ATCM TECHNICAL GUIDANCE

MAINTENANCE AND CLEANING GUIDANCE DOCUMENT FOR COLD-WATER STORAGE TANKS AND CISTERNS

ASSOCIATION OF TANK AND CISTERN MANUFACTURERS

Written by The ATCM

1. PURPOSE

This ATCM guidance document outlines recommended procedures for the inspection, maintenance, cleaning and disinfection of cold-water storage tanks and cisterns, for the purposes of this document now referred to as cisterns.

The purpose of this document is to:

- Promote compliance with relevant UK legislation and industry standards.
- Maintain water quality and hygiene.
- Minimise risks associated with Legionella and other waterborne contaminants.
- Protect operatives, building users and stakeholders from potential hazards.
- Support best practice in the management of water storage systems.

1. SCOPE

This guidance covers:

- Regular visual and technical inspections of water storage cisterns.
- Scheduled or post inspection cleaning and disinfection activities.
- Water quality testing and verification.
- Record keeping and documentation requirements.
- Risk management procedures, including Legionella control and chemical handling.

Inspections should typically be undertaken every twelve months or at intervals determined by the responsible person, risk assessment, operational requirements or stakeholder needs.

This guidance applies to all personnel, contractors and organisations involved in the inspection, maintenance, cleaning and management of water storage tanks and cisterns.

Competence

Personnel undertaking inspections, cleaning, disinfection and sampling shall be demonstrably competent through training, experience and ongoing assessment. See Legionella Control Association (LCA) for guidance on Competency **Appendix 1.**

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Contractor Control

For outsourced works:

Contractors shall provide evidence of competence, insurance, training records, risk assessments and method statements before undertaking work.

3. APPLICABLE LEGISLATION, STANDARDS AND CODES OF PRACTICE

All activities should be undertaken in accordance with applicable legislation, standards and industry guidance, including but not limited to:

PD 855468-2015

Guidance on cleaning, flushing and disinfection of services supplying water for domestic purposes within buildings and their curtilages.

Legionella Control Association Service Delivery Standard for Cleaning and Disinfection

HSG274 Part 2 – The Control of Legionella Bacteria in Hot and Cold Water Systems

·Paragraphs 2.1–2.58 (management responsibilities)
·Paragraphs 2.60–2.120 (cold water storage systems)
·Appendix 2.1 (example schematic)
·Appendix 2.2 (written scheme requirements)

ACOP L8 – Legionnaires' Disease

Approved Code of Practice for controlling Legionella bacteria in water systems.

BS 8558

Guidance on the design, installation, testing and maintenance of water systems.

Water Supply (Water Fittings) Regulations 1999

Requirements for preventing contamination and misuse of water systems.

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BS EN 806

Specifications for water supply systems within buildings.

COSHH Regulations 2002

Safe handling, storage and use of cleaning and disinfection chemicals.

Confined Spaces Regulations 1997

A confined space assessment shall be undertaken before entry. Cistern entry shall only be treated as confined space working where the criteria defined within the Confined Spaces Regulations 1997 are met.

Manual Handling Operations Regulations 1992

Requirements for safe lifting and handling operations.

Personal Protective Equipment (PPE) at Work Regulations 1992 (as amended)

Provision, use and maintenance of suitable PPE.

4. ROLES & RESPONSIBILITIES

Maintenance Manager / Supervisor

Responsible for:

- Ensuring compliance with inspection and cleaning schedules.
- Monitoring maintenance activities.
- Ensuring personnel are trained and competent.
- Verifying compliance with health and safety procedures.

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Trained and Competent Directly Employed Personnel / Contractors

Responsible for:

- Carrying out inspections
- Carrying our cleaning and disinfection activities.
- Following safe systems of work.
- Using appropriate PPE.
- Reporting defects and non-conformities.

Health and Safety Officer

Responsible for:

- Reviewing and updating risk assessments and method statements.
- Monitoring water quality testing results.
- Reviewing maintenance records and compliance documentation.

Responsible Person (ACOP L8 para 44-53)

Responsible for:

- Overall management of the water system.
- Ensuring suitable and sufficient Legionella risk assessments are completed.
- Appointment of competent persons.
- Ensuring implementation of the Written Scheme of Control.
- Reviewing monitoring and inspection results.

Administrative Personnel

Responsible for:

- Maintaining inspection and maintenance records.
- Retaining water quality reports.
- Coordinating training requirements and review schedules.

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5. INSPECTION PROCEDURE

5.1 Visual Inspection

Frequency

At least every twelve months, or more frequently where risk assessments or operational requirements dictate. Care must be taken to prevent contamination of the stored water or the storage cistern during inspection tasks.

Inspection Tasks

- Ensure safe and clear access to the cistern.
- Examine the tank including the underside of the lid for structural integrity and identify signs of damage, leaks, scale deposits or corrosion.
- Check the condition and security of lids, covers and access points.
- Check vermin/insect screens on lid vent and overflow/warning pipes for presence and condition.
- Check the installation promotes good crossflow with no areas of stagnation.
- Check tank balance where multiple connected tanks are fitted in parallel by comparing visual condition, temperature of stored water, chemical residual (if water treatment is in use) or water meter readings (if fitted).
- Check water surface is clear and free from any significant visible contamination.
- Measure the stored temperature of the tank remote from the inlet valve then measure the inlet valve water temperature.
- If a biocide is in use, measure the residual in the tank remote from the inlet valve then measure the inlet valve water residual. NB some biocides may be dosed at the tank so there may be no residual in the inlet water.
- Verify that internal supports remain correctly positioned and secure.
- Identify and hollow structures such as supports or ladders that could retain stagnant water.
- Check insulation remains intact, secure and effective.
- Inspect for debris, sediment, sludge or biofilm present in the cistern.
- Examine base support structures for deterioration, corrosion or deflection.
- Confirm that the water category remains appropriate for the intended application.
- Verify that internal surfaces including the underside of the lid remain smooth, cleanable and free from degradation, delamination or exposed reinforcement materials.

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- Evidence of vermin infestation (consider increasing frequency of inspection if there is evidence of vermin)
- Assess water storage volume using water meter checks or a drop test (isolate inlet and observe usage over several hours to estimate tank turnover time). There should be no more than 24 hours storage for most premises, 12 hours for healthcare premises.

HSG274 Part 2 Cold Water Storage Cistern Inspection Requirements

Inspect for:

- Presence of tight-fitting insect-proof lids.
- Condition of screened overflows and vents.
- Evidence of vermin ingress.
- Signs of stagnation.
- Dead legs or redundant pipework.
- Internal corrosion.
- Scale formation.
- Water level control effectiveness.
- Adequate air gaps where required.
- Tank turnover rates.

5.2 Functional Testing

Inspect and verify the operation of:

- Float valves.
- Inlet and outlet arrangements.
- Overflow systems.
- Warning pipes.
- Control equipment.
- Water temperature monitoring.
- Residual disinfectant testing.
- pH testing where applicable. Generally, when the dosing system has been selected or during disinfections with pH sensitive disinfectants like sodium hypochlorite.

All components should operate in accordance with BS EN 806 requirements.

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Temperature Requirements

Monitor and record:

- Cold water temperature at sentinel outlets.
- Incoming mains temperature where practicable.
- Stored water temperature.

Acceptance criteria:

- Stored cold water should be maintained below 20°C. Sentinel outlets should achieve a temperature below 20°C within two minutes of operation.
- Verify that stored water is turned over regularly at least daily and does not remain stagnant. Storage capacity should reflect actual demand rather than design or theoretical demand and must avoid excessive retention periods. Consider the use of delayed action float valves to help keep stored water cool by adding a larger volume of water with each valve activation.

Reference:

- HSG274 Part 2 paragraphs 2.18, 2.114–2.118.

