


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

|   |  |  |
|---|--|--|
|  <p><b>1181</b><br/>Accredited to<br/>ISO/IEC 17025:2017</p> | <b>Northumbrian Water Ltd</b><br><br><b>Issue No: 118    Issue date: 03 December 2020</b>                      |  |
|   | <b>Northumberland Dock Road</b><br><b>Howdon</b><br><b>Wallsend</b><br><b>Tyne and Wear</b><br><b>NE28 0QD</b> | <b>Contact: Mrs S Alexander</b><br><b>Tel: +44 (0)870 320 4567</b><br><b>Fax: +44 (0)191 296 8560</b><br><b>E-Mail: sarah.alexander@nwl.co.uk</b><br><b>Website: www.nwss-labs.co.uk</b> |

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 |
|--|---|--|---------------|
| <b>Address</b><br>Northumberland Dock Road<br>Wallsend<br>Tyne and Wear<br>NE28 0QD                                    | <b>Local contact</b><br>Mr I Barnabas<br>Ms H Routledge<br><br>Tel: +44 (0)191-296 8500<br>Fax: +44 (0)191-296 8560<br>Email: lan.barnabas@nwl.co.uk<br>Helen.Routledge@nwl.co.uk | <b>Support Functions:</b><br>Quality System<br>Quality Audit administration<br><br><b>Sampling and Testing:</b><br>Environmental Analysis<br>Operation of flexible scope | Howdon        |
| <b>Address</b><br>Northumberland Dock Road<br>Wallsend<br>Tyne and Wear<br>NE28 0QD                                    | <b>Local contact</b><br>Mr J Kenefec<br><br>Tel: +44 (0)191-296 8500<br>Fax: +44 (0)191-296 8560<br>Email:<br>Jonathan.Kenefec@nwl.co.uk  | Water Sampling   | Howdon        |
| <b>Address</b><br>Levenmouth Laboratory<br>Levenmouth Waste Water<br>Treatment Works<br>Methilhaven<br>Fife<br>KY8 3LA | <b>Local contact</b><br>Ms H Routledge<br><br>Tel: +44 (0)191-296 8500<br>Fax: +44 (0)191-296 8560<br>Email: Helen.Routledge@nwl.co.uk  | Environmental Analysis   | Levenmouth    |
| <b>Address</b><br>Cork Laboratory<br>Carrigrennan WWTW<br>Courttown Industrial Estate<br>Little Island<br>Cork, Eire   | <b>Local contact</b><br>Ms H Routledge<br><br>Tel: +44 (0)191-296 8500<br>Fax: +44 (0)191-296 8560<br>Email: Helen.Routledge@nwl.co.uk  | Environmental Analysis   | Cork          |



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| Location details   |  | Activity   | Location code  |
|--|--|--|--|
| <p><b>Address</b><br/>Chelmsford Laboratory<br/>Hanningfield Treatment Works<br/>South Hanningfield<br/>Chelmsford<br/>Essex<br/>CM3 8HS</p> | <p><b>Local contact</b><br/>Mr D Edwards<br/><br/>Tel: +44 (0) 191-296 8500<br/>Fax: +44 (0) 191-296 8560<br/>Email: Diran.Edwards@nwl.co.uk</p>   | <p>Environmental Analysis<br/>Water Microbiology</p>                 | <p>Chelmsford</p>                                    |
| <p><b>Address</b><br/>Horsley Laboratory<br/>Water Lane<br/>Horsley<br/>Newcastle-upon-Tyne<br/>NE15 0PA</p>                                 | <p><b>Local contact</b><br/>Mr I Barnabas<br/><br/>Tel: +44 (0) 191-296 8500<br/>Fax: +44 (0) 191-296 8560<br/>Email: Ian.barnabas@nwl.co.uk</p>   | <p>Environmental Analysis<br/>Water Microbiology</p>                 | <p>Horsley</p>                                       |
| <p><b>Address</b><br/>Leat House<br/>Pattinson Road<br/>District 15<br/>Washington<br/>NE38 8LB</p>  | <p><b>Local contact</b><br/>Mr Ian Lumsdon<br/><br/>Tel: +44 (0)191-296 8500<br/>Fax: +44 (0)191-296 8560<br/>Email: Ian.Lumsdon@nwl.co.uk</p>     | <p>Waste water sampling</p>  | <p>Site - Trade effluents<br/>Site – Water Waste</p> |
| <p><b>Address</b><br/>Horsley Laboratory<br/>Water Lane<br/>Horsley<br/>Newcastle-upon-Tyne<br/>NE15 0PA</p>                                 | <p><b>Local contact</b><br/>Mr Ian Lumsdon<br/><br/>Tel: +44 (0)191-296 8500<br/>Fax: +44 (0)191-296 8560<br/>Email: Ian.Lumsdon@nwl.co.uk</p>     | <p>Raw and drinking water<br/>sampling</p>                           | <p>Site - Water clean</p>                            |
| <p><b>Address</b><br/>Chelmsford Laboratory<br/>Hanningfield Treatment Works<br/>South Hanningfield<br/>Chelmsford<br/>Essex<br/>CM3 8HS</p> | <p><b>Local contact</b><br/>Mr Ian Lumsdon<br/><br/>Tel: +44 (0)191 2968500<br/>Fax: +44 (0)191 2968560<br/>Email: Ian.Lumsdon@nwl.co.uk</p>       | <p>Raw and drinking water<br/>sampling</p>                           | <p>Site - Water clean</p>                            |
| <p><b>Address</b><br/>Levenmouth Laboratory<br/>Levenmouth Waste Water<br/>Treatment Works<br/>Methilhaven<br/>Fife<br/>KY8 3LA</p>          | <p><b>Local contact</b><br/>Ms H Routledge<br/><br/>Tel: +44 (0)191-296 8500<br/>Fax: +44 (0)191-296 8560<br/>Email: Helen.Routledge@nwl.co.uk</p> | <p>Untreated Sewage and<br/>Treated Sewage Effluent<br/>Sampling</p> | <p>Site - MACS</p>                                   |



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**Site activities performed away from the locations listed above:**

| Location details   | Activity                                     | Location code         |
|--|--|-----------------------|
| Waste water treatment works  | Sampling (teams from Washington )            | Site - Water waste    |
| Customer premises - Trade effluents  | Sampling (teams from Washington)             | 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    |
| Commercial, industrial and domestic premises   | Sampling (teams from Howdon)                 | Site-Water Customer   |
| Waste Water treatment works – untreated sewage and treated sewage effluent to MACS requirements  | Sampling (teams from Levenmouth)             | Site - MACS           |

**This schedule is ordered as follows:**

**Section 1**

Laboratory Flexible scope of accreditation to ISO/IEC 17025, the Drinking Water Testing Specification (DWTS) and the EA MCERTS: performance standard for organisations undertaking sampling and chemical testing of water (waters)

