2017

Dacorum Borough
Council

Stuart McGregor

[LEGIONELLA MANAGEMENT SYSTEM]

Contents

Legionella Policy Statement

Dacorum Borough Council firmly believes that health, safety and wellbeing of all those who may be affected by its activities is of paramount importance. The council, through its Corporate Management Team, Assistant Directors, Group Managers and Elected Members, in consultation with Unions will ensure that its activities in relation to Water Hygiene and the Control of Legionella Policy are conducted in a manner which identifies and controls all foreseeable risks in accordance with current legislation, recognised guidance and best practice. To achieve excellence in Water Hygiene and the Control of Legionella the council has the following objectives:

- To comply with the requirements of current health and safety legislation and implement procedures to ensure a safe and healthy working environment with commitment to the prevention of injury and ill health.

- To ensure when adopting this management system, hazards are identified, and the associated risks assessed, managed in a sensible way and reviewed as necessary, providing those affected with appropriate information, training, instruction or supervision.

- To implement and maintain this Legionella Management System and monitoring associated arrangements to review the effectiveness, striving for excellence and continuous improvements.

- To provide sufficient resources necessary to establish, maintain and develop comprehensive health and safety practices, competencies, and safe places of work including safe equipment and safe methods in relation to Water Hygiene and the Control of Legionella.

The management of legionella risk will be a continual commitment by DBC, with the Legionella Management working group having a monitoring role.

This manual is formally accepted by DBC. The Council will do all that is reasonable practicable to comply with its requirements and will make all necessary resources available.

The Assistant Directors Elliott Brooks and Rob Smythe have been appointed as the responsible persons for Legionella.

Signed: _____

Chief Executive of DBC

Section 1: Legionella Policy Management

1.0 Introduction

The aim of this document is to define a combined policy and operating procedure as one management system for the control and management of legionella bacteria in water systems within the dwellings and office buildings owned and managed by Dacorum Borough Council (DBC). This Legionella management system will also be referred to as the 'manual' and is in addition to the external 'legionella contract'.

When visiting, working or living in and around DBC premises it is essential that the risk of exposure to legionella bacteria is minimised and strictly managed and controlled.

This manual sets out how the Council intends to meet the requirements of the Health and Safety Executive (HSE) Approved Code of Practice (ACOP) '*L8 Legionnaires' disease - The control of legionella bacteria in water systems'* (Often referred to as the L8)

The ACOP requires Duty holders to identify and assess sources of risk of exposure to legionellosis bacteria. These risks must then be reduced and controlled to prevent harm to any person who may be exposed.

This manual is also intended to ensure that DBC meets requirements made under the Health and Safety at Work etc. Act 1974. This imposes a 'Duty of Care' on DBC in relation to its customers, employees, consultants and contractors, and others affected by our work.

The policy of DBC is to provide and maintain safe working conditions, equipment and systems of work for all staff, visitors and contractors, and to provide resources, information, training and supervision as required for this purpose. This management system, is in addition to the Corporate Health and Safety policy, and further assists the Council in the control of legionella. It also supports DBC People Strategy document 'A Clean, Safe and enjoyable environment.

1.1 What is Legionella?

Legionnaires disease is a potentially fatal or permanently debilitating form of pneumonia which can affect anybody, but which principally affects those who are susceptible because of age, illness and/or immunosuppressant. It is caused by the bacterium *Legionella pneumophila* and related *bacteria*. Legionella bacteria can also cause less serious illnesses which are not fatal or permanently debilitating. The collective term used to cover the group of diseases caused by legionella bacteria is legionellosis.

Legionella bacteria are common and can be found naturally in environmental water sources such as rivers, lakes and reservoirs, usually in low numbers. Legionella bacteria may also enter purpose built water systems and can be found in cooling tower systems, hot and cold water systems and other plant which use or store water.

Legionella bacteria can survive under a wide variety of environmental conditions but reproduce to high numbers in warm, stagnant water (between 20 °C and 45 °C). The organisms will not survive above 60°C and do not appear to multiply below 20 °C. They may however remain dormant in cool water and multiply only when water temperatures reach a suitable level.

Legionnaires' disease is normally contracted by inhaling small droplets of water (aerosols), suspended in the air, containing the bacteria. The risk is increased where: (a) water temperatures are between 20 and 45 °C (b) there are deposits that can support bacterial growth (c) water droplets can be produced and breathed in.

Water system design and operation, temperature control, treatment and monitoring of the water and recommended cleaning and disinfection procedures must be considered if the risk is to be minimised.

2.0 Scope

This system applies to all employees, contractors and members of the public who may encounter legionella bacteria originating from premises under our control.

This document will assist the following persons to ensure compliance with the regulatory requirements in order to minimise the potential for outbreaks of Legionnaires' disease:

- Building Services
- Compliance officers
- Building managers
- Architects/Developers Those responsible for any building or maintenance projects that may have any changes to water systems, or implementation of new water systems.
- Contract managers
- Corporate Health and Safety

Specifically,

- Commercial Assets
- Owned and managed property
- Contracted/Leased
- Leisure Centres
- Commercial Shops
- Community Centres

The principal goals of the legionella management system are to ensure that:

- All areas of the Council are accounted for and risk assessed, managed and owned.
- To include the management of risk in relation to the planning for new water systems/projects
- To review and manage the risks of legionella findings from water risk assessments in a timely fashion

- To implement a robust risk assurance system, that includes a system of monitoring and auditing the contract of Legionella management
- Building owners and occupiers are aware of their responsibilities from ACOP L8.
- A reasonable assurance system in place of buildings owned by DBC but managed via lease/contract.
- All local DBC staff that are nominated with responsibilities have training to equip them to fulfil the roles determined by this management system.

3.0 Definitions

Non-Domestic Premises – are premises which are used as a place of work, visitor venues or premises which provide support or service facilities for members of the public, communal areas of sheltered schemes and any other council owned and managed premises where responsibility for water hygiene has not been specifically devolved as a council responsibility through a lease contract or other agreement.

Domestic Premises – are places of residence and include the Councils housing stock.

4.0 Risk Profiling

The DBC system for managing safety and business is premised on managers knowing what the predictable risks are in their department, such as, legionella bacteria and to rank them in order of importance and take action to control them. More information on risk assessment and risk assurance can be found in Section 3.

The range of risks goes beyond health and safety to include, quality, environmental and asset damage, but issues in one area could impact on another.

5.0 Legislation, Guidance and Standards

It is the responsibility of the Council to ensure a suitable and sufficient Risk Assessment of the water systems is carried out and details held on file.

Additionally, the Council has a duty to ensure people involved with the control of Legionella are adequately trained, qualified and experienced to fulfil their duties in executing the risk management programme.

The following legislation is applicable to the management and control of legionella:

- Health and Safety at Work etc. Act 1974
- Management of Health and Safety at Work Regulations 1999
- Control of Substances Hazardous to Health Regulations 2002
- The Notification of Cooling Towers and Evaporative Condensers Regulations 1992

Failure to comply with applicable legislation is a criminal offence that could result in unlimited fines for the Council and possibly fines and imprisonment for individuals found to be individually culpable.

The following approved codes of practice and guidance have been issued to assist in maintaining compliance:

- The Health and Safety Executive Approved Code of Practice L8 – Legionnaires disease (4th Edition) The control of Legionella bacteria in water systems. ISBN 9780717666157
- HSE Technical Guidance HSG274 Parts 1, 2 & 3
- BS8558:2011Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages
- BS8580: 2010 Water Quality – Risk Assessment for Legionella Control – Code of Practice
- BS7592: 2008 Sampling for Legionella Bacteria in Water Systems – Code of Practice

DBC policy is to follow the guidance in the ACoP (L8) as a means of complying with the Control of Substances Hazardous to Health (COSHH) Regulations 2002. The responsible person(s) as documented shall implement the requirements of the ACoP and, where applicable adopt the procedures and practices detailed in the following sections.

The key requirements of the ACoP L8 include:

- Identify and assess sources of risk
- Prepare a scheme for preventing or controlling the risk
- Implement, manage and monitor precautions
- Retain records of precautions
- Appoint a person to be responsible for the management of Legionella and staff that are competent to fulfil their specific nominated tasks

6.0 Responsibility for Implementing Council Policy

HSE's Approved Code of Practice (L8) states that the duty holder should specifically appoint competent persons to assess the risks and to take day-today responsibility for controlling any identified risk from legionella bacteria. These persons are referred to as 'responsible persons' in L8 and it is important that they have the appropriate level of authority, competence and knowledge to carry out their role effectively and in a timely way.

Whilst legal accountability for compliance with legislative requirements rests with the Council, responsibility for establishing a health and safety framework for the management of Legionella risks, sits at the Executive level. The Executive Board, namely the Corporate Management Team (CMT) recognises the importance that is given to the management of the Council's assets from a health and safety as well as a commercial perspective.

Under this policy and guidance, the Council has appointed appropriate people within the organisation to manage the legionella risk control measures with the supported of an appointed competent

contractor. The contractor's role includes assessing legionella risks, recommending appropriate control measures and carrying out water temperature and water quality monitoring, based on the checklist from the L8 standards.

7.0 Policy Management Arrangements

Ultimate responsibility for this policy rests with the Council as the employer. The Council will require the Chief Executive to ensure that the policy is effectively applied. As with all matters relating to health and safety, the Directors, Group Managers and Team Managers have devolved responsibility for the application of the policy, plan, and policy statement.

7.1 *Chief Executive*

The Chief Executive will have ultimate ownership of the policy and management system with the arrangements described within. The delegation of responsibility can be made to the Corporate Director in the absence of the Chief either through leave or other absence.

7.2 *Deputy Chief Executive / Corporate Director / Assistant Directors*

Corporate Management Team will take ownership of the Policy and the arrangements described within in the absence of the Chief Executive either through leave or other absence, as detailed in the policy statement.

