



Tamworth Borough Council

Management Plan for the Control of Legionella

Bacteria in Water Systems

Contents

Section	Page
Legionella Policy	
Introduction	
Legionella Management	
Legionella Risk Assessment	
Legionella Operational Procedures	
Appendices	

Legionella Policy

The policy of the Council is to provide and maintain safe working conditions, equipment and systems of work for all staff, residents, visitors and contractors, and to provide such resources, information, training and supervision as required for this purpose.

The Council will provide resource and maintain appropriate management systems, systems of work and equipment to ensure that legionella risks to all staff, visitors and contractors are controlled. Suitable information, instruction, training and supervision will be provided to all those involved in the control of legionella.

The council will adopt the principles of control set out in the HSC publication '*Legionnaires' disease: The control of legionella bacteria in water systems. Approved Code of Practice and guidance on regulations L8 (Fourth edition) HSE 2013*

The management of legionella risk will be a continual commitment by the organisation involving regular management and progress meetings, a risk assessment program, monitoring, inspection and record keeping.

The Head of Programmes and Facilities has been appointed by the Organisation as the Responsible Person (Legionella).

This policy is formally accepted by the organisation. The Council will do all that is reasonably practicable to comply with its requirements, and will make all necessary resources available.

Signed: _____

Chief Executive of Tamworth Borough Council

DATE:

1.0 Introduction

1.1 This Management and Procedures Manual has been prepared for Tamworth Borough Council and sets out a framework for ensuring water systems are installed, operated and maintained in a manner which both reduces the risk of a Legionellae outbreak and ensures an appropriate water quality. This Manual forms the first part of a four part framework which comprises the following elements:

i. Management Policy

Outlines the overall responsibilities of the organization, details responsibilities of individuals, and defines outline operational duties which must be implemented, defines record keeping requirements.

ii. Risk Assessment

Outlines the requirement to identify and assess the risk of Legionellosis from work activities and water sources within the council's estate and the identification of any remedial or precautionary measures that need to be undertaken.

iii. Operational Policy

Details the specific operational criteria that must be achieved for all systems identified in the Risk Assessment as being susceptible to colonising Legionella.

Details the specific maintenance criteria that must be achieved to minimise the risk as identified in the Risk Assessment.

Details of testing protocols, frequencies, record keeping etc.

1.2 The Council has both a moral and legal responsibility to ensure that the risk to employees, visitors and contractors etc. is reduced so far as is reasonably practicable. The staff detailed in this manual, are required to implement the procedures, works, etc. necessary to ensure the Councils obligations and statutory requirements are fulfilled.

Legionella Management Policy

Section 1 Contents

1.0	WHAT IS LEGIONNAIRES DISEASE?	6
2.0	LEGISLATION, STANDARDS, GUIDANCE AND CODES OF PRACTICE	8
3.0	ARRANGEMENTS FOR MANAGING LEGIONELLOSIS	11
4.0	LEGIONELLOSIS MANAGEMENT PLAN/ RISK MINIMISATION PLAN	17
5.0	RISK ASSESSMENTS	18
6.0	OPERATIONAL CONTROL MEASURES	19
7.0	MONITORING AND ROUTINE INSPECTION	21
8.0	RECORD KEEPING	22
9.0	TRAINING AND COMPETENCE	24
10.0	THE COURSE OF ACTION IF AN OUTBREAK OF LEGIONNAIRES DISEASE IS SUSPECTED	26
11.0	THE COURSE OF ACTION IN THE EVENT OF AN OUTBREAK	27
12.0	THE COURSE OF ACTION IN THE EVENT OF A LEGIONELLA POSITIVE TEST RESULT	29
13.0	SPECIFIC HEALTH AND SAFETY ISSUES	30

Section 1 Legionella Management Policy

1.0 What is Legionnaires Disease?

1.1 Background

Legionnaire's disease is a potentially fatal form of pneumonia which can affect anybody, but which principally affects those who are susceptible because of age, illness, immunosuppression, smoking etc. It is caused by the bacterium *Legionella pneumophila* and related bacteria. Legionella bacteria can also cause less serious illnesses which are not fatal or permanently debilitating e.g. Pontiac Fever and Lochgoilhead Fever.

Legionnaires Disease was first recognised in July 1976, when an outbreak occurred amongst delegates attending an American Legion Convention in Philadelphia. The cause eluded scientists for several months, but in January 1977 the Centre for Disease Control, Atlanta, reported the isolation of the causative agent, which they named Legionella Pneumophila.

1.2 Risk of Infection

On average there are approximately 200-250 reported cases of Legionnaire's disease each year in the UK. It is thought, however, that the total number of cases may be generally underestimated. About half of cases are associated with travel abroad. Infections which originate in the UK are often sporadic, for which no source of infection is often traced. However, clusters of cases also occur and outbreaks have been associated with cooling tower systems and hot and cold water systems in factories, hotels, hospitals and other establishments.

Mortality rates from confirmed cases are, on average 10 – 12%. Since 1980 there have been a number of major outbreaks of Legionnaires Disease in the UK.

1.3 Susceptibility of Individuals

While previously healthy people may develop Legionnaires Disease, there are a number of factors which increase susceptibility:

- increasing age, particularly above 50 years (children are rarely infected)
- sex: males are three times more likely to be infected than females
- existing respiratory disease which makes the lungs more vulnerable to infection or anything that may suppress the immune system
- smoking, particularly heavy cigarette smoking, because of the probability of impaired lung function

1.4 Reducing the Risk

As legionella bacteria are commonly encountered in environmental sources they may eventually colonise manufactured water systems and be found in cooling tower systems, hot and cold water systems and other plant which use or store water. To reduce the possibility of creating conditions in which risk from exposure from legionella bacteria is increased, it is important to control the risk by introducing measures which:

Section 1 Legionella Management Policy

- (a) Do not allow proliferation of the organisms in the water system; and
- (b) Reduce, so far as is reasonably practicable, exposure to water droplets and aerosol.

The risk of infection depends upon the ability of these organisms to multiply to significant levels, to be then dispersed into the air as an aerosol and to be inhaled in sufficient numbers by susceptible individuals.

By knowing the ideal conditions for the bacteria's growth and taking all reasonable precautions to avoid them we can reduce the risk of sufficient numbers of bacteria being present to cause a health hazard.

Although the bacterium is relatively easily killed it is important to avoid the conditions under which it likes to grow.

Most water systems can provide a potential habitat for the organism. The optimum temperature required is 37°C. At temperatures above 37°C the rate of multiplication of Legionella, in laboratory tests, decreases and at 46°C falls to zero. Bacteria will survive at higher temperatures but the survival time decreases from a matter of hours at 50°C to one of minutes at 60°C and practically zero at 70°C.

Below 37°C the multiplication rate decreases and can be considered insignificant below 20°C. The organism can remain dormant at much lower temperatures and return to active multiplication whenever more favourable temperatures occur.

It is this temperature dependence which gives us the main mechanism of prevention of Legionnaires Disease in hot and cold water systems. If we can keep the cold water cold (below 20°C) and the hot water hot (above 50°C) then the bacteria will either not be able to multiply or will be killed.

However, even with good day to day control of temperature or scale, corrosion and fouling, and the use of effective biocides, it is essential to clean and sterilise all parts of a water system on a regular basis. The recommended times between this process vary dependent upon the type of system, but the objectives remain the same. The essentials of control are to keep any water system as clean as possible.

Section 1 Legionella Management Policy

2.0 Legislation, Standards, Guidance and Codes of Practice

2.1 Introduction

The Legionnaires' disease Approved Code of Practice (ACOP) (L8) is aimed at dutyholders including employers, those in control of premises and those with health and safety responsibilities for others, to help them comply with their legal duties in relation to legionella. This Approved Code of Practice (ACOP) gives advice on the requirements of the Health and Safety at Work etc. Act 1974 (the HSW Act) 1 and the Control of substances hazardous to health (6th edition) (COSHH) and applies to the risk from exposure to legionella bacteria (the causative agent of legionellosis, including Legionnaires' disease). In particular it gives guidance on sections 2, 3, 4 and 6 of the HSW Act and regulations 6, 7, 8, 9 and 12 of COSHH. The Code also gives guidance on compliance with the relevant parts of the Management of Health and Safety at Work Regulations 1999 (the Management Regulations).

The revised version 4 of the ACoP and the Technical Guidance documents were published on the 25th November 2013. The previous version has now been withdrawn. The revision of L8 means that the document is now in two parts and gives a clearer distinction between legal requirements and guidance:

1. Legionnaires' disease: The control of legionella bacteria in water systems. Approved Code of Practice and guidance on regulations L8 (Fourth edition) HSE 2013
2. Technical Guidance HSG 274:
 - Part 1 - The Control of Legionella bacteria in evaporative cooling Systems
 - Part 2 - The control of Legionella bacteria in domestic hot and cold water systems
 - Part 3 - The control of Legionella bacteria in other risk systems
3. BS 8580 Water quality. Risk assessments for Legionella control. Code of Practice British Standards Institution

In addition to the ACOP a number of other sources of legislation, guidance, codes of practice, etc. are available and are listed below:

- Control of substances hazardous to health (6th edition). The Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Code of Practice and guidance L5 (Sixth edition) HSE 2013
- The Water Supply (Water Fittings) Regulations 1999
- "Safe" Hot Water and Surface Temperatures – Health Guidance Note 1998
- British Standard Specification BS 6700: 1997 for design, installation and maintenance of services supplying water for domestic use within buildings and their curtilages
- British Standard Specification BS 8558: 2015 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages
- Health and Safety Executive – Guidance Note EH48 Legionnaires Disease
- The Chartered Institution of Building Services Engineers TM13 2002 COP Minimising the Risk of Legionellosis

Section 1 Legionella Management Policy

The above documents provide a useful source of data for site staff to manage the control of Legionellosis and should be consulted whenever further information on the subject is required.

2.2 Required Standards at Tamworth Borough Council

Our policy is to follow the guidance in the ACoP (L8) as a means of complying with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended). Approved Code of Practice and guidance L5 (Sixth edition) HSE 2013.

Although failure to comply with any provision of the ACoP is not in itself an offence, that failure may be taken by a court in criminal proceedings as proof that a person has contravened the legal requirement to which the provision relates. In such cases, however, it will be open to that person to satisfy a court that he has complied with the requirements in some other way.

Therefore, in order to minimise the potential for an outbreak of Legionella and ensure appropriate water quality standards are maintained, **the responsible persons as detailed in Section shall implement all requirements of the ACoP and, where applicable, adopt the procedures and practices detailed in the supporting documents listed above.**

2.3 ACoP L8: The Key Requirements

The key requirements of the ACoP are listed below and a more detailed copy is included in the Operational Policy Document:

- Identify and assess sources of risk;
- Prepare a scheme for preventing or controlling the risk;
- Implement, manage and monitor precautions
- Keep records of the precautions
- Appoint a person to be managerially responsible

The Operational Policy Manual (Section 3 of this Manual) provides specific detail on the maintenance regimes that must be implemented on the systems on the council's estate.

2.4 Tamworth Borough Council Policy Statement

The policy of the Council is to provide and maintain safe working conditions, equipment and systems of work for all staff, visitors and contractors, and to provide such resources, information, training and supervision as required for this purpose.

The Council will provide resource and maintain appropriate management systems, systems of work and equipment to ensure that legionella risks to all staff, visitors and contractors are controlled. Suitable information, instruction, training and supervision will be provided to all those involved in the control of legionella.

Section 1 Legionella Management Policy

The council will adopt the principles of control set out in the HSE publication *'Legionnaires' disease: The control of legionella bacteria in water systems- Approved Code of Practice and Guidance (L8)*

The management of legionella risk will be a continual commitment by the organisation involving regular management and progress meetings, a risk assessment program, monitoring, inspection and record keeping.

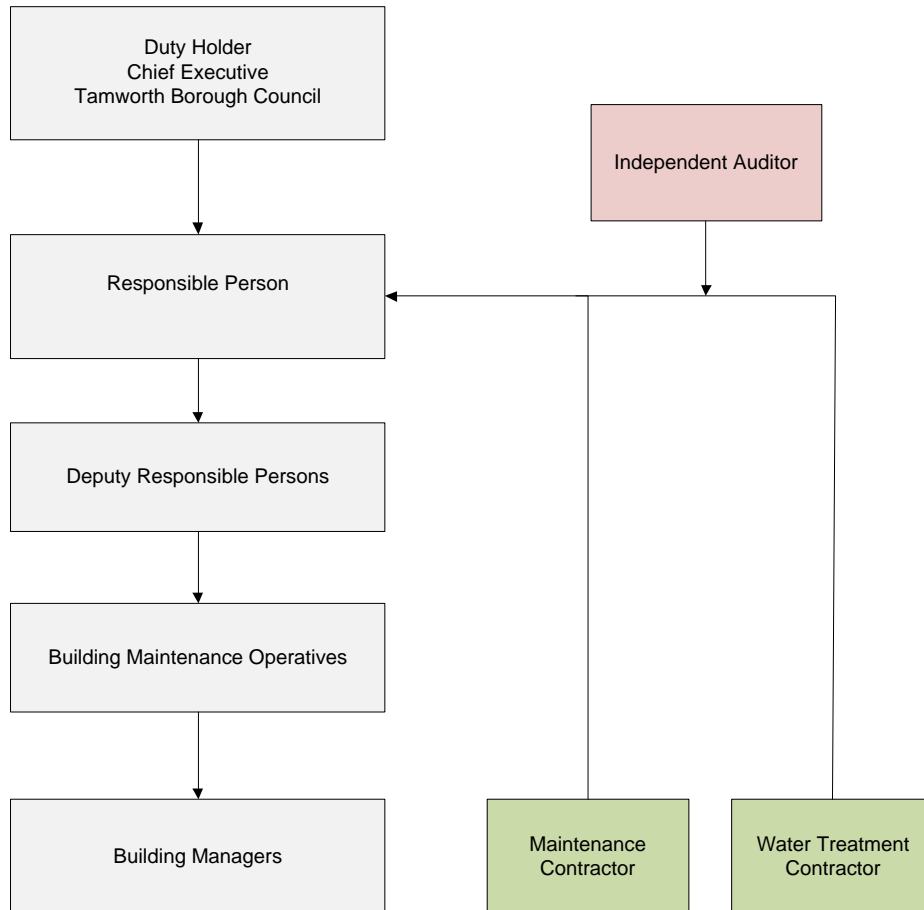
The Head of Programmes and Facilities has been appointed by the organisation as the Responsible Person (Legionella)

This policy is formally accepted by the organisation. The Council will do all that is reasonably practicable to comply with its requirements, and will make all necessary resources available.

