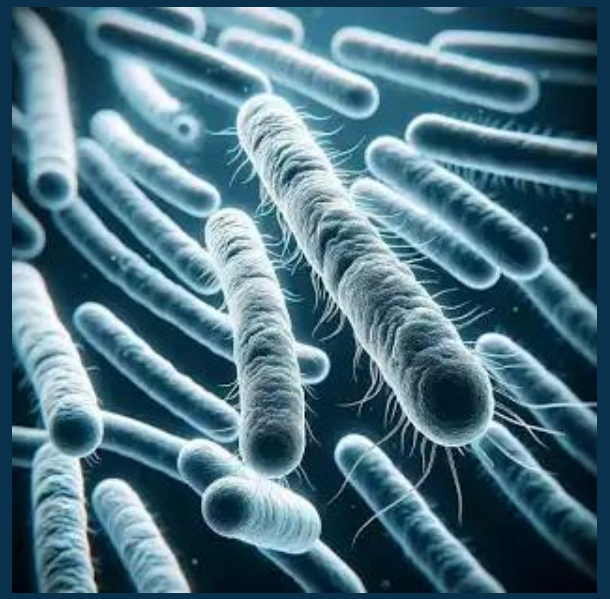
Legionella and the HCC Estate – CIBSE School Design Group

17 February 2025

Universal Services



Hampshire County Council

Property Services

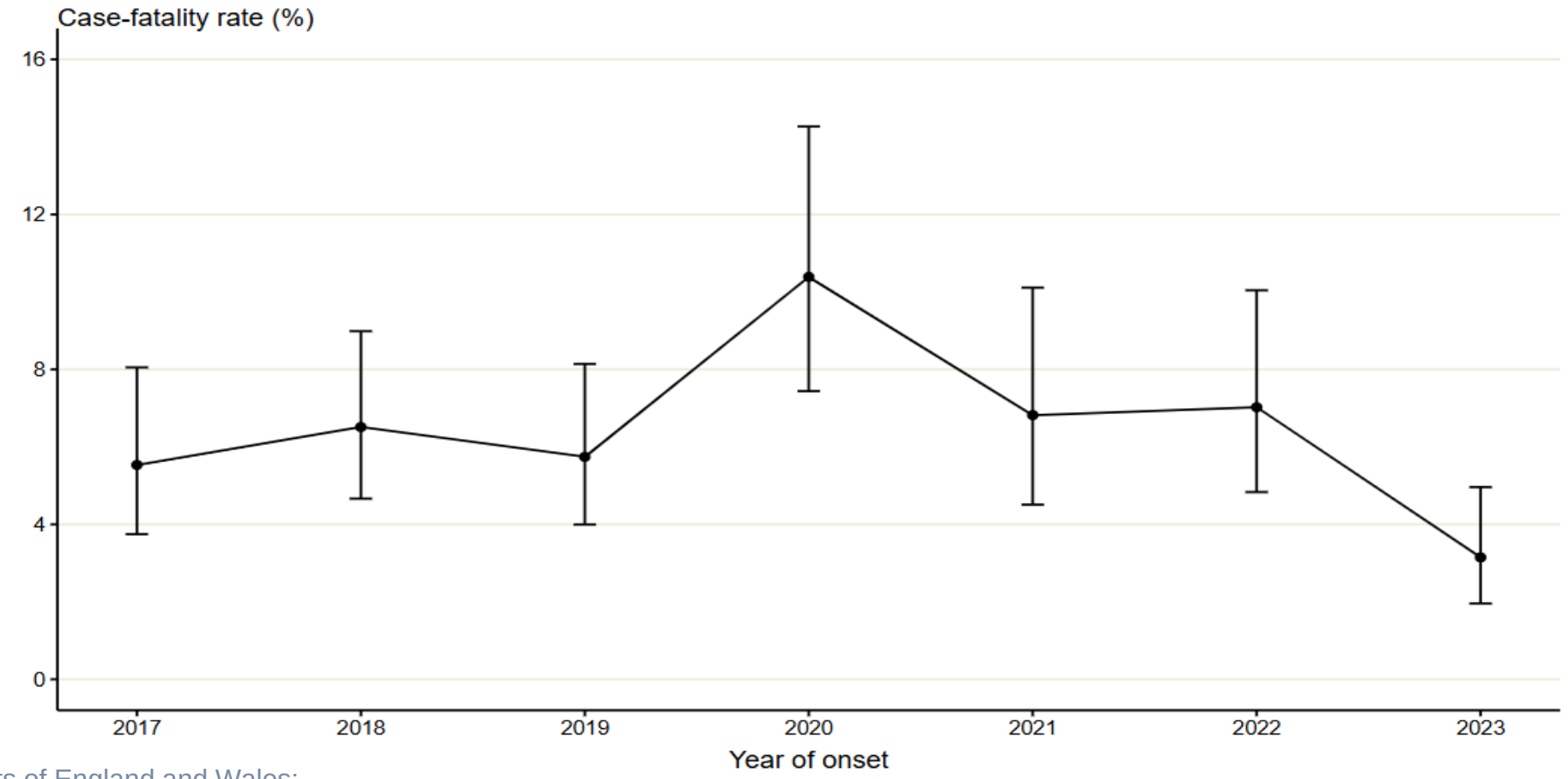
WHAT IS LEGIONELLA?