7.3 *Group Manager Property and Place and Group Manager Commercial Assets will:*

i. Lead on and manage the corporate risk assessment process for all Council managed buildings and oversee the Management Plan detailed in this policy.
ii. Identify necessary resources to take remedial action to reduce the risks presented by Legionnaires' disease within the premises managed by them.
iii. Ensure that all premises managers/building managers follow the steps set out in the section below.
iv. Liaise with the Corporate Director's/Assistant Director's, Corporate Lead Health and Safety Officer Property and Place Team Leaders and Building Services Team Leader where legionella risks are identified.
v. Accept the role of Responsible Person as detailed in L8
vi. Delegate responsibility to an appropriately trained and competent representative(s) from Property and Place to:
    - Advise on the potential areas of risk and identify where systems do not comply with guidance.
    - Appoint a competent contractor to carry out the requirements of HSE guidance L8
    - Advise departments and building managers on the necessary remedial action to take following water hygiene risk assessments.
    - Monitor the implementation of these procedures and actions.
    - Maintain and co-ordinate adequate records.
    - Arrange for any necessary two-yearly water hygiene risk assessment reviews.

- Arrange for the monitoring of the effectiveness of necessary remedial works following water hygiene risk assessments and water testing.
- Manage the appointed contractor to undertake the risks and testing of sites.

7.4 ***Team Leader Property and Place / Compliance and Mechanical and Electrical***

Team Leader Commercial Assets and Property development

Team Leader Supported Housing will:

Provide advice and assistance on implementation of this policy and to managers in commissioning or managing any works in connection with hot and cold water systems (and other related systems) as defined by this policy.

7.5 ***Mechanical and Electrical Surveyor (Principle Surveyor) – (Contract Administrator)***

Property/Place and Statutory Compliance Manager Commercial assets

Legislation Compliance Surveyor will:

i. Arrange the appointment of a competent Water Quality Risk Assessment Contractor approved by the LCA (Legionella Control Association).
ii. Arrange the appointment of a competent Water Quality Management Contractor to manage Water Systems identified within this policy to ensure that they are fully compliant with the guidance contained in ACOP- the Control of Legionella Bacteria in Water Systems L8 2013.
iii. Maintain a schedule of meetings with the Water Quality Management Contractor to ensure all relevant information regarding risk assessments is acted upon within a reasonable time limit.
iv. Take responsibility for the hazards within their service area, as the lead risk owner, and ensure these are dealt with in the appropriate manner (see risk assurance section)
v. Ensure duty holders are identified and made aware for buildings within their service
vi. Act as first point of contact during any escalation relating to:
    - Positive reading from water sampling
    - Continued loss of control of any water system under DBC responsibility

7.6 ***Supported Housing Officer/ Design and Maintenance Manager / Repairs Manager / Building Responsible Managers / Caretakers/ FM / Those in Control of Premises will:***

i. Allow reasonable access to enable the water hygiene risk assessment and any remedial works to take place.
ii. Liaise with their relevant Service areas on the management of Legionnaires 'disease within their premises and the commissioning of any remedial works.
iii. Ensure no repair, maintenance or alteration work takes place on the hot and cold water system within the building(s) they are responsible for without notifying their service area of the planned changes so an assessment can be made as to the potential water hygiene impact on the system.
iv. Nominate an individual (s) who will be responsible for completing the routine water hygiene tasks and checks for the premises, as detailed within the water hygiene site logbook. Ensure that the necessary

routine water hygiene tasks and checks as described in the premises Water Hygiene Log Book/Opuz/PPM are completed at the required frequencies and recorded in the site logbook/Opuz.

v. Report any changes in water quality to their relevant Team Leader's/Statutory Compliance officers.

vi. Advise their departments Senior Management Team where additional funding is required to comply with L8 or where risk assessments have identified potential areas of concern.

7.7 ***Corporate Health and Safety Lead Officer / Mechanical and Electrical Surveyor (Principle Surveyor)***

Property/Place and Statutory Compliance Manager Commercial assets

Legislation Compliance Surveyor will:

i. Provide appropriate advice and support to managers in respect to all aspects of this policy, its procedures and good practice.

ii. Ensure actions resulting from monitoring / inspection / repair / contractor liaison are recorded and concluded within appropriate timescales.

iii. Review the effectiveness of this policy with relevant staff as detailed.

iv. Ensure relevant personnel receive training to perform their roles effectively.

7.8 ***Those who Design (SPAR), or Commission Work on Hot and Cold Water Systems must:***

i. Adhere to the Council's regulations on contracts and tenders.

ii. Ensure that any changes to the system are designed and constructed to ensure that the system will be safe and without risks to health.

iii. Ensure that L8 2013 The Control of Legionella Bacterium in Water Systems and other relevant standards are strictly followed.

iv. Consult the water hygiene risk assessment and written schematic for the building as part of the planning process.

v. Comply with all relevant British standards.

vi. Aid safe operation of the system by making water circuits as simple and short/direct as possible. "Deadlegs" will be avoided.

vii. Aid cleaning and disinfection to ensure those parts of the system that require routine/regular cleaning are easily accessible.

viii. Reduce stored cold/hot water to a minimum needed to meet peak demands.

ix. Minimise heat gain/loss by ensuring water pipes and storage tanks are insulated and ensure hot and cold pipes are suitably separated to prevent heat transfer.

x. Update existing schematics and register any changes with the relevant Service.

xi. Select materials which do not support bacterial or fungal growth e.g. polythene construction.

xii. Lag calorifiers and hot water pipes to ensure water temperatures reach 60c and 50c respectively and make appropriate arrangements to prevent scalding of these using the system outlets.

xiii. Minimise the ingress of organic material into water storage tanks by having close fitting lids and insect screens fitted to overflow pipes.

7.9 ***Those who work on, or repair, hot and cold water systems (Contractors or Council Employees) must:***

i. Ensure a risk assessment has been completed and that relevant health and safety precautions are in place for the work. (If the work is to be carried out by a contractor to ensure a method statement and risk assessment is obtained from them prior to carrying out the work and that it is reviewed by a competent person prior to work starting).

ii. Record any changes/repairs made to the system (however minor) and record them within the sites water hygiene log book/Opuz. Where necessary the schematic will also need to be updated by contacting the relevant Service.

iii. Ensure that L8 2013 The Control of Legionella Bacterium in Water Systems and other relevant standards are strictly followed.

iv. If unsure of any aspect of the system or whether they are competent to design/modify the system to immediately contact the relevant Service for direction

7.10 ***Water Hygiene Contractors (Risk Assessors) will:***

i. Ensure all work is in accordance with the ACOP L8. The Control of Legionella Bacterium in Water Systems 2013.

ii. Ensure that those engaged in the risk assessment process are suitably qualified and competent.

iii. Provide a suitable method statement and general risk assessment for the work to ensure the safety of their workforce and Council staff/members of the public to Property and Place/Commercial Assets Services for review and acceptance before work begins.

iv. Programme the water hygiene risk assessments, identified by DBC Services, as part of the Council's management plan.

v. Prepare a full and detailed water hygiene risk assessment of the hot and cold water systems at various premises provided to them.

vi. Prepare a specific written scheme of control for minimising the risk from legionella bacteria and to ensure good water hygiene at each of the premises risk assessed.

vii. Prepare a full and detailed written schematic of the hot and cold water system at each of the premises risk assessed.

viii. Provide both a written and computer-based record of the risk assessment, scheme of control and schematic of the water system.

ix. Provide the building manager with a Site Water Hygiene Log Book and carry out digital thermometer test and record the water temperatures.

x. Provide the Building Manager and other relevant staff with adequate information, instruction and training to carry out the required local water hygiene tasks and checks listed in the Water Hygiene Log Book/PPM.

xi. In cases of doubt, contact Property/Commercial Team Leader? and/or the Lead Corporate Health and Safety Officer.

xii. Where temperature non-conformities are identified adjust the system accordingly, retest until satisfactory temperatures are achieved and record the actions and inform the contract administrator. Where the temperature cannot be altered due to failure of the controls the contractor shall report this to the contract administrator as a non-conformity requiring client action.

7.11 ***All Employees, Line managers, Managers and Supervisors will:***

i. Immediately report to their line manager any changes in the water quality within the building they work.
ii. Immediately report any confirmation from a Medical Practitioner that they have been diagnosed with any form of Legionellosis, reporting to Corporate Health and Safety.

7.12 ***Letting Agents action on behalf of the Council will:***

i. Implement the requirements of HSE publication L8 the Control of Legionella Bacterium in Water Systems 2013 on the Councils behalf for the premises identified in the policy scope.
ii. Implement effective Legionnaires Disease Management Plans (including appropriate risk assessment and written scheme of control) and manage these plans on behalf of the Council for the premises identified in the policy scope.
iii. Ensure all non-conformances, risks or concerns are raised in an appropriate and timely way with the relevant Council representative.

8.0 Discovery of Legionella Bacteria

In the event of the discovery of legionella bacteria within a water system, follow the guidelines as set out in the Operational Procedure section of this document.

9.0 Records

DBC will retain records for the period they remain current and for at least two years afterwards, except for records kept for monitoring and inspection, which will be kept for at least five years.

We will also keep training records of employees; records of the work of external service providers, such as water treatment specialists; and information on other hazards, e.g. chemical safety data sheets for at least five years.

We will regularly check that our records both written and electronic contain accurate information and contain details of the:

- person or people responsible for conducting the risk assessment, managing, and implementing the written scheme;
- significant findings of the risk assessment;
- written control scheme and details of its implementation;

- details of the state of operation of the system, i.e. in use/not in use;
- results of any monitoring, inspection, test or check carried out, the dates and any resulting corrective actions, as defined in the written scheme of precautions, such as: results of chemical and microbial analysis of the water;
- water treatment chemical usage;
- inspections and checks on the water treatment equipment to confirm correct operation;
- inspections and checks on the water system components and equipment to confirm correct and safe operation;
- records of maintenance to the water system components, equipment and water treatment system; and
- the cleaning and disinfection procedures and the associated reports and certificates.

10.0 Review

This guide should be reviewed at regular intervals or sooner if there is any reason to suppose that the advice is no longer valid, or any of the circumstances of the work have changed significantly.

