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MICROBIOLOGY TESTS



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Our Microbiology Laboratory offers an comprehensive range of analytes for water and wastewater.

All analyses are covered by our ISO9001 and ISO17025 Quality Assurance System and most by our extensive NATA accreditation.

The following tables detail our full range of analyses, methods employed, and detection limits.



Microbiological Test Method Summaries

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB300./WB300.2 (APHA 9215 A&B)	Heterotrophic Plate Count	Total number of aerobic and facultative anaerobic microorganisms which grow at 35°C/21°C	This test will not pick up Microorganisms which are strictly anaerobic, require more complex substrates or different environmental conditions for growth, require a different temperature or longer incubation time.	<1. to >300 CFU/mL per dilution
WB301.11/ WB301.12 (APHA 9221 A&B)	Total Coliforms via MPN	Enumeration of the Total Coliform group using the Most Probable Number method (a statistical calculation of the Coliform count)	Certain non-coliform bacteria may suppress coliforms or act synergistically to ferment LT broth and therefore false negative or positive results are possible. False positives may also occur with chlorinated primary effluents. False negatives may occur with waters containing nitrates.	<2. to ≥1600. orgs/100mL per dilution set.
WB301.21/ WB301.22 (APHA 9222 A&B /AS 4276.5)	Total Coliforms via Membrane Filtration	Enumeration of the Total Coliform group using filtration techniques	Samples which are turbid cannot be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result. Confluent bacterial growth may inhibit typical colony formation.	<1. to >80. CFU/100mL (per dilution)

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB302.11/ WB302.12 (APHA 9221C)	Faecal Coliforms via MPN	Enumeration of the Faecal (Thermotolerant) Coliform group using the Most Probable Number method (a statistical calculation of the Coliform count)	Certain non-coliforms may act synergistically to ferment LT broth and provide false positives. False negatives may occur if the faecal coliforms are suppressed by other bacterial growth.	<2. to ≥1600. orgs/100mL per dilution set.
WB302.21/ WB302.22 (APHA 9222D/ modified AS4276.7)	Faecal Coliforms via Membrane Filtration	Enumeration of the Faecal (Thermotolerant) Coliform group using filtration techniques.	Samples which are turbid cannot be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result. Confluent bacterial growth may inhibit typical colony formation.	<1. to >60. CFU/100mL (per dilution)
WB302.31 (APHA 9221F)	<i>E. coli</i> via MPN (In addition to Faecal Coliforms)	Enumeration of <i>Escherichia coli</i> using the Most Probable Number method (a statistical calculation of the Coliform count)	Not all <i>E.coli</i> bacteria grow at this temperature and not all <i>E.coli</i> bacteria produce the appropriate reaction to EC-MUG. False negatives may occur if the <i>E. coli</i> coliforms are suppressed by other bacterial growth.	<2. to ≥1600. orgs/100mL per dilution set.
WB302.322 (APHA 9221F)	<i>E. coli</i> via Membrane Filtration (in addition to Faecal Coliforms)	Enumeration of <i>Escherichia coli</i> using filtration techniques.	Not all <i>E.coli</i> bacteria grow at this temperature and not all <i>E.coli</i> bacteria produce the appropriate reaction to EC-MUG. False negatives may occur if the <i>E. coli</i> coliforms are suppressed by other bacterial growth.	<1. to >60. CFU/100mL (per dilution)
WB304.11 (APHA 9230 A&B)	Faecal Streptococci via MPN	Enumeration of Faecal Streptococci using the Most Probable Number method (a statistical calculation of the Coliform count)	False negatives may occur if the Faecal Streptococci are suppressed by other bacterial growth.	<2. to ≥1600. orgs/100mL per dilution set.