**Section 2**

Accreditation to ISO/IEC 17025 and the Drinking Water Testing Specification (DWTS)

**Section 3**

Accreditation to ISO/IEC 17025 and the EA MCERTS: performance standard for organisations undertaking sampling and chemical testing of water (waters)

**Section 4 - Levenmouth**

Accreditation to ISO/IEC 17025 and the SEPA MACS Performance Standard MACS-WAT-01 Sampling and chemical testing of water

**Section 5 - Levenmouth**


Accreditation to ISO/IEC 17025 only

**Section 6 - Cork**

Accreditation to ISO/IEC 17025 only

**Section 7**

Accreditation to ISO/IEC 17025 and the EA MCERTS: performance standard for laboratories carrying out testing of samples from stack emissions monitoring

|   |   |
|---|---|
|  <p>1181</p> <p>Accredited to<br/>ISO/IEC 17025:2017</p> | <p align="center"><b>Schedule of Accreditation</b><br/>issued by<br/><b>United Kingdom Accreditation Service</b><br/>2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK</p> |
|   | <p align="center"><b>Northumbrian Water Ltd</b><br/><b>Issue No: 118    Issue date: 03 December 2020</b></p>  |
| <p align="center">Testing performed by the Organisation at the locations specified</p>  |   |

**Section 8**

Accreditation to ISO/IEC 17025 only

**Note: accreditation to MCERTS (waters), MCERTS (Stack analysis), MACS (waters) and DWTS automatically confers an equivalent accreditation to ISO/IEC 17025**



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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                            |
|-----------------------------------|---|---|--|
| <b>SECTION 1 – Flexible Scope</b> |   |   |  |
|                                   | <p>The laboratory holds a flexible scope of accreditation for inorganic and organic chemistry test methods managed by the Howdon Laboratory in accordance with TI347 covering the following:</p> <ul style="list-style-type: none"> <li>Incorporation of additional determinands (Howdon only) or matrices (Howdon, Horsely and Chelmsford) to existing accredited methods</li> <li>Authorising the use of replacement equipment for existing methods (Howdon, Horsley and Chelmsford)</li> <li>Development of new methods for matrix types and using techniques and instruments that appear on the fixed scope (Howdon only)</li> </ul> <p>Please contact the laboratory for details of the individual determinands and matrices that can be analysed.</p> | <p>Meeting the requirements of The Drinking Water Testing Specification (DWTS) and the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent as applicable</p> | <p>Howdon<br/>Horsley<br/>Chelmsford</p> |
| <b>END of SECTION 1</b>           |   |   |  |



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|---|---|---|---|
| <b>SECTION 2 – Sampling and Analysis to DWTS specification</b>  |   |   |   |
| <p>WATERS, drinking, surface and groundwaters</p> <p>Distribution samples including:-</p> <p>Consumer taps<br/>Standpipes<br/>Commercial and industrial premises<br/>Service reservoirs<br/>Water treatment works<br/>Raw waters including:<br/>Impounding reservoirs<br/>Spring supplies<br/>Boreholes</p> | <p>Sampling and Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)</p> <p>Sampling with subsequent analysis by an ISO/IEC 17025 and DWTS Accredited Laboratory for Chemical and Microbiological testing (including cryptosporidium)</p> | <p><b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b></p> <p>Documented In-House Methods L1 and L17 for sampling based on:</p> <p>a) Standing Committee of Analysts Methods<br/>b) "The Microbiology of Drinking Water 2010"<br/>c) DWI SOP for the monitoring of Cryptosporidium oocysts to satisfy water supply (water quality) regulations 2000:Part 1</p> | <p>Site-Water<br/>Clean</p>                             |
| <p>WATERS, drinking, surface and groundwaters</p> <p>Consumer taps<br/>Standpipes<br/>Commercial and industrial premises<br/>Raw waters including:<br/>Impounding reservoirs<br/>Spring supplies<br/>Boreholes</p>  | <p><u>Physical and Chemical Tests</u></p> <p>Free Residual Chlorine<br/>Total Residual Chlorine</p> <p>Temperature Measurements</p>   | <p>Documented In-House Methods using:</p> <p>Method L13 using a Colorimeter</p> <p>Method L7 using Digital Thermometers</p>   | <p>Site-Water<br/>Clean</p> <p>Site-Water<br/>Clean</p> |
| <p>Consumer taps,<br/>Commercial and industrial premises</p>  | <p>Sampling with subsequent analysis by an ISO/IEC 17025 and DWTS Accredited Laboratory for Chemical and Microbiological testing</p>  | <p>Method L1</p>  | <p>Site-Water<br/>Customer</p>                          |



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|---|---|--|---------------------|
| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)                    | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |                     |
| WATERS, drinking, surface and groundwaters          | <u>Physical and Chemical Tests</u>  | Documented In-House Methods using:   |                     |
| Consumer taps, Commercial and industrial premises   | Free Residual Chlorine<br>Total Residual Chlorine   | Method L13 using a Colorimeter   | Site-Water Customer |
| Consumer taps, Commercial and industrial premises   | Temperature Measurements  | Method L7 using Digital Thermometers   | Site-Water Customer |
|   | <u>Inorganic Testing:</u>   |  |                     |
| Raw (Ground and Surface), and Drinking Waters       | Alkalinity  | Method 80 using auto-titrator  | Chelmsford          |
| Raw (Ground and Surface) and Drinking Waters        | Ammonium Chloride<br>Soluble reactive Phosphate (as Phosphorus)<br>Nitrite<br>Total Oxidised Nitrogen<br>Nitrate (calculated) | Method HY207 using automated colorimetry   | Howdon              |
| Raw (Ground and Surface), and Drinking Waters       | Ammonium Chloride<br>Soluble reactive Phosphate (as Phosphorus)<br>Nitrite<br>Total Oxidised Nitrogen<br>Nitrate (calculated) | Method 68 using Automated Colorimetry  | Chelmsford          |



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| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)<br><br><u>Inorganic Testing:</u> (cont'd) | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Ground and Surface) and Drinking Waters        | Colour (filtered)  | Method HY266 using Spectrophotometry   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Colour (filtered)  | Method 92 by spectrophotometry   | Chelmsford    |
| Raw (Ground and Surface) and Drinking Waters        | Conductivity   | Method HY201 using automated water analyser or using conductivity Meter                        | Howdon        |
| Raw (Ground and Surface), and Drinking Waters       | Conductivity   | Method 79 using auto-titrator  | Chelmsford    |
| Raw (Ground and Surface) and Drinking Waters        | Dry Residues   | Method HY212 using gravimetry  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Suspended solids   | Method HY217 using gravimetry  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Total dissolved solids   | Method HY225 using gravimetry  | Howdon        |





