Subject	Water Systems Management Policy (Control of Legionella, Pseudomonas & Safe Hot Water)
1. Purpose	**1.1 Policy statement** It is the policy of (Insert name), to effectively manage all water systems in use in buildings owned or occupied by the School to control the risks from legionella, pseudomonas and scalding. The School shall achieve this objective by following the legal requirements and guidance contained within the Control of Substances Hazardous to Health Regulations 2002 and The control of legionella bacteria in water systems Approved Code of Practice and Guidance L8. To achieve this the School will; • Initiate a programme to identify and assess sources of risk within its water systems • Appoint a competent, 'responsible person' with sufficient authority and knowledge of the School's water systems to help take the measures needed to comply with the law • Appoint competent expertise to assist the responsible person in effectively delivering the Schools commitment to safe water systems • Clearly allocate roles and responsibilities to key personnel with duties under the policy • Prepare written scheme(s) for eliminating, preventing or controlling the risks identified • Implement, manage and monitor the control measures and precautions detailed within the written scheme • Keep records of the precautions implemented and keep their effectiveness under review This Policy gives the necessary direction to ensure the School complies with the above key objectives. The School (via the personnel identified in Section 2, below) will ensure this Policy is effectively communicated so that all relevant staff are aware of and comply with the contents herein. **1.2 Background** Legionella is a type of bacteria, which give rise to the risk of infection from diseases, collectively known as Legionellosis. The species Legionella pneumophila presents the most serious hazard, which is mainly, but not solely responsible for causing Legionnaires' disease. Legionnaires' disease is a pneumonia and has serious effects and is fatal in 10 -12% of cases. On average there are approximately 200-250 reported cases each year in the United Kingdom. Pseudomonas are a type of bacteria that can cause infections in the blood, lungs (pneumonia), or other parts of the body. Legionella and Pseudomonas bacteria occur naturally in the environment and can get into man made water systems. Once the bacteria get into a water system (particularly within a building), given certain conditions, they can multiply. Multiplication occurs mainly in warm (20ºC – 45ºC), stagnant or slow moving water. For the bacteria to cause disease or infection in a person they must be inhaled with small water droplets/aerosols. The disease / infection cannot be transmitted from person to person and it is not caught by drinking the affected water The School has a duty as an employer and owner of operational buildings to control the risks from legionella and pseudomonas and also to prevent the risk of scalding, as far as reasonably practicable. Whilst retaining the ultimate responsibility, the School will appoint competent persons to advice on the risks posed by its water systems and will allocate roles and responsibilities to key employees in order to put this policy into effect.
2. Responsibilities	**2.1 The Head Teacher** (aided by competent persons and the senior management team) will as far as reasonably practicable, ensure; • The effective implementation of this policy • The adequate provision and maintenance of suitable equipment and resources, working conditions and environments to make the policy effective

- That a robust audit process is in place to measure and review policy compliance and effectiveness
- Oversee the implementation and monitoring of the effectiveness of this policy within the School as a whole.

2.3 The Responsible Person (for water systems management) Need to clarify who is T&W's Appointed Person(s)

The School's appointed 'Responsible Person' will have sufficient authority and knowledge of the School's water systems to take the measures needed to enable the School to comply with the law, and will;

- Take day-to-day responsibility for implementing the key objectives outlined in the policy statement (1.1) and for controlling any identified risk from legionella bacteria
- Advise on the appointment of competent professional expertise to assist with the assessment, identification and management of risks to the school's water systems.
- Manage the competent professional expertise in the execution of their duties
- Ensure that suitable processes for testing and sampling of water systems are in place and effectively completed, suitable reports are produced as a result and all findings are recorded
- Ensure that all identified risks associated with deficiencies in water systems are clearly and swiftly brought to the attention of the relevant building manager for action
- Ensure that any deficiencies, not effectively addressed within a suitable timescale are followed up and escalated to higher tiers of management, as appropriate
- Take a lead role in any Water Safety Groups established at the Schools premises and the development of any Water Safety Plans developed under the Department of Health's 'HTM 04-01 Technical Memorandum' (as per 3.8, below).

2.4 Building Innovation Telford (BiT)
The teams within the Building Innovation Telford (BiT) Service will (If brought into);

- Provide (in conjunction with the responsible person) a service to ensure that competent assistance is appointed to carry out detailed risk assessments of water systems and provide risk control schemes.
- Ensure schematic drawings for the water systems in all operational buildings are available, maintained and stored on the P2 system.
- Ensure that appropriate testing and maintenance schedules are drawn up for all relevant water systems, equipment and buildings within their control.
- Provide advice to head teachers and managers of buildings *that are not under the control of the BiT water management processes* on how to obtain competent assistance for the management and compliance of their local water systems.
- Provide a design service so that new and/or refurbished systems are designed to eliminate the risk of legionellosis and, where this is not possible, enable it to be easily controlled.

2.5 Internal Health and Safety
The Internal Health & Safety Team, will support the responsible person in the design and implementation of the water systems management policy and the processes and control measures in place, and will:

- Periodically audit and review these processes at all school premises, as necessary
- Ensure that policy reviews and the internal audit process focus primarily on;
    - How effectively the policy is being implemented
    - Monitoring and reporting on any areas where the policy has not been implemented
    - Competence of the individuals who have responsibilities under this policy

2.6 School Governors and Head teachers *(for the purpose of this policy shall be collectively referenced as building managers)*

Building managers with operational control of buildings owned and/or used by the School and/or managerial responsibilities for staff who use or are exposed to water systems, will as far as reasonably practicable;

