Scheme Description

Water Microbiology (QWAS) Proficiency Testing Scheme

lgcstandards.com/AXIO
axiopt@lgcgroup.com

Issue No: 34
Issued: June 2026

29821

RECORD OF ISSUE STATUS AND MODIFICATIONS

Issue	Issue Date	Details	Authorised by
24	Jan 2024	Units of WT419 and WT424 detection tests amended.	T.Ashcroft
25	Feb 2024	Ranges increased for 412, 414 and 420 cfu/vial to reflect sample preparation process.	T.Ashcroft
26	Feb 2024	Reporting units updates for WT431	T.Ashcroft
27	Apr 2024	Updated all ranges to match with reporting units	A.S.Eden
28	July 2024	General format of document updated. Removed references to Appendix A. New sample 432-436 New Enterobacteriaceae analyte to 416 New Legionella identification to 423 New endoscope water sample New Detection of Salmonella in waters (all) sample New Pseudomonas/coliforms/E.coli/enterococci sample in wastewater etc Two different coliphages samples Group samples by matrix type	N. Mason T.Noblett
29	Oct 2024	Updated units for WT-431 to PFU/100ml Updated units for WT 433 to cfu/100ml Corrected WT-427 SDPA to $\log_{10}$ 0.05	T. Ashcroft
30	Jan 2025	Updated units for ranges WT-433, WT-434, WT-435, WT-436 Updated 'Supplied as' WT 433, WT-434 Updated reporting units for WT-436 to PFU/ml	T. Ashcroft
31	Feb 2025	Updated reporting units for WT-435 to cfu/100ml. Updated range to 0 – 100,000 WT-423 Identification analyte changed to 'Legionella species'	T.Ashcroft
32	July 2025	Changed ranges of WT-412 TVC analytes to 0 – 500 cfu/ml Escherichia coli and Enterobacteriaceae analytes removed from WT-416 and added to WT-432. WT-416 Supplied as updated to 1 x 10g simulated sludge sample. WT-416 *Salmonella* range decreased to 0 – 1,000	T.Ashcroft
33	May 2026	New UKAS logo added	A Collins
34	June 2026	New Aeromonas sample added	A Cheetham

Notes: Where this document has been translated, the English version shall remain the definitive version

SCHEME INFORMATION

Scheme Aims and Organisation

The primary aim of the Quality in Water Analysis Proficiency Testing Scheme (QWAS) is to enable laboratories performing the microbiological analysis of water to monitor their performance and compare it with that of their peers. QWAS also aims to provide information to participants on technical issues and methodologies relating to microbiological testing of water and related materials.

The QWAS scheme year operates from January to December. Further information about QWAS, including test material availability, round despatch dates and reporting deadlines, are available on the current QWAS application form.

Test Materials

Details of test materials available in QWAS are given in the 'Samples Available' section. The test parameters are continually reviewed to ensure they meet the needs of current laboratory testing and regulatory requirements.

Test material batches are tested for homogeneity for at least one test parameter where deemed appropriate. Details of homogeneity tests performed and results are given in the QWAS Scheme Reports.

Some aspects of the scheme, such as test material production, homogeneity testing and stability assessment, can from time to time be subcontracted. When subcontracting occurs, it is placed with a competent subcontractor and LGC is responsible for this work. The planning of the scheme, the evaluation of performance and the authorisation of the final report will never be subcontracted.

Statistical Analysis

Information on the statistics used in QWAS can be found in the General Protocol and in the Scheme Report. Methods for determining assigned values and the values for SDPA used for individual samples are given in the 'Samples Available' section.

Methods

Methods are listed PORTAL. Please select the most appropriate method from the list. If none of the methods are appropriate, then please report your method as 'Other' and record a brief description in the Comments Section in PORTAL.

Results and Reports

QWAS results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email.

QWAS reports will be available on the website within 10 working days of round closure. Participants will be emailed a link to the report when it is available.

DESCRIPTION OF ABBREVIATIONS USED

Assigned Value (AV)

The assigned value may be derived in the following ways:

- From the robust mean (median) of participant results (RMean). This is the median of participant results after the removal of test results that are inappropriate for statistical evaluation, e.g. miscalculations, transpositions and other gross errors. Generally, the assigned value will be set using results from all methods, unless the measurement is considered method-dependant, in which case the assigned value will be set by method and indicated in the report tables. For some analytes, where there is a recognised reference method for that type of measurement, this may be used as the assigned value for a particular analyte i.e. it would be applied to results obtained by any method.

  Traceability: Assigned values which are derived from the participant results, or a sub-set of the results are not traceable to an international measurement standard. The uncertainty of assigned values derived in this way is estimated from the participant results, according to ISO 13528.

- From a formulation value (Form). This denotes the use of an assigned value derived from sample preparation details, where known and exact quantities of analyte have been used to prepare the sample.

  Traceability: Assigned values calculated from the formulation of the test sample are traceable, via an unbroken metrological traceability chain, to an international measurement standard. The measurement uncertainty of the assigned value is calculated using the contributions from each calibration in the traceability chain.