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| Materials/Products tested                           | Type of test/Properties measured/Range of measurement  | Standard specifications/ Equipment/Techniques used   | Location Code |
|---|--|--|---------------|
| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614) | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
|   | <u>Inorganic Testing:</u> (cont'd)   |  |               |
| Raw (Ground and Surface) and Drinking Waters        | pH   | Method HY201 using automated water analyser or using pH meter                                  | Howdon        |
| Raw (Ground and Surface), and Drinking Waters       | pH   | Method 78 using auto-titrator  | Chelmsford    |
| Raw (Ground and Surface) and Drinking Waters        | Total organic carbon (TOC)<br>Dissolved organic carbon (DOC)   | Method HY210 using catalytic oxidation followed by Infra-red detection                         | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Bromate<br>Bromide<br>Chlorate   | Method HY 228 using Ion Chromatography   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Turbidity  | Method HY272 using turbidity Meter   | Howdon        |
| Drinking Waters                                     | Turbidity  | Method HY201 by manual turbidity meter   | Horsley       |
| Raw (Ground and Surface), and Drinking Waters       | Turbidity  | Method 73 using turbidity meter  | Chelmsford    |



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|---|--|--|---------------|
| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)   | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Ground and Surface) and Drinking Waters        | <u>Inorganic Testing:</u> (cont'd)<br>Surfactants  | Method HY215 using Solvent extraction followed by colorimetry                                  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Total cyanide  | Method HY243 using colorimetry   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Fluoride   | Method HY209 using automated Ion selective electrode   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Metals:<br>Aluminium<br>Barium<br>Iron<br>Manganese<br>Phosphorous<br>Potassium<br>Sodium<br>Total Boron<br>Soluble Boron<br>Calcium<br>Magnesium<br>Total Hardness<br>Sulphate<br>Silicon as SiO <sub>2</sub> | Method HY251 using ICP-Optical Emission Spectrometry   | Howdon        |
| Raw (Ground and Surface Water) and Drinking Water   | Metals:<br>Antimony<br>Arsenic<br>Cadmium<br>Chromium<br>Copper<br>Lead<br>Nickel<br>Mercury<br>Selenium<br>Silver<br>Zinc   | Method HY267 using ICP-MS  | Howdon        |



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|---|---|--|---------------|
| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)  | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Ground and Surface) and Drinking Waters        | <u>Organic Testing:</u><br>Trichloromethane<br>Trichloroethene<br>Tribromomethane<br>Tetrachloroethene<br>Tetrachloromethane<br>Dichlorobromomethane<br>Dibromochloromethane<br>Benzene<br>1,2 Dichloroethane | Method HY 114 using Purge and Trap Gas Chromatography with Mass Spectroscopy Detection         | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Total THMs<br>Total Ethenes (total of those measured)   | Method HY 114 by Calculation   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | <u>Polyaromatic Hydrocarbons:</u><br>Anthracene<br>Fluoranthene<br>Benzo(b)fluoranthene*<br>Benzo(k)fluoranthene*<br>Benzo(a)pyrene<br>Indeno(1,2,3-cd)pyrene*<br>Benzo(ghi)perylene*                         | Method HY 123 using GC-MS  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Total PAH (total of those marked *)   | Method HY 123 by calculation   | Howdon        |



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| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)   | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Ground and Surface) and Drinking Waters        | <u>Organic Testing: (cont'd)</u><br><u>Uron herbicides, conazoles and pesticides:</u><br>Carbetamide<br>Carbofuran<br>Metamitron<br>Metoxuron<br>Monuron<br>Tebuthiuron<br>Chlortoluron<br>Methabenzthiazuron<br>Isoproturon<br>Diuron<br>Linuron<br>Epoxiconazole<br>Tebuconazole<br>Propiconazole<br>Prothioconazole<br>Carbendazim<br>Quinmerac | Method HY124 using LC-MS-MS  | Howdon        |



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| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)  | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Ground and Surface) and Drinking Waters        | <u>Organic Testing:</u> (cont'd)<br><br><u>Phenyl Urea Herbicides and Conazoles:</u><br>Metamitron (41394-05-2)<br>Metoxuron (19937-59-8)<br>Carbetamide (16118-49-3)<br>Monuron (150-68-5)<br>Carbofuran (1563-66-2)<br>Tebuthiuron (34014-18-1)<br>Chlortoluron (15545-48-9)<br>Methabenzthiazuron (18691-97-9)<br>Isoproturon (34123-59-6)<br>Diuron (330-54-1)<br>Linuron (330-55-2)<br>Epoxiconazole (133855-98-8)<br>Tebuconazole (107534-96-3)<br>Prothioconazole (178928-70-6)<br>Propiconazole(60207-90-1)<br>Carbendazim (10605-21-7)<br>Dimethenamid (163515-14-8)<br>Ethofumesate,(26225-79- 6)<br>Triallate(2303- 17-5)<br>Prosulfcarb (52888-80-9)<br>Flufenacet(142459-58-3 )<br>Oxamyl (23135-22-0) | Method HY270 using LC-MS-MS  | Howdon        |



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| WATERS, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)  | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
|   | <u>Organic Testing:</u> (cont'd)  |  |               |
| Raw (Ground and Surface) and Drinking Waters        | Metaldehyde   | Method HY127 using direct injection LC-MS  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Alkylphenols:<br>4-tert-octylphenol, nonylphenol,<br>4-n-octylphenol<br>4-n-nonylphenol   | Method 239 using solid phase extraction and GC-MS  | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Organochlorine pesticides:<br><br>Dichlobenil<br>Pentachlorobenzene<br>Tecnazene<br>Trifluralin<br>alpha-BHC<br>Hexachlorobenzene<br>beta-BHC<br>gamma-BHC<br>Chlorthalonil<br>Alachlor<br>Heptachlor<br>Chlorthal-Dimethyl (DCPA)<br>Isodrin<br>Aldrin<br>alpha-Endosulfan<br>beta-Endosulfan<br>Endrin<br>Dieldrin<br>P,p-DDT<br>Heptachlor-EXO-Epoxide<br>Heptachlor-ENDO-Epoxide<br>Heptachlor-epoxides | Method HY275 using GC-MSMS   | Howdon        |
| Raw (Surface and Ground Waters) and Drinking Waters | Acid Herbicides:<br><br>Dicamba<br>Fluroxypyr   | Method HY126 by solid phase extraction and LC-MS-MS  | Howdon        |



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

**Northumbrian Water Ltd**

**Issue No:** 118 **Issue date:** 03 December 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, drinking, surface and groundwaters (cont'd) | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)  | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
| Raw (Surface and Ground Waters) and Drinking Waters | <u>Organic Testing:</u> (cont'd)<br>Acidic Herbicides, specifically:<br>Clopyralid<br>MCPP<br>MCPA<br>Dichlorprop<br>Bromoxynil<br>Triclopyr<br>Pentachlorophenol (PCP)<br>Fenoprop<br>MCPB<br>Bentazone<br>Benazolin<br>2,4-D<br>2,4,5-T<br>2,4-DB<br>Propyzamide<br>loxynil<br>Picloram<br>Chloridazon<br>Lenacil<br>Asulam | Method HY265 using online enrichment followed by LC-MS   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Chlormequat   | Method HY118 by LC-MS/MS   | Howdon        |
| Raw (Ground and Surface) and Drinking Waters        | Glyphosate<br>AMPA  | Method HY121 using solid phase extraction and LC-MS/MS   | Howdon        |