Section 1 Legionella Management Policy

3.0 Arrangements for Managing Legionellosis

The following organisational structure diagram summarises the Councils arrangements for managing legionella.



Section 1 Legionella Management Policy

3.1 Specific Duties and Responsibilities

The ACoP identifies two distinct roles, each having specific responsibilities for the management of legionella bacteria, namely

- (a) The Duty Holder
- (b) The Responsible Person

3.1.1 The Duty Holder: Chief Executive –

The duty holder must appoint in writing a responsible person to take managerial responsibility for controlling legionella in Council premises and must ensure that the Council meets its statutory obligations. The Chief Executive is ultimately responsible for Health and Safety and the safe operation of the water systems within the council premises.

3.1.2 The Responsible Person: Head of Programmes and Facilities

The responsible person shall accept managerial responsibility for the control of legionella bacteria within all council premises. They will be responsible for the implementation and management of the Legionella Control Plan and all the procedures for control as set out in this policy and operational manual.

The Responsible Persons duties include but are not limited to the following

- Act as a focal point for all Legionellae / Legionellosis related issues within Council.
- Arranging for all premises to be risk assessed by a competent specialist water treatment contractor, no less frequently than bi-annually, in sufficient detail so as to identify and assess the risk of Legionella.
- Arranging for a competent specialist water treatment contractor to undertake inspection and monitoring regime to meet the requirements of the risk assessment and statutory legislation.
- Maintain Council's Legionellae Written Scheme (Management Plan).
- Ensuring up to date schematic drawings / diagrams of the hot and cold water systems are prepared, updated and made available to Maintenance Contractors, Building Maintenance Operatives and Building Managers as necessary.
- Providing an asset register of all associated plant, pumps etc. to Maintenance Contractors, Building Maintenance and Building Managers (or equivalent) as necessary.
- Providing adequate information to the Building Managers/users/Building Maintenance etc. on any risks and measures necessary to ensure that water systems will be safe and without risks to health.
- Ensuring hot and cold water systems are designed and constructed in compliance with relevant water regulations.

Section 1 Legionella Management Policy

- Notifying the Building Maintenance Supervisor, Contracts Manager and the Health & Safety Advisor of any cooling towers and evaporative condensers.
- Develop and implement action plans in relation to identified or potential Legionellae presence.
- Assess Safe Systems of Work / Method Statements and / or Permit to Work systems in relation to any work where there is a risk of Legionellosis.
- Convene meetings of relevant personnel and groups prior to and, where necessary during any work with the potential for a release of Legionnellae, to ensure appropriate procedures and safe systems of work are being applied.
- Liaise with other relevant agencies and personnel, including surveyors, analysts, HSENI, EMAS, Occupational Health / Hygiene professionals, project managers, and emergency services, as appropriate.
- Coordinate any significant Legionellae related works including, so far is as reasonably practicable, compliance monitoring.
- Ensure that relevant employees and / or contractors are provided with appropriate information, including the results of site-specific risk assessments as applicable.
- Ensure that, in the event of a serious Legionellosis related incident, the appropriate senior managers and the HSENI are informed as soon as possible.
- Being accountable to the Chief Executive and the Director Environmental Services for the effective management of Legionellae within Council.

The Assets Department are responsible for the selection of suitable systems. The design, maintenance and operation of the system is crucial to controlling the risk from Legionella bacteria and employees should avoid procuring systems that give rise to a reasonably foreseeable risk of Legionellosis. Competent advice should be sought from sources such as manufactures, suppliers, British Standards and / or their European / International equivalents where necessary.

3.1.3 Deputy Responsible Persons:

The Deputy Responsible Person will, in the absence of the Responsible Person, assume the role of 'Acting Responsible Person'. They will also be responsible for assisting in the implementation, management and operation of the Legionella Control Plan and all the procedures for control as set out in this policy and operation manual. They may also be delegated specific responsibilities as directed by the Responsible Person.

Section 1 Legionella Management Policy

3.1.4 Building Managers

Those Building Managers who are responsible for the day-to-day management of the risk from Legionella bacteria on-site must:

- Allow reasonable access to enable the risk assessment and any remedial works to take place.
- Ensure that no repair, maintenance or alteration work takes place on hot and cold water systems within the building(s) they are responsible for without notifying Facilities Management Department of the planned changes so an assessment can be made as to the potential water hygiene impact on the system.
- Appoint and identify any individuals(s) who will be responsible for completing the routine water hygiene tasks and checks on the premises, i.e. weekly flushing tasks
- Regular maintenance of showers and water systems (with direction from Building Maintenance and following the recommendations of the assessment carried out by the Maintenance Contractor as appropriate), this may include:
 - a. Flushing / running showers for a set time at the hottest setting at least once a week;
 - b. Flushing / running little used taps, WCs and water sources weekly;
 - c. Instigating suitable closedown and reopening procedures where a facility or part thereof, is to be removed from use for any period of time greater than seven consecutive days.
- Facilitating Building Maintenance as necessary.
- Facilitating Maintenance Contractors as necessary.
- Recording such flushing procedures in log sheets and managing / monitoring maintenance records contained within the log book such as regular maintenance, Chlorination records and remedial works.
- Reporting any concerns to Responsible Person (the Responsible Person), such as inappropriate temperatures, in a timely and appropriate manner.
- Ensuring that problems or concerns are followed up with the Responsible Person, in a timely and appropriate manner.

Section 1 Legionella Management Policy

- Ensure that they are aware of the work being undertaken by the contractors and maintenance staff, the risks being introduced and how the work may affect the working environment;
- Maintaining a Contractors Log for their department.
- Report any damage, deterioration or changes in the use of the building, use of the water systems and / or air conditioning plant within their area of operational responsibility to the Responsible Person.
- Ensure that they inform the contractors and maintenance staff of all relevant emergency procedures within their department / area as appropriate.
- Account for contractors and maintenance staff working within their department in the event of an emergency.
- Ensuring only modifications, approved and authorised by the Responsible Person, are made to any system that utilises hot or cold water.

Each building will have its own Legionella Survey / Risk Assessment and particular recommendations, which must strictly be implemented and followed. Facility / Building Managers should seek advice from the Head of Facilities Management and the Responsible Person. Facility / Building Managers should also seek advice where there is a concern that exposure to Legionella might present a risk to health.

3.1.5 Water treatment contractor

The Water Treatment Contractor, were employed, will be responsible for undertaking any of the legionella control tasks/procedures as delegated to by the Responsible Person. These responsibilities will be defined in writing in the contract documentation. Any deviation from the initial contract documents shall be mutually agreed and documented as part of the contract review process. It is the council's policy that a specialist water treatment contractor will undertake the following tasks as identified in the Risk Assessment and Operational Policy & Procedure Manual

The appointed specialist water management contractor is responsible for carrying out control schemes measures as directed by the tender specification. A detailed list of the current contractors responsibilities are provided in Appendix A. The duties may include, but are not be limited to:

- Carrying out Legionella Surveys and Risk Assessments.
- Provide a log to record details of all monitoring, inspections and remedial work undertaken.
- Monitoring and inspecting all accessible parts of systems for damage or contamination.
- Disinfecting systems and ensuring treatment regimes are appropriate.

Section 1 Legionella Management Policy

- Legionella Sampling.
- Recording all such inspections, assessments and maintenance regimes and providing any necessary documentation to enable responsible persons to update log books accordingly.
- Advising Responsible Person and / or Facilities Managers of the outcome of inspections and areas of concern in a timely fashion so that recommended preventative work can be implemented to maintain appropriate standards.
- Providing Legionella Awareness training to Tamworth Borough Council staff as appropriate.
- Advising Tamworth Borough Council as to the adequacy of its legionella management plan and control procedures
- All work carried out by the contractor must be carried out in accordance with relevant legislation and industry best practice.
- All contractors must comply with the Councils policy on the control of the contractors.

3.1.6 Independent Auditor

An independent Auditor, external to the Council is responsible for auditing the building water systems operation and control and providing independent advice from time to time, as necessary

3.2. Appointments for the Management of Legionellosis

- 3.2.1** The Duty Holder is the Council Chief Executive.
- 3.2.2** The Responsible Person (Legionella) shall be The Head of Programmes and Facilities
- 3.2.3** The Deputy Responsible Persons (Legionella) will be the Assistant Director Property Services and the Compliance Manager
- 3.2.4** The appointments of the Responsible Persons (Legionella) and the Deputy Responsible Persons (Legionella) shall be confirmed in writing by the Duty Holder, a copy of which is held in Appendix B.
- 3.2.5** The details of the current Water Treatment Contractor shall be held in Appendix B.

Section 1 Legionella Management Policy

4.0 Legionellosis Management Plan/ Risk Minimisation Plan

4.1 The Responsible Person and Asset Management Department will be responsible for the implementation and arrangement of the written management plan for the control of legionella bacteria in council properties in accordance with this Policy and Procedure Manual and the HSE ACoP L8, COSHH regulations and all other statutory and advisory provisions afore mentioned. The Legionellosis Management Plan/ Risk Minimisation Plan will take the form of a Legionella Action Plan and will encompass the following key elements

- Risk Assessment
- Risk Control Measures
- Routine Monitoring
- Record Keeping
- Review

4.2 The Legionella Management Plan/Risk Minimisation Plan and arrangements will be reviewed annually on a formal basis by the Responsible Person. This annual legionellosis risk management audit will be undertaken in order to ascertain the effectiveness of the broad management arrangements. The methodology for audit may vary from year-to-year in order to ensure a fresh outlook on each occasion. The audit report will include recommendations for improvement and forms part of the legionellosis risk management system. A quarterly audit of site log books will also be undertaken.

Section 1 Legionella Management Policy

5.0 Risk Assessments

(See section 2 of this Policy and Procedures Manual)

5.1 A suitable and sufficient assessment is required to identify and assess the risk of exposure to Legionella Bacteria from work activities and the water systems on the premises and any necessary precautionary measures. The assessment should include identification and evaluation of potential sources of risk and:

- The particular means by which exposure to legionella is to be prevented; or
- If prevention is not reasonable practicable, the particular means by which the risk from exposure to legionella bacteria is controlled.

5.2 Prior to the conduct of on-site risk assessments, a risk screen will be performed in order to prioritise the water systems for detailed risk assessment, in order that the potentially highest risk building are assessed first.

Where the assessment demonstrates that there is no reasonably foreseeable risk or that risks are insignificant and unlikely to increase, no further assessments or measures are necessary. All risk assessments should be reviewed annually.

5.3 The risk assessment shall form the basis of the Legionella Management/ Risk Minimisation Scheme describing the particular means by which the risk from exposure to Legionella bacteria is to be controlled. The remedial actions within the Legionella Management Plan/ Risk Minimisation Scheme shall be reasonably practicable and prioritised on the basis of risk, cost and difficulty.

Section 1 Legionella Management Policy

6.0 Operational Control Measures

(See section 3 of this Policy and Procedures Manual)

6.1 Where the risk assessment shows that there is a reasonable foreseeable risk and this cannot be totally eliminated, there should be a written scheme for controlling the risk from exposure. This scheme should specify measures to be taken to ensure that it remains effective and should include:

- An up-to-date plan showing layout of the plant or system, including any part temporarily out of use;
- A description of the correct and safe operation of the system;
- The precautions to be taken;
- Checks to be carried out to ensure efficacy of the scheme and the frequency of such checks;
- Remedial action to be taken in the event that the scheme is shown not to be effective.

6.2 General Statement of Control

There are many ways in which exposure to legionella bacteria can be controlled and the complexity of controls will vary depending on the risks posed by any one system. The risk from exposure will normally be controlled by measures, which do not allow the proliferation of legionella bacteria in the system and reduce exposure to water droplets and aerosol. Control measures will generally include the following precautions where appropriate:

- Controlling the release of water spray;
- Avoidance of water with temperatures between 20°C and 45°C;
- Avoiding water stagnation, which may encourage the growth of bio film;
- Avoiding the possibility of materials which provide a harbour for nutrients which encourages the multiplication of bacteria e.g. dead animals, wood etc., which can fall into open water tanks;
- Avoid use of materials in systems that can harbour or provide nutrients for bacteria and other organisms;
- Keeping systems clean to avoid the build-up of sediments which may harbour bacteria
- The use of suitable and safe water treatment programmes;
- Effective monitoring and management systems, which ensure correct and safe operation together with effective maintenance of the water system.

6.3 Any written scheme, which includes the use of chemicals, must contain manufactures details on the effectiveness, the required concentrations and contact time required for effective treatment. They should also contain the health and safety information for the storage, handling, use and disposal of the chemical.

