

# Schedule of Accreditation



|   |                                   |
|---|-----------------------------------|
| Organisation Name                             | Saotharlann Chonamara Teo         |
| Trading As                                    | Complete laboratory solutions     |
| INAB Reg No                                   | 108T                              |
| Contact Name                                  | Aoife Carter                      |
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| Accreditation Standard                        | EN ISO/IEC 17025 T                |
| Standard Version                              | 2017                              |
| Date of award of accreditation                | 15/09/1999                        |
| Scope Classification                          | Biological and veterinary testing |
| Scope Classification                          | Chemical testing                  |
| Services available to the public <sup>1</sup> | Yes                               |

<sup>1</sup> Refer to document on interpreting INAB Scopes of Accreditation

| Sites from which accredited services are delivered   |                                      |  |
|--|--------------------------------------|--|
| (the detail of the accredited services delivered at each site are on the Scope of Accreditation) |                                      |  |
|  | Name                                 | Address  |
| 1  | Rosmuc Site ,<br>Conemarra Co Galway | Rosmuc, Galway, Galway, Ireland                          |
| 2  | Head Office                          | Rosmuc, Connemara, Galway                                |
| 3  | CLS Galway                           | UNIT 2, 3 and 8, IDA Enterprise Park,, Tuam Road, Galway |

# Scope of Accreditation

## CLS Galway

### Biological and Veterinary Testing

Category: A

| Biology/veterinary field - Tests   | Test name   | Technique                                     | Matrix  | Equipment | Std. reference   |
|--|---|---|---|-----------|--|
| 803 Culture of organisms in liquid or agar based culture media with visual or instrument monitoring for growth - .01 Culture of bacteria | Bioburden of Medical Devices  | Incubation and enumeration of microorganisms. | Tests on human pharmaceutical and biological products. Bacteria, Yeasts and Moulds only | N/A       | CLS 210 - ISO 11737-1:2018/AMD 1: 2021 Sterilization of health care products - Microbiological methods - Part 1: Determination of a population of microorganisms on products |
|  | Dual Incubation and Enumeration of TSA Plates   | Plate count                                   | Factory Hygiene Surfaces<br>Factory Hygiene Air   | N/A       | CLS 190 In house method  |
|  | Endotoxin testing of Medical Devices  | Kinetic Assay                                 | Tests on human pharmaceutical and biological products.                                  | N/A       | CLS 211 -ANSI/AAMI St72 - Bacterial endotoxin test methodologies, routine monitoring and alternative batch testing.  |
|  | Endotoxin Testing on Purified Water using Gel clot Method   | Gel Clot                                      | Tests on human pharmaceutical and biological products endotoxin tests                   | N/A       | CLS 185 Based on ANSI/AAMI ST 72:2019 Bacterial Endotoxin test methodologies,routine monitoring and alternatives to batch testing  |
|  | Endotoxin Testing on Purified Water, Renal Water and Endoscopy Water using Kinetic Turbidimetric Method | Kinetic Turbidimetric Method                  | Tests on human pharmaceutical and biological products endotoxin tests                   | N/A       | CLS 186 Based on ANSI/AAMI ST 72:2019 Bacterial Endotoxin test methodologies,routine monitoring and alternatives to batch testing, USP (85) Bacterial Endotoxin Test         |

|  |   |                     |   |     |   |
|--|---|---------------------|---|-----|---|
|  | Enumeration of Micro-organisms Colony count technique at 22°C, 30°C and 37°C in water | Spread plate        | waters: Bacteriological condition of potable waters<br>waters: Bacteriological condition of industrial waters<br>Micro tests for factory hygiene purposes | N/A | CLS 95 based on the Microbiology of Drinking water part 7 (2020)- Methods for the enumeration of Heterotrophic bacteria by pour plate and spread techniques |
|  | Enumeration of Total Coliforms and E.coli   | Colilert            | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water<br>Waters: Environmental Waters   | N/A | CLS 33 Based on the Microbiology of Drinking Water part 4 (d) (2016)  |
|  | Enumeration of Total Viable Counts at 22°C, 35°C and 37°C                             | pour plate          | Waters: Industrial waters   | N/A | CLS 160 fluid monitoring membrane filtration based on ISO 23500-3:2019 Water for Haemodialysis, USP 1230 Water for Haemodialysis                            |
|  | Enumeration of TVC at 30°C using Membrane Filtration                                  | Membrane Filtration | Waters: Industrial waters   | N/A | CLS 171 Based on ISO 15883-1:2006/Amd 1:2014 Washer Disinfectors Part 1 and ISO 15883-4:2018 Washer Disinfectors - Part 4                                   |
|  | Incubation and Enumeration of SDA Plates at 22.5°C                                    | Plate count         | Factory Hygiene Surfaces<br>Factory Hygiene Air   | N/A | CLS 187 In house method   |
|  | Incubation and Enumeration of TSA Plates at 32.5°C                                    |                     | Factory Hygiene Surfaces<br>Factory Hygiene Air   | N/A | CLS 188 in house method   |

# Chemical Testing

Category: A

| Chemistry Field - Tests                                     | Test name | Analyte   | Range of measurement | Matrix         | Equipment/technique | Standard reference/SOP   |
|---|-----------|-----------|----------------------|----------------|---------------------|--|
| 766 Environmental testing (inc waters) - .01 Metal analysis | Aluminium | Aluminium | 2 - 500 ug/l         | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Antimony  | Antimony  | 0.5 - 250 ug/l       | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Arsenic   | Arsenic   | 0.5 - 250 ug/l       | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Barium    | Barium    | 0.5 - 250 ug/l       | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Beryllium | Beryllium | 0.5 - 250 ug/l       | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Boron     | Boron     | 10 - 500 ug/l        | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Cadmium   | Cadmium   | 0.5 - 250 ug/l       | Drinking Water | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Calcium   | Calcium   | 3 - 300 mg/l         | Drinking Water | ICP-MS              | Documented in house method based on                            |

|            |                |                |                |        |   |
|------------|----------------|----------------|----------------|--------|---|
|            |                |                |                |        | USEPA 200.8 ICP-MS<br>CLS 129   |
| Chromium   | Chromium       | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Cobalt     | Drinking Water | 0.5 - 250 ug/l | Cobalt         | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Copper     | Copper         | 1 - 500 ug/l   | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Iron       | Iron           | 10 - 500 ug/l  | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Lead       | Lead           | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Magnesium  | Magnesium      | 0.8 - 80 mg/l  | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|            | Waste Water    | 0.8 - 80 mg/l  | Magnesium      | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Manganese  | Manganese      | 5 - 250 ug/l   | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Molybdenum | Molybdenum     | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Nickel     | Nickel         | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on                                  |

|  |           |           |                |                |        |   |
|--|-----------|-----------|----------------|----------------|--------|---|
|  |           |           |                |                |        | USEPA 200.8 ICP-MS<br>CLS 129   |
|  | Potassium | Potassium | 0.5 - 50 mg/l  | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Selenium  | Selenium  | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Silver    | Silver    | 0.5 - 125 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Sodium    | Sodium    | 1 - 100 mg/l   | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Strontium | Strontium | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Tellurium | Tellurium | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Thallium  | Thallium  | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Tin       | Tin       | 0.5 - 250 ug/l | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Zinc      | Zinc      | 5 - 500 ug/l   | Drinking Water | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |





Biological and Veterinary Testing

Category: A

| Biology/veterinary field - Tests   | Test name   | Technique  | Matrix   | Equipment | Std. reference  |
|--|---|--|--|-----------|---|
| 802 Preparation of films on slides followed by microscopic examination with or without fixation and staining with dyes as required - .02 Microscopic examination for parasites | Detection and Enumeration of Cryptosporidium oocysts  | Filta Max  | Waters: enumeration of Free living Protoza<br>Waters: Environmental waters<br>Waters: Potable water  | Filta Max | CLS 139 Based on MODW (2010) Part 14 and U.S EPA Method 1623:1 (2012) |
| 803 Culture of organisms in liquid or agar based culture media with visual or instrument monitoring for growth - .01 Culture of bacteria                                       | Detection and Enumeration of Legionella species in water and the detection of Legionella pneumophila, serogroups 1 and 2-14 and presumptive spp(not legionella pneumophila 1 -14) | Direct filtration, Acid treatment and Inoculation of selective media | Factory Hygiene Surfaces   | N/A       | CLS 100 Based on ISO 11731:2017 Procedure 7, Matrix A                 |
|  |   |  | Waters: Industrial waters (treated, recirculating)   | N/A       | CLS 100 Based on ISO 11731:2017 Procedure 7, Matrix A                 |
|  | Detection of Campylobacter spp  | Resuscitation  | Confectionary<br>Dairy products<br>Eggs and Egg products<br>Fish, Shellfish and Mollusks<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Cereals and bakery products<br>Factory Hygiene Surfaces<br>Prepared dishes<br>Soups, broths and Sauces | N/A       | CLS 181 Based on ISO 10272-1:2017/Amd 1:2023 - Procedure A            |

|  |                                     |  |     |   |
|--|-------------------------------------|--|-----|---|
|  | Detection of E.coli 0157            | Factory Hygiene Surfaces   | N/A | CLS 11 Based on ISO 16654:2001/ Amd 2:2023            |
|  | Detection of Ecoli 0157             | Cereals and Bakery products<br>Dairy Products<br>Factory hygiene surfaces<br>Meat and Meat products, game and poultry<br>Prepared dishes<br>Soups, Broths and Sauces   | N/A | CLS 11 based on ISO 16654:2001/ Amd 2:2023            |
|  |                                     | Cereals and Bakery products<br>Dairy Products<br>Factory hygiene surfaces<br>Meat and Meat products, game and poultry<br>Prepared dishes<br>Soups, Broths and Sauces   | N/A | CLS 159 Based on Reveal for Ecoli 0157 20 hour system |
|  | Detection of Listeria monocytogenes | Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene Surfaces<br>Soups, Broths and Sauces<br>Prepared Dishes | N/A | CLS 4 Based on IS EN ISO 11290-1:2017                 |

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|--|--|--|-----|--|
| Detection of listeria monocytogenes by ALOA One Day Method |  | Animal feeder<br>Cereals and Bakery Products<br>Confectionary<br>Dairy products<br>Eggs and Egg products<br>Factory Hygiene Surfaces<br>Fish, Shellfish and Molluscs<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Cereals and bakery products<br>Factory Hygiene Surfaces<br>Meat surfaces<br>Product contact surfaces<br>Soups, broths and Sauces | N/A | CLS 163 Based on AES ALOA One Day (AFNOR cert AES 10/03-09/00) |
| Detection of listeria species by ALOA One Day Method       |  | Cereals and Bakery Products<br>Confectionary<br>Dairy products<br>Eggs and Egg products<br>Fish, Shellfish and Mollusks<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Cereals and bakery products<br>Factory Hygiene Surfaces<br>Meat surfaces<br>Product contact   | N/A | CLS 164 Based on AES ALOA One Day (AFNOR cert AES 10/03-09/00) |

|                                |            |  |     |  |
|--------------------------------|------------|--|-----|--|
|                                |            | surfaces<br>Prepared dishes<br>Soups, broths and<br>Sauces   |     |  |
| Detection of salmonella        |            | Meat Surfaces<br>Product contact<br>surfaces<br>Fish, Shellfish and<br>Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery<br>Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene<br>Surfaces 'Factory<br>Hygiene Surfaces and<br>Environmental Swabs<br>for poultry Primary<br>Production'<br>Soups, Broths and<br>Sauces<br>Prepared Dishes | N/A | CLS 2 Based on ISO 6579-<br>1:2017/Amd 1:2020                          |
|                                |            | Waters: Factory hygiene<br>Waters: Industrial<br>waters<br>Waters: Potable water   | N/A | CLS 45 Based on the<br>Microbiology of Drinking Water<br>(2006) Part 9 |
| Enumeration of Total Coliforms | Pour Plate | Fish, Shellfish and<br>Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery   | N/A | CLS 8 Based on ISO 4832:2006   |

|  |                     |  |     |  |
|--|---------------------|--|-----|--|
|  |                     | Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene<br>Surfaces   |     |  |
| Enumeration of Clostridium perfringens       | Membrane Filtration | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water<br>Waters: Environmental<br>Waters Including Effluents   | N/A | CLS 43 Based on the Microbiology of Drinking Water (2021) Part 6 (b) |
| Enumeration of Campylobacter species in food | Spread Plate        | Dairy products<br>Eggs and Egg products<br>Meat and Meat Products<br>game and poultry<br>Fish, Shellfish and Molluscs<br>Soups, Broths and Sauces<br>Cereals and Bakery Products<br>Fruit and Vegetables<br>Confectionary<br>Prepared Dishes<br>Animal Feed<br>Meat and Meat Products<br>game and poultry<br>Factory Hygiene<br>Surfaces | N/A | CLS 197 Based on ISO/TS 10272-2:2017/Amd1:2023                       |
| Enumeration of Clostridium Perfringens       | pour plate          | non alcoholic beverages<br>Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery   | N/A | CLS 7 Based on ISO 7937:2004   |

|   |                            |   |     |   |
|---|----------------------------|---|-----|---|
|   |                            | Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods   |     |   |
| Enumeration of Coagulase positive Staphylococci | Spread Plate               | Cereals and Bakery Products<br>Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene<br>Surfaces<br>Soups, Broths and Sauces<br>Prepared Dishes | N/A | CLS 3 Based on IS EN ISO 6888-1:2022  |
| Enumeration of E.coli                           |                            | Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene<br>Surfaces<br>Soups, Broths and Sauces<br>Prepared Dishes                                 | N/A | CLS 198 Based on ISO 16649-2:2001   |
| Enumeration of E.coli using an MPN method       | MPN (5 tubes, 3 dilutions) | Fish, Shellfish and Molluscs  | N/A | CLS 92 Based on Cefas Protocol Issue 1, 29/06/2020<br>Enumeration of Ecoli in |

