


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 1291 Accredited to ISO/IEC 17025:2017	ALS Life Sciences Limited Issue No: 117 Issue date: 28 May 2020	
	Units 7 & 8 Hawarden Business Park Manor Road Off Manor Lane Hawarden Deeside CH5 3US	Contact: Kathleen Burns Tel: +44 (0)1244 528700 Fax: +44 (0)1244 528774 E-Mail: Kathleen.Burns@alsglobal.com Website: www.alsenvironmental.co.uk
Testing performed at the above address only		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Units 7 & 8 Hawarden Business Park Manor Road Off Manor Lane Hawarden Deeside CH5 3US	Local contact Kathleen Burns Tel: +44 (0)1244 528700 Fax: +44 (0)1244 528774 E-Mail: Kathleen.Burns@alsglobal.com	Testing Chemical Physical Asbestos	A
Address c/o Persley Waste Water Treatment Works Woodside Persley Aberdeen AB22 8AQ	Local contact Jonathan Bladon Tel: +44 (0)1224 695340 Email: Jonathan.Bladon@alsglobal.com	Testing Chemical Physical	B



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Issue No: 117 Issue date: 28 May 2020

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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
ASBESTOS IN BULK MATERIALS	<u>Health and Hygiene</u> Identification of: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	HSG 248:2005 "Asbestos: The analysts' guide for sampling, analysis and clearance procedures", by Documented In-House Method TM048 using stereo-microscopy, polarised light microscopy and dispersion staining	A
ASBESTOS IN SOILS and AGGREGATES (fibre screening, identification)	Asbestos fibre screening, identification of asbestos content: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method TM 048 using stereo microscopy, polarised light optical microscopy, phase contrast microscopy and dispersion staining	A
ASBESTOS IN SOILS (fibre screening, identification and quantification)	Asbestos fibre screening, identification and quantification of asbestos content: Amosite Chrysotile Crocidolite Fibrous Actinolite Fibrous Anthophyllite Fibrous Tremolite	Documented In-House Method TM 048 and TM 304 using stereo microscopy, polarised light optical microscopy, phase contrast microscopy and dispersion staining	A



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ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
NATURAL GAS	<u>Chemical Tests</u> Monoethylene Glycol (MEG) in distributed Natural Gas	Documented In-House Methods in the series TM 000 TM 121 by Thermal desorption and GC-FID	A
AMBIENT AIR	Volatile Organic Compounds, specifically: 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,2,3-Trimethylbenzene 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene 1,2-Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane 1,2-Dichlorotetrafluoroethane 1,3,5-Trimethylbenzene 1,3-Butadiene 1,4-Dichlorobenzene 1-Propanol 2-Butanone (MEK) 2-Hexanone 2-Pentanone 3-Hexanone 3-Pentanone 4-Methyl-2-pentanone Acetone + Propanal Acetonitrile Acrolein Benzene Benzyl Chloride Bromodichloromethane Bromoform	TM 330 based upon US EPA TO-15 By GC-MS	A



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Issue No: 117 Issue date: 28 May 2020

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
AMBIENT AIR (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Organic Compounds (cont'd), specifically: Bromomethane Butanal Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chloroethane Chloroform Chloromethane cis-1,2-Dichloroethene cis-1,3-Dichloropropene Cyclohexane Dichlorodifluoromethane Difluorochloromethane Ethylbenzene Hexanal Hexane Iodomethane Isobutene Isoprene m/p-Xylene Methylacrolein Methylene Chloride MTBE o-Xylene Pentanal Pentane Styrene Tetrachloroethene Toluene trans-1,2-Dichloroethene trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane Trichlorotrifluoroethane Vinyl Acetate Vinyl Chloride	Documented In-House Methods in the series TM 000 TM 330 based upon US EPA TO-15 by GC-MS	A