6.4 The cleaning and disinfection procedures should be clearly stated. Where monitoring procedures are required the scheme must clearly state the required frequency, sampling locations and procedures to ensure consistency. It must make clear the acceptable physical and chemical parameters together with allowable tolerances. There must also be guidance on the remedial action to be taken in case

Section 1 Legionella Management Policy

the control limits are exceed, including lines of communication, which should include all appropriate appointed persons.

- 6.5** It is essential that the risks are adequately controlled therefore written schemes must state what arrangements have been made to ensure they are properly implemented and managed. Anyone who is responsible for managing the scheme or undertaking monitoring of the control measures needs to be identified in the written scheme by name. All written schemes must also contain a Normal Operating Procedure together with an Emergency Action Plan. The primary objective should be to avoid conditions, which permit Legionella Bacteria to proliferate and to avoid creating a spray or aerosol.

Section 1 Legionella Management Policy

7.0 Monitoring and routine inspection

7.1 Where there is a significant risk there is a need to ensure that the control measures remain effective. This should be the duty of the responsible person or where appropriate, a Council appointed external contractor and should involve:

- Checking the performance of the system and it's component parts:
- Inspecting the accessible parts of the system for damage and signs of contamination; and
- Monitoring to ensure that the treatment regime continues to control to the required standard

7.2 The frequency and extent of the routine monitoring will depend on the operating characteristics of the system and shall be set out in the site specific risk assessment (see Appendix C).

Section 1 Legionella Management Policy

8.0 Record Keeping

(See section 3 of this Policy and Procedure Manual)

8.1 Records of risk assessments and surveys of water systems carried out in accordance with the Approved Code of Practice will be documented. The resulting information is to be held by on an Electronic Web Based Log Book.

8.2 Electronic web based legionella log book

8.2.1 The council will use a Web Based Electronic Logbook System to hold all records pertaining to the control and management of legionella relating to the tasks undertaken by the Water Treatment Contractor. The system will be specified by the Property Services Section. It will be the responsibility of the council to act upon any non conformances reported and to appoint a competent person to undertake all necessary remedial action to mitigate the risk of exposure to legionella bacteria.

8.2.2 The system should fully integrate the key stages of the Legionella management process into one user friendly and secure web page. The system must be able to provide the following information as a minimum electronically and with a delay from site to web page of less than one hour; using GPRS enabled PDA hand held technology. Each water system asset will be allocated a unique Asset Identification Number, in the form of a barcode or similar.

8.2.3 The system must include demonstrable, robust security (minimum 1024Bit SSL Certificate) to protect any and all data relevant to the Contract Administrator and the council such as property names, addresses, contact details and information recorded, during the contact period and beyond. The system must fully comply with the Data Protection Act 1998.

8.2.4 Access to the Electronic Web Based System will be via a secure and unique user name and password. The key personnel involved in the management of the control scheme will have full editable access to the system while other users such as Building Managers will have a read only facility.

8.3 Water Hygiene Logbook (Held on each site where practically possible)

8.3.1 A hard copy log book will be held on each site and will hold the following information;

- A log to be signed by all contractors carrying out work on the buildings water systems and a description of their work.
- A register for weekly flushing of infrequently used outlets. This will also include a procedure detailing how and why outlets should be flushed.

(See Appendix I for an example log book).

Section 1 Legionella Management Policy

8.3.2 To ensure that precautions continue to be carried out and that adequate information is available, 'current' records will be required to be kept for at least two years after that period. All records should be signed by those performing the various tasks assigned to them. These records shall be retained for five years.

8.4 Information for Employees

All staff involved in the operation of the Legionellosis Management must be given information to ensure they are aware of the risks associated with the water and other risk systems within the council estate. They should have access to the written scheme, all monitoring records and risk assessments. Poor communication has been indicated in previous outbreaks as a contributory factor, therefore all lines of communication should be clear, unambiguous and audited regularly to ensure they are and remain effective.

Section 1 Legionella Management Policy

9.0 Training and Competence

9.1 Only competent persons will be authorised to carry out legionella management and control works. A person shall be deemed competent to carry out the appropriate operation only if they have satisfactorily completed a Council approved course on Legionella control, as well as having other appropriate qualifications, sufficient knowledge and experience relevant to the Legionella control, testing or management operations that they propose to undertake.

9.2 Council Employees

All council employees involved in the control of legionella will be given suitable and sufficient training to enable them to competently carry out all tasks that they are responsible for. The Responsible Person will identify all employees training requirements and co-ordinate the delivery of that training. Typically legionella training will be required as follows

1. Responsible/ Deputy Responsible Persons

City & Guilds Management of Legionella Bacteria BS0004 or equivalent/similar

2. Building Managers/ Maintenance Operatives

Legionella Awareness Training, City & Guilds BS0006 or equivalent/similar

9.3 Water Treatment Contractor

Contractors appointed to undertake legionella control operations will be required to conform in full with the requirements of this Policy and Procedure Manual. Additionally contractors shall comply with the following

- Hold current membership of the 'Legionella Control Association' (LCA) as set up jointly by the Health and Safety Executive (HSE) and Water Management Society (WMS). Contractors must comply with in full the LCA ' Code of Conduct for Service Providers'
- All contractor employees undertaking Legionella control operations shall hold the relevant City and Guilds/ Water Management Society accredited qualifications. In exceptional cases, employees who have undertaken alternative training courses and are able to demonstrate competency to the satisfaction of the Responsible Person may be permitted to undertake Legionella control operations.

Section 1 Legionella Management Policy

9.4 Water Analysis Services

Water samples taken for analysis as part of the legionella control program should be submitted only to laboratories that are UKAS accredited for the analysis suites in question. A copy of the laboratories relevant UKAS accreditation certificate/s must be submitted to the Responsible Person for approval prior to any analysis being undertaken.

Section 1 Legionella Management Policy

10.0 The Course of Action if an Outbreak of Legionnaires Disease is suspected

- 11.1** The nominated responsible person will be informed of a suspected case of Legionnaires 'disease. If a case is suspected then the Health and Safety Advisor and Head of Facilities Management will normally work in association with the Public Health Laboratory Service and the local CCDC to search for the source of the causative organism. It is essential that systems are not drained or disinfected before samples have been taken. The Facilities Management Departments role is an important one – identifying the various water systems within the building and, in particular, to the points from which samples can be taken. Easy access to these sampling points is essential.
- 10.2** An investigating team will be established under the guidance of the Duty Holder, this will normally comprise of the staff listed in Appendix D
- 10.3** The investigation will concentrate upon all potential sources of Legionella infection, including:
- the domestic hot and cold water distribution system
 - showers or spray washing equipment
 - drainage system and traps
 - humidifiers in ventilation systems
 - cooling coils in air-conditioning systems
 - any other water based system
- 10.4** To assist in such investigations, the Building Manager must be able to provide details of all associated equipment, including all documentation. He must assist by advising the investigating team on the extent of servicing on the site, and by locating taps and sample points.
- 10.5** Information will also be required, such as whether there have been any local excavation or earthmoving works, alterations to water supply systems or drainage systems or any other factors which may have a bearing on the site.
- 10.6** The team is responsible for identifying the cause of infection, and will advise on cleaning, disinfection, any modifications, and long-term control measures.

Section 1 Legionella Management Policy

11.0 The Course of Action in the Event of an Outbreak

- 11.1** Legionnaires Disease is notifiable under public health legislation in the UK
- 11.2** An outbreak is defined by the Public Health Laboratory Service (PHLS) as two or more confirmed cases of Legionellosis occurring in the same locality within a 6 month period. Location is defined in terms of geographical proximity of the cases and requires a degree of judgement. It is the responsibility of the Proper Officer for the declaration of an outbreak. The Proper Officer is appointed by the local authority under public health legislation and is usually a Consultant in Communicable Disease Control (CCDC).
- 11.3** Local authorities will have established incident plans to investigate major outbreaks of infectious disease including Legionellosis. These are activated by the Proper Officer who invokes an Outbreak Committee, whose primary purpose is to protect public health and prevent further infection. This will normally be set up to manage the incident and will involve representatives of all the agencies involved. HSE or the local authority EHO may be involved in the investigation of outbreaks, their aim being to pursue compliance with health and safety legislation.
- 11.4** The local authority, or EHO acting on their behalf (often with the relevant officer from the enforcing authorities – either HSE or the local authority) will make a site visit.
- 11.5** As part of the outbreak investigation and control, the following requests and recommendations may be made by the enforcing authority:
- (a) To shut down any processes which are capable of generating and disseminating airborne water droplets and keep them shut down until sampling procedures and any remedial cleaning or other works has been done. Final clearance to restart the system may be required.
 - (b) To take water samples from the system before any emergency disinfection being undertaken. This will help the investigation of the cause of the illness. The investigating officers from the local authorities may take samples or require them to be taken.
 - (c) To provide staff health records to discern whether there are any further undiagnosed cases of illness and to help prepare case histories of the people affected.
 - (d) To co-operate fully in an investigation of any plant that may be suspected of being involved in the cause of the outbreak. This may involve for example
 - a. Tracing of all pipe work runs
 - b. Detailed scrutiny of all operational records
 - c. Statements from plant operatives and managers
 - d. Statements from water treatment contractors or consultants

Section 1 Legionella Management Policy

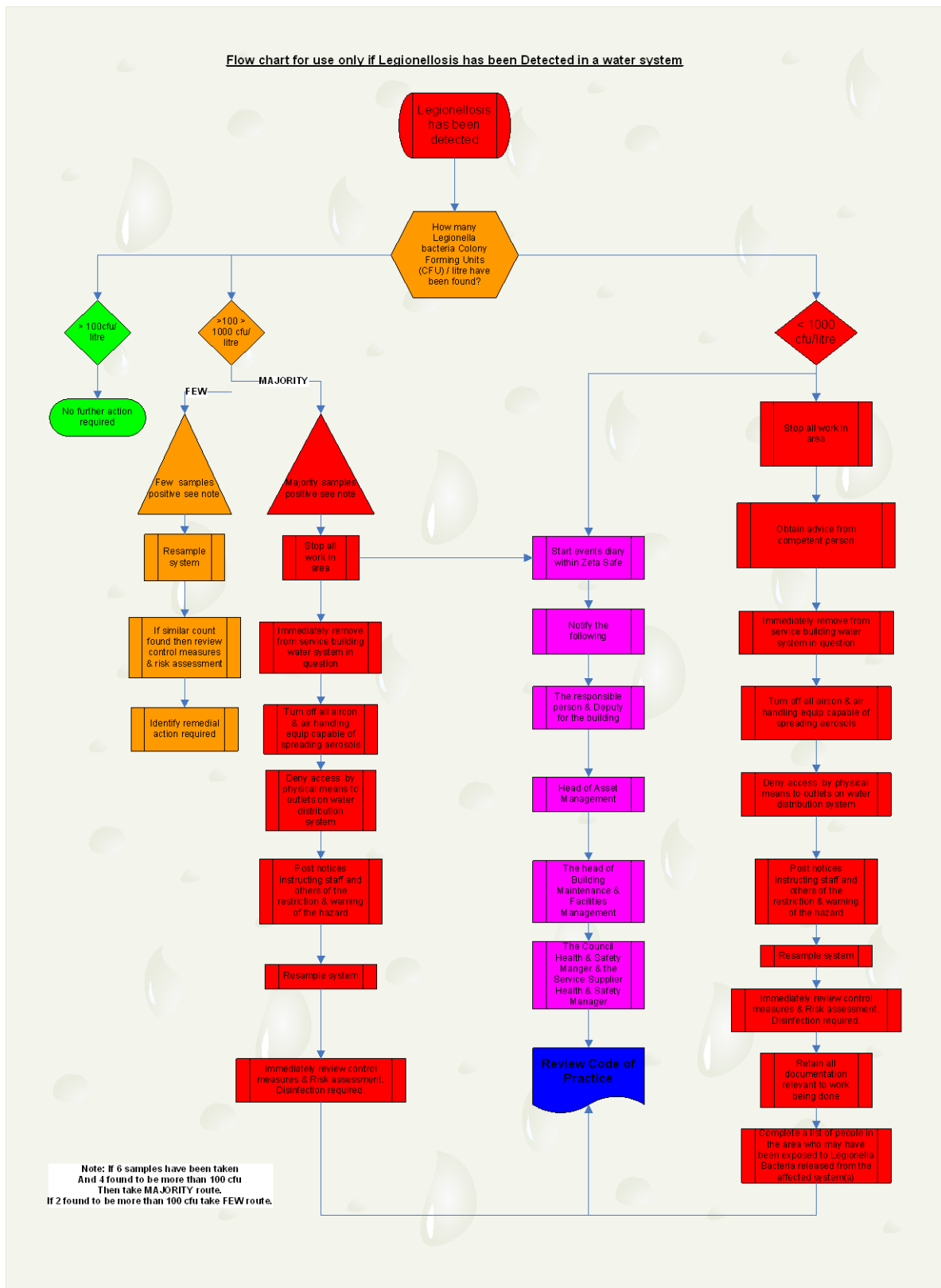
- 11.6** Any infringements of relevant legislation may be suspect to a formal investigation by the appropriate enforcing authority.

- 11.7** If a water system other is implicated in an outbreak of Legionnaire's Disease, emergency treatment of that system should be carried out as soon as possible.

Section 1 Legionella Management Policy

12.0 The Course of Action in the Event of a Legionella Positive Test Result

12.1 Summary of procedures for Action to be undertaken following the confirmation of a legionella positive test result.



Section 1 Legionella Management Policy

13.0 Specific Health and Safety Issues

13.1 Work in Confined Spaces

If plant is located in confined spaces, reference on entry into confined spaces can be sought from Safe Work in Confined Spaces Approved Code of Practice, Regulations and Guidance [L101]. A Confined Spaces Risk Assessment should be completed and returned to the Responsible Person prior to any work commencing.