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB304.21 APHA 2005, 9230 A&C AS/NZS 4276.9 2007	Faecal Streptococci via membrane filtration	Enumeration of Faecal Streptococci using membrane filtration techniques.	Samples which are turbid can not be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result, confluent bacterial growth may inhibit typical colony formation.	<1. to >80 CFU/100ml (per dilution)
WB304.4 (APHA 9230 B)	Enterococcus via MPN (in addition to Faecal Streptococci)	Enumeration of Enterococcus using the Most Probable Number method (a statistical calculation of the Coliform count)	False negatives may occur if the Enterococcus are suppressed by other bacterial growth.	<2. to ≥1600. orgs/100mL per dilution set.
WB304.6 APHA 2005, 9230 A&C AS/ANZ 4276.9 2007	Enterococcus via membrane filtration	Enumeration of Enterococci using membrane filtration techniques	Samples which are turbid can not be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result, confluent bacterial growth may inhibit typical colony formation.	<1. to >80 CFU/100ml (per dilution)
WB306.2 (APHA 9213E/ AS4276.13)	<i>Pseudomonas aeruginosa</i> via Membrane Filtration	Enumeration of <i>Pseudomonas aeruginosa</i> using filtration techniques.	Samples which are turbid cannot be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result. Confluent bacterial growth may inhibit typical colony formation.	<1. to >80. CFU/100mL (per dilution)

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB306.3 ("The Oxoid Manual")	<i>Pseudomonas</i> sp via Membrane Filtration	Enumeration of <i>Pseudomonas</i> sp using filtration techniques.	Samples which are turbid cannot be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result. Confluent bacterial growth may inhibit typical colony formation.	<1. to >80. CFU/100mL (per dilution)
WB335. AS/NZS 3896:1998	Legionella Identification and Enumeration	<p>This method describes a culture method for the isolation and enumeration of <i>Legionella pneumophila</i> and a range of other legionellae in water.</p> <p>The sample of water is cultured on a range of selective media. Specialised identification tests are carried out on suspect Legionella - like organisms [LLOs] to distinguish <i>Legionella pneumophila</i> from other legionellae.</p>	<p>Conditions that favour the growth of <i>Legionella pneumophila</i> do not necessarily apply to other legionellae. Steps need to be included to enhance the sensitivity of the method for such species.</p> <p>Small sample sizes need to be accurately delivered and spread evenly over selective plates.</p>	<10 + 0 >30000 orgs/ml

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB310.1	<i>Clostridium perfringens</i> spores via membrane filtration	Enumeration of <i>Clostridium perfringens</i> spores using membrane filtration techniques.	Sample which are turbid can not be treated with this method as the turbid material may block the filter. Samples which contain algae may also interfere with the result, confluent bacterial growth may inhibit typical colony formation.	<1. To >80 CFU/100ml (per dilution)

N.B. Sampling must be done in a sterilised bottle. If the water supply is chlorinated then the bottle must contain a neutraliser of the chlorine e.g. Sodium thiosulphate. Typically samples are required to be tested within 24 hours of sampling or results may not reflect the source. Samples should be kept cool/refrigerated but not frozen.

Phycology Testing Methods

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB361.	Identification and enumeration of Phytoplankton (Total Algae identification and count)	Enumeration and identification of Phytoplankton including Cyanobacteria (Blue-green algae) Green Algae, Diatoms and Flagellates to genus level (Potentially Toxic Cyanobacteria identified to species level)	Not applicable	>10 cells/mL
WB361.3	Algal Identification (presence /absence)	A semi-quantitative method which provides a relative abundance of each of the major algae groups without individual identification or actual count. Useful to know whether the problem is of an algae source or not.	Not Applicable	Present/ Absent for each Algae group /mL
WB361.4	Algae count only	The total number of algae from all groups are counted and a total count is provided no actual differentiation of what the count consists of	Not applicable	>10cells /mL
WB361.5	Blue Green Algae Enumeration and Identification	Enumeration and Identification of Cyanobacteria to genus level with the potential toxin producers identified to species level	Not Applicable	>10 cells/mL

Method Code & Reference	Method Title	Scope	Interferences	Reporting Limits
				Water
WB362.	Activated Sludge Inspection	Semi-quantitative examination of Activated sludge. Results include description of flocs present including size shape and structure, relative abundance and predominant location of filamentous bacteria and actinomycetes, relative abundance of protozoa, metazoa and other organisms.	Not Applicable	Not Applicable
WB060.	Microscopic examination	Simple and brief description of what is seen when examining the material under the microscope.	Not Applicable	Not Applicable

N.B. Sampling must be done in a clean bottle. For WB362 samples are required within 24 hours of sampling if possible as the sample may alter over time. All samples need to be kept cool/refrigerated but not frozen