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|--|---|--|---------------|
| <p>WATERS, drinking, surface and groundwaters (cont'd)</p> <p>Raw (Surface and Ground Waters) and Drinking Water</p> | <p>Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)</p> <p><u>Organic Testing:</u> (cont'd)</p> <p>Organophosphorus Pesticides, Triazine Herbicides, Fungicides and Insecticides:</p> <p>Dimethoate<br/>Cypermethrin<br/>Propachlor<br/>Simazine<br/>Atrazine<br/>Propazine<br/>Trietazine<br/>Terbutylazine<br/>Metribuzin<br/>Diazinon<br/>Phorate<br/>Propetamphos<br/>Pirimicarb<br/>Metalaxyl<br/>Prometryn<br/>Fenpropidin<br/>Terbutryn<br/>Chlorpyriphos<br/>Pendimethalin<br/>Metazachlor<br/>Chlorfenvinphos<br/>Malathion<br/>Fenpropimorph<br/>Diflufenican</p> | <p><b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b></p> <p>Method HY264 using solid phase extraction and GC-MS</p> | <p>Howdon</p> |





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|---|--|---|-----------------------|
| WATERS, drinking, surface and groundwaters (cont'd)   | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614) | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b>              |                       |
| Groundwater and drinking water only   | <u>Sensory Tests</u><br>Quantitative Taste<br>Quantitative Odour   | Method 5 based on SCA "The determination of taste and odour in drinking waters (2014)" using assessed panel | Horsley               |
| Raw (Ground and Surface), and Drinking Waters   | Quantitative Taste<br>Quantitative Odour   | Method 5 based on SCA "The determination of taste and odour in drinking waters (2014)" using assessed panel | Chelmsford            |
|   | <u>Microbiological Tests</u>   | Documented In-House Methods based on methods published in "The Microbiology of Drinking Water (MODW)"       |                       |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle), raw (Ground and Surface) water | Enumeration:<br>Total viable count at 22 °C and 37 °C  | Method HY003 using pour plates based on MODW part 7 (2012)  | Horsley<br>Chelmsford |
| Raw (Ground and Surface) water  | Coliforms - faecal<br><i>Escherichia coli</i> (presumptive and confirmed)                                  | Method HY002 using membrane filtration based on MODW part 4 (2016)  | Horsley               |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle), raw (Ground and Surface) water | Coliforms and<br><i>Escherichia coli</i> (presumptive and confirmed)                                       | Method HY093 using MLGA based on MODW part 4 (2016)   | Horsley               |
| Drinking water  | Coliforms and <i>E coli</i>  | HY073 using Colilert based on MODW part 4 (2016)  | Horsley               |



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|---|--|--|---------------|
| WATERS, drinking, surface and groundwaters (cont'd)   | Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614) | <b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b> |               |
|   | <u>Microbiological Tests</u> (cont'd)  |  |               |
| Drinking water, bottled Water (Emergency Water, water from main supply into a bottle), Raw (Ground and Surface) Water | Coliforms and <i>E coli</i>  | HY073 using Colilert based on MODW part 4 (2016)   | Chelmsford    |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle), raw (Ground and Surface) water | Clostridium perfringens (presumptive and confirmed)  | Method HY019 using membrane filtration TSC Agar based on MODW part 6 (2015)                    | Horsley       |
| Drinking water, raw (Ground and Surface) water  | Clostridium perfringens (presumptive and confirmed)  | Method HY019 using membrane filtration TSC Agar based on MODW part 6 (2015)                    | Chelmsford    |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle)                                 | Enumeration of sulphite reducing clostridia  | Method HY087 using membrane filtration based on based on MODW part 6 (2015)                    | Horsley       |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle), raw (Ground and Surface) water | Enterococci (presumptive and confirmed)  | Method HY004 using membrane filtration based on MODW part 5 (2012)                             | Horsley       |
| Drinking water, raw (Ground and Surface) water  | Enterococci (presumptive and confirmed)  | Method HY004 using membrane filtration based on MODW part 5 (2012)                             | Chelmsford    |
| Drinking water, bottled water (Emergency Water, water from main supply into a bottle)                                 | <i>Pseudomonas aeruginosa</i> (presumptive and confirmed)  | Method HY072 using membrane filtration based on MODW part 8 (2015)                             | Horsley       |
| Drinking Waters   | Total viable counts at 22 °C and 37 °C   | Method HY011 using spread plate technique based on MODW part 7 (2012)                          | Horsley       |



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|--|---|---|----------------|
| <p>WATERS, drinking, surface and groundwaters (cont'd)</p> <p>Raw (Ground and Surface), Drinking water</p> | <p>Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2016 (SI 2016/614)</p> <p><u>Microbiological Tests</u> (cont'd)</p> <p>Isolation and enumeration of <i>Cryptosporidium</i> oocysts</p> | <p><b>Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)</b></p> <p>CM001 using the Filita-Max xpress 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'</p> | <p>Horsley</p> |

**END of SECTION 2**



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| Materials/Products tested   | Type of test/Properties measured/Range of measurement  | Standard specifications/ Equipment/Techniques used   | Location Code  |
|---|--|--|--|
| <b>SECTION 3 – Sampling and Analysis to MCERTS (Water)</b>                          |  |  |  |
| WASTE WATERS  | <u>Sampling with subsequent analysis by an ISO/IEC 17025 and MCERTS (waters) Accredited Laboratory</u>             | <b>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</b> |  |
| Untreated sewage<br>Treated sewage effluent<br>Trade effluent (to controlled water) | Sampling with subsequent analysis by an ISO/IEC 17025 and MCERTS waters Accredited Laboratory for Chemical Testing | Documented In-House Methods for sampling (Manual and Automatic Methods)  |  |
| Untreated sewage<br>Treated sewage effluent<br>Trade effluent (to controlled water) |  | Method L4 using manual spot Sampling   | Site-Water<br>Waste<br>Site-Water<br>Clean<br>Site Water<br>Customer |
| Treated sewage effluent   |  | Method L18 using refrigerated automatic sampling equipment   | Site-Water<br>Clean  |
| Untreated sewage<br>Treated sewage effluent<br>Trade effluent (to controlled water) |  | Method L18 using refrigerated automatic sampling equipment   | Site-Water<br>Waste  |
| Trade effluent (to controlled water)  | On-site measurement of free and total residual chlorine  | Method L25 using a colorimetric Hach SL1000 Meter  | Site-Water<br>Clean  |



