
# Water Safety Plan

## Document Overview

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| **Title** | Water Safety Plan for the Control of Legionellosis and Other Waterborne Bacteria | | |
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| **Ownership** | Water Hygiene Group (WHG) | | |
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## Version History

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| 21.01.2022 | Primary Water Solutions Ltd | 1 | First Draft |
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## Contents

## 1.0 Purpose

This Water Safety Plan has been developed by Warwickshire County Council to address the risks posed by legionella bacteria within the Council's portfolio of buildings and other risk system and the subsequent potential for a case of legionellosis to occur amongst staff, support staff, students, visitors, and other persons who may be in contact with water systems controlled by the Council.

The Water Safety Plan is used in conjunction with the Council's Water Safety Policy, which provides an overview of the responsibilities of the Council regarding the management of water systems in line with the requirements of the Health & Safety ay Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002.

To satisfy the requirements of the aforementioned legislative documents this Water Safety Plan has been developed and implemented based on the requirements of the Approved Code of Practice "The Control of Legionella Bacteria in Water Systems" L8 4th Edition (2013) and subsequent Technical Guidance Documents HSG 274 Part 2 "The control of Legionella Bacteria in Hot & Cold-Water Systems", HSG 274 part 3 "The Control of Legionella Bacteria in Other Risk Systems" (as applicable) and BS:8680 (2020).

## 2.0 Scope

This Water Safety Plan applies to the design, operation and maintenance of risk systems as defined in Approved Code of Practice "The Control of Legionella Bacteria in Water Systems" L8 4th Edition (2013) where conditions may be conducive to the proliferation of bacteria and a production of water vapour may present a risk of exposure.

The sources include but are not limited to the following domestic or non-domestic water systems and associated plant.

- Domestic Hot & Cold-Water Systems
- Cold Water Storage Tanks / Cisterns
- Calorifiers (including immersion, primary heating coil and other)
- Localised water heaters (including low volume, high volume, instantaneous & Combination water heaters with storage)
- Aerosol producing assets (including showers, spray taps and other)
- Specialist Services Equipment/test systems
- Air Handling Units (AHUs) with Cooling Capacity)
- Other Risk Systems (as indicated by risk assessment)

## 3.0 Background to Legionnaires Disease

Legionellosis is a collective term for diseases caused by legionella bacteria including the most serious legionnaires' disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires' disease is a potentially fatal form of pneumonia, and everyone is susceptible to infection. The risk increases with age, but some people are at higher risk, e.g. people over 45, smokers and heavy drinkers, people suffering from chronic

respiratory or kidney disease, diabetes, lung and heart disease or anyone with an impaired immune system.

The bacterium Legionella pneumophila and related bacteria are common in natural water sources such as rivers, lakes and reservoirs, but usually in low numbers. They may also be found in purpose-built water systems, such as cooling towers, evaporative condensers, hot and cold-water systems and spa pools. If conditions are favourable, the bacteria may multiply, increasing the risks of legionnaires' disease, and it is therefore important to control the risks by introducing appropriate measures.

Legionella bacteria are widespread in natural water systems, e.g., rivers and ponds. However, the conditions are rarely conducive for people to catch the disease from these sources. Outbreaks of the illness occur from exposure to legionella growing in purpose-built systems where water is maintained at a temperature high enough to encourage growth, e.g. cooling towers, evaporative condensers, hot and cold water systems and spa pools used in all sorts of premises (work and domestic).

Any water system that has the right environmental conditions could potentially be a source for legionella bacteria growth. There is a reasonably foreseeable legionella risk in water systems if:

- water is stored or re-circulated as part of systems.
- the water temperature in all or some part of the system may be between 20–45 °C
- there are deposits that can support bacterial growth, such as rust, sludge, scale and organic matter.
- it is possible for water droplets to be produced and, if so, if they can be dispersed.
- it is likely that any of your employees, contractors, visitors etc could be exposed to any contaminated water droplets.

## 4.0 Responsibilities

**4.1** To ensure suitable management of water systems on site in line with the requirements of the L8 ACoP, the Council has a defined management hierarchy as detailed below. The responsibility for the management of water system falls to the detailed persons however individual tasks and responsibilities may fall outside this defined structure relating to the use of specialist contractors/independent consultants who provide relevant information to those detailed, details of these can be found within tale 2.0 below.

**Table 1.0 Management Hierarchy**

| Council Position | L8 Position | Responsibilities |
|---|---|---|
| Chief Executive | Duty Holder | Ultimately responsible for safe operation of the water systems within the premises. |
| Assistant Director for Enabling Services | Responsible Person | Responsibility, on behalf of the duty holder for the safe management and operation of the water systems on a day-to-day basis. |
| Delivery Lead Soft FM | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |

| | | |
|---|---|---|
| Delivery Lead Property Maintenance & Compliance Services | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |
| Lead Commissioner CDM & Compliance | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |
| Health Safety & Wellbeing Technical Specialist | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |

**4.2** Specialist contractors are engaged by the Council to complete various tasks relating to control of site water systems, main points of contact for a given contract are detailed below. Each contractor is to hold relevant memberships/ accreditations for relevant bodies such as Legionella Control Association (LCA), Water Industries Approved Plumbers Scheme (WIAPS) or demonstrate suitable competency for a given contracted task through internal training programmes. This ensures all works conducted are completed to a high professional standard and that materials used by these persons do not increase the risk of bacterial contamination of a given water system. An independent consultant is also retained to form part of the Water Hygiene Group (WHG) and provide specialist advice.

**Table 2.0 Specialist Contractors / Independent consultants**

| Company | Position | Responsibilities |
|---|---|---|
| Primary Water Solutions Ltd | Projects Director / Owner | Retained independent consultant, direct advise to water safety group |
| Primary Water Solutions Ltd | Projects Director / Owner | Legionella Risk Assessment |
| Dodd Group | Account Manager | Various Water Hygiene Monitoring Tasks as instructed by the Council's Service Contract |

**4.3** A water Hygiene Group (WHG) is also engaged with the management of water systems at the Council. The WHG includes those persons detailed within table 3.0.

**Table 3.0 Water Hygiene Group (WHG) Members**

| Council Position | L8 Position | Responsibilities |
|---|---|---|
| NA- | Independent External Competent Person | Retained independent consultant, direct advice to water hygiene group |
| Delivery Lead Soft FM | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water |

| | | |
|---|---|---|
| | | systems on a day-to-day basis as required |
| Delivery Lead Property Maintenance & Compliance Services | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |
| Lead Commissioner CDM & Compliance | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |
| Health Safety & Wellbeing Technical Specialist | Deputy Responsible Person | Responsibility, on behalf of the Responsible Person for the safe management and operation of the water systems on a day-to-day basis as required |
| Property Services Enabling Services - Resources Directorate | NA | To support Deputy Responsible Persons on a day-to-day basis. |

**4.4** The WHG takes the collective ownership and review of the Water Safety Plan (WSP) and ensures that water related hazards are suitably addressed. The overall objective of the WHG is to ensure the safety of all water across the Council's portfolio. The WGH have the following remit;

- To set strategic direction in relation to water safety
- To provide reports on water quality including performance against standards relating tom water safety/quality.
- To ensure adequate control is maintained across the Council's portfolio and that regular reviews of control are undertaken to ensure that it remains effective.
- Provide guidance, direction and recommendations as required due to an adverse event relating to water systems and water hygiene.
- To develop and review the Water Safety Plan (WSP).
- Review results and define subsequent actions if required for adverse water samples.

The Council's Water Safety Policy details the approach of the Council to the control of legionellosis on site, the allocation of responsibilities and specific requirements of those involved across all areas of the organisation.