|  |                           |   |     |  |
|--|---------------------------|---|-----|--|
|  |                           |   |     | Molluscan Bivalve Shellfish and ISO 16649-3:2015                     |
| Enumeration of Enterobacteriaceae                | Pour Plate                | Meat Surfaces<br>Product contact surfaces<br>Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery Products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Factory Hygiene Surfaces<br>Soups, Broths and Sauces<br>Prepared Dishes | N/A | CLS 21 based on IS EN ISO 21528-2:2017                               |
| Enumeration of Enterobacteriaceae (Single Plate) | pour plate (single plate) | Animal feed<br>Dairy products<br>Eggs and Egg products<br>Meat and meat products, game and poultry<br>Fish, Shellfish and Molluscs<br>Fruit and Vegetables<br>Pet Foods   | N/A | CLS 134 In House Method  |
| Enumeration of Enterococci                       | Membrane Filtration       | Waters: Environmental<br>Waters Including Effluents   | N/A | CLS 42 Based on the Microbiology of Drinking Water (2012) Part 5 (a) |
|  |                           | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water<br>Waters: Environmental<br>Waters Including  | N/A | CLS 42 Based on the Microbiology of Drinking Water (2012) Part 5 (a) |

|  |  |                         |  |     |  |
|--|--|-------------------------|--|-----|--|
|  |  |                         | Effluents  |     |  |
|  | Enumeration of Listeria Species including Listeria Monocytogenes | Resuscitation           | Confectionery<br>Dairy products<br>Eggs and Egg products<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Cereals and bakery products<br>Factory Hygiene Surfaces<br>Fish, Shellfish and Molluscs<br>Prepared Dishes<br>Soups, Broths and Sauces | N/A | CLS 6 Based on IS EN ISO 11290-2:2017                          |
|  | Enumeration of micro organisms at 22°C                           | Spread Plate            | Fish, Shellfish and Molluscs   | N/A | CLS 48 Based on IS EN ISO 4833-2:2013 Cor 1:2014               |
|  |  |                         | non alcoholic beverages<br>Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods  | N/A | CLS 48 based on IS EN ISO 4833-2:2013 Cor 1:2014/<br>Amd1:2022 |
|  |  | TVC @ 22°C - pour plate | non alcoholic beverages<br>Fish, Shellfish and Molluscs<br>Dairy products<br>Meat and Meat Products<br>game and poultry  | N/A | CLS 47 based on IS EN ISO 4833-2:2013 Cor 1:2014,<br>Amd1:2022 |



|  |  |                           |  |     |   |
|--|--|---------------------------|--|-----|---|
|  |  |                           | Eggs and Egg products<br>Confectionary<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods   |     |   |
|  | Enumeration of Micro organisms at 30°C | TVC @ 30°C – pour plate   | Animal feed<br>Confectionery<br>Dairy products<br>Eggs and Egg products<br>Fish, Shellfish and Mollusks<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Pet foods<br>Cereals and bakery products<br>Non-alcoholic beverages<br>Factory Hygiene Surfaces<br>Meat surfaces<br>Product contact surfaces<br>Prepared dishes<br>Soups, broths and Sauces | N/A | CLS 15 based on IS EN ISO 4833-1:2013/ Amd 1:2022           |
|  |  | TVC @ 30°C - spread plate | Animal feed<br>Confectionery<br>Dairy products<br>Eggs and Egg products<br>Fish, Shellfish and Mollusks<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Pet foods<br>Cereals and bakery products<br>Non-alcoholic   | N/A | CLS 46 based on IS EN ISO 4833-2:2013 Cor 1:2014/Amd 1:2022 |

|  |  |                           |  |     |   |
|--|--|---------------------------|--|-----|---|
|  |  |                           | beverages<br>Factory Hygiene<br>Surfaces<br>Meat surfaces<br>Product contact<br>surfaces<br>Prepared dishes<br>Soups, broths and<br>Sauces   |     |   |
|  | Enumeration of micro organisms at 37°C     | TVC @ 37°C - pour plate   | Animal feed<br>Confectionery<br>Dairy products<br>Eggs and Egg products<br>Fish, Shellfish and<br>Molluscs<br>Fruit and Vegetables<br>Meat and Meat<br>products, game and<br>poultry<br>Pet foods<br>Non-alcoholic<br>beverages                | N/A | CLS 49 Based on IS EN ISO 4833-1:2013, Amd 1:2022 |
|  |  | TVC @ 37°C - spread plate | Non-alcoholic beverages  | N/A | CLS 50 Based on IS EN ISO 4833-1:2013/Amd 1:2022  |
|  | Enumeration of Presumptive Bacillus cereus | Spread Plate              | Dairy products<br>Meat and Meat Products<br>game and poultry<br>Eggs and Egg products<br>Cereals and Bakery<br>Products<br>Confectionery<br>Fruit and Vegetables<br>Animal Feed<br>Pet Foods<br>Soups, Broths and<br>Sauces<br>Prepared Dishes | N/A | CLS 20 Based on IS EN ISO 7932:2004/Amd:2020      |

|  |                           |   |     |   |
|--|---------------------------|---|-----|---|
| Enumeration of Presumptive Pseudomonas SPP   |                           | non alcoholic beverages<br>Meat and Meat Products<br>game and poultry   | N/A | CLS 22 Based on ISO 13720:2010  |
| Enumeration of Pseudomonas aeruginosa  | Membrane Filtration       | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water<br>Waters: Environmental water  | N/A | CLS 44 Based on the Microbiology of Drinking water Part 8 (2015)                                  |
| Enumeration of $\beta$ -glucuronidase positive E.coli: Colony Count Technique at 44°C using 5-bromo-4-chloro-3-indolyl- $\beta$ -D-glucuronide | Pour Plate                | Dairy products<br>Eggs and Egg products<br>Meat and Meat Products<br>game and poultry<br>Fish, Shellfish and Molluscs<br>Soups, Broths and Sauces<br>Cereals and bakery products<br>Fruit and Vegetables<br>Confectionary<br>Prepared Dishes<br>Animal Feed | N/A | CLS 198 Based on ISO 16649-2:2018   |
| Enumeration of Total Coliforms and E.coli  | Colilert                  | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water   | N/A | CLS 33 Based on the Microbiology of Drinking Water (2016) Part 4 (d)                              |
|  | Membrane Filtration       | Waters: Factory hygiene<br>Waters: Industrial waters<br>Waters: Potable water<br>Waters: Environmental waters including effluents   | N/A | CLS 16 Based on the Microbiology of Drinking Water (2016) Part 4 (a) and ISO 9308:2014/Amd 1:2016 |
| Enumeration of TVC at 22°C, 30°C and at 37°C (Single plate)  | Pour Plate (single plate) | Animal feed<br>Dairy products<br>Eggs and Egg products<br>Factory Hygiene Surfaces  | N/A | CLS 132 In House Method   |