13.2 Water Treatment

Because water treatment chemicals, including chlorine-containing chemicals and solutions, are often toxic or corrosive they should be used cautiously to ensure that they do not endanger the users or other occupants of the building. Caustic resistant gauntlet type gloves will be required. Water treatment should be carried out by, or under the direction of, people who are suitably qualified and experienced.

13.3 COSHH

The use of water treatment chemicals should be subject to a COSHH assessment and permission would be required from the water authority prior to any discharge to sewers, storm water drains and watercourses. The Local Water Authority should be contacted prior to direct discharge to water courses.

13.4 Scalding

With regards to scalding risk the council will ensure that all that is reasonably practicable will be done to follow the requirements for the protection of hot water system users.

13.5 Contaminated Aerosols

13.5.1 The disinfection procedures presented for cold water storage tanks, domestic hot water vessels and water systems are designed to minimise the risk to staff and others that may come into contact with water which may have been contaminated with *Legionella sp.* In all instances of draining, water should be drained in such a way as to avoid the creation of an aerosol. This also applies for the safe purging of stagnant water e.g. from unused outlets.

13.5.2 The appropriate protective clothing should be worn during such procedures. This can be a powered filter and hood, European Class TH3 [assigned protection factor of 40] or a power assisted filter and close fitting full face mask TM3 [assigned protection factor 40]. It should be borne in mind that the filter on these systems is liable to get wet and subsequent resistance to air can increase with consequent discomfort to the operator.

13.5.3 Where possible, cleaning methods which create an aerosol [e.g. high pressure water jets] should be avoided. If this is not possible, the operation should be executed when the building is unoccupied, or in the case of permanently occupied building, windows in the vicinity should be closed and air inlets temporarily blanked off. As systems requiring cleaning will have high organic load the operator and others closely involved should wear suitable respiratory protective equipment.

Risk Assessment Policy and Procedures

Section 2 Contents

1.0	INTRODUCTION	33
2.0	PERSONS AT RISK	33
3.0	BUILDINGS AND SYSTEMS AT RISK	34
4.0	REVIEW OF RISK ASSESSMENT	35
5.0	RISK ASSESSMENT	36

1.0 Introduction

Identification and assessment of the risk

A suitable and sufficient assessment is required to identify and assess the risk of exposure to legionella bacteria from work activities and water systems and any necessary precautionary measures on all Tamworth Borough Council premises. The council will comply with its requirements under the Control of Substances Hazardous to Health Regulations 1999, Regulation 6 Management of Health and Safety at Work Regulations 1999, Regulation 3 Health and Safety at Work Act 1974, Sections 2, 3 in undertaking a Legionella/ Water Hygiene Risk Assessment at all premises within the councils estate.

The risk assessment will form the basis of the Legionella Management Plan/ Risk Minimization Scheme, as set out in section 1 of this Policy and Procedure Manual.

2.0 Persons at Risk

The Council have identified that all building users, including employees, residents, contractors, visitors and the general public are at risk from the potential exposure to legionella bacteria. However, the council recognizes that due to the nature of legionellosis certain individuals may be at greater risk, these include;

- Smokers/ drinkers
- Individuals with existing respiratory conditions
- Males over the age of 50yrs
- Immune-suppressed individuals e.g. the aged or the young

The council will identify any specific groups of building users at significant risk or susceptibility and will fully inform the individual/s undertaking the risk assessment.

3.0 Buildings and Systems at Risk

It is generally considered that all buildings that contain a water system of any description are at risk from the potential proliferation of legionella bacteria which may result in the potential exposure to building users.

The following types of water systems are considered to present a reasonably foreseeable risk of causing an exposure to legionella bacteria and should be prioritised for assessment as part of the Legionella Management Plan/Risk Minimisation Scheme;

- Water systems incorporating a cooling tower
- Water systems incorporating an evaporative condenser
- Hot and cold water systems
- Other plant and systems containing water that is likely to exceed 20°C but not 60°C, and which may release a spray or aerosol during operation or when being maintained.

Risk Categorisation

For the purpose of risk prioritisation and management, Council buildings and plant are considered to fall into five categories, these are

Class A: Buildings with cooling towers

Class B: Complex buildings with spray outlets/showers

Class C: Simple buildings with spray outlets/showers

Class D: Simple buildings with spray outlets

Class E: Mains fed buildings with point of use water heaters

4.0 Review of Risk Assessment

- 4.1 It is the council's policy that all risk assessments are reviewed annually by a competent person. The purpose of this review is to assess the effectiveness of the control scheme, its management and to identify any changes to the water systems or the building use.

Additionally the risk assessments shall be reviewed in the following circumstances, where there are

- changes to the water system or its use;
- changes to the use of the building in which the water system is installed;
- the availability of new information about risks or control measures;
- the results of checks indicating that control measures are no longer effective;
- a case of Legionnaires' disease/legionellosis is associated with the system.

4.2 High Risk Buildings and Systems

Buildings that are identified and categorised as High Risk (Class A and B) will undergo a desktop risk assessment review, every 3 months and undertaken by the Responsible Person. This will involve an audit of all records held including the on site hard copy logbook and the electronic web based system.

4.3 Independent Auditor

The Council will employ the services of an Independent Auditor to audit and assess the effectiveness of the Risk Minimisation Scheme, including the risk assessments, internal audit procedures, and record keeping. The auditor will be employed on an annual basis or at the discretion of the Responsible Person.

5.0 Risk Assessment

Competency

Risk Assessments will only be undertaken by individuals who are suitably and sufficiently trained, qualified and competent. It is the council's policy that a specialist Water Treatment Contractor is employed to undertake these risk assessments.

The Responsible Person (Legionella) should assess the competency of any contractor or individual prior to any legionella works being undertaken in accordance with section 1 of this Policy and Procedure Manual.

5.2 Carrying out a risk assessment

A number of factors are required to create a risk of acquiring legionellosis, such as:

- (a) the presence of legionella bacteria;
- (b) conditions suitable for multiplication of the organisms e.g. suitable temperature (20°C-45°C) and a source of nutrients e.g. sludge, scale, rust, algae and other organic matter;
- (c) a means of creating and disseminating breathable droplets e.g. the aerosol generated by a cooling tower or shower; and the presence (and numbers) of people who may be exposed, especially in premises where occupants are particularly vulnerable, e.g. healthcare.

While there will inevitably be common factors associated with the many and varied types of premises being assessed, the individual nature of each site should be taken into account. In complex systems or premises, a site survey of all the water systems should be carried out and should include an asset register of all associated plant, pumps, strainers and other relevant items. This should include an up-to-date drawing/diagram showing the layout of the plant or system, including parts temporarily out of use. A schematic diagram would be sufficient. It should then be decided which parts of the water system, for example, which specific equipment and services, may pose a risk to those at work or other people.

5.3 The following list contains some of the factors which should be considered, as appropriate, when carrying out the assessment:

- (a) the source of system supply water, for example, whether from a mains supply or not;
- (b) possible sources of contamination of the supply water within the premises before it reaches the cold water storage cistern, Calorifier, cooling tower or any other system using water that may present a risk of exposure to legionella bacteria;
- (c) the normal plant operating characteristics; and
- (d) unusual, but reasonably foreseeable operating conditions, for example breakdowns.

5.4 Specification for the Risk Assessment

The following sets out the specification for all risk assessments and risk assessment reviews that are undertaken on council buildings or water systems.

- 5.4.1 The risk assessment is to be carried out by a fully trained surveyor who has been trained in accordance with the City and Guilds accredited course BS4 or equivalent, Legionellosis: Hazard Identification and Risk Assessment of Water Systems within Buildings or equivalent. Copies of the surveyors training records will be required to be submitted to the Authorized Officer before any work commences.
- 5.4.2 The risk assessment is required to be carried out in accordance with the section identification and assessment of the risk, detailed within part 1: The Approved Code of Practice within HSE document Approved Code of practice and Guidance, L8 “Legionnaires Disease” The Control of Legionella Bacteria in Water Systems.
- 5.4.3 The Risk assessment is to be supplied in 1 no. hand bound copy and 1 No. PDF copy on a secure web page. The risk assessment is to be provided in the following section for the ease of identification and contain the information as listed as a minimum in a logical format enabling ease of use to the end user.

The Risk Assessment documentation should conform to the requirements outlined in ACoP L8 and BS 8580. Refer to Appendix F for further information.

Operational Policy and Procedures

Section 3 Contents

1.0	INTRODUCTION	40
2.0	DOMESTIC COLD WATER SYSTEMS	41
3.0	DOMESTIC HOT WATER SYSTEMS	42
4.0	OTHER RISK SYSTEMS	44
5.0	MANAGEMENT REVIEW	46
6.0	RECORDS	51
7.0	SCHEMATICS	52
8.0	TECHNICAL PROCEDURES	53
9.0	INFREQUENTLY USED BUILDINGS	63

Section 3 Operational Policy and Procedures

1.0 Introduction

The following policy and procedures set out the specific operational requirements for hot and cold water and other risk systems and associated plant within the Tamworth Borough Council estate. These operational procedures are designed to mitigate the risk of the potential proliferation of legionella bacteria in water and other associated systems by reducing the risk, so far as is reasonably possible. These operational procedures set out the basis for the written scheme for the control of legionella bacteria. In all cases reference should be made to the specific site Risk Assessment and the recommendations for the control scheme and the water systems contained within.

Section 3 Operational Policy and Procedures

2.0 Domestic Cold Water Systems:

2.1 Non-Mains Water Supplies

Natural water sources such as borehole supplies may be contaminated with legionellae. Sampling for Legionella testing shall be undertaken where such supplies are used.

2.2 Cold Water Cisterns and Cold Feed Tanks

All new domestic cold water storage cisterns and tanks shall comply with the requirements of the Water Byelaws 2000 for cold water storage [heating system header tanks - F&E are excluded]. The organisation is subject to a risk assessment programme as required by the HSE L8 ACoP. The findings of the risk assessments include prioritised recommendations. The actions necessary to bring existing tanks to the standards required by the Water Byelaws, and timescales appropriate are tabled in the legionellosis risk minimisation scheme, and are reviewed as part of legionellosis risk re-assessment.

All cold water storage tanks with a water storage capacity of greater than 1000 litres containing potable water are to be examined and the temperature tested on a regular six monthly cycles and cleaned on an annual basis as required.

All other domestic cold water storage tanks are to be examined on an annual basis [where possible to coincide with the annual legionellosis risk re-assessment exercise], and cleaned and disinfected as detailed in the Tank Cleaning Procedure as required.

2.3 Connections to Outside Services

The existence of these connections and their necessity is checked on an annual basis.

2.4 Pressurisation / Supply Pumps

Where two or more pumps have been fitted for pressurisation systems, the lead pump shall be changed over at least weekly in order to avoid water stagnation.

Dates and times of the manual pump change-over shall be recorded in the plant room log book. Print-outs of regimes for automatic systems will be adequate.

Where pumps have not been in service for a period of four weeks or greater, or have been removed for any reason, the pump and associated pipe work shall be thoroughly washed out and disinfected before being brought back into service. Disinfection of pumps shall be to 50ppm free residual chlorine for 1 hour and pumps shall be totally submerged during this period. An incident report record sheet shall be completed giving details of why the pump was out of use.

Section 3 Operational Policy and Procedures

3.0 Domestic Hot Water Systems

3.1 Calorifiers and hot water cylinders are all a means of producing domestic hot water and are subject to the procedures below. Hereinafter the term "calorifier[s]" is used to describe any domestic hot water storage vessels.

3.2 **Hot Water Storage and Distribution Temperatures**

The storage of domestic hot water should be arranged to ensure that a water outflow temperature of at least 60°C is achieved. It is important to maintain temperatures at above this figure [Legionellae organisms will survive for only a short period of time above this temperature - approximately two [2] minutes].

Permanent continuous monitoring of water temperatures via a building management system or data logger is recommended for higher risk premises in order to demonstrate performance.

The outflow water temperature, under prolonged maximum continuous demand [at least 20 minutes] from calorifiers should not be less than 60°C.

While it is accepted that occasionally under peak instantaneous or prolonged demand that the water outflow temperature will fall, it is not acceptable if this occurs frequently [more than twice in any 24 hour period] and / or for long periods [exceeding 20 minutes].

Under no circumstances shall the domestic hot water flow temperature fall below 50°C.

It is recommended that disinfection by pasteurisation is undertaken if the water temperature of the calorifier falls below 45°C.

A minimum domestic hot water circulation temperature of 50°C shall be maintained.

3.3 **Calorifier Operation**

Calorifiers in high risk premises are to be run 24 hours per day, 7 days per week, and the domestic hot water circulation pump kept running. Should it be necessary for interrupted operation or shut-down, then the calorifier should be allowed to maintain its water storage temperature and the domestic hot water pump should be started up to ensure full temperature through-out the distribution system for at least one hour prior to occupation of the premises.

3.4 **DHW Circulation Pumps**

Domestic hot water circulation pumps should perform in such a way to ensure a minimum water circulation temperature of 50°C.

Only one domestic hot water distribution pump should be installed near the calorifier, and a spare pump kept for immediate replacement in the event of pump failure.

Section 3 Operational Policy and Procedures

In circumstances where it is impracticable to remove pumps, the pumps shall be switched daily to ensure that all pumps are regularly brought into service, thus avoiding stagnation. It may be more effective to utilise an auto-changeover system.