11.0 Training and Monitoring

The Duty Holder must ensure that the Responsible Person(s), service provider and/or staff appointed to implement the control measures and strategies are suitably informed, instructed and trained and their suitability assessed. The levels of competence and training qualifications is detailed in the training and competence section.

Regular refresher training will be provided and the Responsible Person(s) must ensure that they have a clear understanding of their role and the overall health and safety management structure and policy of the organisation

This guide will be monitored regularly by the working group and Corporate Health and Safety Committee.

Section 2: Control Matrix

12:0 Control Matrix

The control matrix has been created as part of the main control measure and key part of this management system to achieve not only legal requirements, but a robust system in the management of Legionella. It is solely and specifically based on the Approved Code of Practice, and directly from the checklists and guidance from the HSE.

It is extremely important to note that this control matrix is in addition to the Councils External Legionella management contract with Orion Building Services. The external contract to manage is in place, this manual has been prepared to give Corporate Management Team full assurance of risk control in managing legionella. DBC have completed proactive health and safety works and risk profiling, giving Legionella Management further auditing and even more control measures.

The external contract should give the council a robust legal level of compliance and offer assurance for the wellbeing of staff and others. This management system and the whole subject of Legionella therefore shouldn't become convoluted.

To support the implementation of the Legionella Management System the following Control Matrix has been devised.

The Control Matrix is designed to be completed at a local level so that for each service area there is clarity about the frequency with which water systems should be inspected, by whom and managed by. A further layer of control is added by way of a 'process checked by' column.

Key Performance Indicators (KPI) are linked to each of the L8 tasks, detailed in the control matrix tables.

The following tables identify for the service areas Property and Place and Commercial Assets. It should be noted that this is *in addition* to the contract for 'managing Legionella'.

12.1 Property and Place

Table 1: Legionella Management risk identification checklist based on HSG 274 **Part 2**

KPI No.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
1	Legionella water risk assessment	2 years	Orion/SMS	M+E Surveyor John Quinn	Produce and/or complete review	M+E Team Leader Ricky Lang
2	Cold Water (CW) Sentinel taps water temperature	Monthly	Orion	M+E Surveyor	Water temp should be below < 20c after running the water for 2 min	M+E Team Leader
3	Hot Water (HW) Sentinel taps water temperature	Monthly	Orion	M+E Surveyor	Water temp should be above > 50c after running the water for 1 min	M+E Team Leader
4	Representative sample of the HW taps temperature	On rotation	Orion	M+E Surveyor	Representative number of HW taps on rotation. Water temp should be above > 50c after running the water for 1 min	M+E Team Leader
5	Representative sample of the CW taps temperature	On rotation	Orion	M+E Surveyor	Representative number of CW taps sampled on rotation. Water temp should be below < 20c after running the water for 2 min	M+E Team Leader
6	Check thermal insulation CW system (CWS)	Annually	Orion	M+E Surveyor	Check thermal insulation to ensure intact; consider weatherproofing if exposed to outside	M+E Team Leader
7	Calorifier temp leaving and returning (HW)	Monthly	Orion to introduce	M+E Surveyor	Outgoing temp should be above >60c and return above > 50c	M+E Team Leader
8	Calorifier inspection and clean	Annually	Orion	M+E Surveyor	Remove the inspection cover and/or use a borescope camera and clean by draining the vessel. Where no inspection cover: purge debris and collect the initial flush for inspection	M+E Team Leader
9	Cold Water Tanks	Annually	Orion	M+E Surveyor	Inspect and carry out remedial work	M+E Team Leader
10	Cold Water Tanks check water temp	Annually (Summer)	Orion	M+E Surveyor	Check the tank water temperature remote from the ball valve and the incoming mains temp. Water temp should be below < 20c at all times	M+E Team Leader

KPI No.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
11	Showers and spray taps	Quarterly	Showers – Orion Taps – Orion to introduce	M+E Surveyor	Dismantle clean and descale: removable parts, heads, inserts, and hoses, if applicable	M+E Team Leader
12	Combination water heaters	Annually	Orion	M+E Surveyor	Inspect the cold water header tanks	M+E Team Leader
13	Combination water heaters	Monthly	Orion	M+E Surveyor	Check water temperatures at an outlet to confirm the heater operates between 50-60c	M+E Team Leader
14	Point of Use (POU) taps	Monthly or six monthly – on rotation	Orion	M+E Surveyor	Check water temperatures at an outlet to confirm the heater operates between 50-60c	M+E Team Leader
15	POU filters	To be removed	Orion	M+E Surveyor		M+E Team Leader
16	Instructions			Record the service start date and lifespan or end date; replace filters as recommended by the manufacturer		M+E Team Leader
17	Base Exchange Softeners	Weekly	Orion	M+E Surveyor	Visual check on salt levels and top up where necessary	M+E Team Leader
18	Base Exchange Softeners	Annually	Orion/SMS	M+E Surveyor	service and disinfect	M+E Team Leader
19	Multiple use filter	As recommended by the manufacturer	Auto process/ Orion	M+E Surveyor	Backwash and regenerate as specified by manufacturer	M+E Team Leader
20	Infrequently used outlets	Weekly	Housing Support Officers	Housing Support Managers	Flush through	Team Leader Supported Housing
21	Thermostatic mixing valves (TMVs)	Annually or as recommended by the manufacturer	Orion	M+E Surveyor	Remove and/or inspect, clean, descale, and disinfect	M+E Team Leader
22	Expansion Vessels	Monthly and or six monthly	Orion	M+E Surveyor	Where practical flush through	M+E Team Leader

Table 2: HSG274 Part 2: Cleaning and Disinfection

KPI no.	Task	**Frequency** (or as indicated by risk assessment)	**Task** completed by (service provider)	Managed process by	Action point	Process checked by
23	Cleaning and Disinfection	Annually	Orion/SMS	M+E Surveyor	Chemical disinfection	M+E Team Leader

Table 3: HSG274 Part 2: Microbiological Monitoring

KPI no.	Task	**Frequency** (or as indicated by risk assessment)	**Task** completed by (service provider)	Managed process by	Action point	Process checked by
24	Microbiological Monitoring BS7592	As per the buildings RA recommendations. Following a continually non-conforming temp reading. 2-7 days after disinfection of tank.	Orion	M+E Surveyor	4 x samples Following positive sample, flush and re-test	M+E Team Leader

Table 4: Legionella Management risk identification checklist based on HSG 274 **Part 3**

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
	Fountains and water features	As indicated by the risk assessment	N/A		Clean and disinfect ponds, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	
	Spa Pools	As recommended by the manufacturer	N/A		Detailed HSE/PHE guidance on the management of spa pools is available in Management of spa pools: Controlling the risks of infection	
25	Whirlpool baths	As indicated by risk Assessment	Site staff maintained – TBC by DBC	DBC Housing Support Management	Clean, flush and disinfect air channels. Remove, flush and clean jets	M+E Surveyor
	Water softeners	As recommended by manufacturer	Action as base exchange softener		Clean and disinfect resin and brine tank; check with the manufacturer what chemicals can be used to disinfect resin bed	
	Emergency showers, eyebaths and face-wash fountains	As indicated by risk assessment, but at least every six months	N/A		Flush through and purge to drain ensuring three to five times the volume of water in the stagnant zone is drawn off	
		Monthly			Inspect water storage tanks (where fitted)	
		Quarterly, or more frequently, as indicated by the risk assessment			Clean and disinfect shower heads, nozzles, roses, 'Y' strainers, and water storage tanks (where fitted)	
	Sprinkler and hose reel systems	As recommended by the manufacturer	No sprinkler systems. Hose reels being removed – ongoing		Note: when undertaking test of the sprinkler blow down ensure that there is a minimal risk of exposure to aerosols	
	Vehicle wash systems	As recommended by the	N/A		Check and clean filtration systems, collection tanks and	

		manufacturer			interceptor tanks and check treatment of the system. A biocide system should be in place. Clean and disinfect systems and ensure that sludge tanks are emptied	
		Initial sample to establish control measures achieved. Quarterly			Sample for legionella	
	Ultrasonic humidifiers/foggers and water misting systems	Six monthly Or as recommended by the manufacturer	N/A		If the equipment is fitted with UV lights, check to ensure the effectiveness of the lamp and clean filters	
		As part of the machinery shut down process			Ensure automatic purge of residual water is functioning	
		Refer to the risk assessment			Clean and disinfect all wetted parts	
		Refer to the risk assessment			Sampling for legionella	
	Spray humidifiers	Six monthly	N/A		Clean and disinfect spray humidifiers and make-up tanks, all wetted surfaces, descaling as necessary	
		Weekly			Confirm the operation of non-chemical water treatment	
	Air washers, wet scrubbers, particle and trivial gas scrubbers	As indicated by risk assessment	N/A		Clean and disinfect air washers, wet scrubbers, particle and trivial gas scrubbers and water storage tanks	
		As indicated by risk assessment			Apply, monitor and record the result of water treatment	
	Dental equipment	Twice daily. Disinfect contact time as recommended by the manufacturer	N/A		Drain down, clean, flush; disinfect all systems components, pipework and bottles	
		Daily			Clean storage bottles, rinse with distilled water, drain and leave inverted overnight	
		As indicated by risk assessment			Take microbiological samples	
		Refer to: Decontamination Health Technical Memorandum: Decontamination in primary care				

		dental practices

12.2 Commercial Assets

Table 5: Legionella Management risk identification checklist based on HSG 274 **Part 2**