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| 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>                               | <b>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</b> |               |  |        |
|  | <u>Inorganic Testing</u>                              |  |               |  |        |
| Untreated sewage, treated sewage effluent and trade effluent | Biochemical Oxygen Demand                             |  |               | In-house method H042<br>Manual and Robotic | 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, treated sewage effluent and trade effluent | Aluminium<br>Cadmium<br>Copper<br>Iron<br>Manganese   | In-house method H225 by ICP-MS   | Howdon        |  |        |



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| 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)   | <b>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</b> |               |
| Untreated sewage, treated sewage effluent and trade effluent | <u>Inorganic Testing</u> (cont'd)<br>Phosphorus  | In-house method H230 by ICP-OES  | Howdon        |
| Treated sewage effluent                                      | Ammonium<br>Nitrate<br>Nitrite<br>Total Oxidised Nitrogen (TON)  | In-house method H219 by discrete colorimetric analyser   | Howdon        |
| Untreated sewage, treated sewage effluent and trade effluent | Mercury  | In-house method H108   | Howdon        |
| Treated sewage effluent and trade effluent                   | <u>Organic Testing</u><br>2,4,6-Trinitrophenol<br>4-Nitrophenol<br>2,4-Dinitrophenol<br>2,6-Dinitrophenol<br>2-Nitrophenol<br>Nitrobenzene | In house method O042 by HPLC-UV  | Howdon        |

**END of SECTION 3**



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| Materials/Products tested   | Type of test/Properties measured/Range of measurement  | Standard specifications/ Equipment/Techniques used   | Location Code          |
|---|--|--|------------------------|
| <b>SECTION 4 – Sampling and Analysis to SEPA MACS (Water) and ISO/IEC 17025 LEVENMOUTH laboratory</b> |  |  |                        |
| WASTEWATERS to SEPA MACS scheme   | <u>Sampling with subsequent analysis by an ISO/IEC 17025 and SEPA MACS Accredited Laboratory</u> | <b>Documented In-House Methods to meet the requirements of the SEPA MACS Standard - Sampling and chemical testing of water</b> |                        |
| Wastewater:<br>Crude Sewage (untreated sewage influent)<br>Final Effluent (treated sewage effluent)   | Sampling of wastewater for Subsequent chemical testing   | Spot sampling in-house method LEV 006<br>Automated sampling in-house Method LEV 007  | Levenmouth Site - MACS |
| WASTEWATERS to SEPA MACS scheme   | <u>Inorganic Testing</u>   |  |                        |
| Crude Sewage (untreated sewage influent)<br>Final Effluent (treated sewage effluent)                  | Biochemical Oxygen Demand  | H042 using oxygen meter Manual   | Levenmouth             |
| Crude Sewage (untreated sewage influent)<br>Final Effluent (treated sewage effluent)                  | Chemical Oxygen Demand   | H171 using colorimetry   | Levenmouth             |
| Final Effluent (treated sewage effluent)  | Suspended Solids   | H035 using Gravimetry  | Levenmouth             |
| Final Effluent (treated sewage effluent)  | pH   | Method LEV003 using pH meter   | Levenmouth             |
| <b>END of SECTION 4</b>   |  |  |                        |



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|--|---|---|---------------|
| <b>SECTION 5 –Analysis to ISO/IEC 17025 only<br/>LEVENMOUTH laboratory</b>   |   |   |               |
| <p>WASTEWATERS</p> <p>Crude Sewage (untreated sewage influent)</p> <p>Crude Sewage (untreated sewage influent)</p> | <p><u>Inorganic Testing</u></p> <p>Suspended Solids</p> <p>pH</p> | <p>Documented In-House Methods to meet the requirements of ISO/IEC 17025</p> <p>H035 using Gravimetry</p> <p>Method LEV003 using pH meter</p> |               |
| <b>END of SECTION 5</b>  |   |   |               |





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|---|---|--|---------------|
| <b>SECTION 6 Analysis to ISO/IEC 17025 CORK Laboratory</b>          |   |  |               |
| WATERS  | <u>Chemical Tests</u>                                 | Documented In-House Methods                        |               |
| Crude Sewage (untreated sewage influent)<br>Treated Sewage Effluent | Suspended solids                                      | H035 using Gravimetry                              | Cork          |
| Crude Sewage (untreated sewage influent)<br>Treated Sewage Effluent | Biochemical oxygen demand                             | H042 using oxygen meter Manual                     | Cork          |
| Crude Sewage (untreated sewage influent)<br>Treated Sewage Effluent | Chemical oxygen demand                                | H171 using colorimetry                             | Cork          |
| SEDIMENTS/ SLUDGES  | <u>Chemical Tests (cont'd)</u>                        | Documented In-House Methods                        |               |
| Sewage Sludges  | Dry solids and volatile matter                        | Method C006  | Cork          |
| Sewage Sludges  | pH  | Method C003 using pH meter                         | Cork          |
| <b>END of SECTION 6</b>   |   |  |               |



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|---|---|---|---------------|
| <b>SECTION 7 Analysis to MCERTS (Stack sample analysis)</b>   |   |   |               |
| ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES<br><br>Filters<br>Probe and impinger rinses (toluene, acetone and water)<br>XAD-2 resin trap | <u>Chemical Tests</u><br><br>Poly Chlorinated Dibenzo-p-Dioxins (PCDD):<br>2,3,7,8-TCDD<br>1,2,3,7,8-PeCDD<br>1,2,3,6,7,8-HxCDD<br>1,2,3,4,7,8-HxCDD<br>1,2,3,7,8,9-HxCDD<br>1,2,3,4,6,7,8-HpCDD<br>OCDD<br><br>Poly Chlorinated Dibenzo Furans (PCDF):<br>2,3,7,8-TCDF<br>1,2,3,7,8-PeCDF<br>2,3,4,7,8-PeCDF<br>1,2,3,4,7,8-HxCDF<br>1,2,3,6,7,8-HxCDF<br>2,3,4,6,7,8-HxCDF<br>1,2,3,7,8,9-HxCDF<br>1,2,3,4,6,7,8-HpCDF<br>1,2,3,4,7,8,9-HpCDF<br>OCDF | 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 for laboratories carrying out testing of samples from stack emissions monitoring<br><br>BS EN 1948-2:2006 and BS EN 1948-3:2006. Extraction followed by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (GCHRMS) (SOP 0055) | Howdon        |