|  |  |                             |  |     |  |
|--|--|-----------------------------|--|-----|--|
|  |  |                             | Fish, Shellfish and Molluscs<br>Fruit and Vegetables<br>Meat and Meat products, game and poultry<br>Pet foods<br>Non-alcoholic beverages   |     |  |
|  |  | Spread Plate (single plate) | Dairy products<br>Eggs and Egg products<br>Meat and Meat Products<br>game and poultry<br>Fish, Shellfish and Molluscs<br>Fruit and Vegetables<br>Non-alcoholic Beverages<br>Pet Foods<br>Animal Feed | N/A | CLS 133 In House Method  |
|  | Enumeration of TVCs (Air Settlement plates)      | Plate count                 | Factory Hygiene Air  | N/A | CLS 82 In house method   |
|  | Enumeration of TVCs contact plates               | Contact Plates              | Factory Hygiene Surfaces   | N/A | CLS 80 Based on ISO 18593:2018   |
|  | Enumeration of Yeast and Mould                   | Plate count                 | Factory Hygiene Air  | N/A | CLS 130 In House Method  |
|  |  | Spread Plate                | Cereals and Bakery products<br>Dairy products<br>Factory Hygiene Surfaces<br>Fruit and Vegetables<br>Non-alcoholic beverages<br>Prepared dishes  | N/A | CLS 1 Based on ISO 21527-1 and 2:2008  |
|  | Membrane Filtration Method using Chromocult Agar | Membrane Filtration         | Waters: Potable water  | N/A | CLS 199 Based on ISO 9308-1:2014 Detection and Enumeration of Total Coliforms and E.coli in water with low bacterial Flora |
|  |  |                             |  |     |  |



Chemical Testing

Category: A

| Chemistry Field - Tests                                     | Test name   | Analyte   | Range of measurement   | Matrix  | Equipment/technique | Standard reference/SOP   |
|---|---|-----------|------------------------|---|---------------------|--|
| 766 Environmental testing (inc waters)                      | Ammonia in Saline Waters by spectrophotometry                         | Ammonia   | 0.010 -1.00mg/l as N   | Saline  | Spectrophotometer   | CLS 202  |
|   | Nitrate in Saline Waters by spectrophotometry                         | Nitrate   | 0.003 - 1.0 mg/l as N  | Saline  | Spectrophotometer   | CLS 203  |
|   | Nitrite in Saline Waters by spectrophotometry                         | Nitrite   | 0.003 -0.10 mg/l as N  | Saline  | Spectrophotometer   | CLS 204  |
|   | Phosphate in Saline Waters and Phosphate low levels in Surface Waters | Phosphate | 0.003 - 0.40 mg/l as P | Saline  | Spectrophotometer   | CLS 205  |
|   |   |           | 0.003 - 0.40 mg/l as P | Surface   | Spectrophotometer   | CLS 205  |
| 766 Environmental testing (inc waters) - .01 Metal analysis | Aluminium   |           | 2 µg - 10,000 µg/L     | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
|   | Antimony  |           | 0.5 µg - 5,000 µg/L    | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable                       | ICP-MS              | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |

|           |  |                     |   |        |  |
|-----------|--|---------------------|---|--------|--|
|           |  |                     | and Domestic Purposes   |        |  |
| Arsenic   |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Barium    |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Beryllium |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Boron     |  | 10 µg - 10,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |

|          |                     |   |        |   |
|----------|---------------------|---|--------|---|
| Cadmium  | 0.5 µg - 5,000µg/L  | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Calcium  | 3 mg - 3,000 mg/L   | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Chromium | 0.5 µg - 5,000µg/L  | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Cobalt   | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Copper   | 1 µg - 10,000 µg/L  | Bore Waters<br>Other waters   | ICP-MS | Documented in house<br>method based on                                  |



|              |         |                     |   |        |   |
|--------------|---------|---------------------|---|--------|---|
|              |         |                     | (surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes                                |        | USEPA 200.8 ICP-MS<br>CLS 129   |
| ICPM Metals  | Mercury | 0.05-2.5ug/l        | Waste Water   | ICPMS  | CLS 129/USEP A<br>200.8   |
| ICPMS Metals |         | 0.05-2.5ug/l        | Drinking Water  | ICPMS  | CLS 129/USEP A<br>200.8   |
|              |         | 0.05-2.5ug/l        | Ground Water  | ICPMS  | CLS 129/USEP A<br>200.8   |
|              |         | 0.05-2.5ug/l        | Surface Water   | ICPMS  | CLS 129/USEP A<br>200.8   |
|              | Silver  | 0.5-125ug/l         | Ground Water  | ICPMS  | CLS 129/USEP A<br>200.8   |
|              |         | 0.5-125ug/l         | Surface Water   | ICPMS  | CLS 129/USEP A<br>200.8   |
|              |         | 0.5-125ug/l         | Waste Water   | ICPMS  | CLS 129/USEP A<br>200.8   |
| Iron         |         | 10 µg - 10,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
| Lead         |         | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable                             | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |



|           |                     |   |        |  |
|-----------|---------------------|---|--------|--|
| Potassium | 0.5 mg - 500 mg/L   | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Selenium  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Sodium    | 1 mg - 1,000 mg/L   | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Strontium | 5 µg - 5,000 µg/L   | Bore Waters<br>Other waters (surface waters)<br>Waste water treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes | ICP-MS | Documented in house method based on USEPA 200.8 ICP-MS CLS 129 |
| Tellurium | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters   | ICP-MS | Documented in house method based on                            |

|  |          |  |                     |   |        |   |
|--|----------|--|---------------------|---|--------|---|
|  |          |  |                     | (surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes                                |        | USEPA 200.8 ICP-MS<br>CLS 129   |
|  | Thallium |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Tin      |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Vanadium |  | 0.5 µg - 5,000 µg/L | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water<br>treatment plants<br>effluent (WWTP<br>effluent)<br>Waters for Potable<br>and Domestic<br>Purposes | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |
|  | Zinc     |  | 5 µg - 10,000 µg/L  | Bore Waters<br>Other waters<br>(surface waters)<br>Waste water  | ICP-MS | Documented in house<br>method based on<br>USEPA 200.8 ICP-MS<br>CLS 129 |

|  |                             |      |                  |  |                         |  |
|--|-----------------------------|------|------------------|--|-------------------------|--|
|  |                             |      |                  | treatment plants effluent (WWTP effluent)<br>Waters for Potable and Domestic Purposes  |                         |  |
| 766 Environmental testing (inc waters) - .02 Biochemical oxygen demand | Biochemical Oxygen Demand   |      | 1-7,000 mg/L     | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade wastes<br>Waters for potable and domestic purposes<br>Waste water treatment plants effluent (WWTP effluent) | DO Probe                | Documented in house method based on APHA standard methods for the examination of water and waste 24th edition, 2020 (unless otherwise stated) CLS 12 Measurement of Oxygen consumed over 5 days (APHA 5210B) |
|  | BOD using automated system  | BOD  | 1-3000 mg/l      | Influent, Effluent, Surface Water, Ground Water and Saline Water   | Automated BOD Analyser  | Standard Methods for the Examination of Water and Wastewater, 24th ed. 2023. CLS214  |
|  | cBOD using automated system | cBOD | 1-3000 mg/l      | Influent, Effluent, Surface Water, Ground Water and Saline Water   | Automated cBOD Analyser | Standard Methods for the Examination of Water and Wastewater, 24th ed. 2023 CLS214   |
| 766 Environmental testing (inc waters) - .03 Chemical oxygen demand    | Chemical Oxygen Demand      |      | 10 - 30,000 mg/L | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade wastes<br>Waters for potable and domestic purposes<br>Waste water treatment plants effluent (WWTP effluent) | DR5000                  | CLS 52 Based on Hach Procedures Manual 9th Edition 1999 and standard methods for the examination of water and wastewater 24th edition, 2023  |