5.3 Water Quality Testing

Microbiological Testing

Including:

- Legionella testing:
    - Where recommended by risk assessment
    - Weekly where control is lost (temperature or biocide residuals) until control is regained
    - When commissioning a new system
    - When adopting a biocide regime to replace temperature control
    - Where there are susceptible populations exposed to the system
    - If any there are any other indications of contamination such as taste, odour, other microbiological results, etc.

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- General bacterial and other analysis as required such as:
    - Total viable counts
    - Coliforms/E.coli
    - Category 2 analysis

Chemical Testing

Including:

- pH levels.
- Residual disinfectant levels.
- Other site-specific parameters where applicable.

Risk-Based Sampling

Water samples should be collected by competent personnel using aseptic techniques and analysed by a suitable UKAS accredited laboratory.:

- Following cleaning and disinfection.
- Following major maintenance works.
- Following contamination incidents.
- Where risk assessments identify elevated Legionella risk.

Reference:

- HSG274 Part 2 paragraphs 2.1–2.129.

Documentation

All testing results must be recorded within the relevant maintenance, attendance or property logbook.

5.4 Commissioning and Recommissioning (Refer to PD 855468 for full requirements).

Commissioning Requirements

Where cisterns are:

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- Newly installed
- Returned to service after isolation
- Significantly modified

The following should be completed:

1. Inspection of installation quality.
2. Pre-disinfection flushing.
3. Cleaning where necessary.
4. Disinfection.
5. Verification sampling.
6. Documentation of results.

6. CLEANING PROCEDURE

6.0 Pre-Disinfection Flushing
PD 855468 Section 6

- **Cleansing flush to all associated pipework (valves fully open, all flow restrictions removed).**
- **Remove debris and stagnant water.**
- **Achieve satisfactory water clarity prior to disinfection.**

6.1 Preparation

Notification

Inform building occupants, stakeholders and affected parties before commencing work.

Risk Controls

Ensure:

- Appropriate PPE is available and used.
- Cleaning chemicals are approved for use by the cistern manufacturer and suitable.
- Suitable calibrated water testing equipment is available.
- Risk assessments and method statements are reviewed

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Drainage

Seek discharge consent and drain the tank safely and dispose of water in accordance with local requirements and environmental regulations.

6.2 Cleaning Process

If the system is heavily contaminated or positive for legionella a pre-clean, pre-entry disinfection stage should be carried out.

Step 1 – Removal of Debris

Remove:

- Sediment.
- Sludge.
- Loose contamination.
- Foreign materials.

Step 2 – Surface Cleaning

- Clean internal surfaces using approved cleaning agents.
- Use brushes, low-pressure washing or high-pressure systems where appropriate.
- Follow COSHH requirements at all times.

Step 3 – Disinfection

- Disinfection should be undertaken using suitable disinfectant in accordance with BS 8558 and PD guidance. Typical free chlorine concentrations range between 20 mg/l and 50 mg/l depending upon the selected method and available contact time. Typical CT values (concentration in mg/l/contact time in minutes) for hydrogen peroxide range from 30,000 to 60,000.
- Follow chemical manufacturer instructions.
- Comply with PD855468 recommendations.
- Allow adequate contact time for effective disinfection.
- If the disinfectant is affected by pH, take measures to mitigate this effect by extending contact time or switching to an alternative disinfectant.

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Step 4 – Rinsing

REF: ATCM Internal Stainless Steel Corrosion Statement APPENDIX 5

- Thoroughly rinse all surfaces.
- Remove all cleaning residues and disinfectants.
- Dispose of waste safely.

Verification of Disinfection
PD 855468 Sections 8 and 10

Following disinfection:

- Confirm disinfectant concentration and pH (if applicable) at the tank and sentinel outlets at the start, during and after the addition of disinfectant.
- Verify contact time achieved.
- Record all results.
- Undertake post-disinfection sampling where required between 2 and 7 days after the completion of the disinfection process. Immediate post disinfection sampling is likely to give a false negative. HSE, LCA and BSI say not to do this.

6.3 Post-Cleaning Activities

Final Inspection

Carry out a visual inspection to confirm cleanliness and identify any remaining issues.

Refill and Testing

- Refill with fresh water.
- Conduct immediate water quality testing.
- Verify suitability before returning the tank to service.

Securing the Cistern

- Reinstall lids, covers and access hatches securely.
- Ensure protection against contamination and unauthorised access.

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Documentation

Record:

- Cleaning dates.
- Findings and observations.
- Chemicals used.
- Water testing results.
- Corrective actions undertaken.

6.4 Remedial Actions

PD 855468 Section 11

Where inspections identify:

- Legionella positive results.
    - Positive Legionella results shall be actioned in accordance with the site's Written Scheme and escalation procedure. Actions may include resampling, system disinfection, engineering review, restriction of use, or consultation with the Responsible Person and competent water hygiene specialist
- Other positive microbiological results.
    - Positive microbiological results shall be actioned in accordance with the site's Written Scheme and escalation procedure. Actions may include resampling, system disinfection, engineering
- Excessive sediment, scale or biofilm.
- Damaged or corroded cistern structures.
- Failed temperature or biocide controls.
- Vermin ingress.

The responsible person shall:

- Assess risk.
- Implement corrective actions.
- Record actions taken.
- Verify effectiveness.



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7. DOCUMENTATION AND RECORD KEEPING

Maintain records including:

- Inspection reports.
- Cleaning schedules.
- Water quality testing results.
- Corrective actions.
- Maintenance logs.

Records should remain accessible for future reference, auditing and regulatory inspection.

Written Scheme Records

All inspection, cleaning and monitoring activities shall form part of the site's Written Scheme of Control as required by ACOP L8.

(HSG274 Appendix 2.2)

Maintain:

- Asset register.
- Cistern identification numbers.
- Schematic drawings.
- Inspection frequencies.
- Cleaning frequencies.
- Temperature monitoring records.
- Water testing results.
- Corrective action records.
- Training records.
- Contractor competency records.

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8. TRAINING, REVIEW AND AUDIT

Training

All personnel should receive appropriate training in:

- Legionella awareness.
- Confined space working.
- Manual handling.
- Chemical handling.
- PPE use and maintenance.

Review

Procedures should be reviewed:

- Annually.
- Following incidents.
- Following legislative changes.
- Following significant system modifications.

Hygiene Flushing

PD 855468 Section 12

Where tanks or outlets are infrequently used:

- Undertake routine flushing.
- Record dates and duration.
- Verify turnover of stored water.
- Review occupancy patterns.

Audit

Periodic audits should be undertaken to:

- Verify compliance.
- Review effectiveness.
- Identify opportunities for improvement.

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9. WATER MANAGEMENT LOGBOOK

PD 855468-2015 Section 14

The logbook should contain:

- Risk assessments.
- Schematics.
- Inspection reports.
- Cleaning certificates.
- Disinfection certificates.
- Temperature monitoring.
- Sampling reports.
- Maintenance records.
- Training records.
- Incident investigations.

SUPPLEMENTARY RAMS
RISK ASSESSMENT AND METHOD STATEMENT

1. Risk Assessment

Activity:

Inspection, Maintenance and Cleaning of Cold-Water Storage Cisterns

Hazard	Risk	Control Measure
Legionella Exposure	Inhalation of contaminated aerosols during cleaning	Complete a Legionella risk assessment and control as per **ACOP L8**. Use PPE (mask, gloves) and ventilation methods.
Slips, Trips & Falls	Wet and slippery surfaces; working in confined spaces	Use non-slip mats, ensure adequate lighting, and follow **Confined Spaces Regulations 1997**.