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
1	Legionella water risk assessment	2 years	Orion subcontract to SMS Environmental	Building Legislation Compliance Surveyor Tracey Simmonds	Produce and/or complete review	Building Services Team Leader Tony Moore
2	Cold Water (CW) Sentinel taps water temperature	Monthly	Orion	Tracey Simmonds	Water temp should be below < 20c after running the water for 2 min	Tony Moore
3	Hot Water (HW) Sentinel taps water temperature	Monthly	Orion	Tracey Simmonds	Water temp should be above > 50c after running the water for 1 min	Tony Moore
4	Representative sample of the HW taps temperature	On rotation	Orion	Tracey Simmonds	Representative number of HW taps on rotation. Water temp should be above > 50c after running the water for 1 min	Tony Moore
5	Representative sample of the CW taps temperature	On rotation	Orion	Tracey Simmonds	Representative number of CW taps sampled on rotation. Water temp should be below < 20c after running the water for 2 min	Tony Moore
6	Check thermal insulation CW system (CWS)	Annually	Orion	Tracey Simmonds	Check thermal insulation to ensure intact; consider weatherproofing if exposed to outside	Tony Moore
7	Calorifier temp leaving and returning (HW)	Monthly	Orion	Tracey Simmonds	Outgoing temp should be above >60c and return above > 50c	Tony Moore
8	Calorifier inspection and clean	Annually	Orion	Tracey Simmonds	Remove the inspection cover and/or use a borescope camera and clean by draining the vessel. Where no inspection cover: purge debris and collect the initial flush for inspection	Tony Moore

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
9	Cold Water Tanks	Annually	Orion	Tracey Simmonds	Inspect and carry out remedial work	Tony Moore
10	Cold Water Tanks check water temp	Annually (Summer)	Orion	Tracey Simmonds	Check the tank water temperature remote from the ball valve and the incoming mains temp. Water temp should be below < 20c at all times	Tony Moore
11	Showers and spray taps	Quarterly	Orion	Tracey Simmonds	Dismantle clean and descale: removable parts, heads, inserts, and hoses, if applicable	Tony Moore
12	Combination water heaters	Annually	Orion	Tracey Simmonds	Inspect the cold water header tanks	Tony Moore
13	Combination water heaters	Monthly	Orion	Tracey Simmonds	Check water temperatures at an outlet to confirm the heater operates between 50-60c	Tony Moore
14	Point of Use (POU) taps	Monthly or six monthly	Orion	Tracey Simmonds	Check water temperatures at an outlet to confirm the heater operates between 50-60c	Tony Moore
15	POU filters	As recommended by the manufacturer	Orion	Tracey Simmonds		Tony Moore
16	Instructions		Orion	Record the service start date and lifespan or end date; replace filters as recommended by the manufacturer		Tony Moore
17	Base Exchange Softeners	Weekly	Site Manager	Tracey Simmonds	Visual check on salt levels and top up where necessary	Tony Moore
18	Base Exchange Softeners	Annually	Orion	Tracey Simmonds	service and disinfect	Tony Moore
19	Multiple use filter	As recommended by the manufacturer	Orion	Tracey Simmonds	Backwash and regenerate as specified by manufacturer	Tony Moore
20	Infrequently used outlets	Weekly	Site Manager. Orion in empty properties (sports pavilions)	Tracey Simmonds	Flush through	Tony Moore
21	Thermostatic mixing valves (TMVs)	Annually or as recommended by the manufacturer	Orion	Tracey Simmonds	Remove and/or inspect, clean, descale, and disinfect	Tony Moore

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
22	Expansion Vessels	Monthly and or six monthly	Orion	Tracey Simmonds	Where practical flush through	Tony Moore

Table 6: HSG274 Part 2: Cleaning and Disinfection

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
23	Cleaning and Disinfection	Annual tank disinfections. Or more frequent if RA or six monthly tank inspections recommends.	Orion subcontract to SMS	Tracey Simmonds		Tony Moore

Table 7: HSG274 Part 2: Microbiological Monitoring

KPI no.	Task	Frequency (or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
24	Microbiological Monitoring BS7592	As per the buildings RA recommendations. Following a continually non-conforming temp reading. 2-7 days after disinfection of tank.	Orion	Tracey Simmonds		Tony Moore

Table 8: Legionella Management risk identification checklist based on HSG 274 **Part 3**

KPI no.	Task	Frequency (Or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
25	Fountains and water features	As indicated by the risk assessment	Orion	Tracey Simmonds	Clean and disinfect ponds, spray heads and make-up tanks including all wetted surfaces, descaling as necessary	Tony Moore

KPI no.	Task	Frequency (Or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
	Spa Pools	As recommended by the manufacturer	n/a	n/a	Detailed HSE/PHE guidance on the management of spa pools is available in Management of spa pools: Controlling the risks of infection	n/a
	Whirlpool baths	As indicated by risk Assessment	n/a	n/a	Clean, flush and disinfect air channels. Remove, flush and clean jets	n/a
26	Water softeners	As recommended by manufacturer	Orion	Tracey Simmonds	Clean and disinfect resin and brine tank; check with the manufacturer what chemicals can be used to disinfect resin bed	Tracey Simmonds
	Emergency showers, eyebaths and face-wash fountains	As indicated by risk assessment, but at least every six months	n/a	n/a	Flush through and purge to drain ensuring three to five times the volume of water in the stagnant zone is drawn off	n/a
		Monthly	n/a	n/a	Inspect water storage tanks (where fitted)	n/a
		Quarterly, or more frequently, as indicated by the risk assessment	n/a	n/a	Clean and disinfect shower heads, nozzles, roses, 'Y' strainers, and water storage tanks (where fitted)	
	Sprinkler and hose reel systems	As recommended by the manufacturer	n/a	n/a	Note: when undertaking test of the sprinkler blow down ensure that there is a minimal risk of exposure to aerosols	n/a
27	Vehicle wash systems NB-CURRENTLY OUT OF USE AND TANKS DRAINED	As recommended by the manufacturer	Orion	Graham Patterson	Check and clean filtration systems, collection tanks and interceptor tanks and check treatment of the system. A biocide system should be in place. Clean and disinfect systems and ensure that sludge tanks are emptied	Tracey Simmonds
28		Initial sample to establish control measures achieved. Quarterly	Orion	Graham Patterson	Sample for legionella	Tracey Simmonds
	Ultrasonic humidifiers/foggers and water	Six monthly Or as recommended	n/a	n/a	If the equipment is fitted with UV lights, check to	n/a

KPI no.	Task	Frequency (Or as indicated by risk assessment)	Task completed by (service provider)	Managed process by	Action point	Process checked by
	misting systems	by the manufacturer			ensure the effectiveness of the lamp and clean filters	
		As part of the machinery shut down process	n/a	n/a	Ensure automatic purge of residual water is functioning	n/a
		Refer to the risk assessment	n/a	n/a	Clean and disinfect all wetted parts	n/a
		Refer to the risk assessment	n/a	n/a	Sampling for legionella	n/a
	Spray humidifiers	Six monthly	n/a	n/a	Clean and disinfect spray humidifiers and make-up tanks, all wetted surfaces, descaling as necessary	n/a
		Weekly	n/a	n/a	Confirm the operation of non-chemical water treatment	n/a
	Air washers, wet scrubbers, particle and trivial gas scrubbers	As indicated by risk assessment	n/a	n/a	Clean and disinfect air washers, wet scrubbers, particle and trivial gas scrubbers and water storage tanks	n/a
		As indicated by risk assessment	n/a	n/a	Apply, monitor and record the result of water treatment	n/a
	Dental equipment	Twice daily. Disinfect contact time as recommended by the manufacturer	n/a	n/a	Drain down, clean, flush; disinfect all systems components, pipework and bottles	n/a
		Daily	n/a	n/a	Clean storage bottles, rinse with distilled water, drain and leave inverted overnight	n/a
		As indicated by risk assessment	n/a	n/a	Take microbiological samples	n/a
		Refer to: Decontamination Health Technical Memorandum: Decontamination in primary care dental practices				

Section 3: Risk Assessment and Risk Assurance

13.0 Risk Assessment and Risk Assurance

To manage and control legionella bacteria in water systems DBC will carry out risk assessments for all potential areas of legionella risk for their properties in accordance with the Management of Health and Safety at Work Regulations 1999 and the Control of Substances Hazardous to Health Regulations 2002 and in line with the requirements of HSG274 Part 2: Appendix 2.1; 'Legionella risk assessment'.

The risk assessment will identify the hazards, decide who might be harmed and how, evaluate the risks and decide on precautions, record findings and implement them and review the risk assessments and update them as necessary. This risk assessment will be carried out by an appointed competent person and updated as and when found necessary but at a minimum of two yearly intervals or following significant changes to the hot and cold water services.

All Council managed premises covered by the scope of this management system will be subject to a water hygiene risk assessment.

Site practical risk assessments will be carried out by a competent and experienced UKAS approved analytical company assessed and approved by Property and Place and Commercial Asset and property development services. Each service has completed a service wide assessment of risk, to ensure a documented broader review of Legionella risk approach is undertaken to give assurance of information of the types of property and levels of risk with associated control measures.

The assessments will be conducted in accordance with L8 and the order and timescales for assessments will be prioritised based on the risks presented. This will be determined by the age of the building, its occupancy and use and any pre-existing data available on Legionella bacteria.

The risk assessment will focus on eliminating the risk of Legionnaires Disease. Where risks cannot be eliminated, the risk assessment will identify the remedial actions necessary in order of priority to ensure the risk of Legionnaires Disease is minimised to an acceptable level.

Following each risk assessment of premises, a re-assessment date will be set.

A copy of the risk assessment, any review and written scheme of control will be held on site by the building manager and/or electronically via the OPUZ system.

A full building stock and individual building risk assessment to identify sources of legionella risk and appropriate reporting of those potential sources shall be carried out leading to an asset inventory and maintenance management system to control and reduce the risk of legionellosis.

The greatest areas of risk of the proliferation of legionellosis within DBC is in hot and cold water systems, thermostatic mixing valves, calorifiers, storage cylinders, little used outlets (dead legs), water storage tanks, air conditioning systems, humidifiers, spa-baths/pools, shower heads, a water fountain and any system which provides aerosols that may exceed a temperature of 20ºC. This list is not exhaustive.

An Action Plan arranged from the findings of the risk assessment surveys will be produced and prioritised to reduce legionellosis risk.