Shut down of the pumped circulation system should be avoided. To do so will result in a loss of the required distribution temperatures.

Section 3 Operational Policy and Procedures

4.0 Other Risk Systems

Monitoring requirements for other risk systems should be based on the attached table [which is based on a similar table in the Technical Guidance HSG 274 Part 3 - The control of Legionella bacteria in other risk systems]

See Appendix E.

4.1 Water Conditioning

The hot water treatment method used by the Council is that of full temperature control. Should an alternative water treatment regime be sought the onus shall be on the organisation to establish the efficacy of the system in its control of Legionella for each site, this shall be in the form of a trial to establish:

- A control level;
- The ability to achieve that control level, and;
- The assurance that the control level will be maintained.

Regular Legionella sampling will be required if biocidal treatments are used as an alternative to temperature.

4.2 Cleaning and Disinfection

Water systems will be cleaned and disinfected under the following circumstances as part of a planned maintenance program or reactive works:-

Section 3 Operational Policy and Procedures

System/ Service	Circumstance Requiring Cleaning and Disinfection	Frequency
Domestic cold water tank	New installations.	As required
	Empty tank re-commissioning.	As required
	Tank temperature exceeds 20°C.	As required
	Tank contains moderate sediment, i.e. a complete covering of the tank base.	As required
	Tank contains moderate corrosion.	As required
	Contamination of tank by vermin or vermin faeces.	As required
	Gross organic contamination e.g. large number of dead insects.	As required
	Regular programme for high risk category.	Annually
	Regular programme for significant risk category.	2 yearly
	Regular programme for moderate/low risk systems [excluding small tenanted residential properties].	5 yearly
controls-assurance.co.uk advice - interpretation of microbiological results – drinking water tanks	As required	
Domestic cold water distribution system	New installations and small modification/ additions.	As required
	Contamination of tank by vermin or vermin faeces.	As required
	Gross organic contamination e.g. large number of dead insects.	As required
	Controls-assurance.co.uk advice - interpretation of microbiological results.	As required
Domestic hot water calorifer	New installations and modifications / additions.	As required
	Calorifier falls below 45°C.	As required
	Empty calorifier recommissioning.	As required
	Contamination of header tank by vermin or vermin faeces.	As required
	Regular programme [excluding small tenanted residential properties], where access panels are fitted.	Annually
	Consultant advice - interpretation of microbiological results.	As required
Domestic hot water distribution system	New installations and modifications / additions.	As required
	Contamination of header tank by vermin or vermin faeces.	As required
	Controls-assurance.co.uk advice - interpretation of microbiological results.	As required

Section 3 Operational Policy and Procedures

6.0 MANAGEMENT REVIEW

6.1 Review

Quarterly management review meetings shall be held in order to assess the progress with respect to management issues and the Legionella Management Plan/ Risk Minimisation Scheme.

These meetings will also assess progress against the action plan in order to identify any problems with the implementation of specific remedial measures.

6.2 Sampling and monitoring

The table below summarises the temperature sampling and monitoring frequencies which are to be applied as part of the control scheme were applicable and in accordance with HSE HGS 274 Part 2.

Frequency	Check	Standard to Meet		Notes
		Cold Water	Hot Water	
Weekly	Little used outlets	Flush through and purge to drain, or purge to drain immediately before use, without release of aerosols		
Monthly	Sentinel taps (nearest, furthest and intermediate points from the feed tank or calorifier)	Water temperature should be below 20°C after running the water for up to two minutes	Water temperature should be at least 50°C within a minute of running the water	This check makes sure that the supply and return temperatures on each loop are unchanged
Monthly	If fitted, input to TMVs on a rotational basis		Water temperature should be at least 50°C within a minute of running the water	One way of measuring this is to use a surface temperature probe.
Monthly	Water leaving and returning to calorifier		Outgoing water should be at least 60°C, return at least 50°C.	If fitted, the thermometer pocket at the top of the calorifier and return leg are useful points for measurement. A building management system could be used to carry out measurements and logging
Quarterly	Dismantle, clean and descale shower heads.			
Quarterly	Cold Water Storage Tanks	Carry out temperature checks		Check temp at inlet valve and general cleanliness of tanks.
Six monthly	Incoming cold water inlet (at least once in the winter and once in the summer)	The water should preferably be 20°C at all times		The most convenient place to measure is usually at the ball valve outlet to the cold water storage tanks.

Appendices

Frequency	Check	Standard to Meet		Notes
		Cold Water	Hot Water	
Six Monthly	Bacterial Water Sample Analysis from cold water storage tanks designed to supply a potable water service	Bacterial readings are to comply with the Drinking Water Inspectorate		All samples taken MUST be analysed within a UKAS accredited laboratory.
Annually	Site specific compliance audit.			Carry out full inspection of the water system/records and report on any changes or defects. Update schematics if required
Annually	Cold water storage tanks			Visual inspection
Annually	Representative number of taps on a rotational basis	Water temperature should be below 20°C after running the water for up to two minutes	Water temperature should be at least 50°C within a minute of running the water	This check ensures the whole system is reaching satisfactory temp for Legionella control
Annually	Calorifier flush and sample		Hot water sample. Ensure correct temperatures	
2 yearly	Risk Assessments			Review and update accordingly, including areas of remedial/maintenance works required

6.2.1 Water Temperature Checks

Temperature checks on the calorifier and distribution system should be carried out as detailed below on a monthly, six monthly and annual basis. In the event of a non-compliance, the Responsible Person [*Legionella*] shall be informed immediately. Use of a digital thermometer with a touch and immersion probe is recommended.

Although the HSE recommends spot temperature checks, continuous monitoring will be necessary in certain circumstances, dependent on the risk assessment findings.

Cold water storage tank temperatures should be checked during periods of high ambient temperatures [e.g. afternoons between June and August], water temperatures should be no greater than 20°C. At the same time, the furthest and nearest draw off points in the system should be checked to ensure that the water distribution temperatures no greater than 20°C within 1 minute of running the water [at full flow]. A similar temperature check regime should be undertaken during the winter months to identify the performance of cold water distribution systems and the impact of heat gain from heating systems.

6.2.2 Hot and cold water distribution temperatures from sentinel taps:

For domestic hot water services, these are the first and last taps on a re-circulating system. For cold water systems or non-recirculating hot water systems this is the nearest and furthest taps from the storage tank.

For cold water outlets, the temperature should be no greater than 20°C after two minutes of running the water. For hot water outlets, the temperature should reach 50°C within one minute of running the water.

6.2.3 Calorifier flow and return temperatures:

Outgoing water from the calorifier should be at least 60°C, and water returning to the calorifier should be at least 50°C. These temperatures can be taken from adequately calibrated temperature gauges fitted to the vessel and return pipe work. If temperature gauges are not fitted, then suitable surface temperature probes may be used.

6.2.4 Input temperature to thermostatic mixer valves:

Where fitted, the input temperatures to thermostatic mixer valves should be at least 50°C within a minute of running the water. Outlets with TMV's should be monitored on a sentinel basis as detailed above.

6.2.5 Incoming mains cold water:

Where there is a cold water storage tank, this should be measured at the ball valve outlet. The water should preferably be no greater than 20°C. However, during a prolonged hot summer the incoming water may rise above this temperature. Under the Water Supply [Water Quality] Regulations, water utilities are permitted to supply water to premises at temperatures up to 25°C. If incoming water temperatures are above 20°C, the water undertaker should be advised to see if the cause of the high temperature can be found and removed.

Monitoring should ideally be carried out so that one check takes place in the summer months and the other in the winter months.

6.2.6 Representative number of taps on a rotational basis:

In order to ensure that the whole system is reaching satisfactory temperatures for Legionella control, the outlet temperatures should be taken from a representative number of outlets other than sentinel taps.

For cold water outlets, the temperature should be no greater than 20°C within two minutes of running the water. For hot water outlets, the temperature should reach 50°C within one minute of running the water.

Where water temperatures fail to satisfy the criteria described, the Responsible Person [*Legionella*] shall be informed, and a full investigation must follow.

6.2.7 General Microbiological/Legionella Sampling in Hot/Cold Water Systems

Circumstances under Which Samples are taken

Samples for general microbiological testing i.e. total aerobic bacterial counts at 22°C and 37°C, coli forms and E.Coli are taken:-

- One week following handover of a new building or water system;
- As part of the routine monitoring of drinking water tanks;
- In response to taste or odour or sustained discoloured water complaints.

When such samples are taken, a mains supply sample should be taken as a control, to verify whether the supply could be the source of any identified problems. The water supplier is also contacted for distribution zone water quality data, for the same reason.

6.2.8 Samples for Legionella testing are taken

- Monthly from hot water systems treated with biocides where storage and distribution temperatures are reduced from those recommended in the HSE's ACOP/Guidance Document L8. At the time of preparation of these procedures, there is only one such system within the organisation;
- Weekly from hot water systems where control levels of the treatment regime, i.e. temperature in this case, are not consistently achieved – these samples should be taken until the system is brought back under control;
- When an outbreak is suspected or has been identified;
- Regularly where a department specialises in services for “high vulnerability” healthcare patients.

6.2.9 Action Levels for Legionella in Hot and Cold Water Systems

Legionella Bacteria [cfu/litre]	Action Required
More than 100 but less than 1000	<p style="text-align: center;">Either:</p> <p>If only one or two samples are positive, system should be re-sampled. If a similar count is found again, a review of the control measures and risk assessment should be carried out to identify any remedial actions.</p> <p>If the majority of samples are positive, the system may be colonised, albeit at a low level, with Legionella. Disinfection of the system should be considered but an immediate review of control measures and risk assessment should be carried out to identify any other remedial action required.</p>
More than 1000	<p>The system should be re-sampled and an immediate review of the control measures and risk assessment carried out to identify any remedial actions including possible disinfection of the system.</p>

6.2.10 Laboratory competence

Samples for Legionella shall be tested by a UKAS accredited laboratory that takes part in the PHLS Water Microbiology External Quality Assessment Scheme for the isolation of Legionella from water.

Appendices

7.0 Records

7.1 Retention Period

The following types of records are kept.

Record	Retention Period
This policy and procedures document	Throughout the period for which they remain current and for at least two further years.
Risk assessments	
Risk minimisation scheme and details of its implementation	
Monitoring, inspection, test and check results, including details of the state of operation of the system	At least five years

7.2 Record Keeping

Monthly monitoring records are stored on the electronic web based log book system ZetaSafe. Via the use of a PDA GES Water Hygiene Technicians are responsible for populating the electronic database with temperature results and inspections during monthly monitoring site visits.

Non-conformances identified during the monitoring visit are categorised as High (Priority 1), Medium (Priority 2) or Low (Priority 3) as Per ES 040 Guidelines Non Conformance Reporting ACoP L8 Monitoring- Appendix.

Any Priority 1 high risk non conformances are emailed at the time of the site visit directly to the ABC Facilities Team and to the GES Helpdesk.

It is the responsibility of the GES Contracts Supervisor to follow up all Priority 1 non-conformances with a phone call to the ABC Facilities Team to ensure they are aware of the situation and offer remedial advice. It is the responsibility of the Facilities Team to routinely log onto the zetasafe database (every two weeks) and address all non-conformances. It is the responsibility of the Contracts Supervisor to routinely log onto the zetasafe database and review the performance of the management of the database and identify any areas/asset where there are consistent non conformances. This is communicated back to the ABC Facilities Team.

Appendices

8.0 Schematics

8.1 Water system schematics are produced for all hot and cold water systems, with the exception of point of use water heaters and small tenanted domestic premises served by individual single-pipe water systems. The schematics show the storage systems in plant rooms and tank rooms. Distribution schematics show sentinel outlets on block plans [where available].

8.2 For each water system that presents a risk from Legionella bacteria, a schematic or drawing shall be held, showing:-

- Origin of water supply;
- General layout of the system;
- How the system operates;
- All associated storage and header tanks;
- All standby equipment;
- Any parts of the system that may be out of use temporarily;
- Any problem areas such as dead legs;
- Regular operation and test points e.g. sentinel outlets and major plant

These schematics/drawings may also show:-

- All system plant, e.g. water softeners, filters, strainers, pumps, non-return valves and all outlets, for example showers, wash hand basins etc;
- All associated pipe work and piping routes.

8.3 Drawings/schematics shall be checked to coincide with risk re-assessment, to ensure that they are up to date.

The degree of complexity of schematics will be as follows:-

Risk	Drawing/Schematic Type
High	As-fitted drawing, water storage system schematic and simple distribution schematic
Significant	Water storage system schematic and simple distribution schematic
Moderate	Water storage system schematic
Low	None

9.0 TECHNICAL PROCEDURES

Cleaning of CWSTs

Members of staff either of the organisation, or contract staff shall not be permitted to enter any water storage system [i.e. tank, calorifier, AHU] if they are suffering or have recently suffered from any gastric or other communicable illness, or a condition which may result in their increased susceptibility to legionellosis. It is the responsibility of the individual to inform their supervisor immediately if applicable.

All tanks are classified as potable water tanks.

The Responsible Person/ Building Manager shall notify all users of the proposed line of action, and of any disruption or modification to service. The Building Manager being the individual responsible for the management of the task in question.

All equipment and tools to be employed during the cleaning and disinfection process must be dedicated only to this task - this will include hire equipment. All equipment should be disinfected in a high concentration of chlorine solution prior to commencement of the process.

Refer to Appendix H.1 for the procedure of tank clean and disinfection.

Cold Water Tanks with Water Temperature Greater Than 20°C

This procedure is to be implemented when cold water tanks [domestic hot water header tanks or cold down service tanks] are found to contain water with a temperature of greater than 20°C. This may sometimes be suggested initially, when water at greater than 20°C is supplied by cold water outlets, which normally supply water at a temperature of no greater than 20°C. The temperature of the relevant storage tank should be taken, and the following procedure followed if necessary.