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Hazard	Risk	Control Measure
Chemical Exposure	Skin or respiratory irritation	Follow COSHH requirements and wear suitable PPE
Manual Handling	Musculoskeletal injuries	Provide training and use lifting aids where appropriate
Electrical Hazards	Contact with electrical equipment	Isolate electrical supplies and follow safe systems of work.
Confined Space Entry	Asphyxiation, entrapment	Permit system, gas monitoring, rescue plan
Biologial Contamination	Infection	Hygiene controls, PPE, hand washing
Working at Height	Falls from tank access platforms	Guardrails, ladders, fall protection
Vermin Contamination	Exposure to pathogens	Inspection and exclusion measures
Chlorine Gas Release	Respiratory injury	COSHH controls, ventilation, emergency procedures
Heat Stress	Illness during enclosed working	Hydration, work-rest regimes

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2. Method Statement – This is an outline guide; there are more detailed example method statements in Appendix 2. 3. & 4 It is important to note there are range of disinfectants, not just chlorine

2.1 Objective

To safely inspect, clean and disinfect water storage cisterns while ensuring compliance with UK legislation and industry best practice.

2.2 Preparation and Setup

Pre-Work Briefing

- Review tasks and hazards.
- Confirm communication arrangements.
- Review emergency procedures.

Equipment and PPE

PPE:

- Gloves
- Safety goggles
- Respiratory protection
- Protective clothing

Equipment:

- Brushes
- Approved cleaning agents
- Disinfectants
- Pressure washing equipment (where applicable)
- Water testing kits

Work Area Preparation

- Secure the work area.
- Restrict unauthorised access.
- Remove hazards and obstructions.

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2.3 Task Procedure

Drainage

Prior to drainage consider a preclean disinfection stage as an option for heavily fouled systems or legionella positive systems. Safely drain the cistern and dispose of water appropriately.

Cleaning

- Remove sediment and debris.
- Clean all internal surfaces thoroughly.

Disinfection

- Apply disinfectant.
- Allow specified contact time.
- Rinse thoroughly: **REF: ATCM Internal Stainless Steel Corrosion Statement APPENDIX 5**

Inspection and Testing

- Conduct final visual inspection.
- Refill the cistern.
- Complete water quality testing.

2.4 Post-Work Activities

Return to Service

Secure all covers and access points before returning the system to operation.

Documentation

Complete all required:

- Inspection records
- Cleaning records
- Water quality records
- Incident reports (if applicable)

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Waste Disposal

Dispose of waste materials in accordance with regulations and site requirements.

2.5 Emergency Procedures

Exposure or Injury

- Provide immediate first aid.
- Contact emergency services if required.
- Report and investigate incidents.

Chemical Spills

Follow:

- COSHH procedures.
- Manufacturer spill response guidance.
- Site emergency arrangements.

3. Review and Monitoring

The RAMS should be reviewed whenever:

- Legislation changes.
- Industry standards are updated.
- An incident occurs.
- Equipment or operating conditions change.

Concluding Remarks

This guidance document and supplementary RAMS have been developed by the Association of Tank and Cistern Manufacturers (ATCM) to promote safe, effective and compliant inspection, maintenance and cleaning of water storage cisterns.

By following these procedures, organisations can help preserve water quality, maintain system integrity, minimise health and safety risks, and demonstrate compliance with recognised UK legislation and industry standards.

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Cleaning Frequency Clarification

Cold water storage cisterns should be inspected at least every twelve months and cleaned or disinfected whenever inspection indicates contamination, deterioration, microbiological fouling, sediment accumulation, or where risk assessment identifies a requirement.

This prevents the document being interpreted as requiring routine six-monthly cleaning when a risk-based approach is normally expected under HSG274 and ACOP L8.

These additions would make the document much more closely aligned with:

- ACOP L8 (4th Edition)
- HSG274 Part 2
- The Legionella Control Association Service Delivery Standard for Cleaning and Disinfection
- PD 855468-2015
- BS 8558
- Water Supply (Water Fittings) Regulations 1999

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APPENDICES

Appendix 1. Competence guide:

https://www.legionellacontrolassociation.co.uk/wp-content/uploads/2026/06/1750947287-Competence-guidance-204.20-26-06-25.pdf

Competence Guidance

Legionella Control Association
KEEPING WATER SYSTEMS SAFE

The HSE place great emphasis on competence. The LCA Code of Conduct requires members to ensure and demonstrate that all personnel and sub-contractors involved in managing or delivering legionella control services are competent to carry out each task assigned to them.

This guidance note provides information to help the LCA member to understand competence and what to do to develop and assess it.

1. Employer's Duty

As an employer you have a legal duty to ensure that any person who carries out a task as part of their employment is competent to carry out that specific task. An employee in training must be supervised by a competent person until they can carry out their work effectively and safely. This duty extends to those who employ sub-contractors.

You must also be able to show that your organisation has undertaken reasonable and sufficient checks to ensure that any sub-contractors it has engaged are competent. This should involve assessing the sub-contractors' own competence assessment records, and in some cases conducting your own competence assessment as detailed in requirement 8.3 of the LCA Code of Conduct.

2. What is Competence?

Competence can be described as the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely, efficiently and effectively. Other factors such as attitude and physical ability can affect someone's competence.

Individuals must be aware of limits to their knowledge and competence. For many tasks, the ability to communicate well, both verbally and in writing also needs to be considered.

3. What Is the Difference Between Competence and Training?

Training alone does not make someone competent. Many companies confuse the provision of training for their personnel in a classroom environment, with personnel being competent.
An acceptable approach for an employer to develop competence is to:

i. Provide underpinning theoretical knowledge and understanding by classroom training either in-house or by an external training provider, training on-the-job, self-study, etc.

ii. Provide details/copies of all relevant operating procedures and record keeping systems to be used, relevant to the specific task. Ensure these are understood by questioning of the individual.

iii. Help develop the skill required to carry out the tasks effectively, efficiently and safely by:

- Showing them what to do and how to do it
- Provide constructive coaching, feedback, answer questions, etc.
- Let them practise tasks under supervision
- Check progress throughout by observation, discussion, questioning, etc.

iv. Assess ability to carry out each specific task successfully, effectively, in a safe manner, and ability to communicate well by practical 'on-the-job' assessment.

Each of the development stages i. - iv. above must be assessed and recorded.

4. LCA Member Training and Competence Procedures

The LCA member must have procedures in place to:

- Identify individuals' initial training and skill development needs and arrange training
- Assess and maintain the competence of individuals for each task assigned to them
- Establish individuals' ongoing training and skill development needs
- Ensure developments in legislation, industry guidance, industry standards and good practice are identified and disseminated

The LCA requires member companies to assess the individuals' work on site before allowing them to work unsupervised and maintain records to demonstrate that this has been done by a suitably occupationally competent (for the task being assessed) internal or external assessor.

Records of training, competence assessments and annual competence validity checks (see 7iii below) must be maintained for each individual.

5. Guidance On How to Conduct a Task Based Competence Assessment

The first step in assessing a person's competence is to define the elements required for the successful delivery and completion of the task being assessed. To do this the questions that need to be asked are:

i. What underpinning knowledge and understanding is required?
ii. What operating procedures, forms, instructions, etc., are required?
iii. What practical skills and abilities are required?
iv. What are the criteria indicating the successful completion of each element of the task?

Once the elements have been defined, the next step is to design a competence assessment template for the specific task. Following this, conduct the competence assessment for the specific task.

The competence assessment must cover all stages of the work including preparation, carrying out the task, reporting and any follow up. Each element of the assessment will have its own success criteria and the work done by the person being assessed will need to be measured against each. The LCA requires members to keep records to demonstrate that the assessment has been completed and is reviewed on a regular basis, as outlined in 7 below.

6. What records should be kept?

Competence assessment records should include the following as a minimum:

i. Who was assessed and their position in the company
ii. Where were they assessed
iii. Date of assessment
iv. What was being assessed
v. The successful (or otherwise) completion of each step of the process against all identified knowledge, understanding and skill elements
vi. An assessment conclusion, e.g., staff member is/is not competent to conduct the task
vii. Identification of any further training and/or skill development needs
viii. The assessor's name and position
ix. The agreement of the person being assessed
x. An indication of when the assessment is to be reviewed

7. How frequently should Competence Assessments be conducted?

i. Initial assessment

Each individual must have an initial competence assessment for each task they are required to complete before they are allowed to work unsupervised. The initial assessment of competence must be completed before the individual takes responsibility for task completion. Initial assessment of competence, or validation of their existing competence assessment from their previous employer, must take place for all new employees.