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2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS	<u>Chemical Tests</u>		
	Exchangeable Ammonium	TM 024 by steam distillation and titration	A
	Water Soluble Anions (2:1), specifically: Chloride Bromide Nitrate Sulphate	TM 019 by Ion Chromatography (IC)	A
	Water soluble Anions (2:1), specifically: Chloride Sulphate	TM 243 by Kone analyser	A
	Total Cyanide Easily Liberated/Free Cyanide Thiocyanate	TM 153 by segmented flow analyser based on AWWA/APHA 20 th Edition - Method 4500	A
	Extractable Phosphorus (Olsen's Phosphorus)	TM 229 by Kone analyser based upon The Analysis of Agricultural Materials, MAFF, Third edition, 1986	A
SOILS and SEWAGE SLUDGE	Hexavalent Chromium	TM 151 by Kone analyser	A
SOILS and SLUDGE	Acid Extractable Fluoride	TM397 by ion selective electrode	A
	Dry Matter at 105°C Total Ash at 550°C	Documented In-House Method TM 236 The Determination of the Dry Solids residue at 105°C and The Total Ash after ignition at 550°C	A



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Issue No: 117 Issue date: 28 May 2020

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)		
	<u>Metals:</u> Antimony Arsenic Barium Beryllium Boron Cadmium Cobalt Chromium Copper Iron Lead Manganese Mercury Molybdenum Nickel Selenium Strontium Thallium Tin Vanadium Zinc	TM 181 by ICP-OES	A
	Water Soluble Boron (10:1)	TM 222 by ICP-OES	A
	Loss on ignition	TM 018 by gravimetry	A
	Acid Extractable Sulphate	TM 221 by ICP-OES	A
	Gasoline Range Hydrocarbons, Total, in the range >C5 to C12	TM 089 Headspace GC-FID based on USEPA Methods 8020 and 602	A
	Petroleum Hydrocarbons in the range >C8 - C40	TM 154 by Flash - GC-FID	A
	Mercury	TM 418 by Cold Vapour Atomic Fluorescence Spectroscopy	A



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ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS (cont'd)	<u>Chemical Tests</u> (cont'd) Elemental Sulphur Sulphide Volatile Hydrocarbons: Dichlorodifluoromethane Chloromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane Trans-1,2-dichloroethene Dichloromethane Chloroform 1,1,1-trichloroethane 1,1-dichloropropene Benzene carbon tetrachloride dibromomethane 1,2-dichloropropane bromodichloromethane trichloroethene cis-1,3dichloropropene 1,1,2-trichloroethane Toluene 1,3-dichloropropane dibromochloromethane tetrachloroethene 1,1,1,2-tetrachloroethane chlorobenzene ethylbenzene m/p-xylene Bromoform o-xylene 1,2,3-trichloropropane isopropylbenzene bromobenzene 2-chlorotoluene propylbenzene 4-chlorotoluene	TM 136 by HPLC TM 180 by ion selective electrode TM 116 by Headspace GC-MS based on USEPA Methods 8240, 8120, 8020, 624, 610 and 602	A A A



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Issue No: 117 Issue date: 28 May 2020

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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)		
	Volatile Hydrocarbons: (cont'd) 1,2,4-trimethylbenzene 1,3-dichlorobenzene 1,4-dichlorobenzene Carbon disulphide 1,1-dichloroethene 1,1-dichloroethane cis-1,2-dichloroethene bromochloromethane 1,2-dibromoethane Styrene 4-isopropyltoluene 1,3,5-trimethylbenzene tert-butylbenzene 1,2-dichlorobenzene 1,2-dibromo-3-chloropropane naphthalene 1,2,3-trichlorobenzene Tert-butyl methyl ether 1,2-Dichloroethane Tert-amyl methyl ether 1,1,2,2-Tetrachloroethane	TM 116 by Headspace GC-MS based on USEPA Methods 8240, 8120, 8020, 624, 610 and 602	A
	pH	TM 133 using a GL pH Meter (Ref: Modified BS 1377:Part 3:1990)	A
	Monohydric Phenols: phenol cresols xylenols 2,3,5-trimethyl phenol 2-isopropylphenol Total - Sum of the above 5 Monohydric Phenols	TM 062 by HPLC	A
	Dichloromethane Extractable Compounds	TM 004 by Solvent Extraction Apparatus	A



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Issue No: 117 Issue date: 28 May 2020