**4.5** Role of the Site Responsible Person. For County maintained school buildings this will always fall to the Headteacher and for non-schools the Site Manager. Their roles include:

i. Ensure that adequate resources are made available to enable water monitoring to be carried out on the premises to which they are responsible (Refer to appendix B)
ii. Appoint, in writing, a competent person(s) for carrying out water hygiene monitoring work in accordance with this Water Safety Plan
iii. Ensure that sufficient competent person(s) are trained in order to carry out

the role;

iv. Ensure that the health and safety arrangements for the premises takes into account the additional responsibilities and arrangements of this procedures document

v. Ensure that WCC equipment is maintained in-house or by contractors to standards necessary for the control of Legionella

vi. Ensure that any contractor working on the water system takes into consideration the requirements of the Health and Safety Executive's (HSE) Approved Code of Practice & Guidance L8, '*Legionnaire's Disease*, *The control of Legionella bacteria in water* systems' and that only approved fittings are used as required by the Water Supply (Water Fittings) Regulations 1999 and relevant British Standards.

vii. Ensure that the Water Hygiene Log Book is made available to any contractor working on the water system on the premises in order to ensure that relevant information is completed.

viii. Ensure that monitoring is carried out in accordance with the recommendations of the Water Hygiene Risk Assessment and that the Water Hygiene Log Book is maintained and up to date

ix. Ensure that any proposed alterations/modifications or additions to the water system are reported to Property Services via the Mechanical Services Engineer for approval prior to any works taking place. This will enable a competent person to comment on the use of materials, design, etc.,

x. Ensure that modifications/alterations or additions to the water system are NOT carried out prior to receipt of approval from Property Services and/or Strategic Asset Management.

xi. Ensure that other persons that may be affected by any remedial works carried out on the property's water systems are taken into consideration prior to works being commissioned and that advice is sought where necessary (this could include employees, pupils, visitors/public, contractors, those using the premises under a letting arrangement etc.)

xii. Ensure reporting of incidents under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 – RIDDOR and report to Council's H&S Department.

xiii. Regularly review that the procedures are being carried out in accordance with this Water Safety Plan

xiv. Complete the Check Sheet (Appendix E), ideally quarterly as a minimum. Any non-conformities must be reported to the Deputy Responsible Person(s)

**4.6** Role of the Site Competent Person. For County maintained school buildings this will typically fall to the caretaker, premises representative, or Site Manager. In all cases this person will be notified in writing that they are deemed the 'Site Competent Person' for that site by the Site Responsible Person (person with overall health and safety responsibilities at the property). It is expected that as a minimum the Site Competent Person will have received the necessary training as organised by the Deputy Responsible Person and will receive refresher training at least every 3 years. The Site Competent Person(s) is responsible for:

i. Carrying out checks/monitoring (Refer to appendix B) as recommended within the Water Hygiene Log Book and ensuring that adequate records are maintained e.g. flushing of outlets, temperature monitoring of hot and cold water outlets and pipework (where thermostatic mixer valves are fitted) and ensure that during periods of absence these continue to be carried out. Where this is not possible seek advice from the

Compliance Service Delivery Team. This includes for example, when properties are closed for summer breaks and other holiday periods, ensuring that problems are reported to the Site Responsible Person for the particular property and Property Services as early as possible (ensuring that a record is entered within the Log Book stating what actions have been taken);

ii. Ensuring that contractors who work on the water system complete the Water Hygiene Log Books where required;

iii. Cooperating with Property Services staff and specialist nominated Legionella contractors when checks on the systems and re-inspections are carried out.

**4.7** Where sites do not have the resource in house to deliver the tasks outlined under the Site Competent Person role, the Site Responsible Person has the below options as an alternative, in either case the competency of those attending needs to be assessed.

i. Procure a LCA registered water hygiene company

ii. Procure Warwickshire County Council's 'Mobile Compliance Testing Team'.

## 5.0 Record Keeping

**5.1** The Council's program of inspection, monitoring and maintenance in relation to the control of legionella bacteria and other waterborne pathogens requires significant record keeping and close management based on the size of the portfolio of buildings to ensure water systems are operating correctly within parameters defined within this Water Safety Plan. This is achieved through the use of a site water Log Book. This hard copy Log Book is used to maintain current and historical records in line with the requirement of the L8 ACoP. The system is used to record and maintain the following records.

- Names and position of operational management
- Names of Responsible Persons with responsibilities for tasks and duties in relation to the control of Legionella
- Water Safety Risk Assessments.
- Details of works/ repairs carried out on water systems in relation to non-conformances.
- Results of monitoring, inspections, tests, sampling, and checks carried out.
- Up to date Schematic drawings of hot and cold water installations.
- The completed flushing records.
- Reports of the cleaning and disinfection procedures carried out including certificates.
- Details of training for all staff including internal personnel and contractors.
- Results of Legionella/ Microbiological Sampling.

**5.2** Each asset related to the sites water system has been assigned a unique identifier including plant and outlets, this allows simple identification of an asset or item of plant within the wide portfolio of buildings. The unique identifiers are used by on site staff and external contractors to record the results of monitoring/maintenance such as temperature monitoring and plant inspections. The use of this system allows a collaborative approach of record keeping between all parties involved in control.

## 6.0 Management Reviews

**6.1** the Council operate a policy of regular review meetings, meetings are held on a quarterly basis. Reviews are held with members of the Water Hygiene Group (WHG) in attendance. The Water Hygiene Group includes members across various disciplines and includes an independent consultant from an LCA registered company (see also section 4.3)

**6.2** The aim of these reviews is to ensure critical information relating to the management of the water systems from the previous quarter is distributed to those directly involved with management of the water systems so they can be disseminated to site responsible persons where required. Action plans in reaction to issues found in the previous quarter can be formulated, time scales for completion allocated based on the associated risk. During subsequent review meetings actions from the previous quarter are reviewed.

**6.3** The Water Safety Plan (WSP) is reviewed at a period of no more than 3 years ideally annually or when significant changes to water systems, additional information on control methods of when control is identified as being ineffective based on the results of monitoring and inspections as identified by the Water Hygiene Group (WHG). The WSP may also be reviewed in the following circumstances.

- A change to the water systems on site or their use.
- A change to the use of buildings in the Council's portfolio.
- New information available about the risks or control measures.
- Water Hygiene Group reviews indicating that control measures are no longer effective.
- Changes to key personnel within the Water Hygiene Group
- The detection of legionella bacteria within Council's water systems.
- A case of legionnaire's disease/ Legionellosis associated with the Council's portfolio.

**6.4** Reviews of site Water Log Books are completed by site responsible persons on a regular basis but at least on a quarterly basis (See appendix B). Required actions as a result of monitoring are then escalated to Property Hotline, 01926 414123, hotline@warwickshire.gov.uk

## 7.0 Training

**7.1** The Council operate a policy for training in line with the requirements of the L8 ACoP. Those involved with control of water systems are trained to the required standard depending on their roles.

- Responsible Person(s) / Water Safety Group – Role of Responsible Person Training.
- Role of the Site Responsible Person Training.
- Legionella Awareness Training for Site Competent Persons.
- Legionella Awareness and Competent Person Training.

**7.2** Regular refresher training is undertaken at an interval of not greater than 3 years, this ensures that training remains current and up to date for all involved with the control of legionellosis on site. Refresher training will also be undertaken if legislation or approved code

of practise L8 are changed, this ensures that training remains current and abreast of changes which may affect the management or suitable control of water system on site.

## 8.0 Risk Assessment & Reviews

**8.1** Risk Assessments will be conducted in all premises as part of a 2 or 4 year rolling programme (or more frequently if there is reason to believe that the assessment is no longer valid e.g. due to a significant system change or change of use of the building) and a monitoring and maintenance regime implemented. All Risk Assessments will be carried out under the instruction of the WSG. The programme will be subject to review periodically under the advice of the specialist Legionellosis Risk Management Consultants.

**8.2** Complete risk assessments of the sites water systems including physical assessment of plant / associated distribution systems and the review of control measure will be conducted on a 2 or 4 yearly basis and in line with BS8580;2019. This will be completed by a Legionella Control Association registered company.

**8.3** Risk assessment reviews are also undertaken in line with the requirements of the L8 ACoP under the following circumstances, The responsibility of initiating reviews under these circumstances will remain with the WHG.

- A change to the water system or its use.
- A change to the use of the building where the system is installed.
- New information available about the risks or control measures.
- The results of checks indicating that control measures are no longer effective.
- Changes to key personnel.
- Legionella detected in the system.
- A case of Legionnaires' disease/ Legionellosis associated with the system.