In the case of an experienced new starter, or TUPE transfer, this initial competence assessment should include an element of a review of prior competence assessments, CPD and training records where these records are available. These previous records, if available, should be retained as part of the records of employee competence required under point 2.3 of the LCA Code of Conduct and may be audited.

Competence is subjective and one employer's criteria for competence assessment may vary slightly from another's, particularly where their methodology or support for staff differs. For this reason, caution should be exercised when using competence assessments from an employee's previous employment. If previous records indicate field assessed competence in all tasks to be performed, choose one sample task and carry out field assessment to validate the assessment by others using your criteria. If your assessment brings the previously recorded assessment into question, then all tasks should be re-assessed. If the experienced

individual's records of previous competence assessment are not available, then all tasks they perform must be competence assessed in the field.

Should it be found through competence assessment that any individual is below the competence standard required for the task, then training and skills development should be implemented. The individual's competence should be re-assessed at the end of this programme. This process must be repeated until the individual's competence is consistently demonstrated.

ii. Reactive review

The competence of an individual must be reviewed whenever:

- They progress from requiring supervision to working unsupervised, to supervising or assessing others etc.
- There is a significant change to operating techniques, procedures, relevant published guidance, regulations etc.
- An individual is assigned new tasks
- A complaint regarding the individual's work, attitude, etc. has been received
- There is reason to doubt the individual's competence through other means

iii. Regular competence validity check

Once an individual is deemed competent for a task, this must be formally validated at least annually by an occupationally competent assessor, to determine whether the basis of the previous assessment remains valid or whether a full re-assessment is required.

In stage 1 of a validity check process, the assessor should consider whether, since the original assessment or previous review, any of the points in 7**ii.** above apply.

In stage 2 of a validity check process, the assessor should consider evidence to support competence such as records of tasks completed and compliance with procedures, work activity audits and feedback from customers and more experienced colleagues. If this doesn't provide an adequate indication of the individual's competence, then a full reassessment of their competence must be carried out. The evidence examined to reach their conclusion should be recorded as part of this process.

Provided the original competence assessment was correct and the outcome of stage 1 and 2 supports this, the assessment is still valid – the process should be recorded, and no further action is needed until the scheduled infield reassessment date.

If, however, the outcome of stage 1 or stage 2 above shows the assessment is no longer valid then their competence should be re-assessed as above at 7**i.**.

The process used and the outcome of all competence assessments, validity checks and reviews should be documented.

An example of how a competence assessment validity check might be recorded is given at **Appendix A. NB** This template is for illustration purposes only and service providers should develop their own system for recording competence validity checks (either manual or electronic).

iv. Regular competence reassessment

In addition to reactive infield reassessment of competence, detailed above, as a minimum for each member of staff at least one task must be reassessed in the field every three years. This is intended as a sample on a rolling programme to reassess all tasks in the field that every individual performs. Should any infield reassessment create doubt over the competence of an individual, the other tasks that employee is responsible for should also be considered for immediate reassessment.

8. Demonstrating Occupational Competence

Your company procedures to assess competence in specific tasks must be applied to all employees, including Directors, owners, managers or similar if they are undertaking the tasks or assessing others. Those at the top of an organisation's competence structure might not be those at the top of the general management structure and this must be considered. Those at the top of a competence structure must be able to demonstrate and evidence their competence by other means.

If you are assessing the competence of others or are a single employee company, sole trader or employee at the top of your competence structure needing to demonstrate your occupational competence to others you may:

i. Establish and maintain a portfolio of evidence consisting of e.g. records of qualifications, training, CPD, conferences, seminars, CV, testimonials, references, and examples of previous recent work output, etc.

ii. You may use an occupationally competent individual from outside your company to carry out an assessment of your competence.

9. How should sub-contractors demonstrate competence?

Sub-contracting companies may be LCA members, in which case they are required to have the records of competence assessment and regular validation readily available as detailed in **7** (above). Any LCA member employing another LCA member should request evidence that competence assessment of each individual associated with the relevant tasks has been conducted according to **7.** (above) prior to employing the sub-contractor.

If this evidence is not readily available or forthcoming the LCA would encourage you to report this to us via the complaints procedure.

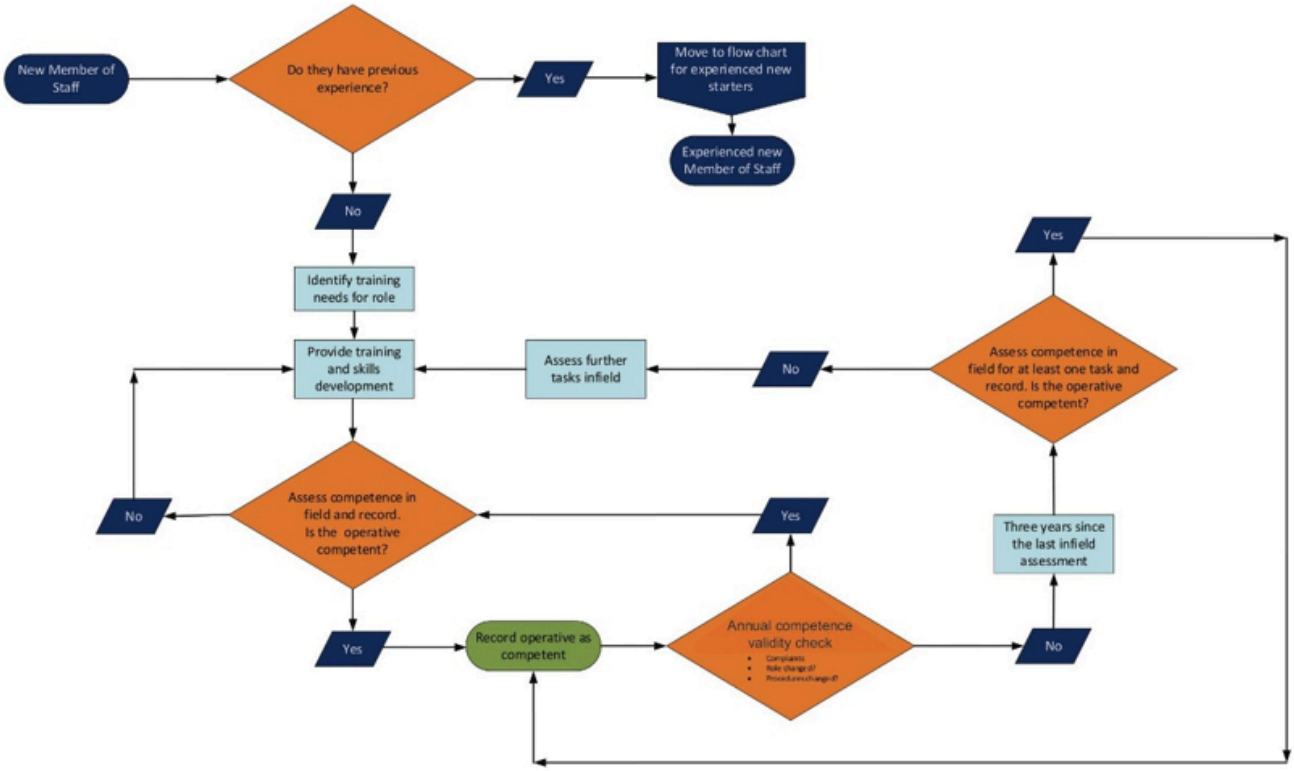
If your sub-contractors are not LCA members, suitable evidence of competence must be sought. Members sub-contracting legionella control services must satisfy themselves that their sub-contractor has a suitable level of competence for the sub-contracted tasks. This may mean that members employing non LCA registered sub-contractors have to complete their own competence assessments of the relevant sub-contractor staff and keep records as if they were a direct employee.