	• Oversee the management of buildings, workplaces and the water systems within their control and will manage those water systems in accordance with the School's key policy objectives outlined in the policy statement (1.1), above. • Ensure that competent assistance is obtained to identify, assess and manage the risks. *BiT will provide this assistance for all schools that have brought into their service. BiT will also advise on how to obtain this assistance if you are not in a core building / service area and still have a legal duty to comply with this policy.* • Where this competent assistance is provided from outside the Council *(i.e. not by BiT)* then the details of the competent assistance selected must be notified by the building manager to BiT so that this information can be recorded on the school's water systems database. This will be monitored by the Internal Health & Safety Team. • Maintain a record on the premises of the precautions in place to control the risk of legionellosis. • Where School services are delivered / supported from premises that are not owned by the school then the above duties must be carried out in accordance with the requirements of the lease and the building manager must provide BiT with proof of compliance with the key objectives of this policy and also ACOP L8 (The Control of Legionella Bacteria in Water Systems: Approved Code of Practice and Guidance). • Where a risk to water systems is identified within buildings not owned by the school, details of that risk must be communicated to BiT immediately along with copies of all relevant risk assessments and test and certification records associated with that risk. **2.7 Building Manager's and Head Teachers additional responsibilities** In addition to the key objectives outlined above the building manager or Head Teacher of each individual school is also responsible for the ensuring following additional actions are completed; • Ensuring site staff are aware of their responsibilities in relation to water safety risks and necessary controls. • Determining the 'low use outlets' (taps, showerheads, etc) and bringing these to the attention of appointed person so as to instigate a programme of regular (weekly) flushing, providing a method of recording. • Running of outlets where the system has not been used for some time i.e. shutdown of building (as detailed in item 3.4). • Where outlets are not used / required, request that the outlets are removed. • Manage and risk assess any other plant and systems containing water which is likely to exceed 20ºC and which may release a spray or aerosol during operation or when being maintained (examples are listed in 3.1.2). • Act on recommendations from competent assistance identified by the risk assessment • Report water temperatures which are outside the permitted parameters (see 3.2.3) • Where the site does not buy back into the services of Building Innovation Telford (BiT), arrange for any corrective measures to be undertaken where the temperatures recorded are outside the permitted parameters (see 3.2.3) • Ensure any building works arranged by the site, do not affect the water safety controls and the works themselves do not result in dead legs being left within the system. **2.8 Managers of Buildings /Head Teacher's providing care for vulnerable user groups.** Managers that have responsibility for provision of services to vulnerable groups have a key role in ensuring the effective implementation of this policy. Whilst the whole of this policy applies to such managers there are specific guidelines outlined within items (3.1.1, 3.8 & 3.9). **2.9 All Employees of the School** Must at all relevant times, to minimise the risk of injury to themselves, other colleagues, pupils or visitors to the School follow the guidance laid out within this document.
3. Arrangements	**3.1 Sources of risk** A number of factors are required to create a risk of illness / disease from a water source: • The presence of legionella or pseudomonas bacteria. • Conditions suitable for multiplication of the organism (inadequate temperature and/or water system hygiene standards). • Means of creating and spreading breathable droplets e.g. a shower, air conditioning systems, cooling towers or taps situated high above sinks.

- The presence of vulnerable (susceptible) people (see 3.1.1, below)

3.1.1 Factors which increase susceptibility include;

- The elderly, particularly those above 50 years (children rarely infected)
- Males are three times more likely to be infected than females
- Chest problems: i.e. respiratory disease, which makes the lungs more vulnerable to infection
- Auto immune illnesses: i.e. cancer, diabetes, kidney disease or alcoholism, which weaken the body's natural defences
- Smoking, particularly heavy smoking
- Service users on renal dialysis or on immune-suppressant drugs, which inhibit the body's natural defences against infection

3.1.2 Potential sources of risk within School premises include;

- Standard hot and cold water systems.

  The risk from these is considered very low where;
  - Temperatures of hot water are high (over 60°C)
  - Temperatures of cold water are low (at least below 20°C)
  - Water outlets are used frequently or where instantaneous water heaters are used.

  The risk level increases;
  - Where water temperatures are between 20-45°C
  - Water outlets are used infrequently
  - A source of nutrients exists in the water system to feed the bacteria (e.g. sludge, scale, rust, algae and other organic or inorganic matter)
  - Where 'dead-legs' are present in the water system (a dead leg is a pipework branch off of the main system that has been blanked off, thus having no flow through it, and contains water that becomes stagnant, allowing bacteria to breed and contaminate the main water system)

- Spa pools: are known by a variety of names including as hot tubs, whirlpool spa and whirlpools. They are recognised source of Legionnaires' disease due to the presence of water droplets they create in air.
- Other plant and systems containing water which is likely to exceed 20ºC and which may release a spray or aerosol during operation or when being maintained; such examples that are used in the authority include;
  - spray humidifiers;
  - air washers, wet scrubbers, particle and trivial gas scrubbers;
  - water softeners;
  - emergency showers, eyebaths and face wash fountains;
  - sprinkler and hose reel systems;
  - horticultural misting systems;
  - vehicle washers including automatic washers for cars, buses,
  - fountains and decorative water features
  - non-disposable nebulisers used for respiratory therapy;
  - irrigation systems;
  - fire, dust and odour suppression systems;

3.2 Water Systems Risk Assessment

All water systems require a risk assessment, however not all systems will require elaborate control measures. A simple risk assessment may show that the risks are low and being properly managed to comply with the law.

In such cases, you may not need to take further action, but it is important to review your assessment regularly. Assessments must be reviewed at least annually and whenever there is a significant change in either;

- the water system layout / construction
- the vulnerability of the client group
- the use of the premises
- relevant policy or guidance

The School's standard risk assessment process for managing water safety must be adhered to by all sites. Some sites and service areas will need to comply with additional elements identified within their risk assessment to ensure all specific legionella risks have been controlled i.e. care homes and care provisions, whirlpools, spas and leisure services, etc (see item 3.3, below).

The annual risk assessment, cleaning and chlorination of all School that buy into the Building Innovation Telford (BiT) is managed by BiT and are stored on the P2 buildings maintenance database. BiT will provide competent assistance to all Schools to help identify, assess and manage the risks to water systems.

Where a risk assessment identifies that remedial works are required, then repairs should be carried out as soon as practicable & be prioritised in accordance with the level of risk identified. Copies of assessment reports will be received by BiT, who will notify the relevant Building Manager of the actions to be taken? The Building manager must then approve the works before the BiT team arrange completion of the work via suitable contractors. The BiT Team will record the status and details of all works assigned and completed and update P2 accordingly.