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|--|---|---|---------------|
| <p>ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES</p> <p>Filters<br/>Probe and impinger rinses (toluene, acetone and water)<br/>XAD-2 resin trap</p> | <p><u>Chemical Tests</u> (cont'd)</p> <p>Polychlorinated Biphenyls(PCBs):<br/>Congener 77<br/>Congener 81<br/>Congener 105<br/>Congener 114<br/>Congener 118<br/>Congener 123<br/>Congener 126<br/>Congener 156<br/>Congener 157<br/>Congener 167<br/>Congener 169<br/>Congener 189</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 for laboratories carrying out testing of samples from stack emissions monitoring</p> <p>BS EN 1948-4:2010+A1:2013. Extraction followed by GCHRMS (SOP O084)</p> | <p>Howdon</p> |

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| <b>SECTION 8 Sampling and Analysis to ISO/IEC 17025</b> |  |  |               |
| SEDIMENTS/ SLUDGES                                      | <u>Chemical Tests</u>  | Documented In-House Methods                                |               |
| Sludge, ashes, soils, sediments and dusts               | Poly Chlorinated Dibenzo-p-Dioxins (PCDD):<br>2,3,7,8-TCDD<br>1,2,3,7,8-PeCDD<br>1,2,3,6,7,8-HxCDD<br>1,2,3,4,7,8-HxCDD<br>1,2,3,7,8,9-HxCDD<br>1,2,3,4,6,7,8-HpCDD<br>OCDD<br><br>Poly Chlorinated Dibenzo Furans (PCDF):<br>2,3,7,8-TCDF<br>1,2,3,7,8-PeCDF<br>2,3,4,7,8-PeCDF<br>1,2,3,4,7,8-HxCDF<br>1,2,3,6,7,8-HxCDF<br>2,3,4,6,7,8-HxCDF<br>1,2,3,7,8,9-HxCDF<br>1,2,3,4,6,7,8-HpCDF<br>1,2,3,4,7,8,9-HpCDF<br>OCDF | Method O036 using solvent extraction followed by HRGC/HRMS | Howdon        |
| Sludge, ashes, soils, sediments and dusts               | Polychlorinated biphenyls:<br>Congener 77<br>Congener 81<br>Congener 105<br>Congener 114<br>Congener 118<br>Congener 123<br>Congener 126<br>Congener 156<br>Congener 157<br>Congener 167<br>Congener 169<br>Congener 189   | Method O084 using HRGC/HRMS                                | Howdon        |



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|--|--|--|---------------|
| <p>ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES</p> <p>Filters<br/>Probe and impinger rinses (toluene, acetone and water)<br/>XAD-2 resin trap</p> | <p>Poly Chlorinated Dibenzo-p-Dioxins (PCDD):<br/>2,3,7,8-TCDD<br/>1,2,3,7,8-PeCDD<br/>1,2,3,6,7,8-HxCDD<br/>1,2,3,4,7,8-HxCDD<br/>1,2,3,7,8,9-HxCDD<br/>1,2,3,4,6,7,8-HpCDD<br/>OCDD</p> <p>Poly Chlorinated Dibenzo Furans (PCDF):<br/>2,3,7,8-TCDF<br/>1,2,3,7,8-PeCDF<br/>2,3,4,7,8-PeCDF<br/>1,2,3,4,7,8-HxCDF<br/>1,2,3,6,7,8-HxCDF<br/>2,3,4,6,7,8-HxCDF<br/>1,2,3,7,8,9-HxCDF<br/>1,2,3,4,6,7,8-HpCDF<br/>1,2,3,4,7,8,9-HpCDF<br/>OCDF</p> | <p>Documented In-House Methods based on the following national, international and other recognised standards</p> <p>BS EN 1948-2:2006 and BS EN 1948-3:2006.<br/>Extraction followed by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (GCHRMS) (SOP O055)</p> | <p>Howdon</p> |
| <p>Filters<br/>Probe and impinger rinses (toluene, acetone and water)<br/>XAD-2 resin trap</p>   | <p>Polychlorinated Biphenyls(PCBs):<br/>Congener 77<br/>Congener 81<br/>Congener 105<br/>Congener 114<br/>Congener 118<br/>Congener 123<br/>Congener 126<br/>Congener 156<br/>Congener 157<br/>Congener 167<br/>Congener 169<br/>Congener 189</p>  | <p>BS EN 1948-4:2010+A1:2013.<br/>Extraction followed by GCHRMS (SOP O084)</p>   | <p>Howdon</p> |



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| <p>ATMOSPHERIC POLLUTANTS AND EFFLUENTS – DIGESTER GASES</p> <p>Digester gases including biomethane<br/>Collected on Tenax TA sorbent tube</p> | <p><u>Chemical Tests</u> (cont'd)</p> <p>Siloxanes:</p> <p>Octamethyltrisiloxane<br/>Octamethylcyclotetrasiloxane<br/>Decamethyltetrasiloxane<br/>Decamethylcyclopentasiloxane<br/>Dodecamethylpentasiloxane<br/>Dodecamethylcyclohexasiloxane</p> | <p>Documented In-House Methods</p> <p>Method O108 using Thermal Desorption and Ion Trap GC-MS</p> | <p>Howdon</p> |
| <p>Digester gases including biomethane<br/>Collected in Tedlar bags</p>  | <p>Bulk and Trace components:</p> <p>Methane<br/>Ethane<br/>Ethylene<br/>Propane,<br/>Carbon dioxide<br/>Oxygen<br/>Nitrogen<br/>Hydrogen<br/>Hydrogen sulphide</p>  | <p>Method O109 using GCFID, GCTCD and GCFPD</p>   | <p>Howdon</p> |



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| WATERS   | <u>Chemical 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, Methods developed by instrument manufacturers |               |
| Groundwater, Surface water, Landfill Leachate, Trade Effluent, Treated Sewage Effluent                   | Alkalinity  | H109 using autotitrator   | Howdon        |
| Landfill Leachate, Untreated Sewage, Treated sewage effluent, Trade Effluent, Groundwater                | Bromide<br>Chloride<br>Fluoride<br>Sulphate           | H090 using Ion Chromatography   | Howdon        |
| Groundwater, Surface water, Landfill Leachate Trade Effluent, Treated Sewage Effluent                    | Formaldehyde - free<br>- total                        | H040 using spectrophotometry<br>H039 using spectrophotometry  | Howdon        |
| Groundwater, Untreated Sewage, Treated Sewage Effluent & Trade Effluent                                  | pH  | H031 by pH meter  | Howdon        |
| Groundwater, Surface Water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent | Boron   | H228 by ICP-OES   | Howdon        |



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| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)  | 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 |               |
| Groundwater, Surface Water, Landfill Leachate, Trade Effluent, Untreated Sewage, Treated Sewage Effluent | Mercury   | H108 using Cold Vapour Atomic Fluorescence Spectrometry   | Howdon        |
| Groundwater, Surface Water, Landfill Leachate, Untreated Sewage, Trade Effluent, Treated Sewage Effluent | Settleable solids   | H036 using Gravimetry   | Howdon        |
| Ground water, treated sewage effluent & trade effluent   | Surfactants - anionic   | H104 using Manual Extraction and Colorimetry  | Howdon        |
| Ground water, treated sewage effluent & trade effluent   | - non-ionic   | H052 using Colorimetry  | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent | Suspended solids  | H035 using Gravimetry   | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Trade Effluent, Treated Sewage Effluent                   | Elements:<br>Calcium<br>Magnesium<br>Potassium<br>Sodium<br>Hardness – total (by calculation) | H206 using ICP-OES  | Howdon        |