13.1 Written Scheme of Control

As part of the water hygiene risk assessment a site specific written scheme of control will be established by the Risk Assessor to minimise the risks of Legionella bacteria and ensure good water hygiene for each premise.

The scheme will include:

- A detailed schematic of the hot and cold water system.
- A description of the correct and safe operation of the system.
- Precautions to be taken.
- The required routine water hygiene tasks and checks for the building to ensure the system is functioning efficiently. These will be listed within the water hygiene site logbook and electronically on the OPUZ system.
- Remedial action to be taken in the event that the scheme is shown not to be effective.
- Whether routine water testing/monitoring is required for the system e.g. legionella bacteria, other general bacterial testing, e.g. Total Viable Count (TVC) etc.

13.2 Reviewing Risk Assessments

Following completion of each building's water hygiene risk assessment the person described in the control matrix ‘managed process by’ must make arrangements to complete any remedial works in a timely manner to comply with the requirements of the risk assessment. Evidence of remedial works must be checked, and available for auditing.

13.3 Risk Register/Hazard Data/Audit Process

Hazards are being recorded via the electronic online system – OPUZ, and DBC currently have a weekly uplift of current Hazards, these are then entered onto a spread sheet and shared with the ‘owners’ for each service. The owners are detailed in the Control Matrix under the heading ‘Managed By’ column.

Ultimately each hazard is owned, managed and monitored to ensure no delays, and all risks are managed.

Hazards are either generated from the routine water risk assessment, or routine water monitoring works, or from local site management concerns, or routine audits/inspections.

The hazards are rated simply as very low, Low, Medium, High or Very High by the Contractor, or their sub-contractor. The weekly hazard uplift from Opuz system is to manage and monitor all hazards. To ensure that all hazards are addressed and completed within the recommended timescale. It is the key

responsibility of the DBC staff named within the 'Control Matrix' as '*Managed by'* process, to ensure all hazards within their service areas are followed up and completed; these staff are the direct risk owners.

If any medium or high risk that cannot be controlled and reduced within the recommended time, must be transferred to '*Process Checked By'* staff. All High and Very High risks should be transferred and shared with the relevant Team Leader, or person listed as the '*Process checked by'* within the control matrix, to ensure this risk is reduced within the recommended time and monitored by management. All 'very high' risks should be transferred and shared with the relevant service group manager, this should be completed immediately, and all control measures are also required immediately.

This risk assurance, is that DBC staff monitor and react to all weekly hazard uplifts from Orion, this should be completed as an ongoing action.

The audit process is imbedded within the control matrix as an internal auditing system, as the *Managed By* staff is managing and checking the task identified in the L8 task schedule, and the *Process checked by* staff is auditing the *Managed by* staff duties. In addition to this the KPI's complete further checks on managing the risks and hazards identified. Further internal or external auditing either as a general health and safety audit, and/or an external specific audit will form part of DBC's health and safety work plans.

13.4 Testing for Legionella Bacteria and Microbiological Monitoring

- **Commercial Assets/Property and Place** On-going monitoring of general bacterial numbers Total Viable Count (TVC) of hot and cold water systems will not normally be carried out unless there are required as part of the risk assessment, or reported as necessary, or suspected, changes in the water system e.g. taste, odour, colour etc.

13.5 Testing for legionella bacteria will normally be completed (in accordance with L8) where:

- It is identified as necessary within the site practical water hygiene risk assessment, or service wide risk assessment.
- **Water storage and distribution** temperatures are reduced from those recommended in L8.
- An outbreak of Legionella is suspected.
- Controls of a system e.g. temperatures/biocide levels cannot be consistently achieved.
- Analysis of water samples will only be carried out by a UKAS accredited laboratory.
- Implementation of remedial action following the results of any test will be prioritised on the action levels contained within L8.

13.6 Water Temperatures

Temperature control is an effective means to ensure the risks from legionella bacteria are minimised. Operation of the hot and cold water system should therefore be designed to restrict bacterial growth (legionella proliferates between 20c and 45c) by keeping;

- Calorifier temperatures above 60c.
- Cold water temperatures (taps and storage) below 20c.
- Hot water temperatures at taps above 50C (after one minute). The scalding dangers presented by water above 50c need to be seriously considered particularly. Water temperatures should be controlled not to exceed 43c by the installation of fail-safe thermostatic mixer taps/shower as promoted by the Council where the risk assessment dictates there is risk – Elderly or disabled users of facilities. In all cases hot water outlets will displays a warning sign.
- Water softeners and filters maintained according to manufacturer's instructions.
- Older water systems that are unable to achieve required temperatures will have an alternative means of controlling growth of bacteria defined within the written scheme of control.

13.7 Scalding HSG274

There is a risk of scalding where the water temperature at the outlet is above 44 °C. In certain facilities with 'at risk' residents (vulnerable groups such as over 55s) this is especially so where there is whole body immersion in baths and showers of vulnerable residents, including the very young, elderly people, and people with disabilities or those with sensory loss who may not be able to recognise high temperatures and respond quickly. Where there are vulnerable individuals and whole body immersion, testing of outlet temperatures using a thermometer can provide additional reassurance

The potential scalding risk should be assessed and controlled in the context of the vulnerability of the user groups, within the buildings. The approach will depend on the needs and capabilities of residents.

For most people, the scalding risk is minimal where water is delivered up to 50 °C at hand washbasins and using hot water signs may be considered sufficient, where a TMV is not fitted.

Where vulnerable people are identified and have access to baths or showers and the scalding risk is considered significant, TMV Type 3 (TMV3) are required. This shall be the case for all Disabled toilets in use and communal facilities provided in housing schemes.

All of which should be addressed within each of the service wide risk assessments.

13.8 Water Hygiene Site Log Book (and/or electronically held records/OPUZ)

Following a risk assessment, a Water Hygiene Log Book/or access to the electronic Opuz system, will be provided to each building manager. The log book/Opuz will contain details/frequency of the necessary water hygiene tasks that must be completed by the building manager or other appointed person at the site.

13.9 Housing Stock (Domestic Premises)

The revised Approved code of Practice 2013 states the following in relation to the Domestic Properties:

Capacity of hot water systems

The scope of the ACoP previously applied only to those hot water systems which had capacities of 300 litres or over. This was a purely arbitrary limit designed to exclude domestic systems. Domestic systems can present a risk, depending on the circumstances of use, but the ACoP will only apply to systems from which risk arises in relation to any work activity. A service wide risk assessment has been completed.

Identified Risk in DBC Housing Stock

- Where properties are in the Councils control i.e. voids or properties empty for refurbishment. The Contractor will prior to working on the water system, inspect the water storage tank, check the system, flush and chlorinate or replace any shower head. During the works period the contractor will be responsible for running all taps weekly. This must be recorded. Before the property is re-occupied the housing officer/manager will run all taps at letting stage.
- Where properties are having capital works which affect the water system and tenants remain in occupation. The Contractor will inspect the water storage tank, check the system, flush and chlorinate or replace any shower heads. During the period of work the contractor will be responsible for running all taps weekly. This must be recorded.
- Where tenants of sheltered schemes with combined water systems are away from their property for periods of over one week the Scheme Coordinator will where possible endeavour to ensure that all taps are run prior to re-occupation in circumstances which the Council is made aware.
- For general needs properties not in the Councils direct control advice to tenants will be issued prior to occupation in the tenant information pack.

13.10 Emergency Procedures

DBC has prepared procedures detailing the action necessary in the event of an outbreak of Legionnaires Disease for which it is responsible. In addition, further Emergency Procedures highlight actions to follow in the event of a Positive Sample Analysis or continued Loss of System Control. The emergency procedure is in the form of an emergency card, from the technical guides which must be specific for DBC, to include all emergency actions, and emergency contact in a simple one form emergency card.

13.11 Service Wide Specific Risk Assessments

Each service, is required to complete a service wide specific risk assessment on the management of Legionella. This will detail what the service looks after, and the consideration of risk. This service wide risk assessment is in addition to the site practical legionella risk assessments

14.0 Key Performance Indicators (KPI)

The Key Performance Indicators (KPI) are a set of standard checks connected to relevant staff to ensure actions have been completed and checked. DBC have completed the following very simple KPI checks to have an additional risk control measure, supporting their risk control in the management of Legionella.

KPI – A: The Control Matrix

How do we know DBC is compliant to L8 standard? This management system's core control system to ensure compliance with L8 is the development and implementation of the 'Control Matrix', as this lists all the 'Tasks' as required by the L8.

Detailed within the 'Control Matrix', are named staff responsible for each task, refer to 'Control Matrix' to review KPI number. This KPI has two different people listed, the '*managed process by'* and the '*process checked by'*.

For example, KPI 1 task 'Legionella risk assessment to be completed every two years'. Those identified in the both the '*managed process by'* and the '*process checked by'* would need to complete checks on evidence to confirm that the required water risk assessments have been completed within the allotted timescale.

KPI 2 within the control matrix is monthly cold water temperature checks, so the same listed staff members under this KPI would need to check once a month that the temperatures checks have been completed and that they remained under 20c. Rather than add additional paperwork, and to keep the process of managing Legionella, the KPIs linked to the Control Matrix has sufficient information and guidance already within the matrix to not then further complicate the KPI checks. The staff who have the responsibility and accountability of arranging, managing, monitoring and completing KPIs from the control matrix need to ensure they fully understand their specific duties.

KPI – B; The Control Matrix KPI - Group Manager

The Group Manager from each service should complete a check on the KPI – A to ensure that all KPI's have been completed and monitored. This could be asking the staff who are 'Managing the process' and 'Process checked by' to provide evidence of each of the tasks/KPI's (as listed in the control matrix) being completed and checked. This could be completed on a six-monthly basis.

KPI – C: The Control Matrix KPI - Assistant Director

The Group manager will share evidence to their Assistant Director that they have checked the teams KPI's linked to the control matrix, this should be completed on an annual basis.