Legionella is a naturally occurring type of bacteria that can cause a severe form of pneumonia known as Legionnaires' disease.

There are a several vulnerable groups which are more susceptible and these include:

- older adults,
- smokers,
- individuals with weakened immune system

Figure 8. Case fatality rate of Legionnaires' disease, England and Wales, 2017 to 2023



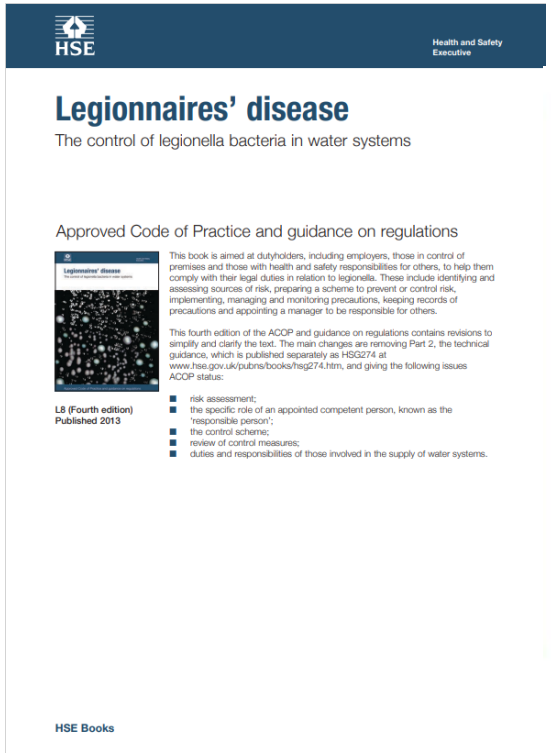
Legionellosis in residents of England and Wales: 2017 to 2023 report - GOV.UK

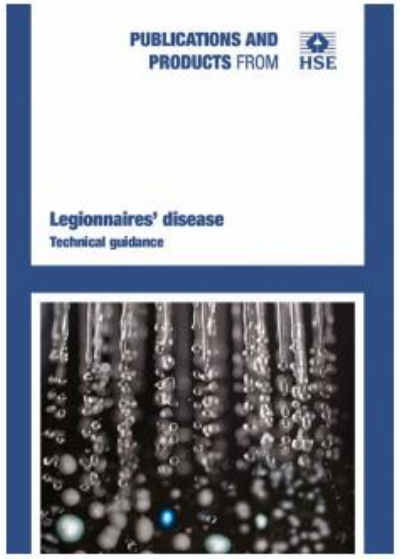
ROUTES TO TRANSMISSION

- Inhalation of contaminated water aerosols/mist.
- Aspiration (drawing breath whilst water is held in the mouth).
- There are over 50 species in the genus and 70 serogroups identified
- Serogroup 1- pneumophila is the strand commonly associated with legionnaires disease.