The legal duty to comply with relevant health and safety legislation (including avoidance or control of risk to exposure to Legionella bacteria) rests solely with the statutory dutyholder, being either the employer or the person in control of the premises or systems where any relevant risk is present, and this cannot be delegated. Specific functions (e.g. carrying out risk assessment) can be delegated and the Legionella Control Association (LCA) Code of Conduct is designed to help service providers, who also have duties under health and safety legislation, to establish appropriate management systems for the prevention or control of risk from Legionella bacteria. The LCA assesses the management systems of LCA members upon initial registration, reviews annually upon re-registration, and re-assesses by annual company audits. The LCA cannot and does not carry out other regular supervision of its members' commitments to the Code of Conduct nor their compliance with other LCA guidelines. LCA membership is only valid if the Company named is listed on the LCA website www.legionellacontrol.org.uk/directory.php. This listing confirms only that a service provider has satisfied LCA requirements at registration, re-registration and its most recent company audit. It does not confirm the service provider's actual or continuing compliance with their commitments to the LCA Code of Conduct and/or other LCA guidelines. The LCA does not approve specific products or services as being effective in controlling Legionella or verify the competence of service providers' staff and sub-contractors, which is the duty of the service provider and the statutory dutyholder. The LCA accepts no liability for any omission or any act carried out in reliance on the LCA Code of Conduct or other LCA guidelines, or any loss or damage resulting from non-compliance with such documents.

Please note: The Legionella Control Association focus is limited to the control of Legionella. There are many other areas of legal compliance such as Building Regulations, Water Regulations, and general health and safety that do not come under the LCA remit and are therefore not assessed by the LCA.

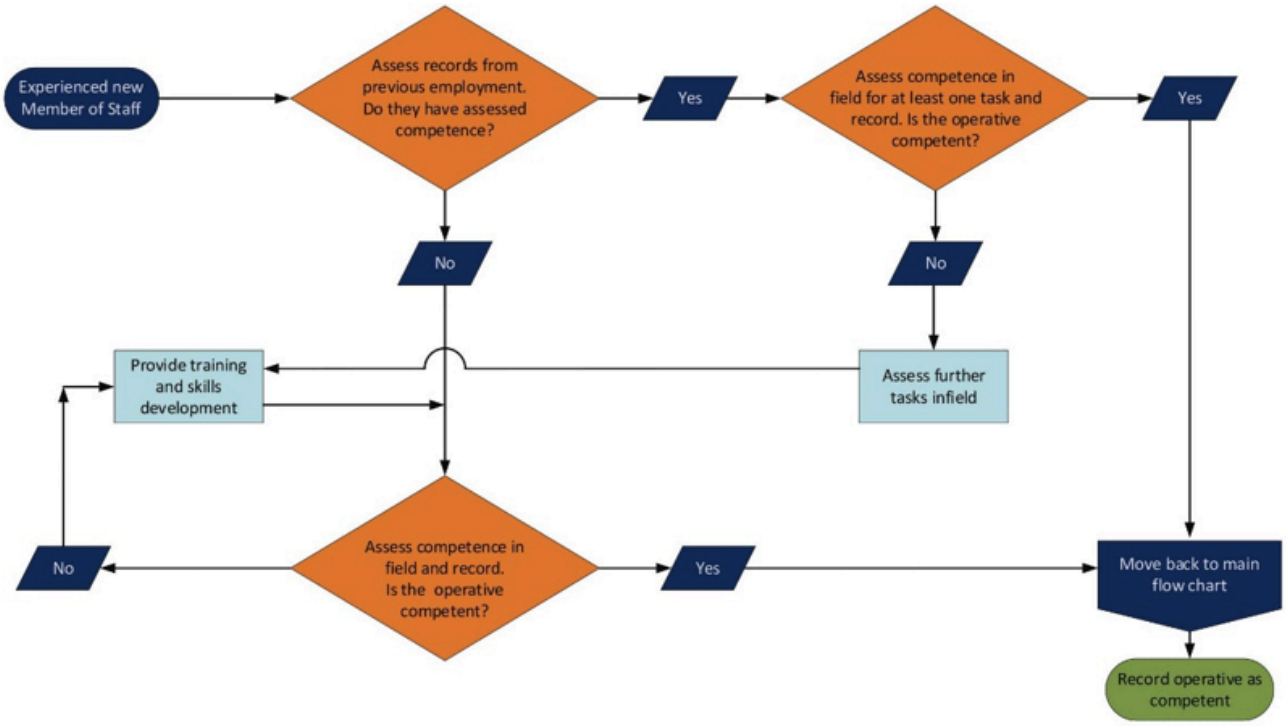
Flow chart 1

Legionella Control Association
KEEPING WATER SYSTEMS SAFE



Flow chart 2

Legionella Control Association
KEEPING WATER SYSTEMS SAFE



Appendix A

Legionella Control Association
KEEPING WATER SYSTEMS SAFE

Competence Assessment Validity Check

This should be carried out annually by the employee's knowledgeable supervisor / line manager (if they are occupationally competent) in discussion with the employee for each task/role the employee undertakes. (This could be completed as part of an annual review?)

Employee & position: _____

Validator & position: _____

Task/role: _____

Date: _____

Since the last validity check or full competence assessment:

i. Has the individual progressed from requiring supervision to working un-supervised **Y/N**

ii. To supervising others, or assessing others etc. **Y/N**
If yes, what is the detail and have they been assessed for their competence on these new tasks:

iii. Have there been significant changes to company operating methods or procedures associated with the Task/ Role **Y/N**
Detail:

iv. Have there been significant changes to relevant published guidance or regulations associated with the Task/ Role **Y/N**
Detail:

v. Is the individual performing new tasks **Y/N**
Details of new tasks:

vi. Has a complaint regarding the individuals' work, attitude, etc. been received **Y/N**
Details of any complaints:

vii. Check a sample of the individuals work output and look for any reason to doubt the individual's competence. Is there any evidence of a need for reassessment of competence regarding **Y/N**
Evidence checked (detail the date, site and reference number of each job checked – LCA assessor may want to re-examine these jobs so they must be identifiable):

If the answer to any of the above questions is YES then a reassessment of the competence for this task is indicated.

EXAMPLE

ATCM TECHNICAL GUIDANCE: MAINTENANCE AND CLEANING GUIDANCE DOCUMENT FOR COLD-WATER STORAGE TANKS AND CISTERNS

ASSOCIATION OF TANK AND CISTERN MANUFACTURERS

Appendix 2: Example Method Statement

Hot and Cold-Water System Clean and Disinfection

Works are to be carried out in accordance with guidelines from the Health and Safety Executive.

[Enter site specific details here including scope of work from the quotation and plant locations]

Introduction

The success of these disinfection works depends on effective planning and the provision of unobstructed and unrestricted access to the works areas.

Pre-works Checks

1. Advise client/security of arrival on-site and sign in. Obtain permission to carry out specified works.

2. The operative is to seek client advice on any special/particular site hazards within the building to ensure nothing has recently changed so that all issues can be risk assessed prior to commencement of works.

3. Before works commence the client is to advise us of a suitably sized and located foul drainage point to allow for the rapid drainage of water storage vessels.

4. Carry out a site-specific task risk assessment and ensure appropriate control measures are in place, including wearing of appropriate personal protective equipment, before works commence. Obtain permission to carry out specified works.

5. Change into protective clothing and post warning notices and cordon off/protect works area before commencing any work.

6. All mechanical lifting and moving provisions (i.e. lifts, sack trucks etc) can be used (subject to client's permission) as a method of control where a risk of a manual injury remains. Specific risks regarding manual handling will be included within the scope of the pre-works risk assessment and controlled where deemed necessary.

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Site Works

Pre-disinfection

1. If cistern conditions within the cold water storage cisterns are so poor that they could adversely affect the welfare of the operators undertaking the clean, a pre-disinfection should take place using steps 2-5 under post-clean disinfection below.