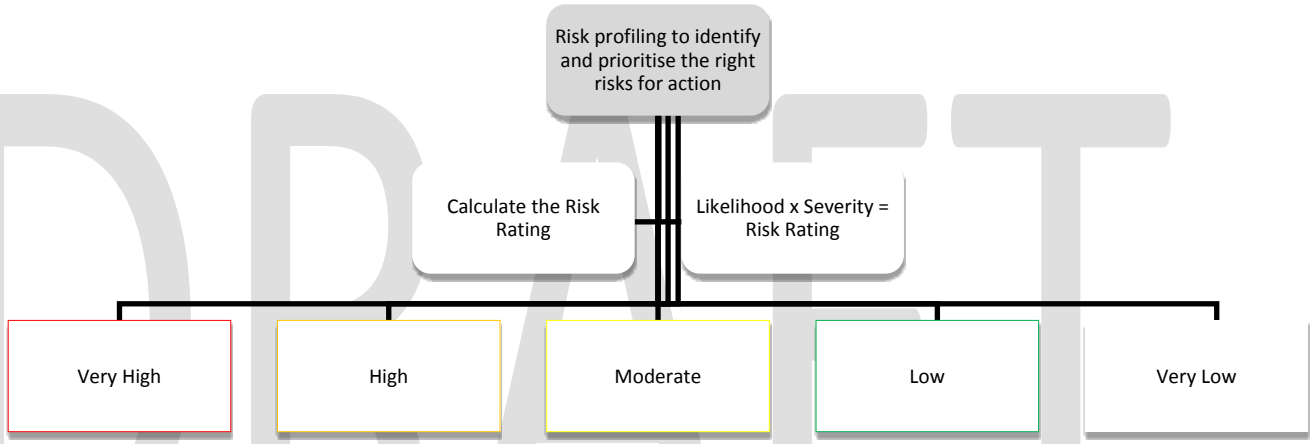
15.0 Risk Assurance

Risk Escalation Process

This risk escalation process, is an important control measure, as it means that risks are being monitored and escalated according to risk.

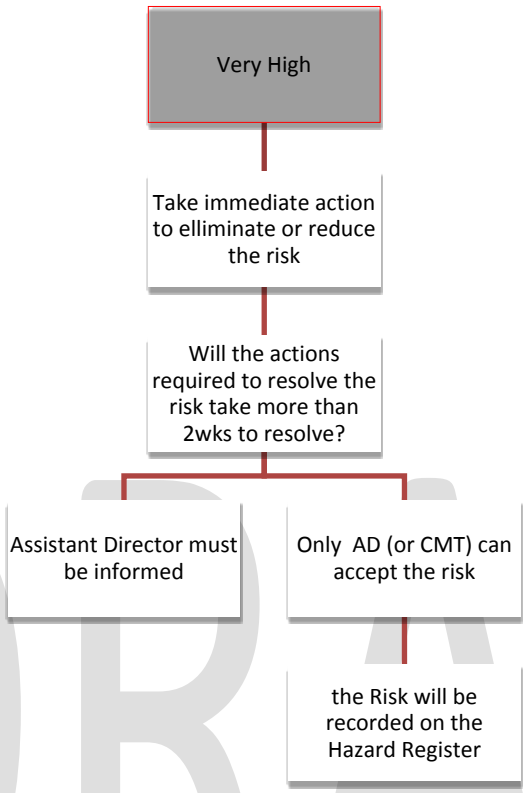
The risk profiling shown below (Diagram 1), is considering the risk already given by the contractor, normally from a water risk assessment.

Diagram 1: Risk Profiling



The following diagrams identify the steps to be taken for each of the risk profiles.

Diagram 2: Risk Profile – Very High



. **Diagram 3:** Risk Profile - High

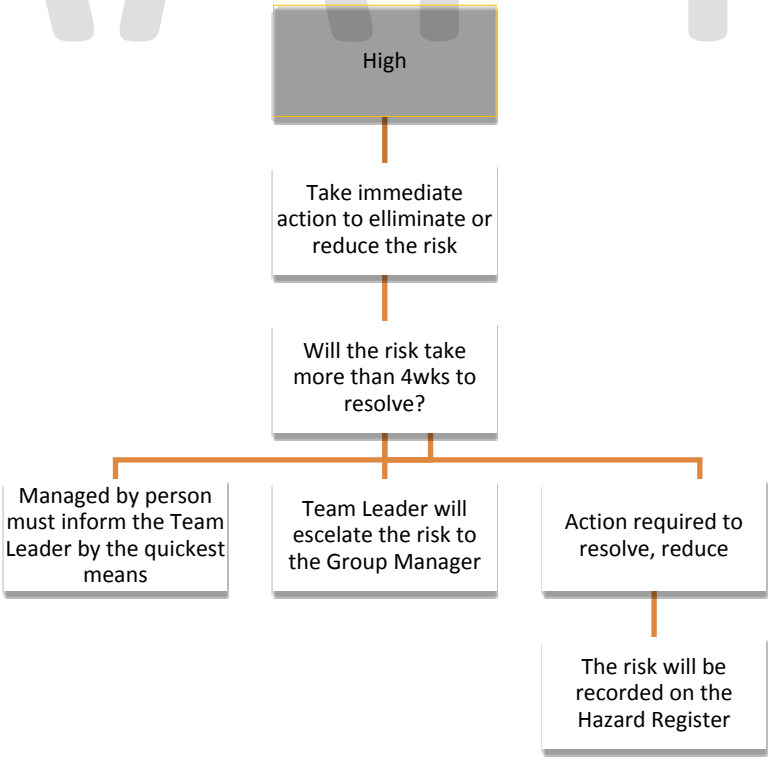


Diagram 4: Risk Profile - Moderate

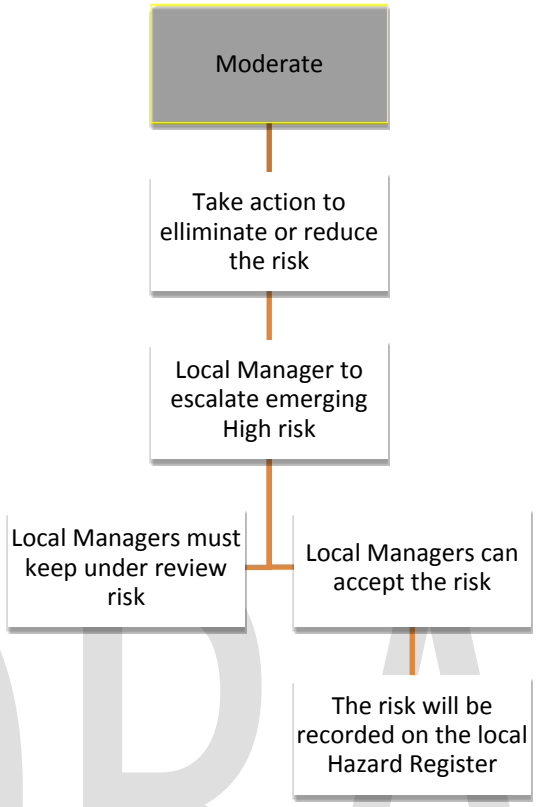
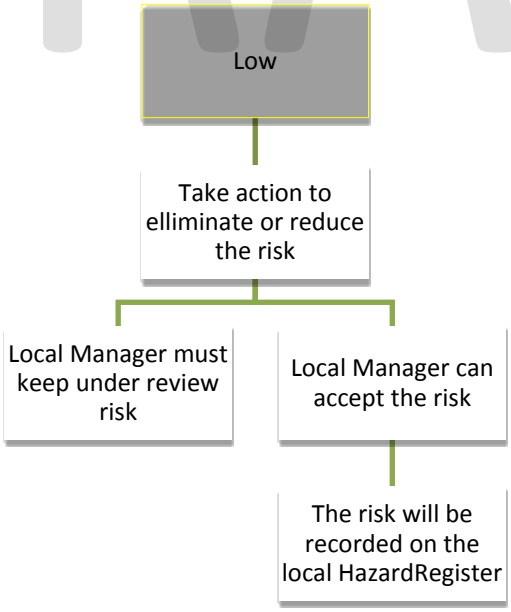


Diagram 5: Risk Profile - Low



Managing the Risk

For each of the five risk categories identified, the Risk Owners (who are always initially the staff listed on the Control Matrix as 'managed process by' and who receive the weekly hazard report), will need to make sure that the appropriate action is being taken to eliminate or reduce the risk to an acceptable level by either lessoning the likelihood of the event occurring, or its impact if it does occur.

It is unacceptable to have risk that has passed the recommended timescale for completion, being held at a local manager level, being held or not escalated to an appropriate level with focus and assurance of the risk being managed.

Risk Control Strategy Options;

Option 1	Establish or improve control procedures	Implement new or revise existing SMS policies and/or processes
Option 2	Avoid the risk	Do not proceed with an intolerable risk
Option 3	Transfer the risk	Through insurance and or contractual arrangement with third parties
Option 4	Share the risk	Through a joint venture
Option 5	Tolerate the risk	Desirable to accept the risk as it may present opportunity and not only a threat
Option 6	Retain and reduce the risk	Maximise existing opportunities and minimise the risk

Section 4: Training and Competence

16.0 Training and Competence

Duty Holders and appointed/nominated/deputy persons who carry out the control measures and strategies for Legionella should be suitably informed, instructed and trained, ensuring that tasks undertaken are performed in a safe and technically competent manner. Training must impart a detailed understanding of Legionella, how to manage the water system, how to keep records and how to resolve identified hazards.

Levels of training required for Legionella must be reviewed by Assistant Directors (ideally with links to the PDR process) as part of the annual management review and should ensure competency, with refresher training undertaken every 3 years, all records of all initial and refresher training must be recorded and maintained. Training is an essential element of competence; it is not the only factor and should be viewed as a product of sufficient training, experience, knowledge and other personal qualities which are needed to undertake a job safely. Competence is dependent on the needs of the situation and the nature of the risks involved.

Water hygiene training is undertaken by external company and should be assessed that after completing the course staff would be considered competent to undertake the roles relating to Legionella management.