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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd) Total Organic Carbon (TOC) Total Carbon Polynuclear Aromatic Hydrocarbons (PAH): Naphthalene ^{1,2} Acenaphthylene ² Acenaphthene ² Fluorene ² Phenanthrene ^{1,2} Anthracene ^{1,2} Fluoranthene ^{1,2} Pyrene ² benz(a)anthracene ^{1,2} Chrysene ^{1,2} Benzo(b)fluoranthene ² Benzo(k)fluoranthene ^{1,2} Benzo(a)pyrene ^{1,2} Indeno(123cd)pyrene ^{1,2} Dibenzo(ah)anthracene ² Benzo(ghi)perylene ^{1,2}	TM 132 by combustion method TM 132 by combustion method TM 218 by Solvent Extraction and GC-MS	A A A



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ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS (cont'd)	<u>Chemical Tests</u> (cont'd) PCB congeners: PCB 28 PCB 52 PCB 77 PCB 81 PCB 101 PCB 105 PCB 114 PCB 118 PCB 123 PCB 126 PCB 138 PCB 153 PCB 156 PCB 157 PCB 167 PCB 169 PCB 180 PCB 189	TM 168 using GC-MS	A
SLUDGE Digestor liquor only	Volatile Fatty Acids: Acetic acid Propionic Acid Isobutyric Acid Butyric Acid Isovaleric Acid Valeric Acid Caproic Acid Heptanoic Acid	TM 201 by GC-FID	A



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Issue No: 117 Issue date: 28 May 2020

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SOILS	<u>Chemical Tests</u>	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil	
	Total cyanide Easily liberated/Free cyanide Thiocyanate	TM 153 by segmented flow analyser based on AWWA/APHA 20 th Edition - Method 4500	A
	Water Soluble Boron (10:1)	TM 222 by ICP-OES	A
	Water Soluble Anions (2:1), specifically: Chloride Bromide Nitrate Sulphate	TM 019 by Ion Chromatography (IC)	A
	Elemental Sulphur	TM 136 by HPLC	A
	Arsenic Beryllium Cadmium Cobalt Chromium Copper Manganese Mercury Nickel Lead Zinc	TM 181 by ICP-OES	A
	Exchangeable Ammonium	TM 024 by steam distillation and titration	A
	pH	TM 133 by automated pH probe	A
	Loss on ignition	TM 018 by gravimetry	A
	Water soluble sulphate 2:1 Water soluble chloride 2:1	TM 243 by Kone analyser	A
	Acid Extractable Sulphate	TM 221 by ICP-OES	A



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ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)	
	Sulphide	TM 180 by ion selective electrode	A
	Total Organic Carbon (TOC)	TM 132 by combustion method	A
	Hexavalent Chromium	TM 151 by Kone analyser	A
	Polynuclear Aromatic Hydrocarbons (PAH): Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benz(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(123cd)pyrene Dibenzo(ah)anthracene Benzo(ghi)perylene	TM 218 by solvent extraction and GC-MS	A



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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Hydrocarbons: Dichlorodifluoromethane Vinyl Chloride Bromomethane Chloroethane Trichlorofluoromethane Carbon Disulphide Tert-butyl methyl ether Trans-1,2-Dichloroethene 1,1-Dichloroethane Cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane 1,1-Dichloropropene Carbon tetrachloride 1,2-Dichloroethane Benzene 1,2-Dichloropropane Dibromomethane Bromodichloromethane Cis-1,3-Dichloropropene Toluene 1,1,2-Trichloroethane 1,3-Dichloropropane Tetrachloroethene Dibromochloromethane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-tetrachloroethane Ethylbenzene o-Xylene 1,2,3-Trichloropropane Propylbenzene 1,3,5-Trimethylbenzene Bromoform Bromobenzene	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd) TM 116 by Headspace GC-MS based on USEPA Methods 8240, 8120, 8020, 624, 610 and 602	A



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ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)	
	Volatile Hydrocarbons (cont'd): 2-Chlorotoluene 4-Chlorotoluene Tert-Butylbenzene 4-Isopropyltoluene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2-Dibromo-3-Chloropropane Naphthalene	TM 116 by Headspace GC-MS based on USEPA Methods 8240, 8120, 8020, 624, 610 and 602	A
	Gasoline Range Hydrocarbons, Total, in the range >C5 to C12	TM 089 Headspace GC-FID based on USEPA Methods 8020 and 602	A
	Extractable Petroleum Hydrocarbons (EPH), in the range >C8 to C40	TM 415 by solvent extraction and GCxGC-FID	A
	Monohydric Phenols: phenol cresols xylenols 2,3,5-trimethyl phenol 2-isopropylphenol Total - Sum of the above 5 Monohydric Phenols	TM 062 by HPLC based on MEWAM Book 124-1988/Second Site Property, March 2003, Method 17.7	A
	PCB congeners: PCB 28 PCB 52 PCB 77 PCB 81 PCB 101 PCB 105 PCB 114	TM 168 using GC-MS	A