## 9.0 Control Measures

**9.1** Control requirements for the sites water system are derived from Technical Guidance Documents HSG 274 Part 2 "The control of Legionella Bacteria in Hot & Cold-Water Systems" and part 3 The Control of Legionella Bacteria in Other Risk Systems". The aim of these control measures is to;

- Avoid water temperatures between 20 °C and 45 °C and conditions that favour the growth of legionella bacteria and other microorganisms.
- Avoid water stagnation which may encourage the growth of biofilm.
- Control the release of water spray.
- Maintain the cleanliness of the system and water in it.
- Use suitable water treatment techniques (as applicable)
- Take action to ensure the correct and safe operation and maintenance of the water system.

**9.2** The primary means of control of legionella bacteria implemented by the Council is that of Temperature. Maintaining temperatures outside 20-45$^0$C has proven efficacy against the proliferation of legionella bacteria. The specific parameters for control are detailed within

section 10.0 of this document, this gives specific information regarding temperature requirements for specific plant and water systems and defect rectification issues given a specific circumstance. The actions may not cover all eventualities but are a basis for rectification.

**9.3** A secondary strategy for control has also been implemented at some sites, this takes the form of Chlorine Dioxide (CL02) treatment. Treatment is applied on monitored in line with the requirements of HSG 274 as detailed within section 11.0. In all cases this is to be used as supplementary treatment rather than in place of temperature control.

**9.4** Control requirements for "other risk" systems have been based where and applicable on the requirements of part 3 The Control of Legionella Bacteria in Other Risk Systems". However other risk systems within the portfolio of Council fall out of the scope of this documents in the majority of instances. Control requirements have been devised on a risk assessment-based approach, the efficacy of these control measure will be reviewed on a regular basis during WHG meetings and alterations made as required based on results.

**9.5** Parameters for control where applicable will be detailed in site Log Books with clear procedures if results falls outside of a defined control parameters.

## 10.0 Primary Control – Temperature

**10.1** Maintaining cold water service temperatures <20$^0$C at cold water outlets and hot water service temperatures at outlets >50 $^0$C is proven by the completion of sentinel temperature monitoring at defined outlets, in line with the requirements of HSG 274 part 2 this monitoring is completed monthly unless specifically stated within this water safety plan.

**10.2** In addition to monthly sentinel monitoring rotational temperature monitoring is also conducted over a defined period. Rotational temperature monitoring builds a temperature profile of a given building/system and ensures operational temperatures are as required to reduce the potential for bacteria proliferation across that system. Records to be kept in the site Log Book under 'Annual Temperatures / Other Outlets'.

**10.3** All temperatures obtained from water systems either by site staff or external contractors is completed with a suitably calibrated digital temperature probe.

**Table 4.0 – Temperature requirements at outlets**

| Location Type | Temperature Requirement | Parameters |
|---|---|---|
| Hot Water Sentinel Outlet | Minimum 50$^0$C | Temperature to be achieved within 1 minute of outlet operation |
| Cold Water Sentinel Outlet | Maximum 20$^0$C | Temperature to be achieved within 2 minutes of outlet operation |
| Hot Water Rotational Outlet | Minimum 50$^0$C | Temperature to be achieved within 1 minute of outlet operation |
| Cold Water Rotational Outlet | Maximum 20$^0$C | Temperature to be achieved within 2 minutes of outlet operation |
| Hot Water Distribution Primary Return Loop | Minimum 50$^0$C | Temperature to be achieved <30 seconds (Preferably instantly) |
| Hot Water Distribution | Minimum 50$^0$C | Temperature to be achieved <30 seconds (Preferably instantly) |

| | | |
|---|---|---|
| Subordinate Return Loop | | |
| Hot Water Distribution Tertiary Return Loop | Minimum $50^0$C | Temperature to be achieved <30 seconds (Preferably instantly) |

**10.4** It is essential that temperatures which fall outside the parameters identified above are identified and suitable action taken to address the root cause issue of the temperature failures. Table 5.0 defines the action taken in the event of these failures by the Council. Failures in temperature are recorded in site Log Books and if required escalated to Property Hotline, 01926 414123, hotline@warwickshire.gov.uk.

**Table 5.0 – Temperature Failure Required Actions**

| Failure | Investigative Action (s) | Corrective Action |
|---|---|---|
| Hot Water Outlet < $50^0$C | 1- Retake temperature at outlet to confirm temperature<br>2-Establish the frequency of outlet usage<br>3- Confirm the operating parameters of hot water source | 1-Enter location / outlet into weekly flushing regime to ensure regular usage.<br>2-Adjust temperature of hot water source, then ensure minimum delivery temperatures. |
| Cold Water Outlet > $20^0$C | 1- Retake temperature at outlet to confirm temperature<br>2-Establish the frequency of outlet usage<br>3- Confirm operating temperature of supply source. | 1-Enter location / outlet into weekly flushing regime to ensure regular usage.<br>2-Review turnover rate of stored water. |
| Return loops (primary, subordinate, tertiary) < $50^0$C | 1-Retake temperature at loop to confirm temperature<br>2-confirm return temperature at supply source (>$50^0$C)<br>3-confirm local outlet temperature (>$50^0$C)<br>4-Check operation of return pump | 1-Increase temperature at supply source<br>2-resinstate/repair return pump<br>3-rebalance hot water return |

**Cold Water Storage Tanks**

**10.5** Outlet supply temperatures from cold water storage tanks are monitored in line with section 10.1. In addition to this on an annual basis (Typically conducted over the Summer months) temperature from a remote part of the tank and the ball valve of the tank are recorded (including header tanks of combination water heaters with storage). Temperatures for each part of the tank should be <$20^0$c in line with the requirements of HSG 274. In addition, the temperature difference between these two temperatures is recorded, a temperature difference of <$2^0$c is required.

**Table 6.0 Cold Water Storage Tank Temperature Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| Supply temperature to tank >$20^0$c | 1-review incoming mains temperature to building | 1-Reduce capacity of tank based on turnover review |

| | | |
|---|---|---|
| | 2-Review risk assessment for outstanding actions | 2-complete outstanding remedial actions |
| Stored Water Temperature >20$^0$c | 1-Review turnover of tank<br>2-Review risk assessment for outstanding actions | 1-Reduce capacity of tank based on turnover review<br>2-complete outstanding remedial actions |
| >2$^0$c difference between building incoming main & stored water temperature | | |

**Centralised Hot Water Storage Vessels (>15L)**

**10.6** Outlet supply temperatures from centralised water heaters are monitored in line with section 10.2. In addition to this, on a monthly basis in line with requirements of HSG 274 part 2 the flow and return temperatures are recorded from centralised vessels. Target temperatures are defined as 60$^0$c or greater from the flow of the vessel & 50 $^0$c or greater from the return to the vessel.

**Table 7.0 Centralised Water Heater Temperature Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| Flow <60$^0$c | 1-check thermostat set temperature<br>2-check heat source for correct operation | 1-adjust thermostat to raise vessel temperature<br>2-Reinstate heat source to vessel / adjust temperature<br>3-confirm action by retaking temperatures |
| Return <50$^0$c | 1-check operation of return pump<br>2-confirm operating temperature of vessel | 1-reinstate / repair return pump<br>2- adjust thermostat to raise vessel temperature<br>3-confirm action by retaking temperatures |

**High Volume Local Water Heaters (>15L)**

**10.7** Outlet supply temperatures from high volume water heaters are monitored in line with section 10.1 **.** In line with the requirements of HSG 274-part 2 local water heaters with a volume of >15L are set to a minimum temperature of 60$^0$c to address the risk associated with storing a higher volume of stored water.

**Table 8.0 High Volume Local Water Heaters (>15L) Temperature Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| Operational temperature <60$^0$c | 1-Check water heater for operation<br>2-Check water heater thermostat temperature. | 1-reinstate water heater<br>2- adjust thermostat setting<br>3-retest operational temperatures after action |

**Combination Water Heaters with Storage**

**10.8** Outlet supply temperatures from combination water heaters are monitored in line with section 10.1 **.** In line with the requirements of HSG 274-part 2 water heater set temperature is set as close to but not exceeding $60^0$c.