Examples of failures which may be responsible for tepid cold water [greater than 20°C]:

- High ambient temperature and heat gain - may be accentuated by poor ventilation, glass windows above tanks, lack of or poor insulation.
- Mixing valve failure causing back feeding - non return valves are recommended.
- Domestic hot water system venting over the tank.
- Failure of the primary heating coil.

Refer to Appendix H.2 for procedure for dealing with CWST with temperatures greater than 20°C.

Appendices

Calorifier Flushing

Each calorifier should be flushed quarterly through its drain valve by opening the drain valve three [3] times, each time for a three [3] minute period. The hose from the drain valve is to discharge to a container filled with clean water as described in the section dealing with the safe discharge of stagnant water.

Calorifier flushing should be carried out after temperature checks on the calorifier and system have been completed. The calorifier maintenance record form should be completed.

Refer to Appendix H.3 for procedure for calorifier maintenance.

Stratification Checks

Domestic hot water storage vessels should be subject to water temperature stratification checks on a bi-annual basis [i.e. every two years] for each calorifier. These checks should extend over a period of seven [7] days. Checks should also be made where de-stratification pumps have been fitted to establish that such a pump will ensure that the water temperature at the base of the vessel achieves 50°C.

The sophistication of the temperature checking process depends on the water system legionellosis risk:-

Water system	Type of temperature check
High	BMS
Significant	Portable logger
Moderate	Spot checks
Low	None

Calorifier temperature stratification checks are not undertaken in small tenanted domestic properties with individual single pipe water systems.

Appendices

Showers

Showers which are rarely used should preferably be removed, or run at least weekly for a 3 [three] minute period.

A memo is to be issued to all Building Managers indicating this requirement, and requesting notification of showers for removal. Label all showers "**THIS SHOWER MUST BE RUN WEEKLY**". A memo should be issued to all users / managers with showers indicating their responsibility to ensure that showers are run on a weekly basis.

Shower heads are cleaned and de-scaled where necessary, on a quarterly basis.

Domestic Hot Water Temperature Less Than 45°C

This procedure must be employed following a reduction of domestic hot water temperature to below 45°C for any reason.

Such temperature reductions can result from system failures such as:

- Primary heat source failure;
- Calorifier water temperature controls failure;
- Domestic hot water distribution pump failure;
- System shut down for modification or repairs.

Refer to Appendix H.4 for procedure for dealing with DHW temperatures less than 45°C.

Cleaning Water Systems within Buildings

Installations within buildings

All visible debris and scale shall be removed from the cistern. The cistern and distribution pipe work shall be filled with clean water and then drained until empty of all water. The cistern shall then be filled with water again and the supply closed. A measured quantity of Sodium Hypochlorite solution of known strength shall be added to the water in the tank in order to give a free residual chlorine concentration of 50mg/l [ppm] in the water. The cistern shall be left to stand for one [1] hour. After this time period, each draw-off point shall be successively opened working progressively away from the cistern. Each tap and draw-off point shall be closed when the water discharge begins to smell of chlorine. The cistern shall not be allowed to become empty during this exercise. If necessary it shall be refilled and chlorinated as above. The cistern and pipes shall remain charged with chlorinated water for a further one [1] hour.

On completion of this period, the tap furthest from the tank shall be opened and the level of free residual chlorine in the water discharged from this tap shall be measured. If the concentration of free residual chlorine is less than 30 mg/l [30ppm] the disinfection process shall be repeated.

The tank and pipe work shall remain charged with chlorinated water for one [1] hour [for existing installations], sixteen [16] hours [for new installations]. Systems fed directly off the mains water supply shall have a chemical injection point fitted by others, and then thoroughly flushed out with clean water until the free residual chlorine concentrations measured at the taps are no greater than that present in the supplier's mains water.

On completion of the cleaning exercise, a certificate of cleaning and chlorination shall be issued stating that the system has been cleaned and chlorinated in accordance.

Safe Purging Of Stagnant Water

Stagnant water may potentially contain large numbers of legionellae. In order to avoid the risk of legionellosis, precautions are taken to avoid the creation of aerosols and to avoid the exposure of people to any unavoidable aerosols.

The specific precautions may vary according to the particular circumstances, but typically include:-

- Running a hose from the outlet into a container of clean water;
- Running hoses directly into a drain cover;
- Running fire hoses at a distance from occupied buildings;
- Closing windows and air conditioning intakes where aerosols are created outdoors;
- Wearing respiratory protective equipment [remember this does not protect nearby members of the public and others who are not wearing masks].

Care should be taken to avoid the possibility of back siphon age into mains water supplies.

Flushing of Infrequently Used Outlets

In order to avoid the risk of stagnation of water in outlets that are not used regularly it is recommended that such outlets are flushed on a weekly basis and that this action is documented in a site specific log book.

Flushing should be performed in line with the following procedure:-

- Identify any outlets that may be infrequently used
- Flush through each tap at the outlet for at least 3 minutes
- Record the flushing in a site specific log book

Any outlets that may have remained unused for a significant period of time should be purged

10.0 Management of Infrequently Used Buildings:

This procedure describes how the Council controls and manages the risks associated with the proliferation of and exposure to legionella bacteria in buildings that are classified as infrequently occupied,

- Part closed or unoccupied,
- Under temporary closure
- Under indefinite closure
- Residential or leased buildings
- New or refurbished buildings

10.1 **Definition:**

An infrequently occupied building can be defined as one where the water systems contained within that building are not used or maintained to a frequency where the minimum operating control measures as set out in HSE ACoP L8 are not met on at least 5 out of 7 days per week.

A full risk assessment should be carried out on all buildings on a minimum of a two yearly cycle, in accordance with the councils Risk Assessment Policy and Procedures Manual to determine whether or not a building should be classified as infrequently occupied.

This procedure may typically, but not exclusively apply to the following buildings within the council's estate

- Pavilions
- Community Centres
- Halls

10.2.1 **Responsibility**

It is the responsibility of the nominated Responsible Person for each building to co-ordinate, monitor and measurement activity. It is also the responsibility of all individuals to undertake the works they are involved in accordance with these procedures, control documents, relevant legislation, guidance documents and recognized best industry practice. This will include all,

- Contractors
- Council Staff
- Visitors

10.3 Occupation of New Premises

Procedure until Occupation

This procedure is designed to prevent the risk of legionellosis developing in a new building / department through the interim period following construction, commissioning and hand over to occupancy.

Design and Build Contracts - outbreaks of Legionnaires 'disease has been associated with 'design and build' type contracts. It is vital that Development and Factoring staff who projects manage such projects ensure that immediately before occupation that cleaning and disinfection of water systems is undertaken.

Once the system is in use and has been cleaned and chlorinated prior to hand over, a Responsible Person shall be nominated to monitor and observe the system, and ensure that the system is operated in accordance with the Organisation's 'Procedure for Temporary Closure' and the relevant record sheets completed.

At the point of hand over all relevant information on system performance together with as-fitted drawings and design criteria of the domestic hot water systems and cold water services shall be submitted to the relevant Officer who will be responsible for the premises.

Occupancy of the new property should be as soon after hand over as possible to prevent further costs being incurred due to the need for re-chlorination of the water systems

10.4 Residential Accommodation/ Leased and Buildings

This sub-section applies to domestic properties served by individual water systems. Where domestic properties share a common water system, the procedures for the larger premises apply.

By contract, Tamworth Borough Council has a responsibility to risk assess and ensure the safety of the water from the incoming mains and other communal supplies up to where the water enters the part of the building the tenant occupies; however, the tenants have the responsibility to do the same from the point at which it enters their premises. All tenants will be informed of the potential risk of exposure to legionella and its consequences and advised accordingly. Simple control measures can help manage the risk of exposure to legionella and should be maintained, such as:

- Tenants to regularly clean and disinfect showerheads.
- Tenants to inform the association if the hot water is not heating properly or if there are any other problems with the system, so that appropriate action can be taken.
- Tenants to use all hot and cold water systems at least weekly.
- Tenants to arrange a suitable flushing regime (or other measures, such as draining the system) if their dwelling is to remain vacant for long periods.

10.4.1 Hot water control parameters

By contract, Tamworth Borough Council has a mandatory requirement to perform vital gas safety checks or routine maintenance visits. At the time of the annual CP12 inspection, the engineer will perform a physical thermostat inspection to ensure that the hot water storage vessel is operating as per the legal requirement.

10.4.2 Cold water control parameters

By contract, Tamworth Borough Council has a mandatory requirement to perform vital gas safety checks or routine maintenance visits. At the time of the annual CP12 inspection, the engineer will test the cold water temperature (mains water & tank water). Using a calibrated thermometer, and a suitable penetration probe, the engineer will allow the cold water to run for two continuous minutes before recording and logging a final temperature.

10.4.3 Vacant premises

Hot and cold-water services within unoccupied properties will be flushed on a weekly basis until such times as the property becomes occupied. Flushing records will be held in a central location.

Maintenance Actions/Checks Prior to Occupation by a New Tenant

Whenever the expected time delay between vacation of accommodation by one tenant and occupation by the next is greater than one week, the following actions should be taken.

The accommodation unit is visited by a member of Facilities Management Department, within one week prior to occupation. The following actions are taken, in the order stated:-

- The hot water system is switched on;
- All WCs are flushed twice [on full flush where dual flush type];
- The cold water storage tank, where present, is checked for gross contamination e.g. microbiological growth, the presence of organic debris or live organisms such as insects – in the event of discovering such contamination the Facilities Management Department is informed to arrange tank cleaning and disinfection. The remaining actions below are not undertaken until the cleaning and disinfection of the tank is complete;
- Each hot and each cold water outlet is run for three minutes, creating as little aerosol as possible;
- The shower head is removed and the shower hose run underwater for three minutes;
- The hot water system is left switched on;
- Any defects are reported to the Facilities Management Department and wherever possible, rectified prior to tenant occupation.

These actions apply to accommodation served by either a conventional hot water system or a combination boiler.

10.5 Provision of Information for New Tenants

The organization can influence but not control the actions of its domestic tenants. It exerts its influence by the provision of the following guidance as part of the general information pack provided to new tenants.

“The water systems in this accommodation have been prepared by the Facilities Management Department in such a way as to protect water hygiene. You can protect your own health and safety by:-

- Ensuring that all outlets are used regularly [preferably once per week] or run for a couple of minutes per week to keep the water fresh;
- Reporting any water system defects, such as hot water temperature failure or dirty drinking water, to the Council as soon as possible”.

10.6 Procedure in the Event of Closure of Part or All of a Building

Background

Where part or all of a building is going to close for a period of greater than one week, the relevant manager must notify the Responsible Person [*Legionella*] of the details.

Following a closure decision, negotiations between the relevant manager and the Responsible Person [*Legionella*] must take place to ensure that the following procedure is established and documented, and to clearly define what actions named individuals shall perform.

Period of Closure

The period of closure should be established at the earliest point in negotiations. The period for which an area is closed can play an important part on the cost implication and involvement of a closure.

10.7 Temporary Closure

Where a closure is expected to not exceed 60 days a nominated individual shall be identified to run every tap for 3 minutes and flush every toilet weekly. The nominated individual should then complete the record sheet, signed by themselves and their relevant manager, the completed form being forwarded to the Responsible Person [*Legionella*].

Before the closed area is re-occupied the Facilities Management Department shall carry out an inspection and test of the water systems and report its condition to the Responsible Person [*Legionella*] for any remedial works that may be required.

It is the responsibility of the relevant manager to notify the Facilities Management Department of their intention to re-open a temporarily closed area.

10.8 Indefinite Closure

In the instance that part or all of a building is to close with no planned re-opening date, or where the closure period exceeds 60 days, negotiations must be held as detailed in the “background” subsection above, and funding made available to the Facilities Management Department by the manager of the department that is closing, in order to disconnect and drain the water services within the affected area. The relevant manager should be aware that considerable cost for modifications could be needed to achieve this requirement in some large properties.

10.9 Detail of Works for an Indefinite Closure

Where relevant - all water tanks associated with the affected area shall be drained, cleaned and dried out.

All pipe work and devices shall be drained and where applicable domestic hot water calorifiers [or other storage vessels] shall be opened up, cleaned and left open to the atmosphere.

Pipe work shall be disconnected from the mains services and capped off, mains cold water services shall be isolated and capped off from the system and all relevant pipe work drained.

Notices shall be posted throughout the affected area stating that all water services are disconnected.

The Facilities Management Department shall be responsible to ensure that an adequate water seal exists in unused toilets to prevent odours from the foul drain system entering the premises.

Adequate records of actions, and amended water service schematic diagrams shall be produced by the Facilities Management Department showing the relevant modifications and disconnections made to the water systems. The Indefinite Closure Form shall be used for record keeping purposes.

10.10 Re-occupation of an Indefinitely Closed Area

In the event of re-occupation of an indefinitely closed area, full negotiations must take place between the relevant manager and the Facilities Management Department prior to the re-occupation exercise.

The Facilities Management Department will require the following information: -

- The planned re-opening date;
- Any proposed changes of use of the area;
- Any areas which will not be used.

Before the water system is put back into service, any necessary modifications and maintenance shall be carried out prior to the cleaning and disinfection of the system.

Appendices

Duties of Water Treatment Contractor

The Contractor

The contractor is responsible for all aspects of the Legionella monitoring and management regime as outlined in ACOP L8, excluding:-

- Weekly Flushing of outlets

The Contractor will, on receipt of an order from the client (Tamworth Borough Council) undertake remedial works identified in the Legionella risk assessments and through regular monitoring works.