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Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil (cont'd)	
	PCB congeners (cont'd): PCB 118 PCB 123 PCB 126 PCB 138 PCB 153 PCB 156 PCB 157 PCB 167 PCB 169 PCB 180 PCB 189	TM 168 using GC-MS	A
WATERS	<u>Chemical Tests</u>	Documented In-House Method	
Potable water (non-regulatory), Ground water, Saline water, treated and untreated sewages and trade effluent	Hexavalent Chromium	TM 241 by Kone Analyser	A
Surface Water	Gasoline Hydrocarbons: Total in the range >C5-C12, and Benzene Toluene Ethyl Benzene o-xylene m/p-xylene MTBE TAME	TM 245 by Headspace GC-FID based on USEPA Methods 8020 and 602	A



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2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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)	Documented In-House Method	
Ground water and Final effluent	Banded and Total Gasoline Hydrocarbons: Total in the range >C5 - C12 including bands >C6-C8 >C8-C10 >C10-C12 and Benzene Toluene Ethyl Benzene o-xylene m/p-xylene MTBE	TM 245 by Headspace GC-FID based on USEPA Methods 8020 and 602	A
Ground water, surface water, treated and untreated sewages, landfill leachates	Dissolved Metals: Aluminium Arsenic Barium Beryllium Bismuth Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead Lithium Magnesium Manganese Molybdenum Nickel Potassium Phosphorus Selenium Silver Sodium Strontium Thallium	TM 152 by ICP-MS with KED	A



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Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method	
Ground water, surface water, treated and untreated sewages, landfill leachates (cont'd)	Dissolved Metals (cont'd): Tin Titanium Tungsten Uranium Vanadium Zinc	TM 152 by ICP-MS with KED	A
Ground water, surface water, treated and landfill leachates	Dissolved Metals: Antimony	TM 152 by ICP-MS with KED	A
Ground water, surface water, treated and untreated sewages, landfill leachates	Total Metals: Aluminium Antimony Arsenic Barium Beryllium Bismuth Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead Lithium Magnesium Manganese Molybdenum Nickel Potassium Phosphorus Silver Sodium Strontium Thallium Tin Titanium Tungsten	TM 152 by ICP-MS with KED	A



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Issue No: 117 Issue date: 28 May 2020

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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method	
Ground water, surface water, treated and untreated sewages, landfill leachates (cont'd)	Total Metals (cont'd): Uranium Vanadium Zinc	TM 152 by ICP-MS with KED	A
Ground water, surface water, treated and landfill leachates	Dissolved Metals: Selenium	TM 152 by ICP-MS with KED	A
Surface Water, treated sewage effluent and trade effluent	Total Petroleum Hydrocarbons	TM 235 by Infra-red	A
Potable water (non-regulatory), Ground water, Surface waters and Final effluent	Extractable Petroleum Hydrocarbons C10 - C40	TM 172 by GC-FID	A



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Issue No: 117 Issue date: 28 May 2020

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WATERS (cont'd) Surface Waters, Ground Waters	<u>Chemical Tests</u> (cont'd) Semi-Volatile Organic Compounds (SVOCs), specifically Bis(2-chloroethyl)ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol N-nitrosodi-n-propylamine Hexachloroethane 4-Methylphenol Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol Bis(2-chloroethoxy)methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene 4-Chloro-3-methylphenol 2-Methylnaphthalene 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2-Chloronaphthalene 2-Nitroaniline Dimethyl phthalate Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene Dibenzofuran 2,4-Dinitrotoluene Fluorene Diethyl phthalate 4-Chlorophenylphenylether 4-Nitroaniline Azobenzene 4-Bromophenylphenylether	Documented In-House Method TM 176 by GC-MS	A