LEGAL FRAMEWORK FOR MANAGING LEGIONELLA RISKS

- **Legislation Overview**: The Health and Safety at Work Act 1974 sets general duties for employers to ensure the health and safety of employees and others affected by their work, including the management of Legionella risks.
- **Risk Management Regulations**: The Management of Health and Safety at Work Regulations 1999 require employers to have effective plans for risk assessments, control, and monitoring of health and safety, which includes Legionella management.
- **COSHH Regulations**: The Control of Substances Hazardous to Health Regulations 2002 (COSHH) outline the need for risk assessments and control measures for hazardous substances, including Legionella bacteria.
- **Notification Requirements**: The Notification of Cooling Towers and Evaporative Condensers Regulations 1992 mandate that local authorities must be notified about the installation or removal of such equipment.
- **Reporting Obligations**: The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) classify legionellosis as a reportable disease, requiring cases to be reported to the appropriate authorities.





HSG274 Part 1
Published 2024

GUIDANCE FOR LEGIONELLA CONTROL

Legal Framework

ACOP L8 2013 serves as a means of compliance for managing Legionella risks in water systems, ensuring compliance and safety. Department of Health HTM guides provide guidance for the design and maintenance in care facilities, HSG 274 Parts 1,2 & 3 provide further technical guidance.

Risk Assessments

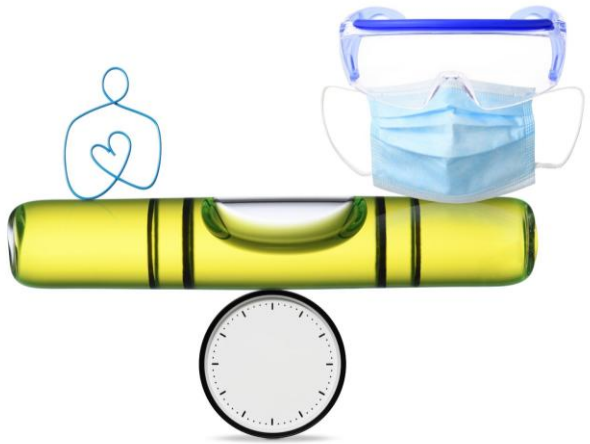
Conducting thorough risk assessments is essential for identifying potential sources of Legionella in water systems. BS 8580-1:2019 Water quality. Risk assessments for Legionella control. Code of

Practice and BS 8580 - 2:2022 Pseudomonas risk assessment

Monitoring and Maintenance

Regular monitoring and maintenance of water systems are critical to prevent Legionella outbreaks and ensure pupil, public and staff safety.

KEY ELEMENTS OF ACOP L8



Identifying Potential Sources

Identifying potential sources of Legionella is essential for preventing outbreaks and ensuring public health safety.

Assessing Risks

Risk assessment involves evaluating the presence and growth conditions for Legionella to mitigate potential hazards effectively.

Implementing Control Measures

Control measures must be implemented to manage and reduce the risk of Legionella in water systems.

Documentation and Training

Proper documentation and staff training are critical to ensure compliance with safety guidelines related to Legionella.

Typical situations where the risk is heightened

- *Water storage and recirculation systems*
- *Systems where there are deposits such as rust, slime, scale, sludge or other organic matter*
- *Taps, showers, fountains etc., where water droplets or spray can be produced*
- *Where all or part of a water system is between 20^{o}C and 45^{o}C*
- *Flexible Connections to Taps EPDM etc.*
- *Expansion Vessel bladders*
- *Cooling towers and evaporative condensers*
- *Showers with very little use (Secondary/SEND/etc.)*

SOURCES OF LEGIONELLA IN SCHOOLS AND CARE HOMES

- **Hot and Cold Water Systems**

Water systems in schools and Adult Care buildings if not properly designed or regularly maintained can harbour Legionella bacteria

- **Water Heaters/Calorifiers/Buffer Vessels and Water Tanks/Cisterns**

Water Heaters/Calorifiers/Buffer Vessels and Tanks/Cisterns, can be a significant source of Legionella. Proper maintenance is essential to ensure the safety of the building users.

- **Fountains**

External fountains but also internal Drinking Water fountains can be a hidden source of Legionella, requiring regular upkeep to prevent bacterial growth.