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| WATERS (cont'd)   | <u>Chemical Tests</u> (cont'd)  | 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 |               |
| Groundwater, Surface water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent to Sewer, Trade Effluent to controlled Water | Elements:<br><br>Aluminium<br>Antimony<br>Arsenic<br>Barium<br>Cadmium<br>Cobalt<br>Chromium<br>Copper<br>Iron<br>Lithium<br>Manganese<br>Molybdenum<br>Nickel<br>Lead<br>Selenium<br>Tin<br>Titanium<br>Thallium<br>Vanadium<br>Zinc | H225 using ICP-MS   | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent to Sewer                                     | Beryllium   | H225 using ICP-MS   | Howdon        |



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| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)                        | 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 |               |
| Groundwater, Surface water, Untreated Sewage, Treated Sewage Effluent, Trade Effluent, Landfill Leachate   | Phosphorus  | H230 using ICP-OES  | Howdon        |
| Treated Sewage Effluent, Trade Effluent, Landfill Leachate, Prepared Leachate, Surface Water, Ground Water | Cyanide – Free<br>Cyanide – Total                     | H127 using Segmented Flow Colorimetry   | Howdon        |
| Groundwater, Surface water, Landfill Leachate Trade Effluent, Treated Sewage Effluent                      | Sulphides   | H041 using spectrophotometry  | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent   | Biochemical oxygen demand                             | H042 using oxygen meter Manual and Robotic  | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent   | Chemical oxygen demand                                | H171 using colorimetry  | Howdon        |
| Groundwater, Surface water, Landfill Leachate, Trade Effluent, Treated Sewage Effluent                     | Conductivity  | H032 using meter/autotitrator   | Howdon        |
| Drinking Waters (Non Regulatory)   | Permanganate Index                                    | Method HY216 using oxidation and titration  | Howdon        |
| Untreated Sewage, Treated Sewage Effluent and Trade Effluent   | Elements:<br>Silver                                   | H217 using ICPOES   | Howdon        |



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|--|--|---|---------------|
| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)   | 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 |               |
| Treated Sewage Effluent, Trade Effluent, Landfill Leachate, Prepared Leachate, Surface Water, Ground Water | Phenolic compounds (as Phenol)   | H128 using Segmented Flow Colorimetry   | Howdon        |
| Groundwater, Surface water, Drinking Water (non regulatory), Treated Sewage Effluent                       | Poly Chlorinated Dibenzo-p-Dioxins (PCDD):<br>2,3,7,8-TCDD<br>1,2,3,7,8-PeCDD<br>1,2,3,6,7,8-HxCDD<br>1,2,3,4,7,8-HxCDD<br>1,2,3,7,8,9-HxCDD<br>1,2,3,4,6,7,8-HpCDD<br>OCDD<br><br>Poly Chlorinated Dibenzo Furans (PCDF):<br>2,3,7,8-TCDF<br>1,2,3,7,8-PeCDF<br>2,3,4,7,8-PeCDF<br>1,2,3,4,7,8-HxCDF<br>1,2,3,6,7,8-HxCDF<br>2,3,4,6,7,8-HxCDF<br>1,2,3,7,8,9-HxCDF<br>1,2,3,4,6,7,8-HpCDF<br>1,2,3,4,7,8,9-HpCDF<br>OCDF | Method O036 using solvent extraction followed by HRGC/HRMS  | Howdon        |



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|--|---|---|---------------|
| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)  | 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 |               |
| Groundwater, Surface Water, Landfill Leachate, Untreated Sewage, Treated Sewage Effluent, Trade Effluent                 | Anions and Cations:<br>Ammonia<br>Nitrate<br>Nitrite<br>Total Oxidised Nitrogen (TON)<br>Dissolved ortho phosphate<br>Total phosphate   | In-house method H219 by discrete colorimetric analyser  | Howdon        |
| Groundwater, Surface Water, Treated sewage effluent, Drinking Water (non regulatory) , Landfill Leachate, Trade Effluent | Organochlorine Pesticides:<br><br>Aldrin<br>BHC-alpha<br>BHC-beta<br>BHC-gamma<br>DDE-op<br>DDE-pp<br>DDT-pp<br>Dieldrin<br>Endosulphan-alpha<br>Endosulphan-beta<br>Endrin<br>Hexachlorobenzene<br>Isodrin<br>TDE-op<br>TDE-pp<br>Tecnazene<br>Trifluralin | Method O052 using GCMS  | Howdon        |



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| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)   | 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 |               |
| Groundwater, Surface Water, Treated sewage effluent, Drinking Water (non regulatory), Trade Effluent | Polychlorinated biphenyls:<br><br>Congener 28/31<br>Congener 52<br>Congener 101<br>Congener 118<br>Congener 138<br>Congener 153<br>Congener 180  | Method O052 using GCMS  | Howdon        |
| Groundwater, Surface Water, Treated Sewage Effluent  | DDT-op   | Method O052 using GCMS  | Howdon        |
| Ground water, Surface water, Drinking Water (non regulatory), Treated Sewage Effluent                | Polychlorinated Biphenyls:<br>Congener 77<br>Congener 81<br>Congener 105<br>Congener 114<br>Congener 118<br>Congener 123<br>Congener 126<br>Congener 156<br>Congener 157<br>Congener 167<br>Congener 169<br>Congener 189 | Method O084 using HRGC/HRMS   | Howdon        |



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|--|--|---|---------------|
| WATERS (cont'd)  | <u>Chemical Tests</u> (cont'd)   | 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 |               |
| Groundwater, Surface water, Landfill Leachate, Trade Effluent, Treated Sewage Effluent | Triazines:<br>Atrazine<br>Trietazine<br>Propazine<br>Simazine  | Method O053 by GC-MS  | Howdon        |
| Groundwater, Surface water, Landfill leachate, Trade effluent, Treated sewage effluent | Alcohols:<br><br>Methanol<br>Ethanol<br>Acetone<br>Propan-2-ol<br>Butan-2-ol<br>Methyl ethyl ketone<br>Butan-1-ol<br>Isobutanol<br>Propan-1-ol<br>Methylisobutylketone | Method O015 using Headspace-GC  | Howdon        |