Where the assessment and management of water systems is undertaken from outside the Council (i.e. not by BiT) then the relevant building manager must still comply with this policy. BiT will advise building managers of schools on how to comply with this policy and from where to obtain competent assistance to achieve this.

Details of the competent assistance selected must be notified to BiT so that this information can be recorded on the Council's water systems database. This will be monitored by the Internal Health & Safety Team.

Copies of risk assessments must be kept on the premises to which they relate for a minimum of three years and should be readily available for inspection upon request.

3.2.1 Competent assistance
Inadequate management, lack of training and poor communication are all contributory factors in outbreaks of legionnaires' disease. Competent assistance is needed by Schools to help assess the risks from every water system.

In the context of this policy, competence should be regarded as someone with sufficient training, experience, knowledge and other relevant qualities to be able to identify risks within water systems and to advise on how to best prevent / control them.

The Building Innovation Telford Service (BiT) will arrange these services for Schools. BiT will also advise on how to obtain technical support if you are not in a core building / service area and yet still have a legal duty to comply with this policy.

3.2.2 Control measures
Having assessed the water systems within a building / service area and identified any risks they present, then it may be necessary to implement control measures proportional to the risk posed by the water system, taking into account the vulnerability of the people exposed to that system.

Control measures to prevent the proliferation of legionella bacteria in water systems include;

- Monitoring and managing the water temperature to within safe parameters, which inhibit the growth of harmful bacteria
- Removing and/or cleansing water storage tanks and/or unnecessary pipe runs, as appropriate
- Ensuring water outlets (taps and shower heads, etc) are flushed regularly to prevent water stagnation
- Sampling and testing for the presence of the legionella bacteria

Further guidance on these control measures in relation to specific systems is outlined below.

3.2.3 Temperature Monitoring

For Schools, the risk of Legionella is primarily controlled by ensuring that the temperature of hot and cold water systems is as per the guidance set out within the Health and Safety Executive's Legionella ACOP L8 guidance, as below;

- Cold water – must be less than 20°C at the outlet (tap) when running the water for 2 minutes
- Hot water – must be more than 50°C at the outlet, when running the water for 1 minute
- For hot water calorifiers (storage tanks) – water must be stored at more than 60°C at all times (minimum 50°C on return).

3.2.4 Cold Water Storage - Water storage tanks should be installed in accordance with the Water Supply (Water Fitting) Regulations 1999 and should include a fixed lid/cover and be adequately insulated to reduce the risk of temperature rise. The tanks within School buildings will be inspected and cleaned annually and in some case 6-monthly for higher risk systems i.e. serving a vulnerable population.

Where the temperature in a cold water storage tank exceeds 20ºC further investigation will be required to establish and rectify the cause of the problem and the manager on site and BiT team must be informed. Where remedial works are required, these should be completed as soon as practicable (see appendix 2).

3.2.4 Hot Water Storage - should be maintained at a minimum temperature of 60ºC. Where necessary, thermostatic mixing valves (TMV's) should be installed as close to the point of use as possible, to reduce the hot water temperature at the water outlet to minimise risk of scalding.

Monthly temperature checks at sentinel taps (first and last taps on the system) will be required where the premises are used predominantly by vulnerable persons. This equally applies where showers are used predominately by;

- An elderly client group – (day care, residential care etc)
- People who are likely to be immuno-compromised (e.g. used by some special needs groups)

Other representative outlets throughout the system should be tested for temperature as above, on rotational basis (check a minimum 20% of outlets on each test).

Where the temperature of the hot water at a sentinel tap is below 50ºC after running it for up to one minute further investigation will be required to establish and rectify the cause of the problem and the manager on site and the BiT team must be informed (see appendix 2).

In circumstances where it is not possible for hot water to be stored above 60ºC then the hot water system must be thermally or chemically disinfected on an annual basis. The calorifier must also be drained, internally inspected for scale, debris and sludge and cleaned if necessary. In such cases the system should be upgraded to enable storage at a minimum of 60ºC.

Wherever refurbishment of a system is planned it is recommended that a means for remotely monitoring water temperature is installed. This will increase accuracy and speed of temperature testing. Refurbishment also provides the opportunity to review the provision of hot water storage and amend and/or reduce this wherever practicable, thereby increasing the rate of turnover through the system and reducing the chance of bacteria multiplication.

3.2.5 For Schools that buy into the services of BiT, water outlet temperature monitoring is carried out by the BiT Facilities Management Team, as per (Table 1 below).

The BiT FM Team record the temperatures taken on the P2 Buildings Management system and where a temperature fails, the system will automatically send an alert to nominated persons and assist with the management of any failure.

Table 1: Minimum water temperature monitoring frequencies in School buildings

Monthly	• Sentinel taps (first and last taps on the system) • other taps that are considered by the Building manager or person testing to represent a particular risk • Mixing valves (temperatures at intake positions) • Flow and return from calorifiers (hot water storage tanks)

Six Monthly	• Incoming water supplies • Stored water in supply tanks (where accessible)
Annual	• Representative sample of all outlets (minimum 20%)

Premises that do not buy into BiT's water safety management services still have a legal duty to comply with this policy. As such, records must be kept of the results of temperature and biocide monitoring and the results of any inspection and follow up action. These should be kept on the premises to which they relate and be readily available for inspection for 5 years.

For systems where no water is 'stored' (where hot water is provided by instantaneous electric heaters, for example), and there are none of the other risks indicated in 3.1.2 above, little needs to be done other than to review the risk assessment on an annual basis and monitor the system for any changes that would require further action.

3.3 Cleansing of Water Systems
On a yearly basis a water systems risk assessment review is undertaken at all sites managed by the BiT Team and the water systems are cleaned and disinfected by the Councils nominated contractor. For higher risk sites, i.e. sites with a vulnerable population, this cleaning is undertaken 6-monthly.
A summary of cleaning arrangements for specific water systems managed by the BiT Team on behalf the Council is outlined below. Equivalent control measures must be implemented for any building, school or alternative service area which operates water systems outside of BiT's water safety management services.