Cleaning

1. Neutralise chlorine if pre-disinfection completed, drain the cistern to the designated foul drain.
2. Under normal operation a float operated valve is a restriction within the supply pipework and therefore should be fully operated flushing any particulate matter from the supply main.
3. The cistern should be mechanically cleaned using a method that does not damage any coatings (it might not be possible to clean components where there is evidence of corrosion).
4. Residual sludge and water should be removed from the cistern, using a wet & dry vacuum cleaner, and disposed of in accordance with the cleaning plan. The cistern will then be rinsed with fresh water: **REF: ATCM Internal Stainless Steel Corrosion Statement APPENDIX 5**

Post Clean Disinfection

1. The cistern will be refilled with fresh make up water and isolated from the mains supply.
2. Dose the cistern with the disinfectant and ensure mixing by gradual blending with fill water or by agitating cistern contents with submersible pump. The disinfection of a water system inside a building is normally based on available free chlorine being dosed at 50 mg/L (ppm) for a minimum contact period of one hour, at the end of which the concentration should be not less than 30 mg/L (or 40% drop in concentration) free residual chlorine. >40% drop in residual disinfectant will require the disinfection process to be repeated.
3. The efficacy of chlorine as a disinfectant is pH-dependent, measure the pH after the addition of the disinfectant, pH values in excess of 7.6, require an increase in contact time. (See table 1).
4. pH levels above 8.5 should be discussed with project manager.
5. Confirm the required level of activity has been achieved using the quantitative drop test kit.

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6. The disinfecting solution will be drawn through to the water heater and subsequently to all outlets fed from the system.

7. Key outlets will be tested using the drop test kit to ensure the required concentration is reached.

8. All other outlets will be tested with a simple colour strip test showing the presence or absence of disinfectant.

9. If required, the cistern will be topped up with fresh water and sufficient disinfectant added to bring the concentration back up to target levels.

10. The system will then be left for the designated contact period (See table 1).

Table 1 - Contact times for pH value of 7.6 and above with 50ppm chlorine

Water pH Contact Time

Water PH	Minimum Contact Time
<7.6	1 hour
7.7	1 hour 15 minutes
7.85	1 hour 40 minutes
8.0	2.5 hours
8.45	5 hours

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11. Confirm satisfactory disinfection by retesting key outlets at the end of the contact period. To avoid having to start the process again concentrations should be checked during the contact period.

12. Isolate the cistern and add neutralising agent sodium thiosulphate. Confirm the absence of disinfectant in the cistern, then flush through to the water heaters.

13. Empty the cistern and fill with fresh water (to remove neutralised by-products). Re-dose @ 100ml /m3 as cisterns should be left with a residual free chlorine concentration of 0.5 mg/L.

14. Pull water through to all outlets measuring as required to ensure the level of disinfectant is between 0.5 mg/L and 0.1 mg/L free chlorine. The acceptable maximum residual free chlorine concentration of 2 mg/L should not occur in more than 1% of the distribution samples.

15. Ensure that all signage and outlet warning labels are removed and counted back in.

16. Ensure that all plant/ equipment/ cisterns are completely full and that the ball valves are functioning correctly. Ensure inlet valve has closed before leaving site.

17. Prior to leaving site the senior operative is required to walk the whole site and carry out an inspection of the premises checking for water leakage, air locks etc and clear site of all debris, signage, chemicals and cleaning agents, tools and equipment. Wherever possible this is to be done in the presence of a site representative.

18. Fill out Contract Maintenance Report and obtain site signature. Record all actions in site logbook.

19. Advise client / security of completion of work and departure from site.

20. Sign out at reception and return all keys, passes etc.

21. Note: In the unlikely event of a leak or damage to property we are required to offer every assistance to help to recover the situation.

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Completion of Works

1. Where internal condition of the cistern is such that refurbishment is required, this will be noted and reported to on the disinfection record. Photographs to be taken where useful.

2. Remove all isolation / tags from control switches.

3. Microbiological samples, if due, must be taken between two and seven days after the system is treated. Samples taken immediately after a disinfection process might give false negative results.

Table 1 Contact times for pH value of 7.6 and above

Water pH Contact Time

Water PH	Minimum Contact Time
<7.6	1 hour
7.7	1 hour 15 minutes
7.85	1 hour 40 minutes
8.0	2.5 hours
8.45	5 hours

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Appendix 3: Example Method Statement

Legionella Sampling and Temperature Monitoring at INSERT SITE

Samples are to be taken as per the sample plan but typically will include a selection of non-blended, non-mixed sentinel points in the hot and cold water systems, a selection of blended outlets and a sample from each bank of showers. Samples are to be post-flush for sentinels and pre-flush for blended outlets and showers. [EDIT AS APPLICABLE TO SAMPLE PLAN]

Legionella Sampling and Temperature Monitoring

Introduction

The prime objective is to obtain a sample which is representative of the water at the outlet or within the system for testing either onsite for temperature or offsite for laboratory legionella culture analysis.

Temperature monitoring at outlets should be taken at representative times and only with the flushing detailed for the hot and cold systems below.temperature monitoring of circulating pipes should be undertaken without opening local outlets as this may influence the results obtained.

Pre-flush legionella samples are the most representative of the risk to individuals from the outlet being tested and should be used where the system is under control and is the preferred sampling method from outlets supplied by TMVs or showers due to the difficulty in disinfecting these areas.

Post flush legionella samples are more representative of the water in the system rather than the individual outlet and are normally used when there is reason to suspect the system control or as a follow up to previously positive samples. Post flush samples must include disinfection of the outlet and removal of any inserts as below. Flushing without disinfection or removing inserts may result in counts that are problematic to interpret.

Care must be taken to avoid cross contamination and damage to bottles, as this may put any results obtained in question.

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The site is dosed with hydrogen peroxide and silver and suitable means must be used to neutralise the biocide for transportation to the laboratory. At higher doses, high dose bottles must be used. [DELETE AS APPLICABLE]

Pre-works Checks

1. Samples should be taken in 1 litre pre-sterilised disposable plastic containers containing sodium thiosulphate.
2. All bottles are provided by the laboratory. All bottles are exclusively for the purpose of sampling.
3. All bottles are fitted with a secure lid to prevent any spillage or contamination, and microbiological containers are sealed with a tamper proof lid. If the lid seal is broken the container should not be used as the sterility of the bottle becomes invalid.
4. Advise reception of arrival onsite, sign in if necessary and meet site contact.
5. Review written scheme of control and sampling plan and determine the tests required and the locations of the monitoring points. Sentinel points from the written scheme must be monitored for temperature every month and a representative number of other points should be monitored each month to give a representative picture of the building over the course of a year.
6.Carry out a site-specific task risk assessment and ensure appropriate control measures are in place before works commence.

COLLECTING A PRE-FLUSH SAMPLE (From a tap)

If a mixer tap is sampled the fitting should be set to the midpoint. If the outlet incorporates a TMV the outlet should be set to the normal use temperature.

1. Hold the bottle in one hand and remove the lid with the other.
2. Care must be taken not to touch the top of the bottle during removal or replacement of the cap.
3. The sample bottle should never be rinsed or emptied before filling, as this will remove any preservatives that may be contained.
4. Open the outlet and immediately fill the bottle from a gentle stream of water, leaving a small air gap. Do not let any water run to waste.
5. Do not change or alter the flow rate as the bottle is being filled. This may cause any debris to be dislodged from the system and contaminate the sample.

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6. Replace the lid immediately, secure and shake sample to ensure adequate mixing of the biocide neutralising agent. Allow the tap to keep running for the required amount of time, before inserting a thermometer into the flow of water. Make a note of the temperature on the Laboratory Analysis Request Sheet. Where thermostatic mixers have been fitted, the input temperature may need to be estimated by touching a contact thermometer to the hot water inlet and this recorded alongside the outlet temperature.
7. Samples for legionella analysis should be protected from heat and sunlight and kept at ambient temperature. Hot water samples should be kept apart from cold water samples in insulated containers to prevent warming of the cold samples.