**Table 9.0 Combination Water Heaters with Storage Temperature Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| Operational temperature <$60^0$c | 1-Check water heater for operation<br>2-Check water heater thermostat temperature. | 1-reinstate water heater<br>2- adjust thermostat setting<br>3-retest operational temperatures after action |

**Low Volume Local Water Heaters (<15L)**

**10.9** In line with the reduced risk associated with water heaters of this type, temperatures are recorded on a monthly basis (As not all units can confirmed to be under regular use). Based on the reduced capacity the temperature will be recorded at the "set" point of the water heater, the maximum temperature during the 1-minute operation period will be recorded. In line with the requirements of HSG 274-part 2 water heater set temperature is set as close to but not exceeding $50^0$c.

**Table 10.0 Low Volume Local Water Heaters (<15L) Temperature Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| Operational temperature <$50^0$c | 1-Check water heater for operation<br>2-Check water heater thermostat temperature. | 1-reinstate water heater<br>2- adjust thermostat setting<br>3-retest operational temperatures after action |

**Instantaneous Water Heaters**

**10.10** Based on the operation of these water heaters and the low associated inherent risk, there is no requirement for these to be temperature checked as long cold supply temperatures are being monitored and producing cold water below $20^0$c. Any associated spray devices would need to be cleaned and disinfected as per showers on a quarterly basis.

## 11.0 Supplementary Control – Chlorine Dioxide

**11.1** Chlorine dioxide is an oxidising biocide/disinfectant that when used correctly, has been shown to be effective at controlling both legionella and biofilm growth in hot and cold-water systems. The Council have adopted a strategy for supplementary control based on the use of chlorine dioxide.

**11.2** Use of chlorine dioxide as a legionella control strategy is subject to BS EN 1267132 and national conditions of use require that the combined concentration of chlorine dioxide, chlorite and chlorate in drinking water does not exceed 0.5 mg/l as chlorine dioxide.

**Table 12.0 Chlorine Dioxide Systems & Buildings**

| Buildings Covered |
|---|
| The Pears Centre 1342/1334 |
| |

**11.3** To ensure the application of chlorine dioxide is having the desired effect as a supplementary control method routine inspection and maintenance of the system is essential. To ensure the desired outcome of supplementary control the following control is implemented as detailed within HSG 274 part 2.

**Table 13.0 Chlorine Dioxide System Checks**

| Frequency | Control |
|---|---|
| Weekly | Check the system operation and chemical stocks in the reservoir; |
| Monthly | Test the treated water for both chlorine dioxide and total oxidant/ chlorite at an outlet close to the point of injection to verify the dosage rate and conversion yield; |
| Monthly | Measure the concentration of chlorine dioxide at the sentinel taps – the concentration should be at least 0.1 mg/l; and adjust the chlorine dioxide dosage to establish the required residual at the sentinel sample points; |
| Annually | Test the chlorine dioxide and total oxidant/chlorite concentration at a representative selection of outlets throughout the distribution system – the concentration should be at least 0.1 mg/l chlorine dioxide. |

**11.4** The application of Chlorine Dioxide as a Primary Control Measure would require proven efficacy, this is achieved for a programme of legionella sampling, however the Council rely on the use of chlorine dioxide as a supplementary control only, as such temperature remains the primary means of legionella control. The efficacy of the secondary regime would need to be verified if to be relied on in the future as a primary control method.

**Table 14.0 Chlorine Dioxide System Failures**

| Failure | Investigative Action(s) | Corrective Action(s) |
|---|---|---|
| <0.1 mg/l | 1- recheck levels at outlets<br>2-Check operation of dosing system.<br>3-Check chemical reserve levels. | 1-Adjust dosing system settings<br>2- recheck levels at outlets |
| >0.5 mg/l | 1-Check operation of dosing system. | 1-Adjust dosing system settings<br>2- recheck levels at outlets |

## 12.0 Inspection and Maintenance

### Cold Water Storage Tanks

**12.1** Inspection of site cold water storage tanks / cisterns (including header tanks associated with combination type water heaters) are completed on an annual basis in line with the requirements of ACoP L8/HSG 274 part 2 . Inspections will be completed by an external competent contractor who are registered with the Legionella Control Association (LCA) and can demonstrate suitable competency for the given task. The purpose of inspections is the identify the presence of conditions which may be conducive to the proliferation of legionella

bacteria or other waterborne bacteria. The inspections also ensure the ongoing compliance with the Water Fitting Regulations 1999.

**12.2** The responsibility for subsequent actions based on the inspection of a given cold water storage tank falls to the site responsible person to escalate accordingly. This information will be recorded in the site Log Book. Once appropriate actions have been completed this will be recorded in the Log Book.

**12.3** If chemical disinfection is required due to the condition of a given tank or cistern then disinfection will be completed in line with BS8558**.** Disinfection of cold-water storage tanks (and associated distribution systems) may also be required under the following circumstances. The need for system disinfection under these circumstances will be the responsibility of the Responsible / Deputy Responsible Person under the advisement of the external contractors and/or independent consultant(s)

- New systems prior to hand over
- Hot and cold-water systems after modifications. This includes new pipe work, plus any of the original pipe work which may have become contaminated.
- Legionella monitoring shows tests that a system is infected with Legionella.

**Centralised Hot Water Plant**

**12.4** Internal inspections of centralised hot water plant (including immersion cylinders, calorifiers and other hot water vessels storing >15Litres of water) are completed on an annual basis in line with the requirements of ACoP L8/HSG 274 part 2. Inspections will be completed by an external competent contractor who are registered with the Legionella Control Association (LCA) and can demonstrate suitable competency for the given task. The purpose of inspections is the identify the presence of conditions which may be conducive to the proliferation of legionella bacteria including the presence of sediment and scale within internal sections of vessels.

**12.5** Where practicable inspection hatches are removed, and visual inspections completed on internal services of the vessels or where access is available a borescope used as an alternative method for inspection. The results of the internal condition of vessels are considered by the external contractor and as required suitable remedial actions reported to the site responsible person and detailed in the site Log Book.

**12.6** Where the techniques prescribed above are not practicable for storage vessels as an alternative means of assessing internal condition and as prescribed in HSG 274 part 2 a sample of drain water will obtained through a suitable drain valve fitted. The sample will be assessed for the following criteria;

- Clarity
- Quantity of Debris
- Temperature

**12.7** The assessment of the above criteria and the subsequent remedial actions falls with the external contractor who will provide the Site Responsible Person with requirements.

**Thermostatic Mixing Valves & Thermostatic Taps**

**12.8** Thermostatic blending devices (TMVs/TMTs) are serviced on an annual basis, the servicing includes the full strip down, clean and disinfection of removable parts including strainers and filters as fitted. Servicing of this equipment is to be completed by an external competent contractor who are registered with the Legionella Control Association (LCA) and

can demonstrate suitable competency for the given task. The service of devices includes a failsafe check ensuring that suitable scald protection is being offered by a given device.

**12.9** The results of servicing and failsafe checks are recorded in the site Log Book by the external contractor and as required suitable remedial actions reported to the site responsible person.

**Clean & Disinfection of Aerosol Producing Assets**

**12.10** Aerosol producing assets which cannot be removed to reduce the inherent risk are cleaned and disinfected on a quarterly basis to control conditions which may be conducive to legionella proliferation. The clean and disinfection process includes all associated removable parts including hoses (where fitted) and as practicable.

**12.11** As practicable and based on risk assessments the reduction in aerosol production forms part of the Council's management of water systems, where assets such as spray taps can be removed this will be completed as part of any improvements works.

**12.12** The disinfection of aerosol producing assets is completed by an external competent contractor who are registered with the Legionella Control Association (LCA) and can demonstrate suitable competency for the given task. Records of disinfection are recorded in the site Log Book.

**12.13** The Council identifies the following assets as aerosol producing and as such are included in regime of quarterly clean and disinfection;

- Fixed Shower Heads.
- Removable Shower Heads.
- Pot Wash / Over sink catering wash down hoses.
- Spray taps (where fitted).
- Jet wash lances
- Hairdressing Hose / shower attachments.

**Expansion Vessels**

12.14 Expansion vessels in systems operating at steady temperature and pressure may have long periods without exchanging any significant amount of water and therefore can be at risk of aiding microbial growth to address this risk the Council advises monthly to six monthly purging of expansion vessels as identified by risk assessments and meet the following risk criteria;

- Volume of Vessel is equal to or greater than 5L.
- Vessels are fitted to long runs of pipe work exceeding 0.5m.