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WATERS (cont'd) Surface Waters, Ground Waters (cont'd)	<u>Chemical Tests</u> (cont'd) Semi-Volatile Organic Compounds (SVOCs), specifically (cont'd) Hexachlorobenzene Phenanthrene Anthracene Carbazole Di-n-butylphthalate Fluoranthene Pyrene Butylbenzylphthalate Benz(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(ghi)perylene	Documented In-House Method TM 176 by GC-MS	A



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<p>WATERS (cont'd)</p> <p>Surface water, Groundwater Treated and Untreated Sewages, Trade Effluent, Landfill Leachate</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Volatile Hydrocarbons:</p> <p>Chloromethane Vinyl Chloride Chloroethane Dichloromethane 1,1-dichloroethane tert-butyl methyl ether cis-1,2-dichloroethene bromochloromethane chloroform 1,1,1-trichloroethane 1,1-dichloropropene benzene dibromomethane trichloroethene 1,1,2-trichloroethane toluene 1,3-dichloropropane 1,2-dibromoethane tetrachloroethene chlorobenzene m/p-xylene styrene o-xylene 1,2,3-trichloropropane isopropylbenzene bromobenzene 2-chlorotoluene propylbenzene 4-chlorotoluene n-butylbenzene naphthalene Dichlorofluoromethane Trans-1,2-dichloroethene ethylbenzene 1,2-dichloropropane bromomethane Tert-amyl methyl ether Trichlorofluoromethane 1,1-dichloroethene Carbon disulphide</p>	<p>Documented In-House Method</p> <p>TM 208 by Headspace GC-MS</p>	<p>A</p>



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Surface water, Groundwater Treated and Untreated Sewages, Trade Effluent, Landfill Leachate (cont'd)	Volatile Hydrocarbons: (cont'd) Carbon tetrachloride Bromodichloromethane trans-1,3-dichloropropene Dibromchloromethane 1,1,1,2-tetrachloroethane Bromoform 1,3,5-trimethylbenzene Tert-butylbenzene 1,2,4-trimethylbenzene Sec-butylbenzene 4-isopropyltoluene 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2,4-trichlorobenzene 1,2-dichloroethane 1,1,2,2-tetrachloroethane 1,2-dichlorobenzene Cis-1,3-dichloropropene Hexachlorobutadiene 1,2,3-trichlorobenzene	TM 208 by Headspace GC-MS	A
Groundwater, Surface Water, Landfill Leachate , Treated and Untreated Sewages, Trade Effluents, Saline Waters, Potable Waters (non-regulatory)	pH	TM 256 using a GL pH Meter based on BS 1377:Part 3:1990	A
Groundwater, Landfill leachate, Treated and Untreated Sewages, Trade Effluents	Dissolved Oxygen	TM 187 by titration (including auto- titrator)	A
Groundwater, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Dissolved Mercury	TM 183 by Cold Vapour Atomic Fluorescence Spectroscopy	A



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ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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)		
Ground Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluent, Potable Water (non-regulatory)	Total Mercury	TM 183 by Cold Vapour Atomic Fluorescence Spectroscopy	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Chemical Oxygen Demand (COD) Filtered, settled & total	TM 107, PM210 using Dr Lange Kit,	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Biochemical Oxygen Demand (BOD) Settled & total	TM 045, PM210 based on MEWAM BOD5, 2 nd Edition 1988/AWWA/ APHA, 20 th Edition - Method 5210B	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Anions: Bromide Chloride Fluoride Nitrate Nitrate as N and NO ₃ Nitrite Nitrite as N and NO ₂ Phosphate Sulphate	TM 226 by ion chromatography	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents and Saline water	Alkalinity	TM 043 by titration and auto-titrator based on AWWA/APHA 20 th Edition - Method 2320B/ BS 2690:Part 109:1984 (Ref: BS 2690)	A