COLLECTING A PRE-FLUSH SAMPLE (From a shower)

1. If necessary, to reduce exposure to aerosols at fixed shower heads, affix a new plastic bag around the fixed showerhead using an elastic band or Allen key in the rear grub screw of the head casting.
2. One corner of the plastic bag should be cut with scissors or pinched and torn. The scissors and hands may be disinfected between samples with a 70% v/v solution iso-propyl alcohol.
3. Hold the bottle in one hand and remove the lid with the other. Care must be taken not to touch the top of the bottle during removal or replacement of the cap.
4. The sample bottle should never be rinsed or emptied before filling, as this will remove any preservatives that may be contained.
5. Ensure that the outlet is set to the normal temperature setting. Open the outlet and immediately fill the bottle, leaving a small air gap. Do not let any water run to waste.
6. Do not change or alter the flow rate as the bottle is being filled. This may cause any debris to be dislodged from the system and contaminate the sample.
7. Replace the lid immediately, secure and shake sample to ensure adequate mixing of the biocide neutralising agent. If temperature monitoring is required, allow the shower to keep running for the required amount of time, before inserting the thermometer into the flow of water. Make a note of the temperature on the Laboratory Analysis Request Sheet. Where thermostatic mixers have been fitted, the input temperature may need to be estimated by touching a contact thermometer to the hot water inlet (if accessible) and this recorded alongside the outlet temperature.
8. Samples for legionella analysis should be protected from heat and sunlight and kept at ambient temperature. Hot water samples should be kept apart from cold water samples in insulated containers to prevent warming of the cold samples.

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COLLECTING A POST-FLUSH SAMPLE (From a tap or other outlet)

Where post-flush sampling is required, outlets should be disinfected before being sampled. The disinfection of taps with 70% v/v solution iso-propyl alcohol (This is an alcohol method - other disinfectants are available) should be carried out as follows: -

1. Examine the area and ensure that it is free from any obvious potential contaminates.
2. Allow the tap to run to clear standing water from the service pipe or line.
3. Remove any inserts, flow straighteners or filters from the tap outlet.
4. Using a spray bottle filled with 70% v/v solution iso-propyl alcohol, spray the outside of the tap and inject into the inside of the tap spout.
5.Leave the solution on the tap and allow to evaporate to ensure that there is no residual left on the outside of the tap. The tap should then be turned on and the water run to waste for a sufficient period of time to ensure that all the solution is removed from the inside of the tap before taking a sample.
6. Hold the bottle in one hand and remove the lid with the other.
7. Care must be taken not to touch the top of the bottle during removal or replacement of the cap.
8. The sample bottle should never be rinsed or emptied before filling, as this will remove any preservatives that may be contained.
9. Fill the bottle, leaving a small air gap, from a gentle stream of water.
10. Do not change or alter the flow rate as the bottle is being filled. This may cause any debris to be dislodged from the system and contaminate the sample.
11. Replace the lid immediately, secure and shake sample.
12. Allow the tap to keep running for the required amount of time, before inserting a thermometer into the flow of water. Make a note of the temperature on the Laboratory Analysis Request Sheet. Where thermostatic mixers have been fitted, the input temperature may need to be estimated by touching a contact thermometer to the hot water inlet and this recorded alongside the outlet temperature.
13. Replace and inserts removed at step 3.
14. Samples for legionella analysis should be protected from heat and sunlight and kept at ambient temperature. Hot water samples should be kept apart from cold water samples in insulated containers to prevent warming of the cold samples.

SAMPLE LABELLING / INFORMATION

1. All sample bottles must be adequately labelled with self-adhesive pre-printed company labels.

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2. The information provided on the label should clearly identify the sample as follows:-

- Date of Sampling
- Company Name
- Site Name or Code
- Specific Sample Location
- Time of Sampling
- Analysis Requirements (ie. Legionella)

3. All information on the label should be the same as that written on the Laboratory Analysis Request Form.

4. In addition to the above information, the Laboratory Analysis Request Sheet should have the following details recorded in the additional information field where applicable, in order to ensure that the laboratory process the sample as a matter of priority and to assist in the interpretation of results:

- The presence of any biocides not neutralised by sodium thiosulphate (non-oxidising)
- Temperature

5. Take a copy or a photograph of the Laboratory Analysis Request Form.

STORAGE & RETURNING SAMPLES TO LABORATORY

1. Legionella samples must be forwarded to the appropriate laboratory and processed preferably within 24 hours of sampling, not more than 48 hours following sampling.

2. Ensure that samples are protected from heat and direct sunlight and remain at ambient temperatures throughout transportation and when stored overnight. Use cool boxes if required.

3. NOTE - Samples must be returned to the designated Sample Reception Area whenever possible on the same day as sampling or overnight for collection and dispatch to the laboratory the following morning. Samples must be complete with correct labelling and Laboratory Request Forms. If sample delivery falls outside of normal office hours the samples must be deposited in the designated sample storage box for collection and processing immediately on the following day.

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TEMPERATURE MONITORING

1. Review water analysis records since last visit.

2. Before taking temperatures at outlets, locate the monitoring points for recirculating loop monitoring (principal loops monthly, subordinate loops quarterly) and record temperature as below:

a. If monitoring outlet water, ensure probe is in water stream as tap is turned on. Water should reach temperature very quickly within a few seconds and certainly no more than 30 seconds. Record temperature and make judgement on recirculation. If recirculation has failed report as noncompliance.
b. If monitoring at pipework, use a contact probe as above and record temperature.

Temperature should be above 50 degrees for all HWS circulation pipes at all times. If either flow or return is cooler than 50 degrees report as noncompliance.

3. Locate monitoring points for outlet temperature monitoring and record temperature as below:

a. Open hot tap with thermometer probe in flowing stream of water and observe temperature profile. Record temperature after one minute. If outlet takes most of the minute to reach temperature and is on a recirculating HWS system report as noncompliance due to failed circulation loop. If temperature is below 50 degrees after one minute; report as noncompliance.
b. Open cold tap with thermometer probe in flowing stream of water and observe temperature profile. Record temperature after two minutes. If temperature is above 20 degrees after two minutes; report as non-compliance.
c. If a cold outlet takes most of the two minutes to reach temperature and is above 20 degrees initially this information is useful for risk assessment and investigation purposes and reporting to the contact manager may be useful.

4. Locate calorifier/ plate heat exchanger/ direct fired water heater and identify flow and return pipework.

5. Using a contact probe take the temperature from the flow as close to the calorifier as possible and the return within 1m of the calorifier. Ensure heat from return pumps or the calorifier is not contributing to the return temperature.

6. Locate cold water storage cistern and access hatch.

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7. Empty top pockets of loose items; secure ID badges, glasses, etc so nothing can fall into the cistern.

8. Beware of fall hazard into open cold-water storage cisterns and from the sides of cold-water storage cisterns.

9. Insert thermometer probe into stored water remote from the ball valve, preferably as far from the ball valve as possible and record temperature.

10. Hold thermometer under outlet from ball valve and operate ball valve manually to obtain reading from flow of water. Record reading when temperature has stabilised.

11. Water from the inlet to the cistern and the water stored in a cistern should have no more than 2 degrees difference. More than 2 degrees is a non-compliance, and the recommendation should be to reassess the size of cistern required if supply is below 20 degrees. If supply is above 20 degrees; the recommendation should be to consider a biocide regime.

12. Complete any agreed follow up actions as agreed with customer.

13. Discuss program performance with site representative if available.

14. Provide written report.

15. Update water treatment site logbook as required.

16. Fill out report with record of the visit and obtain site signature. Record all actions in site Logbook diary section.