3.3.1 Shower heads and hoses are dismantled and cleaned on a quarterly basis. Showers that are not in use on a daily basis (e.g. some sports changing facilities) must be flushed before use, using a method that doesn't create an aerosol or put the person or persons carrying out the flushing at risk, (e.g. fitting an enclosure over the shower head with a hose outlet so that the water goes to drain without creating an aerosol).

3.3.2 Whirlpool Baths and Spas shall be continuously treated with an oxidising biocide and the level of this monitored (and recorded) at least three times daily. Filters must be checked daily and backwashed frequently (sand filters should be backwashed daily). The entire system must be cleaned and disinfected at least weekly and all control measures must be managed and recorded by the Site Manager.

3.3.3 Sprinklers and Hose Reel Systems are periodically serviced by specialist contractors. Those carrying out or observing tests of this equipment should take all necessary precautions including the containment of water droplets and the use of suitable respiratory protective equipment, to minimise the risk of exposure to aerosols.

3.3.4 Air Conditioning Systems are periodically serviced by specialist contractors.
Small wall or ceiling-mounted units with closed cooling systems should not present a risk. Larger units may present a risk if they have improperly drained condensate trays where water can stagnate, becoming a reservoir for bacteria to grow. To minimise this risk these units are periodically serviced and cleansed by the specialist contractor.

3.3.5 Other Water Systems, including: water softeners, ornamental water features, vehicle wash systems, emergency showers and eyewash systems, must be cleaned, flushed and disinfected as required at the frequencies listed within ACOP L8 and Technical guidance **–** Part 3. Those carrying out this task should take all necessary precautions including the use of suitable respiratory protective equipment, to minimise the risk of exposure to aerosols.
This process will require a safe system of work to be developed and be undertaken by someone who has had the appropriate training.
Review whether SSW's are in place, in each instance and consider whether suitable means are in place for training of those completing the tasks and record keeping.

3.4 Managing un-used or infrequently used water systems
Any system in which water has been held unused for an extended period has the potential for that water to become stagnant, which can lead to the multiplication of legionella, especially during warm weather (any period when the external daytime temperature is above 20ºC).

When a system is not being used regularly (i.e. on a weekly basis) flushing of the system by running the taps and showers for several minutes, once a week will help to reduce this risk.

Where due to a temporary building closure, a system is to be unused for less than 60 days, arrangements must be made by the building / service manager, throughout the period of closure, for the flushing of all WC cisterns, taps and showers for a period of three minutes on a weekly cycle. Showers must be run both hot and cold to flush both parts of the system and records of flushing should be completed by diary entry or simple logbook. Propose implementing a standard T&W logbook to record this?

Systems which are to be out of use for a prolonged period (i.e. greater than 60 days) should be disconnected and drained completely, where practicable, until they need to be brought back into use. However, if the hot water system is fed from secondary pipework that feeds to other occupied parts of the building it must remain connected and the hot taps only will be flushed for three minutes on a weekly basis. This should be arranged via the BiT Team.

3.4.1 Bringing water systems that have been un-used for a week or more back into use.
Prior to bringing any water system back into use following a period of closure for a week or more, the following measures should be taken;

- Flush all WCs with lids closed.
- Run taps and drain showers for sufficient time to completely replace the water in the system with fresh mains fed water. This must be done without creating aerosols and may need, for example, hoses to be fitted to some taps so they discharge direct to a drain and shower heads encapsulated within an enclosure with a hose outlet so that no aerosol is produced.
- The water in any hot water calorifier or storage cylinder should be brought up to 60ºC, with the temperature being maintained for at least one hour before the hot water system is brought into use.

If the closure has been less than 60 days and weekly flushing as described above had been carried out and recorded the area can be re-occupied immediately when re-opened.

3.4.2 Re-opening of long-term un-used water systems (greater than 60 days)
Prior to the re-opening of long term un-used water systems the Head Teacher/ building manager will advise the BiT team with respect to possible changes of use for the building to be re-opened. This may include the type of service user, the potential for scalding risk, etc, and must be considered in advance to enable remedial works and funding to be identified to support the safe change of use.

- If the workplace has air conditioning units containing water that can generate aerosol, these must be assessed for legionella risks (and possibly cleansed) before they can be re-started.
- Water storage tanks in the building will also need to be assessed and possibly cleansed before being brought back into use?
- All disconnected / isolated pipework should then be reconnected for use before the following measures are taken.
  - Turn on the mains water supply and purge the system
  - Flush all WCs with lids closed
  - Run taps and drain showers for sufficient time to completely replace the water in the system with fresh mains fed water. This must be done without creating aerosols and may need, for example, hoses to be fitted to some taps so they discharge direct to a drain and shower heads encapsulated within an enclosure with a hose outlet so that no aerosol is produced.
  - The water in any hot water calorifier or storage cylinder should be brought up to 60ºC, with the temperature being maintained for at least one hour before the hot water system is brought into use.

Once the system has been assessed, purged and all services flushed and recorded as described above the area can be re-occupied and re-opened.

3.5 Testing for legionella / pseudomonas bacteria may be required in certain circumstances, as follows;

- Where the risk assessment has determined that the residents are immune – compromised and classified into the “at risk” group.

- Where biocides rather than temperature are used as the control measure.
- Where the correct temperature or biocide levels are not consistently achieved.

If legionella / pseudomonas tests are positive, remedial action will be required which will include re-sampling, a review of the risk assessment and control measures and possibly disinfection of the system. *See Appendix 3 for procedure when a positive legionella sample is returned.*

3.6 Record Keeping
The law requires that certain records, relating to water systems are kept as outlined below:

Records should include details of the:
a) person or persons responsible for conducting the risk assessment, managing, and implementing the written scheme
b) significant findings of the risk assessment
c) written control scheme and details of its implementation
d) details of the state of operation of the system, ie in use/not in use
e) results of any monitoring inspection, test or check carried out, and the dates

These records should be retained throughout the period for which they remain current and for at least two years after that period.
Records kept in accordance with point (e) should be retained for at least five years.