The contractor will also provide on site log books as well as an electronic log book in the form of zetasafe, www.zetasafe.co.uk. Responsibilities for the online log are outlined below.

During the contract mobilization stage, the contractor will set up and populate the electronic logbook system, while running a paper reporting system in tandem, until such time as the Zeta Safe system is rolled out to all council departments. The contractor will be responsible for adjusting thermostatic control settings where applicable, to regulate the hot water systems on the councils estate.

The contractor must report all faults to the site responsible person as per their procedure GAMMP 09 Site Operations. All low/medium risk faults will be dealt with locally by the relevant site responsible person. The contractor must also compile a weekly summary report of all major/high risk faults observed to be submitted to the council Building Safety Team.

The Client (Tamworth Borough Council)

The client is responsible for the weekly flushing of infrequently used outlets as identified in the Legionella risk assessment. This must be documented in the site specific log book. The client is responsible for the provision and maintenance of the hard copy site log book.

The client is also responsible for the ordering of remedial works as identified and reported to the client through the Legionella risk assessment and through ongoing monitoring works, reported via the zetasafe on-line log book and the weekly action summary reports.

ZetaSafe

Responsibilities for the Client

The council will identify a person or series of persons who will be appointed as authorised users for the system. Each user will be assigned accessibility and editable rights dependant and relevant to their responsibilities under the Legionella Management Plan. The council will be ultimately responsible for the management and use of the test data stored on the database, this includes

- Appointing relevant authorised users
- Providing the contractor with one main point of contact, in the form of an email address, for the reporting of high risk or emergency situations
- The updating and 'signing off' of system 'notes'
- Periodic or continual checking of the test data, non conformance 'notes' and recommendations stored
- Proactively using the information stored to assist in management and control of Legionella

Responsibilities of the Contractor

The contractor will be responsible for the provision and set up of the system. This includes all technical service management, maintenance and security issues associated with the system. The contractor is required to undertake periodic inspections and other works in accordance with the contract specification, relevant legislation and guidance documents. The contractor will be responsible for the reporting of test results and for providing adequate and relevant supporting recommendations for remedial action. The contractor will specifically be responsible for the following

1. Setting up and providing access to a web based and unique secure log in of all identified council users
2. Setting up specific access/ editable rights for those identified council users dependant on and appropriate to their role in the Legionella Management Plan
3. Setting up of appropriate test suites and asset types on the system, relevant to those on the councils estate
4. Setting up and maintaining periodic inspection schedules for all sites and identified assets in line with HSE ACoP L8
5. Fixing and maintaining a unique asset identification numbers on all major plant/ assets in the form of a barcode sticker
6. Undertaking periodic inspection of buildings and assets as per the inspection schedule/control program set up as they fall due
7. Providing a facility/ procedure for the prompt and timely reporting of high risk occurrences to the appropriate council representative
8. Providing training in the use of the system for authorised council users
9. Providing adequate information regarding recommended remedial action associated with 'notes'
10. Keeping the system operation up to date in line with industry good practice and any relevant changes in legislation of guidance
11. Providing the client with a monthly 'outstanding Note/Non Conformance' report

Appointments of Responsibility for Control of Legionella Bacteria

RESPONSIBLE PERSONS (CORPORATE)

Overall Responsibility:

Nominated Technical Responsibility:

Appointment: *Duty Holder*

Appointment: *Responsible Person*

Name: Andrew Barratt

Name: Mark Rosten

Position: Chief Executive

Position: Head of Programmes and Facilities

Tel: 01827 709709

Tel: 01827 709 406

Mob:

Mob: 07800677322

Fax:

Fax:

E-mail: andrew-barratt@tamworth.gov.uk

E-mail: mark-rosten@tamworth.gov.uk

Signed:

Signed:

Date:

Date:

Delegated Operational Responsibility and co-ordination of all council staff to ensure operational procedures are undertaken:

Name: Barry Curtis

Position: Compliance Manager

Tel: 01827 709385

Mob: 07528630011

Fax:

E-mail: barry-curtis@tamworth.gov.uk

Signed:

Date:

General Health and Safety advice:

Name: Steven Langston

Position: Health and Safety Manager

Tel: 01827 709224

Mob:

Fax:

E-mail: steven-langston@tamworth.gov.uk

Signed:

Date:

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The Control Scheme - for Domestic hot & cold water systems

Risk assessment has concluded that there is a reasonably foreseeable risk of exposure to legionella from hot and cold water systems within this property. The use of water systems, parts of water systems or systems of work that lead to exposure must be avoided so far as is reasonably practicable. Where this is not reasonably practicable, there should be a written scheme for controlling the risk from exposure that should be properly implemented and managed. The following table provides a checklist for hot and cold water systems with an indication of the frequency of inspection and monitoring required. This should form the basis of your site-specific Water Safety Plan (WSP).

The Control Scheme Corporate	
Asset	Minimum Compliance Frequency
Flush infrequently used outlets	Weekly
Rotate standby pumps	Weekly
Water Softener – Visually check salt levels	Weekly
Test sentinel & representative cold outlets for temperature compliance	Monthly
Non-circulating hot water system: Test sentinel & representative hot outlets for temperature compliance	Monthly
Circulating hot water system: Test return legs of the principal loops and subordinate loops rather than taps for temperature compliance	Monthly
Temperature measurements from feed surfaces supplying (TMV) / (TMT) at sentinel test points	Monthly
Test flow & return pipework for temperature compliance	Monthly
Arrange for Pressure Vessels (PV) to be purged	Monthly – Six Monthly
Arrange for Expansion Vessels (EV) to be purged	Monthly – Six Monthly
Dismantle, clean and disinfect (de-scaling as necessary) showerheads and hoses	Quarterly
Dismantle, clean and disinfect (de-scaling as necessary) miscellaneous spray fittings (e.g. spray taps, pot wash etc.)	Quarterly
Service and maintain filtration devices	Six Monthly
Service and maintain Inline strainers	Six Monthly
(POU) Filters: replace filters as recommended by the manufacturer	According to manufacturer's guidelines
Check tank water for temperature compliance	Annually
Visually inspect cold water storage tank and carry out remedial actions where necessary	Annually
Visually inspect integral cold water storage tanks associated with Combination Water Heaters	Annually
Visually check on internal surfaces of hot water storage vessels for scale and sludge	Annually
Purge hot water storage vessels in order to note condition of drain water	Annually
Dismantle, clean and disinfect (de-scaling as necessary) Thermostatic Mixing Valves (TMV)	Annually or on a frequency
Thermostatic Mixing Valves (TMV) tested for safety to maintain protection against scald risk	
Water Softener – Service and disinfect	Annually, or according to manufacturer's guidelines

The Control Scheme Corporate	
Asset	Minimum Compliance Frequency
Commission and test RPZ valves	Annually
Cold water storage tank remedial works sanctioned upon failed inspection report	Defined by regular inspection
Microbial sampling (when control parameters are breached)	As Determined by Risk Assessment Or Management Reviews

Appendix D

Legionella Detection Investigatory Team

To be appointed

Appendix E

Appendix E: Schedule of Monitoring Inspections for 'other' Risk Systems HSG 274 Other Risk Systems

Maintenance Checks for Other Water Systems

System/service	Task	Frequency
Ultrasonic humidifiers/ foggers and water misting systems	If the equipment is fitted with UV lights, check to ensure the effectiveness of the lamp (check to see if within working life) and clean filters	Six monthly or according to manufacturer's instructions
	Ensure automatic purge of residual water is functioning	As part of machinery shut down
	Clean and disinfect all wetted parts	As indicated by risk assessment
	Sampling for legionella	As indicated by risk assessment
Spray humidifiers	Clean and disinfect spray humidifiers and make-up tanks, including all wetted surfaces, descaling as necessary	Six monthly
	Confirm the operation of non-chemical water treatment (if present)	Weekly
Air washers, wet scrubbers, particle and trivial gas scrubbers	Clean and disinfect air washers, wet scrubbers, particle and trivial gas scrubbers and water storage tanks	As indicated by risk assessment
	Apply, monitor, and record the results of the water treatment	As indicated by risk assessment
Water softeners	Clean and disinfect resin and brine tank – check with the manufacturer what chemicals can be used to disinfect resin bed	As recommended by manufacturer
Emergency showers, eyebaths and face-wash fountains	Flush through and purge to drain ensuring three to five times the volume of water in the stagnant zone is drawn off	As indicated by risk assessment, but at least every six months
	Inspect water storage tanks (where fitted)	Monthly
	Clean and disinfect shower heads, nozzles, roses, 'Y' strainers, and water storage tanks (where fitted)	Quarterly, or more frequently, as indicated by the risk assessment
Sprinkler and hose reel systems	When witnessing tests of sprinkler blow-down and hose reels ensure that there is minimum risk of exposure to aerosols	As directed

Appendix E

System/service	Task	Frequency
Spa pools	Detailed HSE/PHE guidance on the management of spa pools is available in <i>HSG 282 The control of legionella and other infectious agents in spa-pool systems</i>	
Whirlpool baths	Clean, flush and disinfect air channels Remove, flush and clean jets	As indicated by risk assessment
Horticultural misting systems	Clean and disinfect distribution pipework, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	Quarterly or as indicated by risk assessment
Dental equipment	Drain down, clean, flush and disinfect all system components, pipework and bottles	Twice daily (typically at the start and finish of each working day). Disinfectant contact time as recommended by the manufacturer
	Clean storage bottles, rinse with distilled or Reverse Osmosis (RO) water, drain, and leave inverted overnight	Daily
	Take microbiological measurements – refer to <i>Decontamination Health Technical Memorandum 01-05:</i>	As indicated by risk assessment
Vehicle wash systems	Check and clean filtration systems, collection tanks and interceptor tanks and check treatment system A biocide programme should be in place and should be monitored and controlled similar to the standards required in cooling towers	As indicated by risk assessment
	Sample for legionella	Initially to establish that control has been achieved and thereafter quarterly or as indicated by risk assessment

Appendix E

System/service	Task	Frequency
Fountains and water features	Clean and disinfect ponds, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	As indicated by the risk assessment, and depending on condition
Industrial process water systems	Conduct a risk assessment of each system, preferably using an assessment team comprising members knowledgeable in legionella management and control, as well as those familiar with the design and operation of the system Devise a control scheme based on this risk assessment	Monitoring, inspection, and testing frequencies to be determined as indicated by the risk assessment

Appendix F: Risk Assessment

Specification for the Risk Assessment Report

Front Page

- Client Name and address
- Site Name and address
- Site Contact and telephone No
- Surveyors Name
- Date of Assessment
- Contractor Contact Details

An Executive Summary

- Category of risk
- Matters of evident concern
- Recommendations for actions

A Policy statement

The contractor is to provide a policy statement signed by a Director / Senior Manager containing important information about the risk assessment document.

Introduction to the risk assessment – For Example:-

- Legal requirements and implications
- Overview of other relevant regulations
- General guidance on the requirements of ACOP/L8 guidance for system contained within document
- Additional considerations, e.g. scalding risk, asbestos, access.
- Summary checklist of ACOP/L8 recommendations
- Any Other useful information

Site Information/ Building Information

- Property type and size
- Property description
- Details of buildings/rooms on site

System Information

- Quantity and location of cold water storage tanks
- Quantity and location of calorifiers/water heaters
- Quantity and location of other systems, e.g. spas, swimming pools, water features
- Site management system and control measures

The Risk Assessment

Key risks identified in the following categories:-

- 1.Cold water services
- 2.Hot water services
- 3.Other water services
- 4.Overall Building risk factor

Each of the items 1-4 listed above is to be risk rated into one of the following risk categories as follows

- No foreseeable risk
- Low
- Medium
- High
- Very High

The contractor is required to provide the following information for each cold water storage tank, calorifier, and water heater identified on site:

Assessment of Calorifier / Water Heaters.