12.15 Purging of vessels which meet the above criteria will be completed by framework contractor, completed tasks are recorded in the site Log Book.

12.16 Expansion vessels which do not meet the above criteria are considered an acceptable risk if in line with HSG 274 they meet the below criteria.

- Fitted in cool areas on cold flowing pipes.
- Mounted as close to the incoming water supply as possible.
- Mounted vertically on pipework to minimise any trapping of debris.
- Volume of vessels is minimised.

**Flushing of Infrequently Used Outlets**

**12.17** To control the risk presented by stagnation of water services, infrequently used outlets and assets are flushed on a weekly basis at a minimum, the duration of flushing will be a minimum of 3 minutes. Flushing will include all assets within a given location which has been identified as infrequently used, for example sanitary equipment with toilet locations or equipment such as hot water boilers within kitchens.

**12.18** Flushing is conducted to avoid the creation of an aerosol release to minimise the risk associated with the task. Reduction in risk of exposure will include removal aerosol producing assets such as shower heads before flushing reducing the number of people within the area of assets to be purged to a single person. Where a risk of exposure is considered increased and cannot be reduced through practical means suitable RPE will be worn in the form of an FFP3 mask. These masks will be face fit tested for each user to ensure that a suitable level of protection is achieved.

**12.19** Flushing is to be undertaken by Site Competent Persons as instructed by the Site Responsible Person, who have had a minimum of legionella awareness training, this allows then to identify the risks associated with the flushing of infrequently used outlets and ensures that risks are minimalised. Actions are recorded within the site Log Book.

**12.20** As required by a given situation this flushing may be increased as required, for example outlets which have had positive legionella results will be flushed daily until satisfactory results have been obtained. The need for increased flushing will be driven by the WHG.

**Miscellaneous Connected Equipment**

**12.21** Other domestic equipment connected to the distribution systems such cold water vendors, hot water boilers, dishwashers, ice machines and washing machines are subject to maintenance in line with manufacturers recommendations. These records are to be kept within the Site Log Book.

## 13.0 Other Risk Systems

### 13.1 Swimming Pool & hydro pools

The installation and maintenance of all swimming pools and hydro pools falls under the responsibility of the Site Responsible Person. As assurances to the Council's Duty Holder, the Deputy Responsible Persons will instruct legionella risk assessments every two years by an independent LCA registered water hygiene contractor and an annual H&S pool inspection conducted for all traded sites by a H&S representative of Warwickshire County Council.

### 13.2 Grey Water Recycling

Any Grey Water Systems will be subject to legionella risk assessment that will dictate any routine control measures that are required alongside information held within Operations and Maintenance Manuals.

### 13.3 Rain Water Recycling

Any Rain Water Systems will be subject to legionella risk assessment that will dictate any routine control measures that are required alongside information held within Operations and Maintenance Manuals.

### 13.4 Water Chiller / Water Fountain

If schools take the decision to install a drinking water fountain, the Council recommends that the installation is done by a company/contractor registered with an approved body such as WIAPS, Watermark.

Consideration for the frequency of use of the water chiller / water fountain. If the water vending service is not used frequently there is a potential to create a dead leg in the water system. Where this is the case the water chiller / water fountain will need to be managed in accordance with the guidance in this document relating to **Flushing of Infrequently Used Outlets paragraphs 12.17 to 12.20**

The school are responsible for maintenance in line with manufacturers recommendations. These records are to be kept within the Site Log Book.

### 13.5 Water Butts

Investigations suggest 95% of water butts contain legionella bacteria. As it is not practicable to put in place all the necessary control measures that would be required to utilise such a water storage system safely the Council does not recommend using water butts and where in place the Council advises water butts are safely removed.

Where water butts continue to be used:

- Water butts should never be connected to any pipe that creates a significant respirable water droplet aerosol release i.e. pressure washer or hose with sprays.
- Only use a Watering Can to minimise respirable water droplet aerosol release.
- The use of water butts is by someone who understands the risks. The water in the water butt can also contain other contaminants and as such washing of hands after using water butts needs to be considered.
- Ensure periodic emptying and cleaning to stop a biofilm/sediment build up.
- Position the water butt out of direct sunlight to limit water temperature increase and growth of biofilms.
- In periods of no use or drought you should disconnect and 'up turn' the water butt to empty the water otherwise stored below the outlet tap.

### 13.6 ANY OTHER WATER SYSTEMS

Whist completing legionella risk assessments, any other water systems found on site will be excluded from the assessment but recommendations made to advise that a water system specific risk assessment to be completed.

## 14.0 Scalding Risk

**14.1** The risk from scalding on site is controlled by the use of thermostatic devices (TMVs/ TMTs), the requirement for the use of these devices is established by suitable scalding risk assessment. The risk posed by legionella bacteria is increased by the use of blended water temperatures as such a policy of removing those devices which are not required to protect vulnerable persons (such as elderly and young) is implemented, as required appropriate safety signage posted warning user of potential risks. Devices which are deemed necessary are maintained in line with section 12. Guidance recommends that a formal Risk Assessment should be made of outlets and surfaces to enable the production of an action plan or risk

minimisation scheme. Properties will be assessed on a priority basis and each site responsible person will be informed whether your property is to be included. The scalding risk assessment report provides a risk minimisation scheme similar to the legionellosis scheme. This scheme identifies areas that do not meet the recommendations and includes a prioritised plan of action

## 15.0 Monitoring for Legionella

**15.1** Microbiological monitoring of domestic hot and cold water supplied from the mains is not usually required unless identified by risk assessment, failures in control are identified from monitoring records or to prove the efficacy of an alternative treatment regime.

**15.2** Failures in control will be identified by Site Responsible Person and escalated via the Property Hotline, 01926 414123, hotline@warwickshire.gov.uk. The requirement for the implementation of a sampling regime for a given situation will be initiated by the Water Hygiene Group (WHG).

**15.3** Where legionella sampling is undertaken due to a situation arising from failures in control or conducted to prove the efficacy of an alternative treatment regime samples should be obtained by trained and competent persons, sampling should be conducted in line with BS 7592 "*Sampling for Legionella organisms in water and related materials."* Analysis of water samples for legionella should be performed in UKAS accredited laboratories with the current ISO standard methods for the detection and enumeration of legionella included within the scope of accreditation.

**15.4** Based on the level of legionella bacteria found within a given sample appropriate action should be taken based on the below;

**Table 16.0 – Actions for systems *without* secondary control**

| **Legionella Detection Level** | **Action** |
|---|---|
| **>100 cfu/l and up to 1000** | **Single Sample;**<br><br>1-Re-sample location to confirm result.<br>2-If second sample returns similar results (>100 cfu/l and up to 1000) review control measures & historical records for location.<br>3-Thoroughly purge outlet to drain taking care to prevent aerosol release (record actions)<br>4-Disinfect the outlet (record actions)<br>5-Resample 2-7 days after disinfection (record actions)<br><br>**Multiple Samples;**<br><br>1-Re-sample locations to confirm results.<br>2-If second samples return similar results (>100 cfu/l and up to 1000) review control measures & historical records for location.<br>3-Throughlty purge outlets to drain taking care to prevent aerosol release (record actions)<br>4-Disinfect the outlets (record actions)<br>5-Resample 2-7 days after disinfection (record actions)<br>6-If post outlet disinfection results returned are unsatisfactory (>100 cfu/l and up to 1000) completed disinfection of affected system. |

**Table 16.0 (cont) – Actions for systems *without* secondary control**

| Legionella Detection Level | Action |
|---|---|
| **>1000 cfu/l** | **All Samples;**<br><br>1-Isolate the location(s) / area(s) from non-essential staff / students<br>2-Resample location to confirm result<br>3- Carry out immediate review or risk assessment / control measures to highlight any remedial actions required for completion.<br>4- Disinfect the effected outlets (record actions)<br>5-Resample 2-7 days after disinfection (record actions)<br>6-If post outlet disinfection results returned are unsatisfactory (>1000 cfu/l) completed disinfection of affected system. |