|   |                      |                          |  |        |   |
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| 766 Environmental testing<br>(inc waters) - .04 Organic | Benzene              | 10-10,000 µg/L           | Bore Waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Trade wastes<br>Waters for Potable<br>and domestic<br>purposes | GC-FID | In house method CLS<br>148 based on USEPA<br>8015B                |
|   | Ethylbenzene         | 10-10,000 µg/L           | Bore Waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Trade wastes<br>Waters for Potable<br>and domestic<br>purposes | GC-FID | In house method CLS<br>148 based on USEPA<br>8015B                |
|   | o-Xylene             | 10-10,000 µg/L           | Bore Waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Trade wastes<br>Waters for Potable<br>and domestic<br>purposes | GC-FID | In house method CLS<br>148 based on USEPA<br>8015B                |
|   | t-butyl methyl ether | 10-10,000 µg/L           | Bore Waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Trade wastes<br>Waters for Potable<br>and domestic<br>purposes | GC-FID | In house method CLS<br>148 based on USEPA<br>8015B                |
|   | Benzene              | 0.01mg/kg to 20<br>mg/kg | Sediments  | GC-FID | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |
|   |                      | 0.01mg/kg to 20<br>mg/kg | Sediments<br>Soils (Loam, Sand<br>and Peat)  | GC-FID | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |

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|--|--|---|---|--------|---|
|  | Ethylbenzene   | 0.01mg/kg to 20 mg/kg   | Sediments   | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B      |
|  |  | 0.01mg/kg to 20 mg/kg   | Sediments<br>Soils (Loam, Sand and Peat)  | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B      |
|  | Extractable Hydrocarbons by GC-FID Diesel Range and Lube Oil (C <sub>8</sub> - C <sub>40</sub> ) | 10-10,000 µg/L<br>10-10,000 µg/L<br>10-10,000 µg/L<br>10-10,000 µg/L<br>10-10,000 µg/L<br>10-10,000 µg/L<br>200-10,000 µg/L | Bore Waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade wastes<br>Waters for Potable and Domestic Purposes<br>Waste Water Treatment plants<br>Effluent (WWTP effluent) | GC-FID | CLS 147 Method based on USEPA 8015B                           |
|  |  | 200 mg/kg to 2,000 mg/kg<br>50 mg/kg to 2,000 mg/kg<br>50 mg/kg to 2,000 mg/kg  | Peat<br>Sediments<br>Soils (Loam, and Sand)   | GC-FID | In house method CLS 156 and CLS 147 Method adapted from 8015B |
|  |  | 0.02 mg/kg to 40 mg/kg  | Sediments   | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B      |
|  | m / p- Xylene  | 0.02 mg/kg to 40 mg/kg  | Sediments<br>Soils (Loam, Sand and Peat)  | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B      |
|  |  | 20 - 20,000 µg/L  | Bore Waters<br>Other waters (surface waters)<br>Saline waters   | GC-FID | In house method CLS 148 based on USEPA 8015B                  |
|  |  |   |   |        |   |
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|  |  |   |                          | Trade wastes<br>Waters for Potable<br>and domestic<br>purposes |                              |   |
|  | o-Xylene                                   |   | 0.01mg/kg to 20<br>mg/kg | Sediments  | GC-FID                       | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |
|  |  |   | 0.01mg/kg to 20<br>mg/kg | Sediments<br>Soils (Loam, Sand<br>and Peat)                    | GC-FID                       | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |
|  | PAH by HPLC                                | Polycyclic Aromatic<br>Hydrocarbons (sum of<br>4) | 0.04-1.6ug/l             | Drinking Water   | Calculation based on<br>HPLC | CLS 149/ISO 17993<br>and Agilent 1200 User<br>Manual              |
|  | Petrol Range Organics<br>(PRO) (C5 to C12) |   | 0.1mg/kg to 169<br>mg/kg | Sediments  | GC-FID                       | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |
|  |  |   | 0.1mg/kg to 169<br>mg/kg | Soils (Loam, Sand<br>and Peat)                                 | GC-FID                       | In house method CLS<br>157 and CLS 148<br>based on USEPA<br>8015B |
|  |  |   | 10-56,250 µg/L           | Bore Waters  | GC-FID                       | In house method CLS<br>148 based on USEPA<br>8015B                |
|  |  |   | 10-56,250 µg/L           | Other waters<br>(surface waters)                               | GC-FID                       | In house method CLS<br>148 based on USEPA<br>8015B                |
|  |  |   | 10-56,250 µg/L           | Saline Waters  | GC-FID                       | In house method CLS<br>148 based on USEPA<br>8015B                |
|  |  |   | 10-56,250 µg/L           | Trade Wastes   | GC-FID                       | In house method CLS<br>148 based on USEPA<br>8015B                |
|  |  |   | 10-56,250 µg/L           | Waters for Potable<br>and Domestic<br>Purposes                 | GC-FID                       | In house method CLS<br>148 based on USEPA<br>8015B                |



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|--|-------------------------------|--|------|--|
| Polycyclic Aromatic Hydrocarbon by HPLC Acenaphthene             | 10 - 400 ng/l                 | Waters for Potable and Domestic Purposes                 | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Acenaphylene             | 50 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Anthracene               | 10 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Benzo (a) fluoranthene   | 10 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Benzo (a) pyrene         | 10 - 400 ng/l<br>5 - 400 ng/l | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Benzo (b) fluoranthene   | 10 - 400 ng/l                 | Other waters   | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
|  | 10 - 400 ng/l                 | Waters for Potable and Domestic Purposes                 | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Benzo (g,h,i) perylene   | 10 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Benzo (k) fluoranthene   | 10 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Dibenzo (a,h) anthracene | 10 - 400 ng/l                 | Other waters<br>Waters for Potable and Domestic Purposes | HPLC | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |

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|--|-----------------------|--|--------|--|
| Polycyclic Aromatic Hydrocarbon by HPLC Fluorene                   | 10 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Fluoranthene               | 10 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Indeno (1,2,3-cd) perylene | 10 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Naphthalene                | 50 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Phenanthrene               | 10 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| Polycyclic Aromatic Hydrocarbon by HPLC Pyrene                     | 50 - 400 ng/l         | Other waters<br>Waters for Potable and Domestic Purposes | HPLC   | CLS 149 Based on ISO 17993 and Agilent 12000 series G1321A user manual |
| t-butyl methyl ether   | 0.01mg/kg to 20 mg/kg | Sediments  | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B               |
|  | 0.01mg/kg to 20 mg/kg | Sediments<br>Soils (Loam, Sand and Peat)                 | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B               |
| Toluene  | 0.01mg/kg to 20 mg/kg | Sediments  | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B               |
|  | 0.01mg/kg to 20 mg/kg | Sediments<br>Soils (Loam, Sand and Peat)                 | GC-FID | In house method CLS 157 and CLS 148 based on USEPA 8015B               |