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ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Groundwater, Surface Water, Saline water, Treated and Untreated Sewages, Trade Effluents	Ammonium Ammoniacal Nitrogen as N and NH ₃	TM 099 by Kone Analyser based on BS 2690 Part 7:1968/ BS 6068:Part 2.11:1984	A
Groundwater, surface water, Untreated Sewage, Treated Sewage, Trade Effluent	Total Inorganic Nitrogen (by calculation)	TM 099 by Kone analyser	A
Groundwater, Surface Water, Treated and Untreated Sewages, Trade Effluents	<u>Anions:</u> Total Oxidised Nitrogen (TON) TON as N and NO ₃ Chloride	TM 184 by automated discrete analyser (Kone)	A
Groundwater, Surface Water, Saline Water, Treated and Untreated Sewages, Trade Effluents	Sulphate as S and SO ₄ Phosphate as P and PO ₄ Nitrite as N and NO ₂	TM 184 by Kone analyser	A
Saline Water	Total Oxidised Nitrogen (TON) TON as N and NO ₃	TM 281 by Kone analyser	A
Groundwater, Surface Waters, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents, Saline water, Potable Water (non-regulatory)	Electrical Conductivity at 20 °C	TM 120 using a Digital Conductivity Meter based on BS 2690:Part 119:1981	A
Ground water, surface water, Landfill leachate, Untreated Sewage, Treated Sewage, Trade Effluent	Total Nitrogen Calculation of Kjeldahl Nitrogen	TM 212 by Skalar	A
Groundwater, Surface Water, Treated and Untreated Sewages, Trade Effluents, Saline water, Potable Water (non-regulatory)	Total Suspended Solids	TM 022 by Gravimetric Determination based on BS 2690:Part 120:1981	A



Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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)		
Untreated Sewage, Treated Sewage, Trade Effluent	Total Neutralised Suspended Solids Total Neutralised Suspended Solids (settled) Total Suspended Solids (settled)	TM 022, PM 210	A
Ground Water, Surface Water, Untreated Sewage, Treated Sewage, Trade Effluent	Volatile suspended solids at 500°C	TM 022 by gravimetry	A
Ground Water, Surface Water, Untreated Sewage, Treated Sewage, Trade Effluent	Non-volatile suspended solids at 500°C	TM 022 based on BS 2690:1981 part 120	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Total Inorganic Carbon	TM 090 by TOC Analyser	A
Groundwater, Surface Water	Total Organic Carbon (low level)	TM 295 by TOC Analyser	A
Groundwater, Surface Water, Potable Water (non-regulatory), Landfill Leachate, Treated and Untreated Sewage Effluents	Total Organic Carbon	TM 090 by TOC Analyser	A
Groundwater, Surface Water, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents,	Total Dissolved Solids	TM 021 by Gravimetric Determination based on BS 2690:Part 121:1981 or TM 123 by conductivity meter	A



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ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Trade Effluent, Groundwater, Treated and Untreated Sewage, Landfill Leachate	Volatile Fatty Acids: Acetic acid Propionic Acid Isobutyric Acid Butyric Acid Isovaleric Acid Valeric Acid Caproic Acid Heptanoic Acid	TM 201 by GC-FID	A
Groundwater, Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Monohydric Phenols: Phenol Cresols Xylenols Sum of the above 3 Monohydric phenols	TM 259 by HPLC	A
Groundwater, Surface Water	Ferrous Iron	TM 125 using colorimetry	A
Groundwater, Potable Water (non-regulatory), Landfill Leachate, Treated and Untreated Sewages, Trade Effluents	Total Cyanide Easily Liberated (Free) Cyanide Thiocyanate	TM 227 by Segmented Flow Analyser	A
Ground Water, Surface Water, Landfill Leachate	Easily Liberatable (Free) Cyanide Total Cyanide	TM 279 by SFA colorimetry	A
Groundwater, Potable Water (non-regulatory), Treated and Untreated Sewages, Trade Effluents,	Fluoride	TM 104 by Kone Analyser	A
Groundwater, Potable Water (non-regulatory), Saline Water, Treated and Untreated Sewages, Trade Effluents	Sulphide	TM 101 by automated discrete analyser (KONE)	A



Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
<p>WATERS (cont'd)</p> <p>Surface Water, Ground Water, Saline Water</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Polynuclear Aromatic Hydrocarbons (PAH's): Naphthalene^{1,2} Acenaphthylene² Acenaphthene² Fluorene² Phenanthrene^{1,2} Anthracene^{1,2} Fluoranthene^{1,2} Pyrene² Benz(a)anthracene^{1,2} Chrysene^{1,2} Benzo(b)fluoranthene² Benzo(k)fluoranthene^{1,2} Benzo(a)pyrene^{1,2} Indeno(1,2,3-cd)pyrene^{1,2} Dibenzo(a,h)anthracene² Benzo(g,h,i)perylene^{1,2} Sum of "Dutch 10" PAHs (annotated ¹) Sum of "EPA 16" PAHs (annotated ²)</p>	<p>TM 178 by GC-MS</p>	<p>A</p>
<p>Surface and Saline waters</p>	<p>Volatile Hydrocarbons: Vinyl Chloride 1,1,1,2-tetrachloroethane 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene 1,2-Dibromo-3-Chloropropane 1,2-Dibromoethane 1,2-Dichlorobenzene 1,2-Dichloroethane 1,2-Dichloropropane</p>	<p>TM 265 by Headspace GC-MS</p>	<p>A</p>