IMPLEMENTING ACOP L8 IN SCHOOLS AND HTM CARE HOMES

Collaboration for Success

Successful implementation of ACOP L8 and HTM’s requires collaborative efforts among school and care home management, maintenance, and personnel. This includes Schools and care homes being responsible for regular flushing and descaling etc.

Regular Audits

Conducting regular audits is crucial for ensuring compliance with ACOP L8 and maintaining a safe environment for students and staff.

Staff Training Importance

Ongoing staff training is essential for understanding and implementing ACOP L8 and HT’s effectively while promoting a culture of safety.

MONITORING AND MAINTENANCE STRATEGIES

Water Temperature Monitoring

Regular monitoring of water temperatures is essential to ensure safety and prevent health risks in schools and care homes.

Cleaning Water Systems

Cleaning water systems regularly helps to maintain safe water quality and prevent contamination in school facilities.

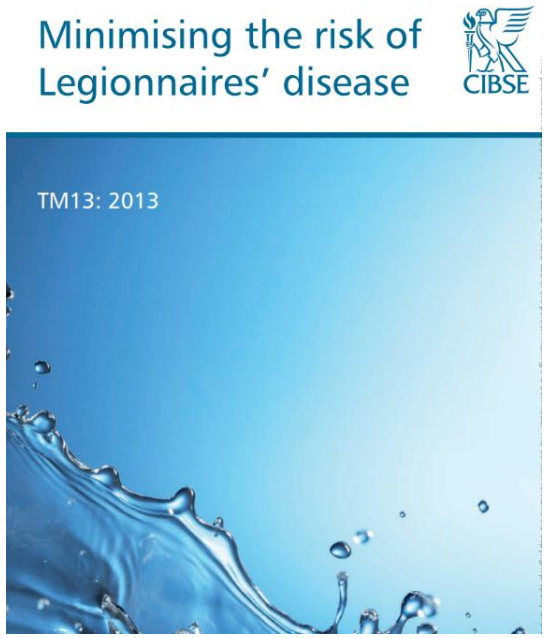
Prompt Response to Risks

Quick response to identified risks ensures safety and compliance within school water systems.

Maintenance Schedule Development

Developing a maintenance schedule aids in ongoing compliance and systematic upkeep of water systems in schools.

DESIGN PRINCIPLES



TMV's

Ensure TMV's are both fully accessible and maintainable (thermocouple monitoring points at strategic locations can help monitor their effectiveness).

Good separation of services/ventilation (warming)

Ensure separation distances are kept to prevent warming of the pipes, ensure plasterboard/MF ceiling voids are ventilated.

Distribution and Balancing

Secondary distribution systems should be correctly balanced using thermal balancing valves/DRV's etc to ensure temperatures are maintained throughout. Application of TBV's require specific installation requirements to ensure they operate correctly.

Dead legs, Dead and Blind ends

Design to ensure there are no dead legs, including branches for future use. Avoid and modify branches that cannot be flushed.

Turnover

Design systems to ensure there is a good turnover of water, most new taps and fittings are reduced flow and storage no need to add in bunce when calculating.

Taps in classrooms and fountains

Only install taps in classrooms where practical, avoid water fountains and bottle fillers which become dead legs in the holiday periods.

DESIGN PRINCIPLES

Expansion Vessels

Ensure expansion vessels are correctly mounted (vertical).

Flexible Connections to Taps

Where practical ensure connection to taps are of the rigid type, some rubber hoses are known to present a greater risk.

Cooling Systems

In some instances,/high risk categories cooling systems can be used (e.g Kemper CoolFlow), ensure expansion vessels are correctly mounted (vertical).

Material specification

Ensure material selection for pipework is carefully considered, some materials can be affected by chlorination chemicals and shock dosing. All other equipment must be WRAs approved.