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|--|--|--|--|--|--------|--|
|  |  |  | 10-10,000 µg/L   | Bore Waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Trade wastes<br>Waters for Potable<br>and domestic<br>purposes | GC-FID | In house method CLS<br>148 based on USEPA<br>8015B   |
|  | Total Extractable<br>Petroleum<br>Hydrocarbons by GC-<br>FID TPH (>nC5 to C44)                             |  | 20 - 10,000 µg/l   | Bore Waters<br>Other waters<br>(surface waters)  | GC-FID | Based on USEPA<br>8015B modified.<br>Documented in house<br>method CLS 193   |
|  | VOC by GCMSD   | Chloroform<br>Bromodichloromethane<br>Dibromochloromethane<br>Bromoform<br>Total Trihalomethanes<br>(THMs) | 1 - 200 ug/l<br>0.5 - 200 ug/l<br>0.1 - 200 ug/l<br>0.1 - 200 ug/l<br>1.7 - 800 ug/l | Drinking Water   | GCMSD  | CLS 183/USEPA<br>524.3   |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>1,1,1,2-<br>Tetrachloroethane |  | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes                                  | GC/MS  | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>1,1,1-trichloroethane         |  | 0.5-50 µg/l  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes                                  | GC/MS  | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>1,1,2,2-<br>tetrachloroethane |  | 4-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes                                  | GC/MS  | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |

|   |   |  |       |   |
|---|---|--|-------|---|
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,1,2-trichloroethane  | 2-50 µg/l<br>0.5-50µg/l<br>0.5-50 µg/l  | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,1-Dichloroethane     | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,1-dichloroethene     | 0.5-50 µg/l                             | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,1-dichloropropene    | 0.5-50 µg/l                             | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2,3-trichlorobenzene | 0.5-50 µg/l                             | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2,3-trichloropropane | 1-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
| Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2,4-trichlorobenzene | 4-50 µg/l<br>0.5-50 µg/l<br>0.5-50µg/l  | Bore waters<br>Other waters (surface waters)<br>Waters for Potable                       | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection                                       |

|  |  |   |  |       |  |
|--|--|---|--|-------|--|
|  |  |   | and Domestic Purposes  |       | Documented in-house procedure CLS 183  |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2,4-trimethylbenzene              | 4-50 µg/l<br>2-50 µg/l<br>2-50 µg/l       | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2-dibromoethane (EDB)             | 4-50 µg/l<br>0.1-50 µg/l<br>0.1-50 µg/l   | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2-dichlorobenzene                 | 4-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l   | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2-dichloroethane                  | 0.2-50 µg/l<br>0.5-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other Waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,2-dichloropropane                 | 1-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l   | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) 1,3,5 trimethylbenzene (mesitylene) | 4-50 µg/l<br>2-50 µg/l<br>2-50 µg/l       | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection<br>Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including   | 0.5-50 µg/l                               | Bore waters<br>Other waters (surface waters)   | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to  |

|   |   |  |       |  |
|---|---|--|-------|--|
| Trihalomethanes (THM)<br>1,3-butadiene  |   | Waters for Potable<br>and Domestic<br>Purposes   |       | Headspace injection<br>Documented in-house<br>procedure CLS 183  |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>1,3-dichloropropane                  | 1-50 µg/l<br>0.5-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>1-chlorobutane (n-butyl<br>chloride) | 0.5-50 µg/l                             | Bore waters<br>Other waters<br>(surface waters))<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>benzene                              | 2-50 µg/l<br>0.1-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>bromobenzene                         | 2-50 µg/l<br>1-50 µg/l<br>1-50 µg/l     | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>bromochloromethane                   | 0.2-50 µg/l<br>2-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>bromodichloromethane                 | 0.2-50 µg/l<br>2-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |

|  |  |  |   |   |       |  |
|--|--|--|---|---|-------|--|
|  |  |  | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore Waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Bromomethane (methyl<br>bromide)            |  | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Carbon disulfide                            |  | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Carbontetrachloride<br>(tetrachloromethane) |  | 0.5-50 µg/l                             | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Cis-1,2-dichloroethene                      |  | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Cis-1,3-dichloropropene                     |  | 0.5-50 µg/l<br>1-50 µg/l                | Bore waters<br>Waters for Potable<br>and Domestic<br>Purposes                                     | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including   |  | 2-50 µg/l                               | Bore Waters   | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection   |



|  |   |   |       |  |
|--|---|---|-------|--|
| Trihalomethanes (THM)<br>dibromomethane  |   |   |       | Documented in-house<br>procedure CLS 183   |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>dibromochloromethane                | 2-50 µg/l<br>0.5-50 µg/l<br>0.1-50 µg/l | Bore Waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Dichlorodifluoromethane<br>(CFC-12) | 1-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Diethyl ether (ether<br>ether)      | 2-50 µg/l<br>1-50 µg/l<br>1-50 µg/l     | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Diisopropyl ether (DIPE)            | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>ethylbenzene                        | 0.5-50 µg/l<br>2-50 µg/l<br>2-50 µg/l   | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>hexachlorobutadiene                 | 2-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| Volatile Organic<br>compounds (VOC)<br>including   | 0.5-50 µg/l                             | Bore waters<br>Other waters<br>(surface waters)   | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to  |



|  |  |   |  |   |       |  |
|--|--|---|--|---|-------|--|
|  | Trihalomethanes (THM)<br>hexachloroethane  |   |  | Waters for Potable<br>and Domestic<br>Purposes  |       | Headspace injection<br>Documented in-house<br>procedure CLS 183  |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Iodomethane (methyl<br>iodide)    | 4-50 µg/l<br>0.1-50 µg/l<br>0.1-50 µg/l |  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>m/p-xylene                        | 4-60 µg/l                               |  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Methyl acetate                    | 5-50 µg/l                               |  | Waters for Potable<br>and Domestic<br>Purposes  | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Methyl tert-butyl ether<br>(MTBE) | 2-50 µg/l                               |  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>naphthalene                       | 4-50 µg/l<br>1-50 µg/l<br>1-50 µg/l     |  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|  | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>n-butylbenzene                    | 4-50 µg/l<br>2-50 µg/l<br>2-50 µg/l     |  | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |

|   |  |   |              |  |
|---|--|---|--------------|--|
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) n-propylbenzene</p>               | <p>4-50 µg/l<br/>1-50 µg/l<br/>1-50 µg/l</p>       | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) o-xylene</p>                      | <p>2-50 µg/l</p>                                   | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) pentachloroethane</p>             | <p>4-50 µg/l<br/>2-50 µg/l<br/>0.5-50 µg/l</p>     | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) styrene</p>                       | <p>2-50 µg/l</p>                                   | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) Tert-amyl ether ether (TAE)</p>   | <p>1-50 µg/l<br/>5-50 µg/l<br/>5-50 µg/l</p>       | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) Tert-amyl methyl ether (TAME)</p> | <p>0.2-50 µg/l<br/>1-50 µg/l<br/>1-50 µg/l</p>     | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable and Domestic Purposes</p> | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183</p> |
| <p>Volatile Organic compounds (VOC) including Trihalomethanes (THM) tetrachloroethene</p>             | <p>0.5-50 µg/l<br/>0.1-50 µg/l<br/>0.1-50 µg/l</p> | <p>Bore waters<br/>Other waters (surface waters)<br/>Waters for Potable</p>                       | <p>GC/MS</p> | <p>Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection</p>                                       |

|  |  |   |  |       |   |
|--|--|---|--|-------|---|
|  |  |   | and Domestic Purposes  |       | Documented in-house procedure CLS 183   |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) Tetrahydrofuran                 | 2-50 µg/l<br>5-50 µg/l<br>5-50 µg/l     | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) toluene                         | 2-50 µg/l                               | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) Trans-1,3-dichloropropene       | 1-50 µg/l                               | Waters for Potable and Domestic Purposes   | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) trichloroethene                 | 2-50 µg/l<br>0.1-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) Trichlorofluoromethane (CFC-11) | 1-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including Trihalomethanes (THM) Trichloromethane (Bromoform)    | 2-50 µg/l<br>0.5-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other waters (surface waters)<br>Waters for Potable and Domestic Purposes | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to Headspace injection Documented in-house procedure CLS 183 |
|  | Volatile Organic compounds (VOC) including   | 2-50 µg/l<br>1-50 µg/l<br>1-50 µg/l     | Bore waters<br>Other waters (surface waters)   | GC/MS | Based on USEPA 524.3 adapted from Purge and Trap to   |

|   |   |   |   |                                 |  |
|---|---|---|---|---------------------------------|--|
|   | Trihalomethanes (THM)<br>Trichloromethane<br>(chloroform)   |   | Waters for Potable<br>and Domestic<br>Purposes  |                                 | Headspace injection<br>Documented in-house<br>procedure CLS 183  |
|   | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes (THM)<br>Vinyl chloride                       | 0.5-50 µg/l<br>0.1-50 µg/l<br>0.1-50 µg/l | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS                           | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|   | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes<br>(THM)4-<br>isopropyltoluene (p-<br>cymene) | 1-50 µg/l                                 | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS                           | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|   | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes<br>(THM)Ethyl tert-butyl<br>ether (ETBE)      | 1-50 µg/l<br>0.5-50 µg/l<br>0.5-50 µg/l   | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS                           | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|   | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes<br>(THM)Tert-<br>butylbenzene                 | 4-50 µg/l<br>1-50 µg/l<br>1-50 µg/l       | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS                           | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
|   | Volatile Organic<br>compounds (VOC)<br>including<br>Trihalomethanes<br>(THM)Trans-1,2-<br>dichloroethene          | 0.5-50 µg/l                               | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes | GC/MS                           | Based on USEPA<br>524.3 adapted from<br>Purge and Trap to<br>Headspace injection<br>Documented in-house<br>procedure CLS 183 |
| 766 Environmental testing<br>(inc waters) - .05 Inorganic | Alkalinity  | 10-500 mg/l as<br>CaCO <sub>3</sub>       | Bore Waters<br>Other waters<br>(surface waters)<br>Waters for potable<br>and domestic<br>purposes | Mettler Toledo DL50<br>Titrator | Standard Methods<br>examination of water<br>and waste water 24th<br>edition, 2023.<br>Documented in-house<br>method CLS 195  |

|  |                               |   |   |                                 |  |
|--|-------------------------------|---|---|---------------------------------|--|
|  | Ammonia                       | 0.005 to 600 mg/L<br>NH <sub>3</sub> -N | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Konelab                         | Konelab CLS 40<br>Salicylate method<br>based on Methods for<br>the examination of<br>water and associated<br>Materials, Ammonia in<br>waters, 1981 |
|  | Ammonia as NH <sub>4</sub>    | 0.01 - 1290 mg/L<br>NH <sub>4</sub>     | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Konelab                         | Konelab CLS 40<br>Salicylate method<br>based on Methods for<br>the examination of<br>water and associated<br>Materials, Ammonia in<br>waters, 1981 |
|  | Bicarbonate by<br>calculation | 10-500 mg/l as<br>CaCO <sub>3</sub>     | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes   | Mettler Toledo DL50<br>Titrator | Standard Methods<br>examination of water<br>and waste water 24th<br>edition, 2023.<br>Documented in-house<br>method CLS 195                        |
|  | Carbonate by<br>calculation   | 10-500 mg/l as<br>CaCO <sub>3</sub>     | Bore waters<br>Other waters<br>(surface waters)<br>Waters for Potable<br>and Domestic<br>Purposes   | Mettler Toledo DL50<br>Titrator | Standard Methods<br>examination of water<br>and waste water 24th<br>edition, 2023.<br>Documented in-house<br>method CLS 195                        |
|  | Chloride                      | 2.0 to 30,000 mg/L<br>Cl                | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes  | Konelab                         | Konelab CLS 36<br>Colorimetric<br>determination and<br>adapted for discrete<br>analyser Standard<br>Methods 24th edition                           |

|  |                          |          |                        |  |                   |  |
|--|--------------------------|----------|------------------------|--|-------------------|--|
|  |                          |          |                        | Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes  |                   | 2023 (APHA 4500-CL E)  |
|  | Colour                   |          | 4.0 - 500 mg/l(P T Co) | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | DR5000            | In house method CLS 29 Based on Standard methods for examination of water and waste water 24th edition, 2023 (APHA 2120 C)   |
|  | Dissolved Organic Carbon | DOC      | 1-100 mg/l             | Other Water (Surface Waters)<br>Waters for Potable and Domestic Purposes   | TOC Analyser      | CLS 150 Total Organic Carbon (NPOC) and Dissolved Organic Carbon (DOC) USEPA Method 415.3  |
|  | Fats, oils and greases   |          | 5 to 10,000 mg/L       | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Soxhlet extractor | CLS 25 Increase in weight after sample filtration and Soxhlet extraction Standard Methods for the Examination of Water and Wastewater 24th edition, 2023 (APHA 5520 A and D) |
|  | Fluoride                 | Fluoride | 0.2 - 1.5 mg/l         | Bore waters<br>Other waters (surface waters)<br>Sewage<br>Trade Wastes<br>Waste water treatment plants   | Konelab           | Standard Methods for Examination of Water and Waste water 24th ed. 2023. CLS 213   |