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ISO/IEC 17025:2017

Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd) Surface and Saline waters (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Hydrocarbons: (cont'd) 1,3,5-Trimethylbenzene 1,3-Dichlorobenzene 1,3-Dichloropropane 1,4-Dichlorobenzene 2-Chlorotoluene 4-Chlorotoluene 4-Isopropyltoluene Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Carbon tetrachloride Chlorobenzene Chloroethane Cis-1,2-Dichloroethene Cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Ethylbenzene Hexachlorobutadiene Isopropylbenzene Naphthalene n-Butylbenzene o-Xylene p/m-Xylene Propylbenzene Sec-Butylbenzene Styrene Tert-Butylbenzene Tetrachloroethene Toluene Trans-1,2-Dichloroethene Trans-1,3-Dichloropropene Trichloroethene Trichlorofluoromethane	TM 265 by Headspace GC-MS	A



Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WATERS (cont'd)	<u>Chemical Tests (cont'd)</u>		
Surface, Ground and Saline waters	Hexabromocyclododecane (HBCDD)	TM 421 by LC-MS-MS	A
	Cypermethrin	TM 422 by LC-MS-MS	A
WATERS & WASTE WATERS	<u>Chemical Testing</u>		
Groundwater, surface Water, Untreated sewage, Treated Sewage & Trade Effluent	Turbidity	TM 195 by nephelometry	A
Untreated Sewage, Treated Sewage, Trade Effluent	Dissolved Metals, specifically: Aluminium Arsenic Cadmium Chromium Cobalt Copper Iron Lead Nickel Phosphorus Selenium Zinc	TM 377 by ICP-MS with Kinetic Energy Discrimination (KED)	A
Untreated Sewage, Treated Sewage, Trade Effluent	Total Metals, specifically: Aluminium Arsenic Cadmium Chromium Cobalt Copper Iron Lead Nickel Phosphorus Zinc	TM 377 by ICP-MS with Kinetic Energy Discrimination (KED)	A



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ISO/IEC 17025:2017

Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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<p>WATERS & WASTE WATERS</p> <p>Groundwater, Surface Water and Treated Sewage Effluent</p>	<p><u>Chemical Testing</u></p> <p>Perfluorinated substances (PFAS): Perfluoro-n-butanoic acid Perfluoro-n-pentanoic acid Perfluoro-n-hexanoic acid Perfluoro-n-butanedisulfonate Perfluoro-n-heptanoic acid 6:2 fluorotelomer sulfonate Perfluoro-n-pentadisulfonate Perfluoro-n-octanoic acid Perfluoro-n-hexadisulfonate Perfluoro-n-nonanoic acid Perfluoro-n-heptadisulfonate Perfluoro-n-decanoic acid Perfluoro-n-octadisulfonate - linear Perfluorooctane sulfonate-branched Perfluoro-n-undecanoic acid Perfluoro-n-dodecanoic acid Perfluorooctanesulfonamide</p> <p>Total PFOS (linear & Branched)</p>	<p>TM 337 by LC-MS/MS</p>	<p>A</p>



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ISO/IEC 17025:2017

Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WASTE WATERS	<u>Chemical Testing</u>	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, treated sewage effluents and trade effluents	
Untreated Sewage	Total Suspended Solids	TM 022 by Gravimetry	A
Treated Sewage Effluent	Electrical Conductivity	TM 120 by Conductivity meter	A
Trade Effluent	Ammonia Ammoniacal Nitrogen as N and NH ₃	TM 099 by discrete colorimetric analyser	A
	pH	TM 256 by pH meter	A
	Chemical Oxygen Demand (COD)	TM 107 by tube test	A
	Biochemical Oxygen Demand (BOD)	TM 045 by DO meter	A
	Total Nitrogen	TM 212 by Skalar	A
Trade Effluent	Anions: Bromide Chloride Fluoride Nitrate Nitrate as N and NO ₃ Nitrite Nitrite as N and NO ₂ Total Oxidised Nitrogen (TON) as N Phosphate Sulphate	TM 226 by Ion Chromatography	A
Treated Sewage Effluent			
Untreated Sewage			