**Table 17.0 – Actions for systems *with* secondary control**

| Legionella Detection Level | Action |
|---|---|
| **>100 cfu/l and up to 1000** | **Single Sample;**<br><br>1-Re-sample location to confirm result.<br>2-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br>3-If Chlorine Dioxide Level <0.1mg/l check operation of dosing unit.<br>4-If second sample returns similar results (>100 cfu/l and up to 1000) review control measures & historical records for location including historical chlorine dioxide levels at outlet<br>5-Thoroughly purge outlet to drain taking care to prevent aerosol release (record actions)<br>6-Disinfect the outlet (record actions)<br>7-Resample 2-7 days after disinfection (record actions)<br>8-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br><br>**Multiple Samples;**<br><br>1-Re-sample locations to confirm results.<br>2-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br>3-If Chlorine Dioxide Level <0.1mg/l check operation of dosing unit.<br>4-If second samples return similar results (>100 cfu/l and up to 1000) review control measures & historical records for locations including historical chlorine dioxide levels at outlet<br>5-Thoroughly purge outlets to drain taking care to prevent aerosol release (record actions)<br>6-Disinfect the outlets (record actions)<br>7-Resample 2-7 days after disinfection (record actions) |

| | |
|---|---|
| | 8-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br>9-If post outlet disinfection results returned are unsatisfactory (>100 cfu/l and up to 1000) completed disinfection of affected system. |

**Table 18.0 (cont) – Actions for systems *with* secondary control**

| Legionella Detection Level | Action |
|---|---|
| **>1000 cfu/l** | **All Samples;**<br><br>1-Isolate the location(s) / area(s) from non-essential staff / students<br>2-Resample location to confirm result<br>2-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br>3-If Chlorine Dioxide Level <0.1mg/l check operation of dosing unit.<br>3- Carry out immediate review or risk assessment / control measures including historical chlorine dioxide levels at outlet to highlight any remedial actions required for completion.<br>4- Disinfect the effected outlets (record actions)<br>5-Resample 2-7 days after disinfection (record actions)<br>8-Test affected outlet for Chlorine Dioxide Level (0.1-0.5mg/l)<br>6-If post outlet disinfection results returned are unsatisfactory (>1000 cfu/l) completed disinfection of affected system.<br>8-Ensure Chlorine Dioxide Levels in system (0.1-0.5mg/l) at all outlets |

**Microbiological monitoring**

**15.5** Cold water storage tanks which provide “potable” drinking water can be considered as potable, assuming they are being inspected regularly, clean and disinfected as necessary and comply to the water regulations.

**15.6** Sampling is conducted on a 6-monthly basis by competent external contractor from each cold-water storage tank for the following parameters.

- Total Aerobic Colony Count (TVC) 2 day @ 37$^{O}$C
- Total Aerobic Colony Count (TVC) 3 day @ 22$^{O}$C
- Total Coliforms
- Escherichia

**15.7** Unsatisfactory results are reported to the Site Responsible Person and WHG to take appropriate actions based on contractor recommendations.

## 16.0 Building Closures

**16.1** Where a property or building is closed for a greater period than 7 days, the Responsible Person and /or Deputy Responsible Person ensure that the following procedures are suitably undertaken and recorded on site Log Book. It is essential that the period of closure is established as soon as practicable, and procedures implemented as below based on the confirmed closure period.

**16.2** The responsibility for informing the Deputy Responsible Persons falls under those in control of a specific premises including head teachers, facility managers when changes to building use occurs, this will allow the Deputy Responsible Person to take the required action based on the below.

**Short / Limited Closure**

**16.3** Where a closure is not foreseen to be more than 60 days a nominated individual/multiple persons normally from site services team who have an appropriate level of training and competence is/are identified to run every tap, outlet, sanitary equipment and miscellaneous connected equipment for a minimum period of three (3) minutes once per week. Flushing will be conducted systemically by nominated persons to ensure that sufficient water is moved through the building over the flushing period. These actions are to be recorded in the site Log Book.

**16.4** Before the department or property is re-occupied an inspection and bacteriological test of the water systems are conducted. Results are reported to the Deputy Responsible Person (Water) identifying any remedial works that may be required.

**Closure of Greater than 60 Days**

**16.5** When a property or building is to close with no planned re-opening date, or where the closure period exceeds 60 days, the following necessary precautions should be put into place to address the associated with legionella and other water borne pathogens.

**1-**Prevent access to the affected area. Access should only be granted if relevant risk assessments and method statements are adhered to, these should specifically include: methods of minimising aerosol release and contact during any maintenance or ad-hoc works.
**2**-All hot and cold-water systems associated with the affected area should be left full of water.
**3-**Pipework is preferably disconnected from the mains at the last flowing point or alternatively adequate back flow prevention devices should be installed.
4-Any deviations from the above should be agreed by the WHG.

**Re-occupation of an Area Closed for Greater than 60 Days**

**16.6** In the event of re-occupation of a building or property closed for greater than 60 days, the Deputy Responsible Person should be informed by those persons responsible for the reopening of the building the planned re-opening date, any proposed changes of use of the building and any areas that are not to be used on reopening.

**16.7** Before the water system is put back into service, any necessary modifications and maintenance (In accordance with method statements for safe operation) are carried out prior to the full and clean and disinfection of the entire system in accordance with the requirements of L8 ACoP and BS8558.

## 17.0 Case or Outbreak of Legionnaires' Disease

**17.1** Public Health England (PHE) will inform the Council of a confirmed case or outbreak of Legionnaires' Disease. Any confirmed cases of Legionnaires' disease must be reported to the Council's Health and Safety team who will carry out their own internal investigation. A request for information will be made to the Responsible Person and is likely to include the following, all records held on site should be made available on request to aid investigation.

- Water Safety Plan
- Risk Assessment(s)
- Temperature Monitoring Records
- Flushing Records
- Positive Legionella Bacteria sample results
- Disinfection Certificates
- Servicing & maintenance records

**17.2** The Responsible Person is to ensure that the Duty Holder is aware of the situation. An outbreak is defined by the Public Health Laboratory services as two or more confirmed cases of Legionellosis occurring in the same locality within a six-month period. If the water system has been implicated in an outbreak of Legionnaires' Disease emergency cleaning of this system has to take place as soon as possible.

**17.3** If a confirmed case or an outbreak of Legionnaires' disease is reported the Responsible Person and /or Deputy Responsible Person should organise the emergency system disinfection and sampling following the actions below as appropriate to a given situation.

**1-**The system should be isolated immediately from use once identified and the areas in the direct vicinity of the contamination should be isolated to all personnel i.e. lock doors to toilets or tank rooms as applicable and keep them shut until satisfactory cleaning /disinfection works have been carried out to obtain final clearance.

**2-**Once the system has been isolated a second sample should be taken in line with BS7592 immediately in order to confirm the result (the local authorities may request that this be undertaken by them) once this sample has been taken it will then be possible to commence the cleaning / emergency disinfections in accordance with the procedures outlined in HSE ACOP L8 and HSG274. The work will be carried out by a specialist water service provider as described in BS8558.

**3-**Post disinfection another sample should be taken in line with BS7592 to confirm the disinfection has been successful, once this sample has been taken and results received from the laboratory the external contractor / independent consultant should be consulted to establish if the water system can be reinstated. As required continue sampling / further remedial actions.

## 18.0 Occupation of New Premises

**18.1**. At the point of contractor 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 are submitted to the Responsible / Deputy Responsible Person.

**18.2** Within 7 days of handover the contractor and/or Council will organise full system disinfection alongside validation sampling for legionella and potable quality.

**18.3** A legionella risk assessment will also be provided by the contractor on completion of the building works. The contractor will ensure that the assessment is carried out by company registered under the Legionella Control Association (LCA).

**18.4** The responsibility for maintaining the water system remains with the new building contractor until official handover is completed between contractor and Council, after official handover and up to occupation of the building the responsibility lies with the Council. If the period between handover and occupation of the building is greater than 7 days, then the procedure for short term closure is implemented (section 16.0)

**18.5** Disinfection of the water system(s) is to be completed before hand over of the building, disinfection(s) should be completed in line with BS8558. Occupancy should occur as soon as possible post hand over to prevent further costs being incurred due to the need for re-chlorination of the water systems.