|  |                            |  |  |   |         |   |
|--|----------------------------|--|--|---|---------|---|
|  |                            |  |  | effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes  |         |   |
|  | Nitrate                    |  | 0.1 - 500 mg/L NO <sub>3</sub> -<br>N  | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Konelab | Konelab CLS 39<br>Calculated value  |
|  | Nitrite                    |  | 0.005 to 10 mg/L<br>NO <sub>2</sub> -N | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Konelab | Konelab CLS 37<br>Colorimetric<br>determination and<br>adapted for discrete<br>analyser, Standard<br>Methods for the<br>Examination of Water<br>and Wastewater 24th<br>edition, 2023 (APHA<br>4500-NO <sub>2</sub> B) |
|  | Nitrite as NO <sub>2</sub> |  | 0.017 - 33 mg/L                        | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Konelab | Konelab CLS 37<br>Colorimetric<br>determination and<br>adapted for discrete<br>analyser, Standard<br>Methods for the<br>Examination of Water<br>and Wastewater 24th<br>edition, 2023 (APHA<br>4500-NO <sub>2</sub> B) |

|  |                |                                       |  |         |  |
|--|----------------|---------------------------------------|--|---------|--|
|  | Orthophosphate | 0.03 to 6,140 mg/L PO <sub>4</sub>    | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Konelab | Konelab CLS 35<br>Colorimetric determination and adapted for discrete analyser, Standard Methods for the Examination of Water and Wastewater 24th edition, 2023 (APHA 4500-PE) |
|  | Phosphorus     | 0.01 to 2,000 mg/L PO <sub>4</sub> -P | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Konelab | Konelab CLS 35<br>Colorimetric determination and adapted for discrete analyser, Standard Methods for the Examination of Water and Wastewater 24th edition, 2023 (APHA 4500-PE) |
|  | Sulphate       | 5-3,000 mg/L SO <sub>4</sub>          | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Konelab | Konelab CLS 88<br>Based on Sulphate in waters Effluents and Soils 2nd Edition (1998) Method E.   |
|  | TON            | 0.1 - 500 mg/L NO <sub>3</sub> -N     | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water   | Konelab | Konelab CLS 38<br>Colorimetric determination and adapted for discrete analyser, Standard Methods for the Examination of Water  |



|  |                             |  |                                    |  |                            |  |
|--|-----------------------------|--|------------------------------------|--|----------------------------|--|
|  |                             |  |                                    | treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes  |                            | and Wastewater 24th edition, 2023 (APHA 4500-NO <sub>3</sub> -H)   |
|  | Total Hardness              |  | 20-3,000 mg/L<br>CaCO <sub>3</sub> | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Konelab                    | Konelab CLS 77 Std Methods 22nd Ed 2012, Colorimetric determination and adapted for discrete analyser, Standard Methods for the Examination of Water and Wastewater 24th edition, 2023 (APHA - 2340 C) |
|  | Total Nitrogen              |  | 0.5 - 1000 mg/L                    | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | TOC-V CPN/CPN TOC analyser | CLS 152 based on ASTM D5176-08 (reapproved 2015) For total chemically bound nitrogen in water by pyrolysis and chemiluminescence detection   |
|  | Total Organic Carbon (NPOC) |  | 1 - 1000 mg/L                      | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | TOC-V CPN/CPN TOC analyser | CLS 150 Based on USEPA 415.3 and Shimadzu User Manual for TOC V-CPH/CPN  |

|  |                      |  |   |                                     |  |
|--|----------------------|--|---|-------------------------------------|--|
|  | Total Phosphorus     | 0.05 - 1000 mg/L<br>PO <sub>4</sub> -P | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Macherey-Nagel<br>Spectrophotometer | CLS 151 Based on<br>ISO 6878-2004 D11<br>(Macherey Nagel)  |
|  | Turbidity            | 0.2 - 4000 NTU                         | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | HACH 2100N<br>Turbidimeter.         | In house method CLS<br>30 Standard Methods<br>for the Examination of<br>Water and Wastewater<br>24th edition, 2023<br>(APHA 2130 B)  |
| 767 Physical<br>test/measurement - .01 pH              | pH                   | 4-10                                   | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water<br>treatment plants<br>effluents (WWTP)<br>Waters for Potable<br>and Domestic<br>Purposes | Ph Probe                            | CLS 26 Measurement<br>of electromotive force<br>by electrode to<br>determine Hydrogen<br>ion concentration,<br>Standard Methods for<br>the Examination of<br>Water and Wastewater<br>24th edition, 2017<br>(APHA 4500 - H+B) |
| 767 Physical<br>test/measurement - .02<br>Conductivity | Conductivity at 20°C | 5 - 12,730 µS/cm                       | Bore waters<br>Other waters<br>(surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water   | Conductivity Meter                  | CLS 67 method based<br>on Standard methods<br>for the examination of<br>water and wastewater<br>24th edition, 2023<br>(APHA-2510 B)  |

|  |   |  |                  |  |                                |   |
|--|---|--|------------------|--|--------------------------------|---|
|  |   |  |                  | treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes  |                                |   |
| 767 Physical test/measurement - .03 Suspended Solids | Suspended Solids  |  | 2 to 15,000 mg/L | Bore waters<br>Other waters (surface waters)<br>Saline waters<br>Sewage<br>Trade Wastes<br>Waste water treatment plants effluents (WWTP)<br>Waters for Potable and Domestic Purposes | Filtration apparatus           | CLS 13 Based on Standard Methods for the Examination of Water and Wastewater 24th edition, 2023 . Increase in sample filter Dried at 103 - 105°C. (APHA 2540 D) |
| 798 Sampling   | Water Sampling of Lakes, Rivers and Lagoons (with subsequent analysis by ISO accredited laboratory) |  |                  | Other waters (surface waters)  | Grab, Rod, Bucket and Van Dorn | CLS WI 135 Based on ISO 5667-4:2016 and ISO 5667-6:2014   |

## Rosmuc Site , Conemarra Co Galway

### Chemical Testing

Category: A

| Chemistry Field - Tests                                 | Test name    | Analyte                             | Range of measurement | Matrix         | Equipment/technique | Standard reference/SOP |
|---|--------------|-------------------------------------|----------------------|----------------|---------------------|------------------------|
| 766 Environmental testing<br>(inc waters) - .04 Organic | VOC by GCMSD | Chloroform                          | 1 - 200 ug/l         | Surface Water  | GCMSD               | CLS 183/USEPA<br>524.3 |
|   |              | Bromodichloromethane                | 0.5 - 200 ug/l       | Surface Water  |                     |                        |
|   |              | Dibromochloromethane                | 0.5 - 200 ug/l       | Surface Water  |                     |                        |
|   |              | Bromoform                           | 0.5 - 200 ug/l       | Surface Water  |                     |                        |
|   |              | Chloroform                          | 2 - 200 ug/l         | Ground Water   |                     |                        |
|   |              | Bromodichloromethane                | 2 - 200 ug/l         | Ground Water   |                     |                        |
|   |              | Dibromochloromethane                | 2 - 200 ug/l         | Ground Water   |                     |                        |
|   |              | Bromoform                           | 2 - 200 ug/l         | Ground Water   |                     |                        |
|   |              | Sum of Tri and<br>Tetrachloroethene | 0.2 - 100 ug/l       | Drinking Water |                     |                        |