3.7 Training
All staff involved in the maintenance, servicing, altering or monitoring of water services must be aware of and where relevant trained in the current best practice & standards applicable to such water services. In order to achieve this;
- The School's appointed 'responsible person' and the providers of 'competent assistance' to the School shall be assessed prior to appointment.
- Each Head Teacher or building manager will, as necessary, attend and undergo training relevant to their role and responsibilities under this policy.
- All such training shall be delivered and/or arranged via the Internal Health and Safety Team.

3.8 Managing risks associated with Pseudomonas aeruginosa
The HTM 04-01 Pseudomonas Technical Memorandum: *The control of Legionella, hygiene, 'safe' hot water, cold water and drinking water systems 2006* was published by the Department of Health as guidance following a number of outbreaks of illness associated with Pseudomonas aeruginosa. The guidance states the measures that should be taken to minimise the risk of bacterial contamination by Pseudomonas.

3.8.1 Who is it for?
The guidance is aimed at healthcare organisations where patients are susceptible to invasive disease, from opportunistic pathogens such as P. aeruginosa. In terms of the care sector, it includes residential care homes, respite care, learning difficulties, mental health premises, behavioural disability and any high dependency establishments which require water as part of their care.

3.8.2 Measures to reduce risk

Many of the control measures undertaken with regards to legionella apply towards Pseudomonas control as well, but there are certain additional measures which should be in place for effective control against Pseudomonas bacteria.

The Building Innovation Telford Service (BiT) will arrange these services for all Telford & Wrekin core buildings and service areas. BiT will also advise on how to obtain technical support if you are not in a core building / service area and yet still have a legal duty to comply with this policy.

- **Daily/Weekly flushing** of little used outlets to prevent water stagnation – assess frequency of usage and if necessary remove underused outlet(s).
- **Hand-washing** should be supplemented with use of antimicrobial hand-rub.

- Check connections to mixing taps to ensure that the supply to the hot connection is not supplied from an **upstream TMV**. If so, stagnation may occur.
- Assess the water system for and **Dead Legs**, and remove.
- Remove and replace non-metallic materials used in items such as inline valves, test points and flexible hoses.
- All materials must be **WRAS-approved** (*Water Regulations Advisory Scheme*) and must not leach chemicals that provide nutrients that support microbiological growth.
- In some cases, it is necessary to carry out a **disinfection of the hot and cold water** distribution systems with respect to the P. aeruginosa contamination, enduring that the biocide is effective against established biofilms.
- Consider replacing contaminated taps with new taps. When replacing taps, consider fitting removable taps, taps that are easy to use, taps that can be readily dismantled for cleaning and disinfection, taps to which a Point-of-Use filter can be attached to the spout outlet (if required).

What do I have to do?
The HTM 04-01 Pseudomonas Technical Memorandum states a specific range of measures to minimise the risk of bacterial contamination by P. aeruginosa bacterium, as follows;

3.8.3 Set up a water safety group (WSG)
It may include the infection control team, facilities, housekeeping, senior nurses/carers, and external water safety contractors/consultants. The WSG should be directly accountable to the appointed person.

3.8.4 Develop a Water Safety Plan (WSP)
Using the legionella risk assessment as a basis, a WSP includes:
A clinical risk assessment; an engineering risk assessment of the water system; operational monitoring of control measures; plans for sampling and testing water for Legionella and Pseudomonas; changes to clinical, housekeeping and monitoring practice (where applicable); cleaning and descaling of water outlets; maintaining and repairing TMVs, shower valves and flexible hose connectors; recording any changes made, keeping documentation up-to-date and carry out an annual review of results of any water testing regime undertaken.

3.8.5 Carry out a Clinical Risk Assessment
The risk assessment should identify microbiological hazards caused by legionella and P. aeruginosa. It should be led by the WSG and consider the risks to and susceptibility of patient(s) from contact with water in any form, as follows;
- scalding,
- cleaning of patient equipment,
- disposal of blood, body fluid and wash-water,
- maintenance and cleaning of water outlets,
- change in use due to refurbishment,
- devices that result in change of water temperature (water chillers, heaters etc),
- engineering assessment of water system,
- installation, maintenance and testing effectiveness of TMVs, shower valves etc,
- replacement of flexible hoses,
- sampling, testing and monitoring programmes,
- the suitability of staff education and training.

3.9 Hot Water Scalding Risks

High water temperatures can create a scalding risk to vulnerable people who use care services, including the elderly, those with reduced mental capacity, reduced mobility and anyone with sensory impairment, or who cannot react appropriately, or quickly enough, to prevent injury.

It can take only very short exposure to high temperatures to cause injury:

65°C a partial thickness burn in about 2 seconds
60°C a partial thickness burn in about 5 seconds
55°C a partial thickness burn in about 15 seconds
50°C a partial thickness burn in about 90 seconds

One of the main reasons given for maintaining high water temperatures (ie stored at 60°C or above and circulated at 50°C or above) is to control the growth of Legionella bacteria.

Other reasons for having water at these temperatures include kitchen/laundry use, to cater for long pipe runs, or to ensure proper boiler operation.

There is no conflict between the prevention of Legionella and the protection of vulnerable people from scalding **Both are essential and the risks can, and should be minimised at all times.**

3.9.1 Managing the Risk of Scalding
A risk assessment must be carried out to determine the risk of scalding from hot water for all those considered vulnerable.
Questions to consider may include;

- Can the person using the care service get in/out, sit up and/or wash themselves unaided?
- Is the person using the care service sensitivity to temperature impaired?
- Is the person using the care service mental state such that they can recognise a bath that is too hot?
- Is the person using the care service capable of summoning assistance if needed?
- Will any lifting or other aids limit the patient's mobility in the bath?
- Is the person using the care service liable to try and run a bath/add water when unattended?

The results of the risk assessment must be recorded on individual care plans of those using the care service. Where the risk assessment warrants it, engineering controls should be provided that ensure temperatures are delivered to appliances as per Table 2; below.