## 19.0 New System Design & Alterations to Current Systems

**19.1** The design and installation of cold water & hot water distribution systems will comply with the relevant parts of:

- The Water Supply (Water Fittings) Regulations 1999
- BS EN 806-2
- BS 8558
- HSG 274 Part 2 Paragraphs 240 -249

**19.2** Prevention and growth of Legionella in such water systems will be paramount when a new system is being designed. Consideration and effect will be given to the maintenance and repair of such systems in respect of normal running and operation.

**19.3** When existing systems are being considered for alteration, the introduction of measures for prevention and minimisation of the growth of Legionella as described in HSG 274 Part 2 within these systems will be a priority within the design. Prior to the alterations being undertaken, the proposed modifications to the resulting system will be reviewed in respect of the modifications and the system, to ensure that all reasonable measures have been taken to eliminate or, if not possible, minimise the system supporting the growth of Legionella. For example, the installation of flexible hoses are not permitted, alterations to pipework will not create dead ends, and the installation of spray taps needs due consideration in line with the guidance highlighted this document.

**19.4** From design all the way through to occupation the building will undergo regular legionella risk assessments. This will be in the form as formal assessments and desk based appraisals.

## 20.0 Chemical Handling

**20.1** All chemicals used on site for application to the water system (secondary control / clean and disinfection chemicals) will be subject to suitable risk assessment prior to installation or use. The responsibility for the completion of suitable risk assessment in line with the COSSH regulations will be the responsibility of the person(s) using, applying or those deemed as responsible for a given process or task. It remains the responsibility of the responsible / deputy

responsible person to ensure that suitable risk assessments are in place to prevent hazards from occurring relating to the use of chemicals on site. Details of COSSH risk assessments are submitted by contractors and held in close proximity to the chemicals held.

## 21.0 Risk from Drowning

Any risks associated with drowning would be identified following any site specific dynamic risk assessment. Following the identification of any drowning risks, specific controls must be put in place prior to commencement of works.

## 22.0 Confined Space Working

Confined space working would be identified following any site specific dynamic risk assessment. Following the identification of a confined space, specific controls must be put in place prior to commencement of works.

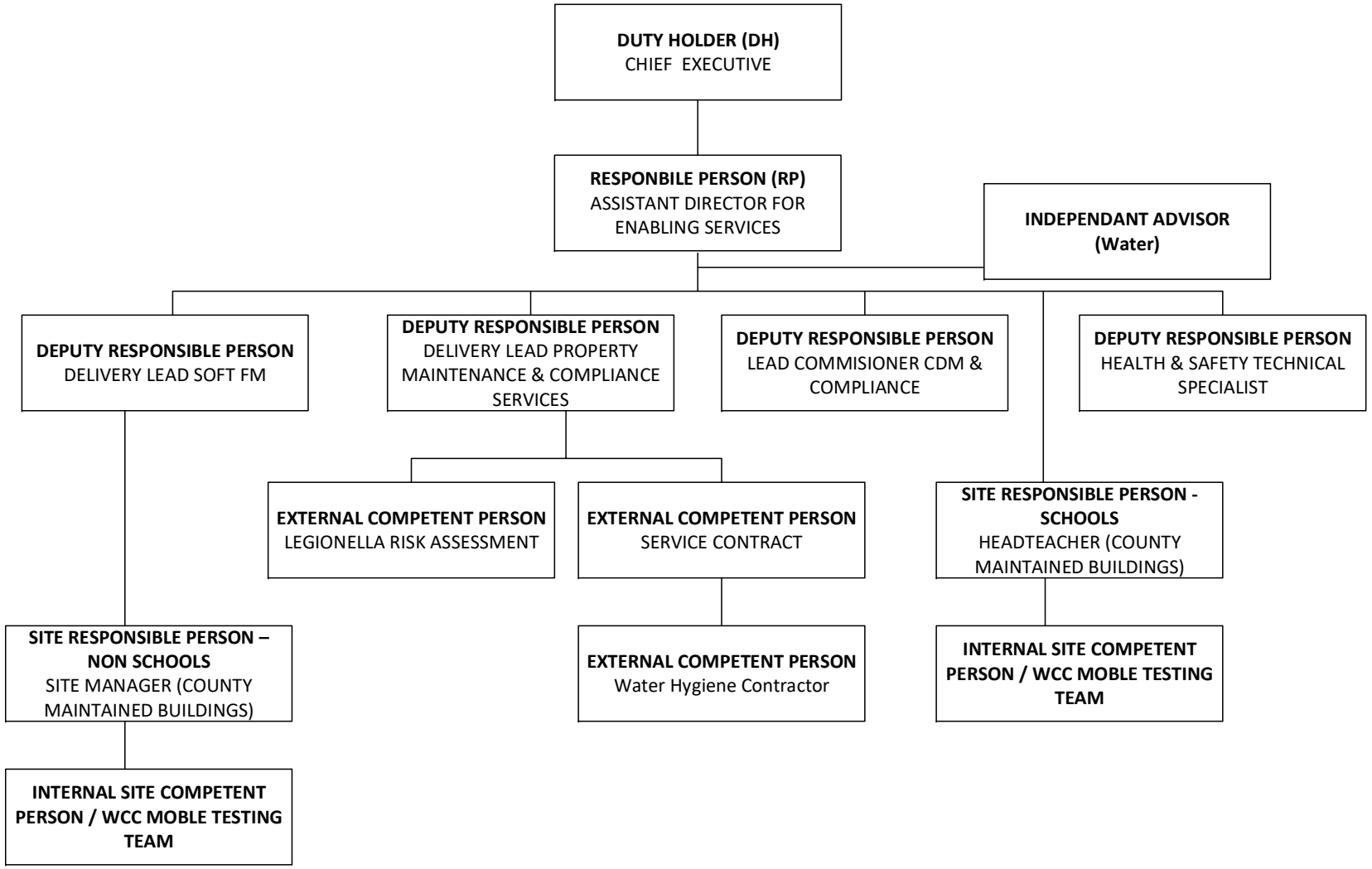
## 23.0 Working at Height

Working at height would be identified following any site specific dynamic risk assessment. Following the identification of working at height risks, specific controls must be put in place prior to commencement of works.

## 24.0 Electrical Safety

Electrical risks would be identified following any site specific dynamic risk assessment. Following the identification of any electrical risks, specific controls must be put in place prior to commencement of works.

## Appendix A – Organisational Structure for Management of Water Safety at WCC



## Appendix B – Routine Control Measures & Responsibilities

| **Key** | |
|---|---|
| WCC | Warwickshire County Council |
| SCP | Site Competent person / WCC Mobile Testing Team / LCA Company |
| ECP | External Competent Person |
| ND | Not Defined |
| FC | Framework Contractor |

| Type of Water System | Service / Task | Frequency | Resp. |
|---|---|---|---|
| **Hot water services** | Arrange for samples to be taken from hot water calorifiers, in order to note condition of drain water. | Annually | ECP |
| | Visual check on internal surfaces of calorifiers for scale and sludge. | Annually | ECP |
| | Where there is no inspection hatch, purge any debris in the base of the calorifier to a suitable drain.<br>Collect the initial flush from the base of hot water heaters to inspect clarity, quantity of debris, and temperature. | Annually, but may be increased as indicated by the<br>risk assessment or result of<br>inspection findings | ECP |
| | For non-circulating systems: take temperatures at sentinel points (nearest outlet, furthest outlet and long branches to outlets) to confirm they are at<br>a minimum of 50 °C within one minute (55 °C in healthcare premises). | Monthly | SCP / ECP |
| | For circulating systems: take temperatures at return legs of principal loops (sentinel points) to confirm they are at a minimum of 50 °C (55 °C in healthcare premises). Temperature measurements may be taken on the surface of metallic pipework. | Monthly | SCP / ECP |
| | For circulating systems: take temperatures at return legs of subordinate loops to confirm they are at a minimum of 50 °C (55 °C in healthcare premises). Temperature measurements may be taken on the surface of metallic pipework. | Quarterly | SCP / ECP |