Details should include the following:-

- Dimensions, capacity and construction
- Does the quantity of hot water stored meet normal operational demand without falling below 60°C?
- Heat Source
- Anti – stratification pump and timer
- System pumped/gravity
- Insulation type and condition
- Drain valve installed/operational
- Flow, return and base temp
- Corrosion
- Supplied from mains and cistern
- Supply pipe work material and size
- Flow pipe work material and size
- Return pipe work material and size
- Condition of supply, flow and return pipe work valves
- Type and condition of installation to supply, flow and return pipe work
- Labelling
- Power, lighting and access
- Any other significant details

Assessment of cold water storage tanks

- Dimensions and capacity
- Does the tank have less than 24 hrs usage?
- Material and construction
- Supply, stored and ambient temperature
- Insulation type, thickness and conditions
- Close fitting lid, ball valve hatch and air vent installed
- Cistern configuration e.g. single, linked, series, parallel
- Overflow pipe – size, material, screened
- Warning pipe – size, material, screened
- Internal tank condition
 - Sludge/slime
 - Corrosion

- Stagnation
- Contamination
- Water flow
- Supply pipe – size and material
- Outlet pipe – size and material
- Type and condition of insulation to supply and outlet pipe work
- Type and condition of valves o supply and outlet pipe work
- Return pipes – quantity and size
- Power, lighting and access

Asset register

The contractor must include an asset register for every asset associated with the water system. Each asset must be given a unique asset no. The assets are to be included within two sections – plant assets and outlet assets and include the following

Plant asset register

- Asset No
- Description
- Location
- Comments
- Supply Temperature
- Stored temperature

Outlet Asset registers

- Asset no
- Location
- Description
- Type
- Quantity
- Supplied from
- Aerosol potential – yes/no
- Comments
- Temperatures – hot, cold, mixed
- Sentinel – yes/no

Actions / recommendations

The contractor must include a full list of recommendations for items required to be carried out to the cold water storage tanks, calorifiers, water heaters and associated system to meet the requirements of ACOP/L8 guidance. The recommendations must be recorded in asset no order and include the following information

- Asset no
- Recommendation
- Priority
- Section for signature and date on completion of remedial action

System Schematics

The Contractor must include a schematic drawing of each building on site showing the complete water systems. The schematic must show each room containing a water system asset and the supplies to the rooms. The drawing must include a legend and the water services within the building, colour coded to show:-

- Mains cold water
- Cold water down services
- Hot water flow
- Hot water return
- Plant with asset number
- Sentinel outlets identified

Appendix G

Appendix G - CS 040 Guidelines Non Conformance Reporting ACoP L8 Monitoring					
Asset Type	Test	Control Limit	Result	Contributing Risk Factor	Priority Rating
HWSV	Storage Temperature	>60 °C	<48°C	<i>If switched ON and thermostat set</i>	1
			>48<55°C		2
			>55<60°C		3
	Return Temperature	>50 °C	>20 <50°C	2	
	Visual inspection of drain water	Clear within 5L of through flush	Fail	<i>If storage/return temperature >20 <48 °C</i>	1
	Visual inspection of internal surfaces	Accumulation of scale	Present		1
Accumulation of sediment		Heavy		1	
Accumulation of sediment		Moderate		2	
Storage WH	Outlet Temperature	>50 °C within 1 minute	>20 <50°C		2
	Visual inspection of drain water/internal	Free from organic matter	Fail		2
Limited Storage WH	Outlet Temperature	>50 °C within 1 minute	>20 <50°C		3
	Visual inspection of drain water/internal	Free from organic matter	Fail		3
Combi Boiler/PHE	Flow Temperature	>60 °C	>20 <48°C		2
			>48<60°C		3
Domestic CWST	Incoming Main Temperature	<20 °C	>25°C		1
			>20°C		1
	Storage Temperature	<20 °C	Present		1
			Presence of corrosion	Heavy	1
	Visual Internal Inspection	Stagnation or bio films	Presence of corrosion	Moderate	2
			Presence of corrosion	Light	3
	Sediment accumulation	Sediment accumulation	Heavy		1
			Moderate		3
Visual Design/Condition Inspection	Compliant with Water Regulations	No		2	
Potable CWST	Presence of corrosion	Sediment accumulation	Yes		1
			Yes		1
	Visual Design/Condition Inspection	Compliant with Water Regulations	No		1
Sentinel Cold Water Outlets	Temperature	<20 °C within 2 minutes	>20°C >20°C	<i>After flushing if still out of spec inspect CWST</i>	2
Sentinel Hot Water Outlets	Temperature	>50 °C within 1 minute	>20<50		2
			>60°C	<i>Scald risk if vulnerable adults/children present</i>	1
TMVs	Mixed Outlet Temperature	Not exceeding 43°C	>50°C		2
		Fail Safe Check	Fail	<i>Scald risk if vulnerable adults/children present</i>	1

Page 105

Appendix H – Technical Procedures

Tank Cleaning Procedure – Appendix H.1

The Process Steps [Free Residual Chlorine]:

- [a] Isolate and shut down the cold water storage tank and remove the cover or inspection hatch. The operator shall display warning labels in and around the plant room stating chlorination in progress;
- [b] The tank shall be examined visually for signs of corrosion [if applicable], debris and biological growth. The water storage temperature and any such defects identified are recorded for reporting to the Facilities Management Department.
- [c] Permission must be obtained from the relevant water authority before dumping the tank contents. The relevant water authority will need to be informed of the volume to be discharged, any further quantities of chlorinated water are to be dumped as a result of tank cleaning should be included. It may be necessary to neutralise the chlorine with sodium thiosulphate before dumping.
- [d] Tank cleaning shall be performed using non-abrasive cleaning materials;
- [e] Protective clothing, footwear, face goggles and masks are to be employed. These items must be specific to the task of cleaning and chlorination, and must not have been used for other activities;
- [f] Where tanks are to be painted, only paints or coatings and materials that are recognised and approved by the WRC and detailed in "The Water Fittings and Materials Directory" shall be employed. The specification for any such product must be submitted to the Responsible Person or their nominated deputies for their approval prior to use;
- [g] Details of all cleaning and painting materials shall be listed on the cold water tank inspection record sheet;
- [h] On completion of the cleaning / painting exercise, and after the necessary paint maturing period [if required], the tank shall be thoroughly flushed and washed out with water, refilled to the tanks normal working level and dosed to a level of 50 ppm free residual chlorine. The tank shall be left to stand for a minimum period of one [1] hour. During this period the level of free chlorine shall be monitored and maintained at 50 ppm;
- [i] On completion of the tank chlorination period, the tank contents shall be discharged as previously detailed in section [c]. The tank is then refilled to its normal operating level with fresh water. The free chlorine level in the tank water shall be monitored until it matches that of the incoming water supply;

- [j] On completion of this exercise the tank shall be put back into service immediately.
- [k] On completion of the tank cleaning or inspection exercise, it is recommended that details should be entered onto a tank cleaning record label to be posted on or adjacent to the tank. Such a label must be robust, and able to withstand contact with water;
- [l] Details of findings, actions taken and test results are to be entered onto the Cold Water Storage Tank Maintenance Record Form. Chlorination certificates are to be obtained and held within the onsite hard copy logbook and on the web based electronic system.

Any defects shall be reported immediately to the responsible person or nominated deputies.

Once a system has been filled, the Council and / or their Contractors will not drain that system unless full disinfection is to be undertaken before the system is brought into use again. The only exception is in the case of an emergency and with the consent of the Responsible Person. However there should be a regular flushing programme if the system is not brought into service within one week. Records of such flushing should be kept.

Cold Water Tanks with Water Temperature Greater Than 20°C – Appendix H.2

- [a] The person identifying, or receiving report of a tepid cold water occurrence must notify the Responsible Person [*Legionella*] as soon as the problem is identified, and an appropriate Facilities Management Department representative should be identified to be responsible for dealing with the occurrence;
- [b] The individual shall verify the problem by taking the water temperature of the appropriate cold water storage tank. If the cold water storage temperature is greater than 20°C, the temperature of the incoming mains cold water should be taken;
- If the incoming water is 19°C or greater, and the tank water is no greater than 2°C higher, no actions are necessary unless the incoming water exceeds 25°C [in which case the Responsible Person [*Legionella*] will contact Scottish Water];
- If the water temperature in the tank is greater than 2°C higher than the incoming water supply, the following actions should be implemented [see [c] to [f)];
- [c] The reason for failure must be identified and rectified as soon as possible;
- [d] If the cause of the warm water is identified as heat gain to the tank, drain the tank contents and clean if necessary. A permanent solution, such as ventilation for the plant room or reducing the water storage volume must be implemented;
- [e] If the reason for warm water is found to be due to ingress of hot water [i.e. from the DHW system or similar source], the Facilities Management representative department shall:
- [i] Inform the users of the failed system that they must not draw off any cold water [and hot water if a single domestic hot water header] from the affected system until further notice;
- [ii] Chlorine disinfection of the tank and distribution system shall be carried out in accordance with the tank cleaning/disinfection procedure;
- [iii] The tank shall be brought back into service, as detailed in the tank cleaning/disinfection procedure;
- [iv] The users shall be informed that the system is back in operation;
- [f] The Facilities Management Department Representative shall complete an Incident Report Sheet.

Calorifier Maintenance – Appendix H.3

The cleaning procedure for calorifiers is as follows:

- [a] The calorifier shall be taken off line by isolating the service valves;
- [b] The calorifier shall be heated up until the contents have reached 70°C and held at this temperature for a period of at least one [1] hour;
- [c] The calorifier is drained [with consideration of the Water Authority as before]. The inspection hatch is removed. The drain down time is recorded and a photo of the internal condition is to be taken and held with the record sheet;

The calorifier should be drained with the hose pipe outlet discharging below water level i.e.: into a container of clean water.

- [d] The calorifier should then be hosed out to remove any debris, scale or other deposit. Care will be taken to ensure that aerosols are kept to a minimum;

If the calorifier does not have an inspection hatch, the pipe work at the top of the vessel should be disconnected to allow the insertion of a high pressure water hose to allow debris to be washed down off internal surfaces;

- [e] The internal and external condition of the calorifier and pipe work should be examined; any defects should be reported immediately to the Supervisor. The safety valve should be checked, overhauled and re-set as necessary including temperature, altitude and pressure gauges to be checked;
- [f] The calorifier can then be re-constructed, ensuring that only materials and compounds approved in the Water Fittings and Materials Directory are employed;
- [g] On completion of calorifier assembly, the following sequence must be undertaken:
 - [i] Refill with cold water;
 - [ii] Drain the calorifier [advise should be sought from the local Water Authority prior to any discharge];
 - [iii] Refill with cold water, leave cold feed valve open;
 - [iv] Run calorifier at a temperature of 70°C for at least one [1] hour. Test the operation of a high limit cut out system if fitted. Check the temperature of the calorifier top and bottom with a touch thermometer;

- [v] Allow the system to cool down to the operating temperature and put the system back on line immediately.
- [vi] Adjust any controls as necessary;
- [h] Undertake sterile bacteriological sampling for the parameters identified in the cold water tank cleaning procedure. Samples to be taken from the calorifier drainage tap [if possible], and nearest and furthest outlet.
- [i] Complete calorifier maintenance record form.

Domestic Hot Water Temperature Less Than 45°C – Appendix H.4

- [a] In the event of a reduction in domestic hot water temperature to less than 45°C, the Responsible Person [*Legionella*] or nominated deputies and the appropriate Facilities Management Department representative should be notified immediately. It may be wise to fit calorifiers with an alarm system. This will be relatively easy to achieve for vessels on a BMS system. The reason for failure must be identified and rectified as soon as possible;
 - [b] The Facilities Management Department representative shall notify the users on the failed system that they must not draw off any hot water from the affected services until further notice;
 - [c] The user shall ensure that their staff members are aware of the situation, and that in turn shall prevent patients from using affected services;
 - [d] Thermal disinfection shall be carried out by raising the domestic hot water temperature of the contents of the calorifier to 60°C, and then circulating this water throughout the affected distribution system for at least one [1] hour. Each tap or appliance should be run in sequence until full temperature is achieved [this should be measured]. To be effective the temperature in the calorifier should be high enough to ensure that all distribution outlets receive water at a temperature of greater than 60°C. Ensure the return flow to the calorifier is a minimum of 50°C;
- Care must be taken not to exhaust the calorifier during this operation;
- [g] The users shall be informed that the system is back in operation;
 - [h] Legionella samples are to be taken;
 - [i] The Facilities Management Department representative shall complete an Incident Report Record.

Management of Water Features Appendix H.5

Carry out the *minimum* following maintenance on the Water Feature; Ensure a log is kept of all activities;

Daily

Check water treatment – if not automatic or continual.

Check water clarity.

Check disinfectant levels in reservoirs.

Monthly

Bacteriological water sampling

Check Temperatures

Filter inspections and changes

Clean pumps

Quarterly

Undertake Legionella sampling (As a measure of best practice, undertake monthly legionella sampling)

Annually

Check written procedures are up to date

Operational Temperature Checks

If the stored water temperature within any supply water storage cistern is recorded at a temperature above 20°C it is recommended that to avoid bacteria proliferation within the cistern, that disinfection remedial action be undertaken as soon as possible.

Management of Sprinkler Systems – Appendix H.6

Carry out the minimum following maintenance on the Sprinkler System; Ensure a log is kept of all activities;

Recommendations for Control

Monthly

Undertake temperature testing on a monthly basis when the system is operational to ensure that temperatures of <20°C are maintained.

Quarterly

The sprinkler heads should be subject to regular inspections and cleaned as required.
Filters should be cleaned and disinfected.

Undertake Legionella sampling when system in use (As a measure of best practice, undertake monthly legionella sampling when system is in use)

As Required

Drain down the system when not in use (i.e. winter periods)

On re-commissioning the system after a period of low use, all operatives who may come into contact with water particles from the system must wear disposable particulate respirators with a minimum assigned protection factor of 3.

Ensure any automatic sprinkling operation is undertaken during the hours when the Golf Course is closed to the public.

Ensure that any hose-based manual watering from the system has been preceded within the previous week by an automatic sprinkling operation.

The pump and filters should be serviced in accordance with manufacturer's instructions.

Appendix H

Appendix I - Legionella Site Log Book

Site Visitor Log Sheet

DATE	NAME	ORGANISATION	COMMENTS	SIGNATURE

Procedure for flushing of Infrequently Used Outlets

Outlets and showers that are not frequently used can present conditions that favour the proliferation of legionella bacteria. Therefore it is important that **ALL** infrequently used outlets and showers are identified and flushed weekly.

TAPS

- Run both the hot and cold tap(s) for a period of five minutes. This should be carried out with minimal production of aerosol.
- If an outlet has not been used in more than seven days then this outlet should be purged to a drain.
- This action **MUST** be recorded on the '*infrequently used outlets*' log sheet.

SHOWERS

- Run both the hot and cold water supplies, or warm if on a single mixer tap, through the showerhead for five minutes.
- Remove the shower head. If this is not possible, then run the shower into a bucket of water or wrap a black bag (with a hole in the bottom) round the head fixture to avoid creating an aerosol.
- This action **MUST** be recorded on the '*infrequently used outlets*' log sheet.

Infrequently Used Outlets Log

Location	Signature	DATE