Table 2: Maximum set hot water temperatures

APPLICATION	MAXIMUM SET HOT WATER TEMPERATURE (°C)
Bidet	38
Shower	41
Wash Basin	41
Bath	44

3.9.2 One of the most effective engineering controls is the fitting of a thermostatic mixing valve (TMV) at, or close to, the hot water outlet.

TMVs work by mixing a controlled amount of cold water with the hot water and discharging the water at a set temperature. TMV's must be fitted as close as possible to the point of use and must not in any case be further than 2m away to reduce the risk of Legionella growth in that section of pipe work in which the cooler water flows.

Fail-safe TMV's are recommended where there is total bodily immersion e.g. showers and baths, or where lower maximum temperatures are necessary.

3.9.3 Maintenance
It is particularly important that where TMVs are provided they are maintained to the standards recommended by the manufacturer. A documented maintenance schedule which takes into account local conditions (eg hard water) and the risk of valve failure, should be followed and recorded.

Where TMVs are used within the Council's care provisions, (visitor's areas, etc) these will be inspected by competent contractors on a six monthly basis to ensure safe and correct operation. The inspection includes testing the fail safe operation of the TMV, where applicable, and a temperature check to ensure a maximum set hot water temperature as per Table 2, above.

The Building Innovation Telford Service (BiT) will arrange these inspections for all Telford & Wrekin core buildings / service areas. BiT will also advise on how to obtain the service if you are not in a core building / service area and yet still have a legal duty to comply with this policy.

3.9.4 Surface Temperatures
It must be remembered that it is **not only the merging hot water that is the problem** – the pipes, tanks and radiators that carry hot water are also a scalding risk to vulnerable people. The risk posed by exposed pipe work, tanks and un-guarded radiators must be assessed using the standard risk assessment form and control measures introduced; this is usually the enclosing of the pipe work or exposed surface.

Wherever service users, residents and visitors have access, the maximum surface temperature of space heating devices and surface mounted pipe work within 2 metres of the floor, should not exceed 43°C when the system is running at the maximum design output. The elderly, mentally impaired and the young are at the greatest risk of burns.

Space heating devices including thermal storage heaters and oil filled radiators as well as conventional radiators, towel rails and other heating devices will have suitable guards fitted to prevent contact with hot surfaces. Pipe work will be securely insulated, boxed in or fitted with suitable guards.

When replacing existing heating devices and/or installing new systems, low surface temperature heat emitters will be used with no exposed low-level pipe work.

3.9.5 Training
Suitable and sufficient training and supervision should be provided to ensure that staff involved in bathing people who use care services understand the risks and precautions. This will include, in particular, filling the bath before the person gets into it and monitoring the outlet temperature of the bath/shower water using a bath thermometer. If it is necessary to add hot water whilst the person using the care service is in the bath, this should be done slowly and the water should be tested as it is added.

Staff should be instructed that water in excess of **41°C** coming from a basin tap and shower outlet or **44°C** from a bath tap should be reported to a responsible person and access to the bath concerned restricted until repairs to the thermostatic mixing valve have been carried out.

APPENDIX 1 Is this necessary? Would it be better to simply state the following;
The Council's water systems are managed by the 'Responsible Person', risk assessed by a competent contractor and remedial actions followed up and implemented by the relevant building manager(s) and BiT? Those buildings / services that choose not to buy into the water management services offered by BiT must source suitable alternative competent assistance, as required by ACOP L8 and apply the guidance in this policy to manage their own water systems.

Legionella Risk Assessment
This is more of a checklist than an assessment. Suggest replacing this with a series of relevant periodic checks to be completed locally, applicable to each type of water system, that support the over-arching risk assessment completed by the competent contractor.
PART ONE – Generic – All buildings and sites
PART TWO – Care homes and Care provisions
PART THREE –Whirlpool Baths and Spas
PART FOUR – Other risks

What are the hazards? What can go wrong?
Infection with legionella bacteria leading to pneumonia.
Who might be harmed and how is this likely to happen?
• The elderly, particularly those above 50 years (children rarely infected)

- Males are three times more likely to be infected than females
- Chest problems: i.e. existing respiratory disease, which makes the lungs more vulnerable to infection
- Auto immune: i.e. Illnesses such as cancer, diabetics, kidney disease or alcoholism, which weaken the natural defences
- Smoking, particularly heavy cigarette smoking
- Service users on renal dialysis or on immune-suppressant drugs, which inhibit the body's natural defences against infection.

PART ONE – Generic Control measures:

For Telford and Wrekin Council properties, the risk of Legionella is controlled by ensuring that the temperature of the hot and cold water services is within the parameters of the guidance as set out within ACOP L8 guidance, as follows;

Are these just better in the Policy, above? Feels like a checklist of actions? Should Managers tick off to confirm measures are in place?

- Hot water is stored above 60ºC
- Hot water is circulated above 50ºC
- Cold water is circulated below 20ºC
- Instantaneous (constant supply) means of heating hot water. Re-word?
- Keep volume of stored water to a minimum i.e. just enough for one day. *Consider recording total consumption of cold water in a typical day.*
- Annual cleaning and disinfection of cold water storage tanks.
- Annual cleaning and disinfection of hot water storage tanks where hot water is not stored above 60ºC.
- Shower heads are dismantled and cleaned quarterly.
- Showers not used on a daily basis are flushed before use without creating an aerosol.
- Water storage tanks are covered to avoid external contamination and build-up of sludge, scale and rust. – Check at least annually Who to check? Accessibility?
- Regular servicing and maintenance of relevant equipment, eg air conditioning, water systems etc by a competent person.
- Annual checks are carried out on circulating water temperatures Clarify?
- Remove "dead legs" and other areas where stagnant water can collect.
- Insulate water pipes in work areas where heat may be transferred from other sources, i.e. hot pipes
- Where the growth of legionella in a system has to be controlled by means of a biocide then the water is tested regularly for the presence of legionella.
- Regular servicing and maintenance of relevant equipment, eg air conditioners, water systems etc by a competent person.
- Where the system is out of use for a period of a week or more between May and September the toilets are flushed with the lids closed and taps and showers run for a sufficient length of time to replace the water in the system with fresh mains water.
- Where a hot water system is out of use for a period of a week or more between May and September then the water is brought to 60ºC and held at that temperature for an hour before use.
- Taps fitted high over sinks e.g. in laboratories are fitted with flexible hosing to minimise aerosol production.
- Employees that have roles and responsibilities identified within the Water safety management policy will need to have the appropriate training, information, instruction and supervision.