When a competent system of controls is implemented, training at a level sufficient to enable any named individual to perform their tasks must be provided to the following people, arranged and funded by the relevant Assistant Director:

- A named, (and Deputy) with the delegated responsibility of managing the water system(s)
- The appointed person who will carry out the identified checks (if required).

16.1 Competence

The HSE places great emphasis on competence (Approved Code of Practice, L8, paragraphs 48 to 52). This management system requires the need for DBC Managers to ensure that their staff and contractors are competent to carry out each task assigned to them.

The following guidance provides the competence guide to ensure all staff involved in the management of Legionella is competent and what to do to develop and assess.

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

DBC must also be able to show and to reassure that any sub-contractors it has engaged are competent. This might involve assessing the sub-contractor's own competence assessment records, or in some cases, conducting your own assessment.

Competence is defined as having the ability, knowledge, understanding and skill to complete a task successfully, effectively and safely. A competent person requires not only the ability to carry out and complete tasks effectively and to work safely, but also the knowledge of their limitations, and for many tasks, the ability to communicate well, both verbally and in writing. Additional qualities that might be required for some tasks include the ability to work successfully, effectively and safely in unusual situations, and the ability to manage time efficiently and to meet deadlines without compromising safety.

16.2 Competence and Training

DBC recognise that having staff in a classroom environment doesn't alone make someone competent.

DBC will champion staff competence in legionella management and awareness by:

- providing them with the theoretical knowledge and understanding by classroom training provided by the appointment of an external training provider and by training on-the-job
- providing details/copies of all relevant operating procedures and record keeping systems to be used and ensure they are understood
- show them what to do and how to do it
- let them practise the tasks under supervision
- provide constructive coaching and answer questions
- check progress throughout by observation, discussion, questioning, etc.
- To assess ability to carry out a task successfully, effectively and in a safe manner, and to assess ability to communicate well, practical 'on-the-job' assessment is essential.

16.3 Training and Competence Procedures

Training matrix should be in place for each service section in order that each member of the team has comprehensive and appropriate training, which is recorded and regularly updated. Each manager is responsible for completing the training matrix, identifying Legionella training needs, and the required refresher training. In addition to this, managers to have a procedure for assessing an individual's competence. Managers are responsible for maintaining the training matrix, including the arrangements of refresher training.

16.4 Competence Assessment

The first step in assessing a person's competence is to define the elements required for the task being assessed.

Managers involved with managing Legionella and have staff that have duties to manage should ask the following questions with their staff:

i) What knowledge and understanding are required to complete the task?

ii) What operating procedures, forms, instructions, etc., are required?

iii) What practical skills and abilities are required?

iv) What are the criteria indicating the successful completion of each element of the task?

Once the elements have been defined, the next step is to conduct the competence assessment. Each element will have its own success criteria and the work done by the person being assessed will need to be measured against each success criterion. Having done this, it is vital to keep records to demonstrate that the assessment has been carried out and then to maintain and update these records to demonstrate that competence is being reviewed on a regular basis.

Section 5: Contractor, Duties for Water Treatment

Code of Conduct

17.0 Code of Conduct for Service Providers

The Contractor/Orion, is responsible for all aspects of the legionella monitoring and management regime as outlined in ACOP L8, excluding any areas detailed in the 'Control Matrix'.

Orion will, on receipt of an order from the client (DBC) undertake remedial works identified in the legionella risk assessment and through their detailed regular monitoring programme.

Orion should provide a monthly service sheet/report for all planned and attended works throughout the year.

Orion will provide site log books where requested as well as an electronic log book in the form of OPUZ. Responsibilities for maintaining and updating data on the OPUZ system is Orion's, and they must ensure a monitoring role of risks and actions required within the allocated timescale.

Orion must also supply a weekly hazard summary report of all risks, which is submitted to the relevant DBC contact. Any high risk findings must be followed up with DBC to ensure an action plan is in place that includes, order number issued, dates of works planned/agreed and recorded, and isn't allowed to exceed the recommended time scale.

17.1 OPUZ SYSTEM

DBC will identify all persons who will be appointed as authorised users for the system. Each person will be authorised as users to the system. The key DBC staff are responsible to ensure they know how to use the system, to monitor and review data.

Orion will provide training, and training notes on how to use the system. Will set up named persons issued from DBC with log in details.

Orion will ensure that data is secure to relevant British Standards, and in the event of any unforeseen circumstance will be able to provide all data to DBC.

The HSE Approved Code of Practice and guidance on regulations (L8) stresses that whilst the tasks required to be undertaken to control the risk may be contracted to an external specialist, the owner/operator must take all reasonable care to ensure the competence of the service provider to carry out the work on his behalf.

Under the Health and Safety at Work etc Act 1974 and the Control of Substances Hazardous to Health Regulations with regards to risks from legionella, all owners and operators of such systems have a responsibility to ensure that the risk is controlled and kept to an acceptable level.

This Code of Conduct is what DBC expect from Orion and their subcontractor/s. The responsibility for the prevention and control of legionella lies with the DBC and the service provider via the contractual agreements.

DBC follow the nine critical areas based on the Legionella Control Association (LCA) that details the commitment the owner/operator should expect.

DBC requires that service providers establish an appropriate management system for the provision of services associated with the control of legionella.

This section should be shared with Orion and any contractors related to the control and management of Legionella.

17.2 Conditions of Compliance

	Compliance area determined by LCA	**Dacorum Borough Council response**
1	There should be a clearly defined written agreement between the service provider1 and the client2 setting out the individual responsibilities of both parties to ensure compliance with current legislation.	*Contract in place with Orion to manage Legionella to L8 standards, together with new control matrix, and DBC management system*
2	Service providers should demonstrate and document a satisfactory level of competence of their staff to achieve the objectives of the Code of Conduct.	*Orion have provided evidence of staff training, and subcontractor training and competence, annual reviews should be in place*
3	The recommendations made by the service provider should be equal to, or better than, the relevant Codes of Practice and guidance documents pertaining to the system in question.	*Contractual agreement is to standard of L8, and management system control matrix states L8 and BS standards*
4	Lines of communication and reporting between client and service provider should be defined as well as the management plan in the event of remedial or corrective action being required, including matters of evident concern outside contracted obligations.	*Implemented control matrix with named persons/titles, with defined accountability and responsibility. Emergency section, lists actions and contact person details. Detailed in risk assurance section, re: communications*
5	Adequate and up to date monitoring and treatment records should be kept. These should be readily available.	*Orion use Opuz which is an online data collection system, key staff (named on the control matrix) also have access for monitoring*
6	The performance of the control measures should be reviewed jointly by the service provider and the client at least annually and the necessary remedial action plan agreed.	*Completed external legionella management audit to review the control measures completed by the contractor Orion*
7	Orion should establish a formal internal auditing procedure for compliance.	*Confirmation required from Orion*

8	Orion sub-contracting any legionella specific activities listed in their scope of services should establish that the sub-contractor is either registered for that activity under the LCA or should maintain additional controls and audits to ensure compliance with the LCA Code of Conduct, and regardless of whether the sub-contractor is LCA registered or not, implement procedures and checks to ensure compliance.	*Orion use SMS who are registered with the LCA, Orion to confirm formal auditing system in place for auditing SMS*
9	Copies of a current certificate should be made available to all relevant clients.	*Maintain annual updates of all provider accreditation certificates*

17.3 Orion (Contractor) Commitments

1: ALLOCATION OF RESPONSIBILITIES, Orion will:

- explain in detail the DBC's obligations under the legionella legislation
- identify those services covered by the contract and those which should be provided by the client to meet all current obligations
- formalise a written agreement detailing the respective responsibilities for each requirement
- state in the written agreement that they and contractor have LCA registration for the service categories being provided, or standards to at least LCA

2: TRAINING AND COMPETENCE OF PERSONNEL, Orion will:

- arrange formal training programmes for personnel associated with the control of legionella bacteria
- have a system for assessing the competence of staff, establishing their training needs and ensuring they are kept up to date with current best practice procedures
- assist DBC to assess training needs of staff and then where requested advise as to how these can be met.

3: ***CONTROL MEASURES***, Orion will:

- have a management system to assess the requirements and ensure an appropriate programme of control measures is designed, implemented, monitored and maintained
- have a system for verifying that corrective and preventive actions are implemented
- ensure the programme of control measures satisfies as a minimum the LCA Standards for Service Delivery.

4: COMMUNICATION, Orion will:

- have management procedures to respond appropriately should the system operating conditions deviate from control criteria
- agree with DBC how to communicate with the DBC's nominated personnel in the event of any necessary actions
- bring to DBC attention any significant matters affecting the control of legionella of which he has become aware, beyond the responsibilities of the contract.
- complete hazard data uplift to relevant DBC staff
- show evidence of works, as listed in the 'task' column in the 'control matrix'

5: RECORD KEEPING, Orion will:

- indicate which records should be kept by both parties and where they will be kept
- establish with DBC who will be responsible for the maintenance of these records.

6: REVIEWS, Orion will:

- establish a programme that will allow both parties to review formally, at least annually, all aspects of the agreement covering system management and the control of legionella.

7: INTERNAL AUDITING, Orion will:

- have a management system to ensure compliance with each of these commitments is self-audited at least once a year and that a formal record is kept
- establish a corrective action programme so that any non-compliance identified is corrected in a timely manner.

8: SUB-CONTRACTORS, Orion will:

- have a management procedure to ensure that any sub-contractor holds an independent registration under the Code of Conduct
- where a sub-contractor is not LCA registered, implement additional controls and audits to ensure that all activities carried out are compliant with the Code of Conduct and any relevant legislation
- regardless of whether the sub-contractor is LCA registered or not, implement procedures and checks as necessary to ensure that the competency of the sub-contract service provider is assessed in relation to the scope of service the sub-contractor is providing.

9: DISTRIBUTION OF THE, Orion will:

- have a management system to ensure that all that are associated with the control of legionella bacteria for DBC, receive a copy of the Code of Conduct and/or Certificate of Registration.