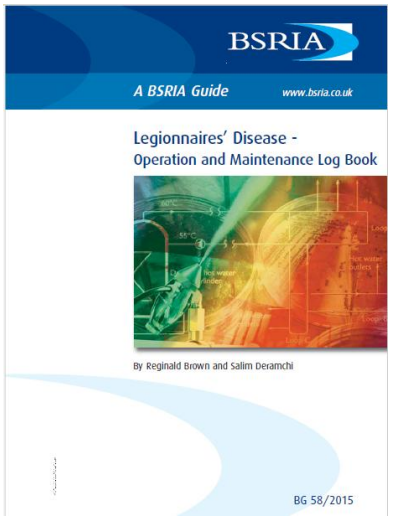
Thermal Insulation

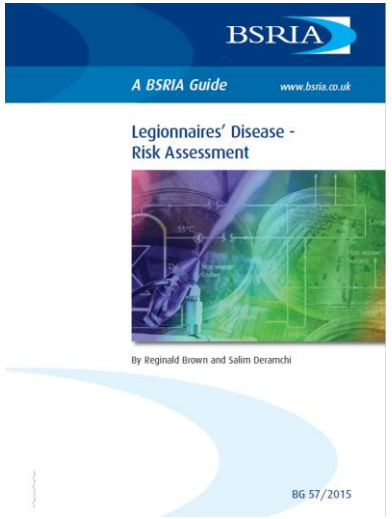
Ensure thermal Insulation is of the correct type as per specification and continuous.

Flushing, Pasteurisation and Disinfection

Ensure system design includes the facility to be flushed, pasteurised and disinfected.

COMMISSIONING AND HANDOVER





Ensure all new installations are fully commissioned in accordance with the guidelines, specifications and requirements.

Ensure all equipment is accessible and maintainable.

Ensure systems are only filled/wetted prior to immediate use, to prevent build up of biofilm etc.

Care should be taken when carrying out disinfection and sampling, often these can be taken on the same day not allowing sufficient time in between, Samples must be taken after 48 hours as a minimum.

Certificates must be issued before practical completion and use can be granted.

WHAT HAPPENS IF WE GET IT WRONG

In 2012 Reading Borough Council were found in Breach of Section 3(1) of Health and Safety at Work etc. Act 1974

(1)It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.

Council Fined £100,000 with £20,000 costs, after the death of a 95-year-old adult male, after a short stay in a care home whilst recovering from a broken leg.

The basin in residents' room was identified as the most likely source of the bacteria, further investigation highlighted that the flexible connections on taps had a type of rubber which facilitated breeding.

Ethylene Propylene Diene Monomer (EPDM) rubber can support the growth of Legionella microorganisms, so any flexible hoses made from EPDM present a significant risk leading to a council wide ban on the use of flexible connections in favour of rigid connections.

JUDGES' DECISION

Courts found that:

- The Legionella training for the key personnel at The Willows was significantly below the standard required;
- There were inadequate temperature checks and some of those done with respect to Thermostatic Mixer Valves (TMV's) were done incorrectly;
- Showers were not descaled and disinfected quarterly as required; flushing of little used outlets was reliant on one member of staff and there was no procedure for this to be done in the absence of that member of staff;
- There was a history of legionella problems at the home which was formerly known as Tanfield Care Home;
- The monitoring, checking and flushing tasks were given to the home’s handyman who was inadequately trained and supervised; with no system in place to cover his absence so the requisite checks were not carried out.

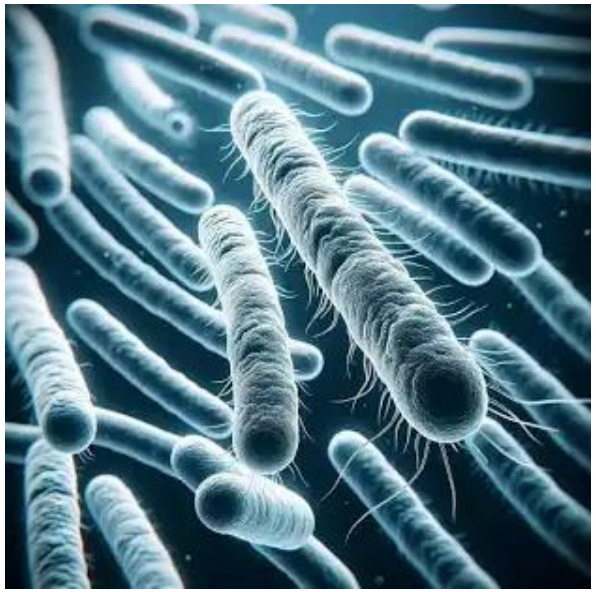
REPORTING LEGIONELLA

Duties under other regulations

Reporting cases of legionellosis

Under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR), you must report any cases of legionellosis in an employee who has worked on cooling towers or hot and cold water systems that are likely to be contaminated with legionella.