PART TWO – Care homes and Care provisions

- All the controls in PART ONE plus:
- Assess if residents are immune- compromised/classified as "at risk" group.
- Monthly water temperature monitoring needs to be carried out in premises used predominantly by the elderly, people with weak immune systems or those classified "at risk" Do we not do it everywhere, regardless of at risk status?
- Where Thermostatic Mixer valves (TMV) are used these must be inspected by a competent person checked on a six monthly basis at all points of use.
- It is recommended that where there is total bodily immersion e.g. showers and baths, or where lower maximum temperatures are necessary, fail safe thermostatic devices should be fitted.
- Surface temperatures of pipe works should not exceed 43 ºC.
- Periodic sampling of the water system for legionella. How often / by who?

- A risk assessment must always be conducted to determine the risk of scalding from hot water. If appropriate, action must be taken to prevent scalding, often by fitting a TMV.
- Appropriate action must also be taken to prevent exposure to surfaces made hot by water at high temperatures i.e fitting guards on storage heaters or towel rails
- Advice must be sought as to the correct type, operating range and location of the TMV to be fitted. TMVs must be maintained and used in accordance with manufacturer's instructions and pipe runs should not exceed 2m
- Set up a Water safety group and plan – see appendix four

PART THREE –Whirlpool Baths and Spas

- All controls in PART ONE plus:
- Continually treat with an oxidising biocide
- Monitor level of treatment and record at least three times a day
- Check filters daily and back wash daily
- Entire system to be cleaned and disinfected weekly
- Adhere to guidance from HPA HPA and HSE guidance for spa

PART FOUR – Other risks (See list of sources of risks in item 5)

- All the controls in PART ONE plus:
- Adhere to guidance from HSE part 3 Technical guidance http://www.hse.gov.uk/pubns/priced/hsg274part3.pdf

APPENDIX 2

Legionella - Temperature Monitoring Controls

The checks below are managed by Building Innovation Telford for all Departments and service areas that buy into its water management functions. Those buildings / services that choose not to buy into the services offered by BiT must source suitable alternative competent assistance, as required by ACOP L8 and apply the guidance in this policy to manage their own water systems.

Frequency	Check	Standard to Meet		Notes	Corrective actions needed
		Cold Water	Hot Water		
Monthly	Sentinel taps	The water temperature MUST be below 20°C after running the water for up to two minutes	The water temperature MUST be at least 50°C within a minute of running	This check makes sure that the supply and return temperatures on each loop are unchanged, ie the loop is functioning as required	Result outside of parameter = Retest after 60mins. If still outside of parameter = inform site manager & BiT team
	If fitted, input to Thermostatic		The water supply to the	One way of measuring this is to	Under 50°C after one minute of

	Mixing Valves on a sentinel basis clarify meaning?		TMV should be at least 50°C within a minute of running the water	use a surface temperature probe, upstream of the TMV?	running, retest after 60 mins – still below 50°C – inform site manager and BiT team
	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 on the return leg are useful points for accurate temperature measurement. If installed, these measurements could be carried out and logged by a building management system	Result outside of parameters = Retest after 60 mins – if temperatures are still outside of parameters = Inform site manager and BiT team
Six monthly	Incoming cold water inlet (at least once in the winter and once in summer)	The water should preferably be below 20°C at all times		The most convenient place to measure is usually at the ball valve outlet to the cold water storage tank	Result outside of parameter = Retest after 60mins. Still above 20°C – inform site manager & BIT team
Annually	Representative number of taps on a rotational basis	The water temperature should be below 20°C after running the water for two minutes	The water temperature should be at least 50°C within a minute of running the water	This check makes sure that the whole system is reaching satisfactory temperatures for legionella control	Retest after 60mins. Still not to standard required inform site manager & BIT team

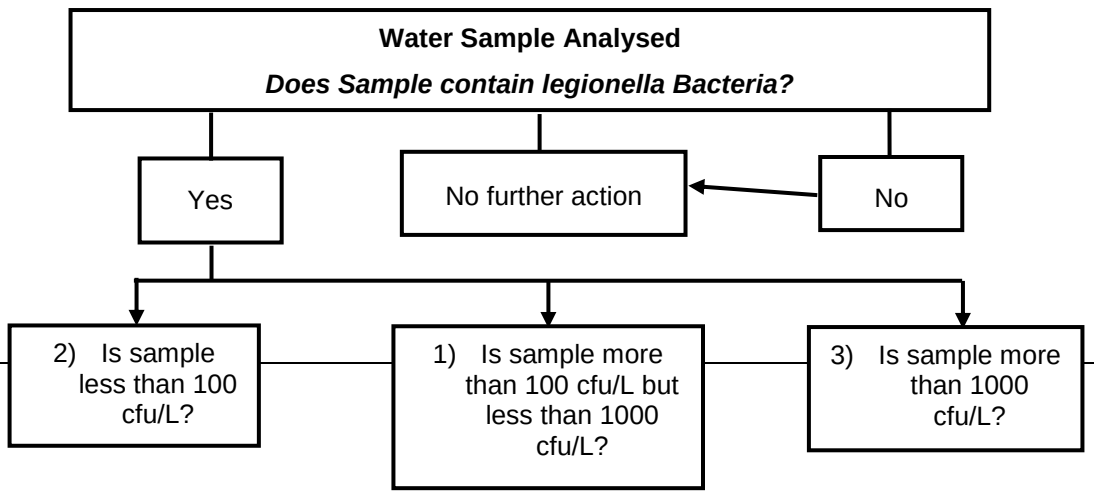
Temperature samples should be taken as follows:-