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| WATERS (cont'd)   | <u>Chemical Tests</u> (cont'd)  | 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 |               |
| Groundwater, Surface water, Drinking Water (non regulatory), Landfill leachate, Trade effluent, Treated Sewage Effluent | Total Petroleum Hydrocarbons  | Method O082 using GC-FID  | Howdon        |
| Groundwater, Surface water, Drinking Water (non regulatory), Landfill leachate, Trade effluent, Treated Sewage Effluent | Aliphatic (Mineral Oil) fractionation of Total Petroleum Hydrocarbons   | Method O082 using GC-FID  | Howdon        |
| Groundwater, Surface water, Drinking Water (non regulatory)   | Polynuclear Aromatic Hydrocarbons:<br><br>Acenaphthene<br>Acenaphthylene<br>Anthracene<br>Benz(a)anthracene<br>Benzo(b)fluoranthene<br>Benzo(k)fluoranthene<br>Benzo(a)pyrene<br>Benzo(ghi)perylene<br>Chrysene<br>Dibenz(a,h)anthracene<br>Fluoranthene<br>Fluorene<br>Indeno(1,2,3,c,d)pyrene<br>Naphthalene<br>Phenanthrene<br>Pyrene<br>Total PAH | Method O044 using GCMS  | Howdon        |



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| WATERS (cont'd)   | <u>Chemical Tests</u> (cont'd)  | 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 |   |
| Treated Sewage Effluent, Drinking Water (non-regulatory), Trade Effluent, Surface Water | Organotin Compounds:<br><br>Dibutyl tin (DBT)<br>Tributyl Tin (TBT)<br>Tetrabutyl Tin (TeBT)<br>Triphenyl Tin (TPT) | Method O106 using GC-MS-MS  | Howdon  |
| WATERS, waste and groundwaters  | <u>Physical and Chemical Tests</u>  | Documented In-House Methods using:  |   |
| Boreholes   | Volume of Water in Boreholes  | Method L15 using Electrochemical Water Detector   | Site Water<br>Waste<br>Site-Water<br>Customer |
| WASTE WATERS  | <u>Chemical Tests</u>   | Documented In-House Methods:  |   |
| Effluents   | Dissolved Oxygen  | Method L10 using Electrochemical Sensor   | Site-Water<br>Customer                        |
| Effluents   | Chemical testing  | Method L4 by manual spot sampling   | Site-Water<br>Waste<br>Site-Water<br>Customer |
| Effluents   | Temperature measurements  | Method L7 using Calibrated thermometer  | Site-Water<br>Waste<br>Site-Water<br>Customer |





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| WATERS                                    | <u>Microbiological Tests</u>  | Documented In-House Methods based on methods published in "The Microbiology of Drinking Water (MODW)"   |               |
| Bottled water                             | Enumeration:<br>Total viable count at 22 °C and 37 °C   | Method HY003 using pour plates based on MODW part 7 (2012)  | Horsley       |
| Bottled water                             | Coliforms and <i>Escherichia coli</i> (presumptive and confirmed)   | Method HY093 using MLGA based on MODW part 4 (2016)   | Horsley       |
| Bottled water                             | <i>Clostridium perfringens</i> (presumptive and confirmed)  | Method HY019 using membrane filtration TSC Agar based on MODW part 6 (2015)   | Horsley       |
| Bottled water                             | Enumeration of sulphite reducing clostridia   | Method HY087 using membrane filtration based on based on MODW part 6 (2015)   | Horsley       |
| Bottled water                             | Enterococci (presumptive and confirmed)   | Method HY004 using membrane filtration based on MODW part 5 (2012)  | Horsley       |
| Bottled water                             | <i>Pseudomonas aeruginosa</i> (presumptive and confirmed)   | Method HY072 using membrane filtration based on MODW part 8 (2015)  | Horsley       |
| Final Treated and Recreational Pool Water | Isolation and enumeration of <i>Cryptosporidium</i> oocysts   | CM001 using the Filta-Max xpress 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       |
| Wastewater - Effluent                     | Enumeration and Identification:<br>Coliforms - faecal <i>Escherichia coli</i> (presumptive and confirmed) | Method HY002 using membrane filtration based on MODW part 4 (2016)  | Horsley       |



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|---|--|--|-----------------------|
| WATERS (cont'd)                               | <u>Microbiological Tests</u>   | Documented In-House Methods based on methods published in "The Microbiology of Drinking Water (MODW)"  |                       |
| Purified water and swimming pool water        | Enumeration and Identification:<br>Coliforms - faecal<br><i>Escherichia coli</i> (presumptive and confirmed) | Method HY093 using MLGA based on MODW part 4 (2016)  | Horsley               |
| Purified water and swimming pool water        | <i>Pseudomonas aeruginosa</i> (presumptive and confirmed)  | Method HY072 using membrane filtration based on MODW part 8 (2015)   | Horsley               |
| Wastewater - Effluent:<br>Swimming pool Water | Enterococci (presumptive and confirmed)  | HY004 using membrane filtration based on MODW part 5 (2012)  | Horsley               |
| Swimming pool Water                           | Coliforms and <i>E coli</i>  | HY073 using Colilert based on MODW part 4 (2016)   | Chelmsford            |
| Swimming pool water                           | Total viable count at 22 °C and 37 °C  | Method HY003 using pour plates based on MODW part 7 (2012)   | Horsley<br>Chelmsford |
| Endoscope Rinse Waters                        | Total Viable Count Aerobic heterotrophic mesophilic microorganisms at 30°C                                   | Method HY 097 using membrane filtration and culture on R2A agar in duplicate based on Health Technical Memorandum 01-06; Decontamination of flexible endoscopes (HTM01-06) | Horsley               |
| Purified water                                | Total viable counts at 32.5 °C   | HY023 using membrane filtration and R2A agar based on Eu Pharma 2005   | Horsley               |
| Purified water and water for injection        | Detection of Endotoxins  | CM008 using LAL Gel Clot Technique   | Horsley               |
| Process Waters (hot and cold water systems)   | Isolation, enumeration and identification of <i>Legionella</i> spp and <i>Legionella pneumophila</i>         | Method LEG 01 using membrane filtration and selective media  | Horsley<br>Chelmsford |
| Raw (Ground and Surface) water                | Algal counts and identification of Algal spp (abundance species)   | BIO 1 using sedimentation with Lugols iodine   | Chelmsford            |



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| <p>WATERS Process water, Drinking water (non regulatory) and recreational water</p> <p>Potable waters and Non-potable waters from domestic hot and cold water systems, Calorifiers, water dispensers, cold water tanks, humidifiers/water spray, Spa Pools, TMV/Mixer taps, instantaneous water heaters and showers/spray taps</p> | <p><u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited Laboratory For:</u></p> <p>Sampling for the purpose of facilities management and as a standalone practice for microbiological testing including <i>Legionella</i></p> | <p>Documented In-House Methods for sampling</p> <p>Documented In-House Methods L1 and L26 based on BS 7592:2008, BS 8554:2015 and The Microbiology of Drinking Water part 2 2010</p> | <p>Site-Water Customer</p> |
| END  |  |  |                            |