- **HCC have had no reportable incidences over the last two decades**
- **All Cooling towers have been removed from the HCC Estate.**



IMPACT OF COVID, CLIMATE CHANGE

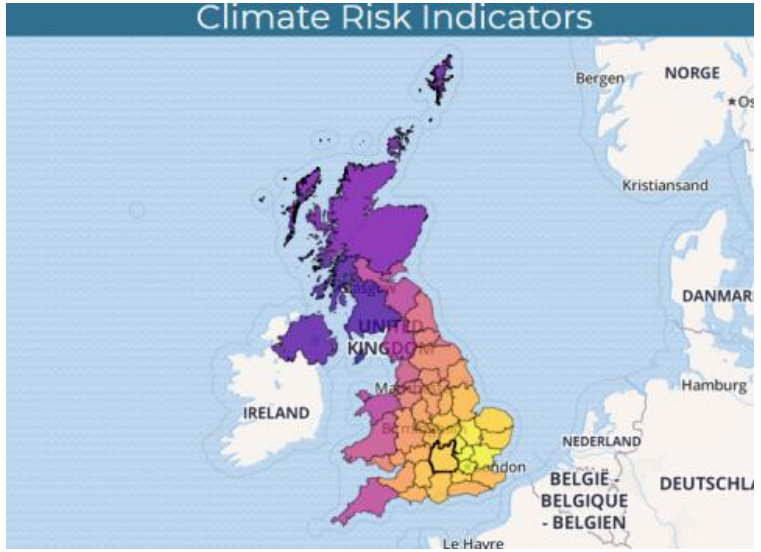
COVID - 19

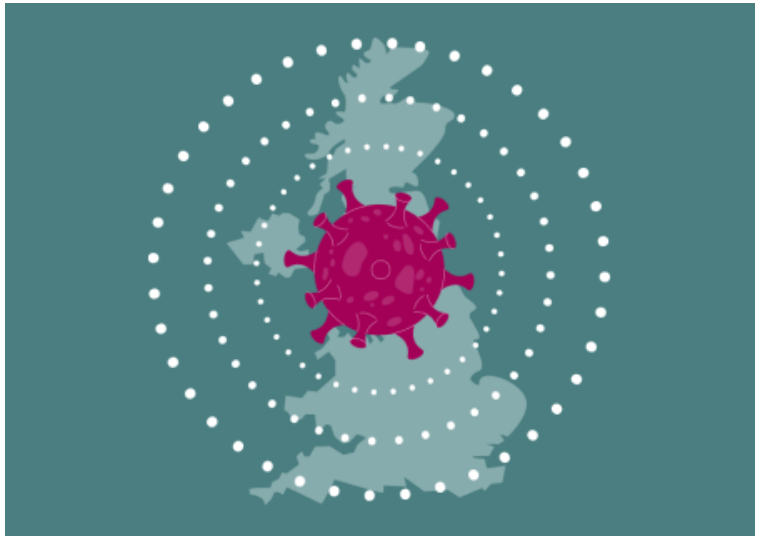
During covid many of Hampshire's buildings were closed for a significant period, water tanks, heaters and circulation systems went unused. Hybrid working included phased return to buildings and casual use of some facilities, affecting turn over of water in systems requiring regular flushing regimes.

Climate Change

Many systems can be affected by the rise in global temperatures and the heat waves experienced across the UK in recent years. These elevated external temperatures lead to overheating in many buildings which can cause the increase of the temperature of the cold and mains water pipework.

It's no longer unusual to find utility supply water temperatures are at 20^{o}C or above and the only realistic way to reduce the rsik associated with elevated temperature would be introduction of cooling systemt to lower the temperature of incoming water to acceptable level.





DISCUSSION