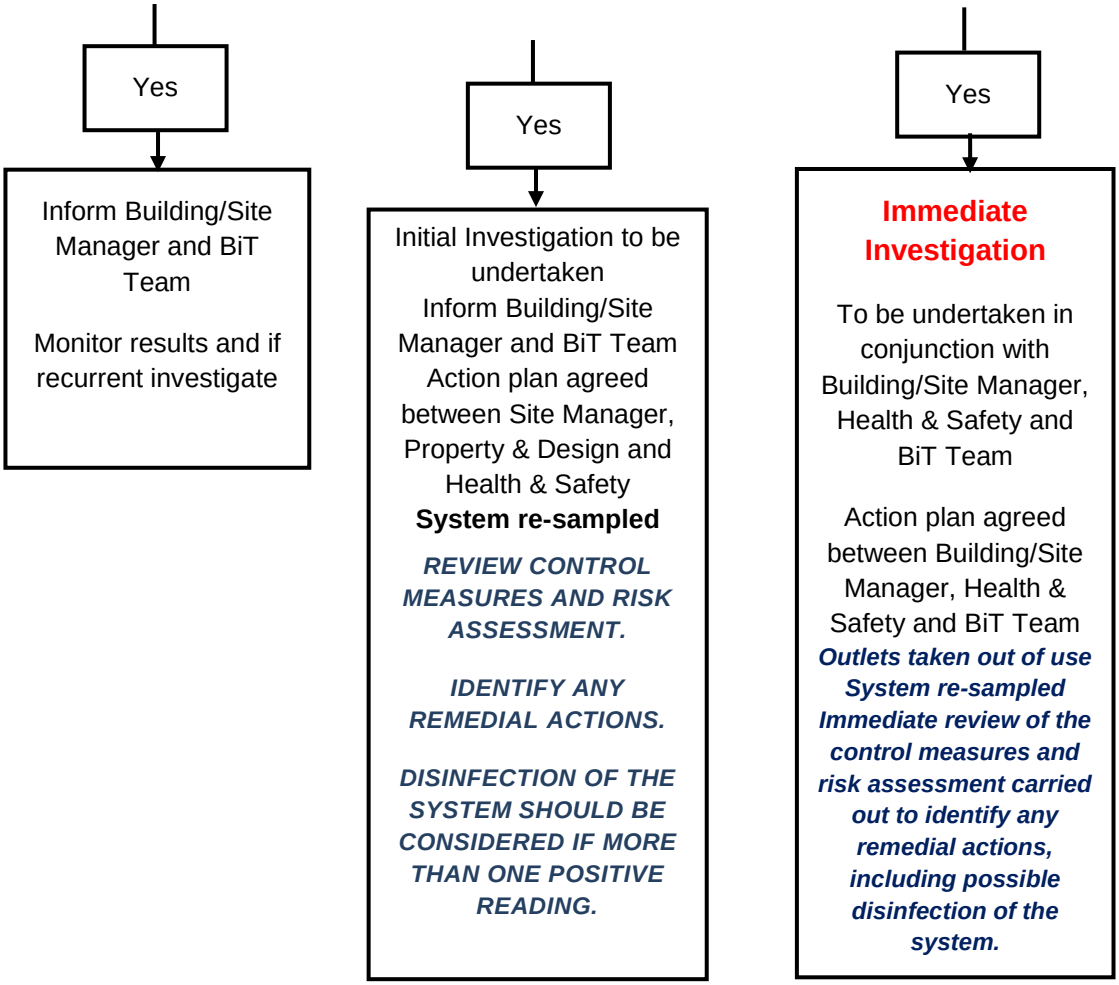
- Cold water system – from the cold water storage tank and the furthest outlet from the tank.
- Samples may also be required from outlets in areas of particular concern, e.g. where 'at risk' Service Users may be exposed to water or droplets;
- Hot water system – from the calorifier (storage tank) outlet or the nearest tap to the calorifier outlet plus the return supply to the calorifier or nearest tap to that return supply.

APPENDIX 3 Legionella Action Plan

Process to follow if a positive result is obtained following sampling for legionella bacteria in hot and cold water systems.

Legionella can exist in hot and cold water systems at very low levels. The Approved Code of Practice (ACOP) L8 advises that no action need be taken for samples where bacteria is detected at less than 100 cfu/L (*colony forming units per litre*). However, the following process will be adopted when legionella bacteria has been detected.





4. Linked Documents	**Further Guidance and Information:** *Add hyperlinks to the below, where appropriate* Premises Water Systems Risk Assessment (specific to each site / water system) Standard risk assessment form xxx (to be used for scalding risks) *Water systems: Health Technical Memorandum 04-01: The control of Legionella, hygiene, 'safe' hot water, cold water and drinking water systems Department of Health 2006*
5. References	• Health and Safety at Work, etc. Act 1974, • Management of Health & Safety at Work Regulations 1999 • Control of Substances Hazardous to Health Regulations 2002 • The Approved Code of Practice and Guidance: Legionnaires' disease: The control of legionella bacteria in water systems; L8 (ISBN 0-7176-1772-6) • HSE part 3 Technical guidance http://www.hse.gov.uk/pubns/priced/hsg274part3.pdf • HSE publication 'Scalding risks from hot water in health and social care' SIM 7/2007/08 http://www.hse.gov.uk/healthservices/scalding-burning.htm • Water Supply (Water Fitting) Regulations 1999 SI 1148/1999 • Minimising the risk of Legionnaires' disease TM13 The Chartered Institution of Building Services Engineers 2013 • The Chartered Institute of Plumbing and Heating Engineering 'Safe Hot Water Temperature' http://www.ciphe.org.uk/Global/Databyte/Safe%20Hot%20Water.pdf

	• Water fittings and materials directory Water Regulations Advisory Scheme www.wras.co.uk/Directory			
6. Version Control	Date	Version	Revision	Name
	TBC	*1*	*First issue*	*TBC*