- From a qualitative formulation (Qual Form). This applies to qualitative tests where the assigned value is simply based on the presence/absence of the analyte in the test material.

  Traceability: Assigned values calculated from the qualitative formulation of the test sample are traceable to a certified reference standard or a microbiological reference strain.

- From expert labs (Expert). The assigned value for the analyte is provided by an 'expert' laboratory.

  Traceability: Assigned values provided by an 'expert' laboratory may be traceable to an international measurement standard, according to the laboratory and the method used. The uncertainty of measurement for an assigned value produced in this way will be provided by the laboratory undertaking the analysis. Details of traceability and the associated uncertainty will be provided in the report for the scheme/round.

Range

This indicates the concentration range at which the analyte may be present in the test material.

SDPA

The SDPA represents the 'standard deviation for proficiency assessment' which is used to assess participant performance for the measurement of each analyte. This may be a fixed value (as stated), a percentage (%) of the assigned value or based on the robust standard deviation of the participant measurement results, either across all methods or by method depending on whether the measurement made is method dependent (see assigned value).

Units

This indicates the units used for the assessment of data and in which participants should report their results. For some analytes in some schemes participants may have a choice of which units to report their results, however, the units stipulated in this scheme description are the default units to which any results reported using allowable alternative results will be converted to.

DP

This indicates the number of decimal places to which participants should report their measurement results.

SAMPLES AVAILABLE

Sample PT-WT-412 **Indicator organisms in potable water**
Supplied as: 10ml vial (to be reconstituted to final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Total aerobic count @ 22ºC	All	RMean	0 to 500	$\log_{10}$ 0.35	cfu/ml	0
Total aerobic count @ 37ºC	All	RMean	0 to 500	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of *Escherichia coli*	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of coliforms	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of enterococci	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0

Sample PT-WT-413 **Environmental organisms in potable water**
Supplied as: 10ml vial (to be reconstituted to final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of *Clostridium perfringens*	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of sulphite-reducing Clostridia	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Detection of sulphite-reducing Clostridia	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA
Enumeration of sulphite-reducing Clostridia spores ONLY	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Pseudomonas aeruginosa*	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of yeast	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of mould	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of yeast and mould	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0

Sample PT-WT-414 **Microorganisms in Process water**
Supplied as: 10ml vial (to be reconstituted to final volume of 100 ml)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Total aerobic count	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of *Pseudomonas* species	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of *Pseudomonas aeruginosa*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of yeast	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of mould	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of yeast and mould	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/ml	0

Sample PT-WT-416 **Detection of Salmonella in Effluent sludge**
Supplied as: 10g simulated sludge sample

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of *Salmonella* species	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA

Sample PT-WT-417 ***Legionella pneumophila* in Industrial waters**
Supplied as: 1 x 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of *Legionella pneumophila* by culture (membrane filtration)	All	RMean	0 to 100,000	$\log_{10}$ 0.50	cfu/L	0
Enumeration of *Legionella pneumophila* by culture (direct count)	All	RMean	0 to 100,000	$\log_{10}$ 0.50	cfu/L	0
Detection of *Legionella pneumophila*	All	Qual Form	0 to 100,000	NA	Detected/Not Detected L	NA
Enumeration of *Legionella pneumophila* by PCR	PCR	RMean	All	$\log_{10}$ 0.50	genomic units/L	0
Identification of *Legionella pneumophila*	All	Qual Form	NA	NA	NA	NA

Sample PT-WT-418 ***Legionella* species in Industrial waters**
Supplied as: 1 x 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of *Legionella* species by culture (membrane filtration)	All	RMean	0 to 100,000	$\log_{10}$ 0.50	cfu/L	0
Enumeration of *Legionella* species by culture (direct count)	All	RMean	0 to 100,000	$\log_{10}$ 0.50	cfu/L	0
Detection of *Legionella* species	All	Qual Form	0 to 100,000	NA	Detected/Not Detected L	NA
Enumeration of *Legionella* species by PCR	PCR	RMean	All	$\log_{10}$ 0.50	genomic units/L	0

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Identification of *Legionella* species	All	Qual Form	NA	NA	NA	NA

Sample PT-WT-419 **Microorganisms in Surface/Waste/Bathing waters**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of total coliforms	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of faecal coliforms	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Escherichia coli*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of enterococci	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Detection of *Salmonella* species	All	Qual Form	0 to 10,000	NA	Detected/Not Detected/L	NA

Sample PT-WT-420 **Microorganisms in Mineral water**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range cfu/g	SDPA	Reporting units	DP
Total aerobic count @ 22ºC	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/ml	0
Total aerobic count @ 37ºC	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/ml	0
Enumeration of *Escherichia coli*	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/250ml	0
Enumeration of Enterococci	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/250ml	0
Enumeration of *Pseudomonas aeruginosa*	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/250ml	0

Sample PT-WT-421 **Microorganisms in Surface/Bathing/Recreational water**
Supplied as: 10ml vial (to be reconstituted to final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of coagulase-positive staphylococci	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Staphylococcus* species	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of sulphite-reducing clostridia	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Clostridium perfringens*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Total aerobic count	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0