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Site Requirements:

It is the responsibility of the Customer to ensure the following:

1. Provide us with contact details of their on-site management staff as appropriate.

2. Unobstructed and unrestricted safe access is provided to the area of works for the duration of our time on-site including any access to ceiling voids, risers or plant areas.

3. Provide us with any key cards or lock combination codes required to access site.

4. Parking and off-loading facilities on site.

Note:

1. In the event of industry or site specifications less stringent than the above being requested, we will NOT work to a specification less than that given in this method statement.

2. Site or industry specifications in excess of that given in this method statement can be accommodated subject to prior agreement and specific inclusion in the quotation and contract.

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Appendix 4: Example Method Statement

Method Statement

Hot & Cold Water System Cleaning, Disinfection, Legionella Sampling and Temperature Monitoring

Scope of Works
Works shall be carried out in accordance with current Health and Safety Executive (HSE) guidance, Approved Codes of Practice (ACOP L8), HSG274 Part 2, BS 8558 and all applicable company procedures.

Site: [Insert Site]

Scope:

- Cleaning of cold-water storage cisterns (where applicable)
- Hot and cold water system disinfection
- Legionella sampling
- Temperature monitoring
- Reporting of findings and recommendations

1. Introduction

The purpose of these works is to ensure the hot and cold water systems are maintained in a hygienic condition through cleaning, disinfection, microbiological sampling and temperature monitoring.

Successful completion depends upon effective planning together with unrestricted and safe access to all plant rooms, water storage cisterns, calorifiers, outlets, ceiling voids and associated equipment.

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2. Pre-Work Requirements

Upon arrival:

1. Report to reception/site representative and sign in.
2. Obtain permission to commence work.
3. Review any site induction requirements.
4. Review the Written Scheme of Control, previous reports and sampling plan.
5. Discuss any new hazards or operational changes with the client.
6. Confirm foul drainage points for disposal of water.
7. Carry out a site-specific Risk Assessment and Dynamic Risk Assessment.
8. Wear appropriate PPE.
9. Install warning signs and barriers where required.
10. Ensure lifting aids are used where manual handling risks exist.
11. Confirm unrestricted access to all required plant and outlets.

3. Hot & Cold Water System Cleaning and Disinfection

3.1 Pre-Disinfection

Where the internal condition of the cold-water storage cistern presents a hygiene risk to operatives, a preliminary disinfection shall be undertaken before cleaning.

3.2 Cleaning Procedure

- Neutralise any existing disinfectant if necessary.
- Drain the cistern to the agreed foul drain.
- Fully operate float valve(s) to flush incoming mains supply.
- Mechanically clean all accessible internal surfaces without damaging protective coatings.
- Remove sludge and residual water using a wet vacuum.
- Dispose of waste in accordance with the cleaning plan.
- Rinse the cistern thoroughly with clean water: **REF: ATCM Internal Stainless Steel Corrosion Statement APPENDIX 5**

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3.3 System Disinfection

1. Refill the cistern with fresh water.
2. Isolate from the mains supply.
3. Dose disinfectant to achieve 50 mg/L free chlorine.
4. Mix thoroughly using fill water or submersible pump.
5. Measure pH.
6. Adjust contact time according to pH.

Water PH	Minimum Contact Time
<7.6	1 hour
7.7	1 hour 15 minutes
7.85	1 hour 40 minutes
8.0	2.5 hours
8.45	5 hours

7. Confirm chlorine concentration using a quantitative test kit.
8. Pull disinfected water through all hot and cold services.
9. Confirm disinfectant reaches key outlets.
10. Test remaining outlets using chlorine indicator strips.
11. Monitor residual chlorine throughout the contact period.
12. If chlorine residual falls below acceptable limits (>40% reduction), repeat the disinfection.
13. Neutralise disinfectant using sodium thiosulphate.
14. Flush system.
15. Refill with fresh water.
16. Dose to achieve a residual free chlorine concentration of approximately **0.5 mg/L.**
17. Flush all outlets until chlorine levels are between **0.1–0.5 mg/L.**

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3.4 Completion of Cleaning & Disinfection

- Remove all warning signage.
- Confirm cisterns are full.
- Confirm float valves operate correctly.
- Inspect for leaks, trapped air and defects.
- Remove all waste, equipment and chemicals.
- Complete service documentation.
- Update site logbook.
- Obtain client signature.
- Sign out.

Where cistern condition indicates refurbishment is required this shall be recorded and photographs taken where appropriate.

Where microbiological samples are required following disinfection, they should normally be collected **2–7 days after treatment.**

4. Legionella Sampling

Sampling shall be undertaken in accordance with the agreed Sampling Plan.

Typically, this includes:

- Sentinel hot outlets
- Sentinel cold outlets
- Representative blended outlets
- Shower outlets
- Additional locations specified within the Written Scheme

Pre-flush samples are normally used for TMVs and showers.

Post-flush samples are generally used where investigation of thesystem is required.

Sampling bottles shall be sterile, 1 litre capacity and contain sodium thiosulphate where appropriate.

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4.1 Pre-Flush Sampling

For taps:

1. Remove sterile bottle lid without contaminating bottle.
2. Open outlet.
3. Immediately collect sample.
4. Leave small air gap.
5. Replace cap immediately.
6. Shake bottle.
7. Continue flushing for temperature measurement where required.
8. Record temperature.

For showers:

1. Fit aerosol control bag where appropriate.
2. Set shower to normal operating temperature.
3. Collect sample immediately.
4. Cap and shake bottle.
5. Continue running for temperature measurement if required.

4.2 Post-Flush Sampling

Where specified:

1. Flush outlet.
2. Remove inserts or flow straighteners.
3. Disinfect outlet using 70% IPA.
4. Allow disinfectant to evaporate.
5. Flush outlet.
6. Collect sample.
7. Replace inserts.
8. Record temperature.

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4.3 Sample Labelling

Each sample shall be labelled with:

- Date
- Time
- Site
- Outlet identification
- Sample location
- Analysis required
- Company details

Laboratory request forms shall match bottle labels.

Record:

- Water temperature
- Presence of non-oxidising biocides where applicable.

Photograph or retain a copy of all submission paperwork.

4.4 Sample Storage

Samples shall:

- Be protected from sunlight.
- Be protected from excessive temperatures.
- Be transported to the laboratory as soon as practicable.
- Preferably arrive within 24 hours.
- Not exceed 48 hours from collection.

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Appendix 5. Temperature Monitoring

Temperature monitoring shall be completed in accordance with the Written Scheme.

Monitoring shall include:

- Hot water circulation loops
- Representative outlets
- Cold water storage cisterns
- Calorifiers/plate heat exchangers
- Cold water inlet temperatures

Acceptance Criteria

Hot Water

- Circulation flow and return >50°C
- Outlet reaches ≥50°C within one minute

Cold Water

- Outlet below 20°C within two minutes
- Stored water should not exceed supply temperature by more than 2°C

Any non-compliance shall be reported.

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Appendix 6: Completion of Works

Upon completion:

1. Remove all temporary signage.
2. Remove isolations where applicable.
3. Reinstate plant to normal operation.
4. Inspect work area.
5. Clear all waste.
6. Discuss findings with site representative.
7. Complete service report.
8. Update site logbook.
9. Obtain client signature.
10. Sign out

Where defects are identified these shall be recorded together with recommended remedial actions.

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Appendix 7: Customer Site Requirements

The Customer shall:

- Provide a suitable site contact.
- Provide unrestricted safe access to all work areas.
- Provide access cards, keys or codes.
- Provide suitable parking and unloading facilities.
- Identify suitable foul drainage locations.
- Notify of any site hazards or operational restrictions.

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Appendix 8: Notes

- Works shall not be undertaken to standards lower than those contained within this Method Statement.
- Additional client or industry requirements can be accommodated where agreed prior to commencement of works.
- In the event of leaks or accidental damage, all reasonable assistance will be provided to minimise disruption and restore service.
- Microbiological verification sampling following disinfection should normally be undertaken between **2 and 7 days** after treatment to avoid false negative results.