| | | | |
|---|---|---|---|
| | Check temperatures in flow and return at calorifiers / hot water storage vessels. | Monthly | SCP / ECP |
| | All HWS systems: take temperatures at a representative selection of other points (intermediate outlets of single pipe systems and tertiary loops in circulating systems) to confirm they are at a minimum of 50 °C (55 °C in healthcare premises) to create a temperature profile of the whole system over a defined time period. | Monthly | SCP / ECP |

| **Type of Water System** | **Service / Task** | **Frequency** | **WHO** |
|---|---|---|---|
| **Cold water services** | Inspect cold water storage tanks and carry out remedial work where necessary. | Annually | ECP |
| | Check temperatures at sentinel taps (typically those nearest to and furthest from the cold tank, but may also include other key locations on long branches to zones or floor levels). These outlets should be below<br>20 °C within two minutes of running the cold tap. To identify any local heat gain, which might not be apparent after one minute, observe the thermometer reading during flushing. | To cover all locations in a year. | SCP / ECP |
| | Check the tank water temperature remote from the ball valve and the incoming mains temperature. Record the maximum temperatures of the stored and supply water recorded by fixed maximum/minimum thermometers where fitted. | Annually (Summer) or as<br>indicated by the temperature<br>profiling | ECP |
| | Check thermal insulation to ensure it is intact and consider weatherproofing where components are exposed to the outdoor environment | During Legionella Risk Assessment or following temperature non-conformances | ECP |

| | | | |
|---|---|---|---|
| | Check that temperature is below 20°C after running the water for up to two minutes in the *sentinel taps | Monthly | SCP / ECP |
| **Water Heaters (Less than 15L)** | Check the temperature of the water heater to ensure the heater operates between 50 - 60°C, or check the unit / installation has a high turnover of water. | Monthly | SCP / ECP |
| **Combination Style Water Heaters** | Check the temperature of the water heater to ensure the heater operates between 55 - 60°C. | Monthly | SCP / ECP |
| | Inspect cold water storage header tank and carry out remedial work where necessary. | Annually | ECP |
| **Shower heads / Spray Taps** | Dismantle, clean and descale shower heads and hoses. | Quarterly | ECP |
| **Little used outlets** | Flush through and purge to drain, or purge to drain immediately before use, without release of aerosols. | Weekly | SCP |

| **Type of Water System** | **Service / Task** | **Frequency** | **WHO** |
|---|---|---|---|
| **TMVs** | Risk assess whether the TMV fitting is required, and if not, remove where needed, inspect, clean, descale and disinfect any strainers or filters associated with TMVs to maintain protection against scald risk, TMVs require regular routine maintenance carried out by competent persons in accordance with the manufacturer's instructions. | Annually or on a frequency defined by the risk assessment, taking account of any manufacturer's recommendations | ECP |
| **Expansion Vessels** | Where practical, flush through and purge to drain.<br>Bladders should be changed according to the manufacturer's guidelines or as indicated by the risk assessment. | Monthly–six monthly, as indicated by the risk assessment | FC |
| **Optional Services** | TVC and Coliform sampling. | As Required | ECP |

| | | | |
|---|---|---|---|
| **(Not driven by L8)** | | | |
| **Potable Cold Water Tanks** | TVC and Coliform, E-Coli sampling. | Six Monthly | ECP |

## Appendix C – Definitions

**Aerosol**: A suspension in a gaseous medium of solid particles or solid liquid particles having negligible falling velocity

**Bacteria**: A microscopic, unicellular (or more rarely multicellular) organism

**Calorifier**: Apparatus used to transfer heat to a vessel by indirect means, the source of heat being contained within a pipe or coil immersed in the water (also known as a cylinder)

**Cold Water Service (CWS):** Installation of plant, pipes and fitting in which cold water is stored, distributed and subsequently discharged.

**Chlorination:** A process using chlorine which destroys or irreversibly inactivates microorganisms and reduces their number to a non-hazardous level (also known as disinfection)

**Domestic Water Services:** Hot and cold water intended for personal hygiene, culinary, drinking water or other domestic purposes.

**Duty Holder -** The person with ultimate responsibility. They should appoint a person or persons in writing to take managerial responsibility and to provide supervision for the implementation of precautions. (ACOP L8, Para 39) Statutory Duty normally falls on the business owner, managing director or the person in control of premises or systems concerned. (ACOP L8, Para 23)

**Hot Water Service (HWS):** Installation of plant, pipes and fittings in which water is heated, distributed and subsequently discharged (not including cold water feed tank or cistern).

**Legionnaires' Disease:** A form of pneumonia caused by Legionella bacteria.

**Legionellae:** The genus Legionella belongs to the family legionellaceae that has over 40 species.

These are ubiquitous in the environment and found in a wide spectrum of natural and artificial collections of water.

**Legionella:** Type of aerobic bacterium that is found predominantly in warm water environments.

(Singular of Legionella.)

**L. pneumophila:** One of the causative organisms of Legionnaires' disease.

**Legionellosis:** Any illness caused by exposure to Legionella.

**Legionella Outbreak:** 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 six-month period.

**Pontiac Fever:** a disease caused by species of Legionella, an upper respiratory illness less severe than Legionnaires' disease.

**Responsible Person:** Responsible for the day-to-day control of identified risk areas. They should have a clear understanding of their duties and of the overall health and safety structure and policy within the organisation. They should also ensure the competence of any contractors carrying out work. (ACOP L8, Para 39-41). The Responsible Person should be a manager, director or have similar status and have sufficient authority, competence and knowledge to ensure the timely and efficient implementation of precautions. (ACOP L8, Para 44.

**Risk Assessment:** Identifying and assessing the risk from Legionellosis from work activities and water systems on premises and determining any necessary precautionary measures.

**Sentinel Taps:** For hot water services - the first and last taps on a recirculation system. For cold water systems (or non-recirculation hot water systems), the nearest and furthest taps from the storage tank: The choice of sentinel taps may also include other taps which are considered to represent a particular risk.

## Appendix D – Document References

The Health & Safety at Work etc. Act 1974

The Management of Health and Safety at Work Regulations 1999.

HSE Approved Code of Practice and Guidance (Document ACoP L8).

HSG 274 Part 2 “The control of Legionella Bacteria in Hot & Cold-Water Systems”

HSG 274 part 3 “The Control of Legionella Bacteria in Other Risk Systems”

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995.

The Control of Substances Hazardous to Health Regulations 2002.

Water Supply (Water Fittings) Regulations 1999.

WRAS Water Fittings and Materials Directory.

BS 8680:2020 Water Quality – Water Safety Plans – Code of Practice.

BS 7592 Sampling for Legionella Organisms in Water and Related Materials.

BS 8558 Guide to the Design, Installation, Testing and Maintenance of Services Supplying Water for Domestic use within Buildings and their Curtilages.

BS 8580 Water Quality – Risk Assessments for Legionella Control – Code of Practice.

## Appendix E – Site Responsible Person – Check Sheet

| SITE: | | UPRN: | |
|---|---|---|---|

| | Name & Job Title | Date of training last completed and by whom |
|---|---|---|
| Name of Site Responsible Person | | |
| Name of Site Competent Person | | |

**Record Keeping & Risk Assessments – (Check on Atlas to see if the most current version is printed)**

| | Hard Copy Present – Yes/No | Action Required / Completed |
|---|---|---|
| Water hygiene log book | | |
| Legionella risk assessment (RA) – survey date | | |
| Any significant water system changes since previous RA | | |
| Water drawing schematic & floor plans | | |
| Water hygiene policy and procedures | | |

**Routine Monitoring Check**

| TASK | Frequency | Completed By | Action Required |
|---|---|---|---|
| Flushing of infrequently used outlets | Weekly | | |
| Hot and Cold temperatures taken from sentinel outlets plus approx. 10% of other outlets. | Monthly | | |
| Temperatures taken from calorifiers (water heaters) flow and return. | Monthly | | |

**Routine Monitoring Check – Service Contract**

| | | | |
|---|---|---|---|
| Quarterly shower head & hose clean and disinfection. | Quarterly | | |
| Incoming cold water temperature and tank temperature. | Annual (Summer) | | |
| Internal inspection of calorifier and cold water storage tanks. | Annual | | |

**Auditor Details**

| | |
|---|---|
| Completed By: | |
| Date of Audit: | |