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ISO/IEC 17025:2017

Schedule of Accreditation
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2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WASTE WATERS (cont'd)	<u>Chemical Testing</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, treated sewage effluents and trade effluents	
Trade Effluent Treated Sewage Effluent Untreated Sewage (cont'd)	Total Metals, specifically: Aluminium Arsenic Cadmium Chromium Cobalt Copper Iron Lead Nickel Phosphorus Zinc	TM 377 by ICP-MS with Kinetic Energy Discrimination (KED)	A
	Dissolved Metals, specifically: Aluminium Arsenic Cadmium Chromium Cobalt Copper Iron Lead Nickel Phosphorus Selenium Zinc	TM 377 by ICP-MS with Kinetic Energy Discrimination (KED)	A



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ISO/IEC 17025:2017

Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

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WASTE WATERS: (cont'd)	<u>Chemical Analysis</u>	Documented In-House Methods based on published procedures in the HMSO series 'Methods for the Examination of Waters and Associated Materials', (MEWAM), referenced by the ISBN number and year or alternative reference as below:	
Treated Sewage	Biochemical Oxygen Demand (BOD)	S5.1 based on HMSO 1988, ISBN 011 752 212 0	B
Untreated Sewage and Trade Effluent	Filtered, settled & total		
	Chemical Oxygen Demand (COD)	S5.2 based on ISO 15705:2002	B
	Filtered, settled & total		
	pH	S3.6.2 based on HMSO 1978, ISBN 011 751 428 4	B
	Alkalinity	Test No S4.1 based on HMSO1981, ISBN 011 751 601 5	B
	Suspended solids, Settleable and Particulate Non-Settleable Solids	S3.8 based on HMSO 1980, ISBN 011 751 957 X	B
	Conductivity	S3.3 based on HMSO 1978, ISBN 011 751 428 4	B
	Dissolved Oxygen	S3.2 based on HMSO 1979, ISBN 011 751 442	B
	Ammoniacal Nitrogen	S2.0 and S2.3 based on HMSO 1989 (2nd Ed 1980), ISBN 011 751 437 3	B
	Chloride	S2.0 and S2.4 based on HMSO 1989 (1st Ed 1980), ISBN 011 751 626 0	B
	Nitrite (NO ₂)	S2.0 and S2.6 based on HMSO 1989, ISBN 011 751 593 0	B



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ISO/IEC 17025:2017

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United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Life Sciences Limited
Issue No: 117 Issue date: 28 May 2020

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS: (cont'd)	<u>Chemical Analysis</u> (cont'd)	Documented In-House Methods based on published procedures in the HMSO series 'Methods for the Examination of Waters and Associated Materials', (MEWAM), referenced by the ISBN number and year or alternative reference as below:	
Treated Sewage	Total Oxidised Nitrogen (TON)	S2.0 and S2.7 based on HMSO 1989 (1st Ed 1980), ISBN 011 751 582 5	B
Untreated Sewage and Trade Effluent (cont'd)	Orthophosphate	S2.0 and S2.8 based on HMSO 1981, ISBN 011 751	B
	Nitrate (TON-NO2)	S2.0, calculated parameter from methods S2.6 and 2.7	B
Treated Sewage	Total Dissolved Solids at 180 °C	S11.2 based on HMSO 1980, ISBN 011 751 957 X	B
SLUDGE	Chemical Tests	Documented In-House Methods	
	Dry Matter at 105 °C	S11.1 based on ISO EN 12880:1998	B
Potable water (non-regulatory), Groundwater and Surface water	pH	S3.6.2 based on HMSO 1978, ISBN 011 751 428 4	B
Potable water (non-regulatory)	Chloride	S2.0 and S2.4 based on HMSO 1989 (1st Ed 1980), ISBN 011 751 626 0	B
END			