Sample PT-WT-422 **Microorganisms in Sea Water**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of total coliforms	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of faecal coliforms	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Escherichia coli*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of enterococci	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Detection of *Salmonella* species	All	Qual Form	0 to 10,000	NA	Detected/Not Detected/L	NA

Sample PT-WT-423 **Legionella in Potable Water**
Supplied as: 10ml vial (to be reconstituted to final volume of 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of *Legionella* species at low levels	All	Qual Form	0 to 1,000	NA	Detected/Not Detected L	NA
Enumeration of *Legionella* species by culture	All	RMean	0 to 1,000	$\log_{10}$ 0.50	cfu/L	0
Identification of *Legionella* species	All	Qual Form	NA	NA	NA	NA

Sample PT-WT-424 **Microorganisms in Mineral water (Presence/absence)**
Supplied as: 10ml vial (to be reconstituted to final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of coagulase-positive staphylococci	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 250ml	NA
Detection of sulphite-reducing Clostridia	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 50ml	NA
Detection of sulphite-reducing Clostridia spores ONLY	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 50ml	NA

Sample PT-WT-425 **Indicator organisms in potable water (Presence/absence)**
Supplied as: 10ml vial (to be reconstituted to a final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of *Escherichia coli*	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of coliforms	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA
Detection of enterococci	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA

Sample PT-WT-426 **Identification Test (non-pathogen)**
Supplied as: Participants will be provided with a vial of freeze-dried material containing a single organism which will need to be cultured on non-selective agar before test. The sample may contain biosafety level 1 or 2 organisms typically found in water.
The organism should be identified to the correct family, genus or species level.

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Identification of unknown organism	All	Qual Form	NA	NA	NA	NA

Sample PT-WT-427 **Paper exercise**
Supplied as: Participants will be provided with a photograph and a scenario in order to count the number of colonies and calculate the number of microorganisms in the original sample.

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Colony count and calculation of number of microorganisms	Visual count	Formulation	0 to 10,000	Greater of robust SD or $\log_{10}$ 0.05	Various	0

Sample PT-WT-429 **Total viable count in dialysis water**
Supplied as: 10ml vial (to be reconstituted to a final volume of 100ml)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Total aerobic count @ 17-23ºC	All	RMean	0 to 100	$\log_{10}$ 0.35	cfu/ml	0

Sample PT-WT-431* **Somatic Coliphages (ϕX174) in drinking water**
Supplied as: 1 x lyophilised vial

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of Somatic coliphages	All	Positive/ Negative	Qual Form	NA	NA	NA
Quantification of Somatic coliphages	All	0 to 1,000	Formulation	Robust SD	PFU/100ml^{-1}	NA

Sample PT-WT-432* **Microorganisms in Effluent sludge**
Supplied as: 10g simulated sludge sample

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of Enterococci	All	RMean	0 to 10,000	$\log_{10}$ 0.50	cfu/ml	0
Enumeration of *Escherichia coli*	All	RMean	0 to 10,000	$\log_{10}$ 0.50	cfu/ml	0
Enumeration of Enterobacteriacae	All	RMean	0 to 10,000	$\log_{10}$ 0.50	cfu/ml	0

Sample PT-WT-433* **Endoscope water**
Supplied as: 10ml vial (to be reconstituted to final volume of 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Total viable count	All	RMean	0 to 100	$\log_{10}$ 0.35	cfu/100ml	0
Detection of environmental *Mycobacterium* species	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA
Detection of *Pseudomonas aeruginosa*	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA

Sample PT-WT-434* **Detection of Salmonella in water (all types)**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of *Salmonella* species	All	Qual Form	0 to 10,000	NA	Detected/Not Detected L	NA

Sample PT-WT-435* **Microorganisms in Surface/Waste/recreational**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 10 x 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Enumeration of *Escherichia coli*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of Enterococci	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0
Enumeration of *Pseudomonas aeruginosa*	All	RMean	0 to 100,000	$\log_{10}$ 0.35	cfu/100ml	0

Sample PT-WT-436* **Somatic Coliphages (ϕX174) in Wastewater**
Supplied as: 1 x lyophilised vial

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of Somatic coliphages	All	Positive/ Negative	Qual Form	NA	NA	NA
Quantification of Somatic coliphages	All	0 to 1,000	Formulation	Robust SD	PFU/ml^{-1}	NA

Sample PT-WT-437* **Aeromonas species in water**
Supplied as: 10ml vial (to be reconstituted to final volume of up to 1 litre)

Analyte	Method	AV	Range	SDPA	Reporting units	DP
Detection of *Aeromonas* species	All	Qual Form	0 to 1,000	NA	Detected/Not Detected 100ml	NA
Enumeration of *Aeromonas* species	All	RMean	0 to 1,000	$\log_{10}$ 0.35	cfu/100ml	0

*Please note that these samples are not currently within the scope of LGC's UKAS accreditation.