Section 6: Operational Procedures

Operating Procedure: WATER TREATMENT, CONTROL PROGRAMMES AND DISINFECTION

The DBC acknowledges that it is essential to keep the whole water system clean as biofilms or scale can reduce the effectiveness of any type of control measures significantly.

Although temperature control is the most common approach to handling the risk from legionella we recognise that sometimes there can be technical difficulties in maintaining the required temperatures, particularly in some of our older buildings.

For this reason, we will consider introducing water treatment techniques where the risk assessment had identified a problem with preventing water stagnating in the hot or cold water system or point of use (POU) filters.

Selection of a suitable system for the control of legionella is complex and depends on many factors, including system design, age, size, and water chemistry, all of which can contribute to the complexity and difficulty of achieving adequate control, as such, we will be guided by the competent advice provided by our service provider.

Routine monitoring and inspection undertaken by the service provider is recorded on OPUZ. Technical operational procedures should be produced from the Contractor and shared with DBC as 'Technical Guides' The following information explains in more detail examples of some of the techniques that they use. A complete description of these techniques is available from the HSE publication, Legionnaires disease, HSG274 Part 2, 'Water Treatment and Control Programmes for hot and cold water systems'.

Temperature Management

Temperature management is the most common approach to controlling the risk from legionella; hot water should be stored:

- at a minimum temperature of 60c and distributed so that it reaches a minimum temperature of 50 °C (55 °C in healthcare premises) within one minute at outlets; and
- higher temperatures must be avoided to reduce the risk of scalding; at 50c this risk is small for most people, however the risk is greater for those with an impairment or young persons.

Where a significant scalding risk is identified consideration will be given to installing thermostatic mixing valves (TMVs) on baths and showers to reduce the temperature:

- the TMV should be placed as close to the point of use (POU) as possible; and
- POU filters should only be used as a temporary measure until a permanent engineered solution is introduced and must be renewed and replaced according to the manufacturer's recommendation.

To ensure the correct function of TMVs, there needs to be a minimum temperature differential between the hot and cold water supplies and the mixed water temperature.

Cleaning and Disinfection

Disinfection of the water services is undertaken by the service provider when the building services are off line.

Note: to author ‘unless chemical MSDS states that it is suitable to be used in this situated’ review

Thermal disinfection of hot water systems

Thermal disinfection is achieved by raising the hot water service temperature (HWS) for at least one hour at which temperature legionella will not survive. Every hot water outlet throughout the system must then be flushed. To be effective, the temperature at the calorifier should be maintained at the outlet does not fall below 60c.

Each tap and appliance should be run sequentially for at least five minutes at the full temperature (but not necessarily at full flow), and it should be measured and recorded.

However, thermal disinfection may prove to be ineffective where parts of the calorifier or water system fail to reach the required temperature for a long enough period.

Chemical Disinfection

The disinfection of a water system is normally based on chlorine:

- dosed at 50 ppm for a minimum contact period of one hour, at the end of which the concentration should not be less than 30 ppm free residual chlorine;
- lower concentrations and longer contact times are considered acceptable, as set out in BS 8558; or
- other disinfectants may be used where they are shown to be effective.

Their intended application should take into account the type of system and user profile at the specified concentration levels and contact period.

Service Records

As part of the thermal or chemical disinfection process, a service record will be kept by the service provider of all work undertaken:

- any items that require attention or refurbishment will be recorded on the disinfection record; and
- the service provider will provide the DBC with specific records which we will keep as specified.

To confirm effective disinfection the service the service provider will take any required microbiological samples, between two and seven days after the system is refilled.

If the disinfectant is for use in water systems supplying wholesome water, then the service user will comply with the requirements of The Water Supply (Water Quality) Regulations 2000.

Flushing

The risk from legionella is increased in the outer parts of the hot and cold water system where there are remote outlets such as hand washbasins, and taps, referred to as dead-legs. Where the risk assessment has identified dead-legs the DBC will on advice from our service provider plan their removal.

The service provider or other named person is responsible for implementing the flushing procedure recorded in the risk assessment; usually these little used outlets are flushed at least once per week.

In circumstances where there has been a lapse in the flushing procedure the service provider or other named person must ensure that the water from a shower or tap or associated dead-leg is purged to the drain without any discharge of aerosol before the equipment is used.

Operating Procedure: MICROBIOLOGICAL MONITORING

Refer to the control matrix for each service for microbiological monitoring. Where the risk assessment has identified that microbiological monitoring is considered appropriate in hot or cold water systems, the service provider is required to undertake water sampling in accordance with BS 7592, 'Sampling for Legionella Organisms in Water and Related Materials' and performed in a UKAS-accredited laboratory that meets the current ISO standard.

The laboratory must also take part in a water microbiology proficiency testing scheme (such as that run by PHE or an equivalent scheme accredited to ISO 17043). Alternative quantitative testing methods may be used if they have been validated using ISO 17994 and meet the required sensitivity and specificity.

The number of samples taken will depend on the complexity of the water system, however, to ensure that the samples taken are representative of the water flowing around the system and not just of the area downstream of the fitting the service provider is required to take these samples from separate hot and cold outlets and not through the mixer taps or other outlets downstream of the TMV's or showers and the samples must be clearly labelled with their source location and identify if the sample was taken pre-or-post flushing.

In both hot and cold water systems, samples should be taken:

- Where it is considered necessary by the risk assessment;
- From areas where the water temperature or disinfection parameters are not consistently met i.e. hot water temperature is below < 50c (55c in healthcare premises) and cold water temperature exceeds > 20c;
- From areas of the water system subject to low usage, stagnation, excess storage capacity, dead-legs, excessive heat loss, crossflow from the water system or other anomaly.

Cold water samples

In cold water systems, samples should also be taken as required:

- From the point of entry (or nearest outlet); if the water is supplied from a private water supply or where the temperature of the incoming mains supply is above 20 °C from the cold water storage tank or tanks; and
- From the furthest and nearest outlet on each branch of the system (far and near sentinel outlets).

Hot water samples

In hot water systems, samples should also be taken as required:

- From the calorifier hot water outlet and from the base of the calorifier, if it safe to do so, as some systems are under considerable pressure;

- From the furthest and nearest outlet on each branch of a single pipe system (far and near sentinel outlets); and
- From the furthest and nearest outlet.

Action to take if legionella or another pathogen is found in the water system

Where legionella or other pathogen, such as E Coli is found in the hot or cold water system, the service provider must contact the duty holder recorded in the risk assessment and the appropriate DBC Client Officer as soon as possible by the quickest means and take the following action.

Legionella bacteria Cfu/l	**Service provider will take the following action**
>100 cfu/l and **up to 1000**	The service provider must inform the duty holder and the DBC Client Officer as soon as possible by the quickest means. Either If the **minority** of samples are positive: ▪ the system should be resampled; ▪ If similar results are found again, a review of the control measures and risk assessment should be carried out to identify any remedial actions necessary. or If the **majority** of samples are positive the system may be colonised, albeit at a low level: ▪ an immediate review of the control measures must be undertaken; and ▪ undertake a risk assessment to identify any other remedial action required i.e. disinfection of the system should be considered.
>1000 cfu/l	▪ The service provider must inform the duty holder and the DBC Client Officer as soon as possible by the quickest means. ▪ Resample the water system as soon as possible. ▪ Instigate an immediate review of the control measures and risk assessment must be carried out to identify any remedial actions, including possible disinfection of the system. ▪ Retest within one day after disinfection and at frequent intervals afterwards until a satisfactory level of control is achieved.

Operating Procedure:

TECHNICAL GUIDES PROCEDURES examples of guides to be requested from contractor and held on file for reference and guides, to be shared with all relevant staff and form part of their knowledge and learning/competence/awareness.

- CLEANING OF CWSTS
- CALORIFIER FLUSHING
- SHOWERS
- CLEANING WATER SYSTEMS
- SAFE PURGING OF STAGNANT WATER
- FLUSHING OF INFREQUENTLY USED OUTLETS
- MANAGEMENT OF SPRINKLER SYSTEMS
- EMERGENCY PROCEDURES

Appendix A: Legionella Guide

1.0 Introduction

The aim of this guide is to assist the DBC, those in control of the premises and those with health and safety **responsibilities for others to assess and control the risks due to legionella bacteria.**

2.0 Scope

This procedure applies to all employees, contractors and members of the public who may encounter legionella bacteria originating from premises under our control.

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 if:

- the water is stored or re-circulated as part of your system;
- 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; or
- it is likely that any of your employees, contractors, visitors etc. could be exposed to any contaminated water droplets.

3.0 Risk Profiling

The DBC system for managing safety and business is premised on managers knowing what the predictable risks are in their department, such as, legionella bacteria and to rank them in order of importance and take action to control them.

The range of risks goes beyond health and safety to include, quality, environmental and asset damage, but issues in one area could impact on another.

4.0 Definition

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, 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 including, people suffering from chronic respiratory or kidney disease, diabetes, lung or heart disease anyone with an impaired immune system, people over 45, smokers or heavy drinkers.

5.0 Procedure

5.1 Procuring a competent service provider

The DBC will take all reasonable care to select a competent service provider with an established management system for the provision of services associated with the control of legionella that satisfies as a minimum the Legionella Control Association LCA Standards for Service Delivery.

We will require the service provider and their sub-contractors to be registered with the LCA and hold a valid Certificate of Registration as evidence of their intention to comply with the LCA, Code of Conduct.

5.2 Identifying and assess the sources of risk

The DBC is responsible for carrying out legionella risk assessments and ensuring they remain up to date in order to manage the risk from legionella bacteria. In conducting the assessment, we will appoint a competent service provider known as the responsible person(s), to help us meet our health and safety duties, i.e. take responsibility for managing the written control scheme.

The practical risk assessment will include a site survey of all the water systems and consider other health and safety hazards arising from this activity e.g. working at height or in confined space.

If the risk assessment concludes that there is no reasonably foreseeable risk, or the risks are insignificant and well managed, then no further action would be required at this time. However, we acknowledge that the assessment of risk is an on-going process and must be regularly reviewed.

The risk assessments will be carried out at least every two years or where there is reason to suspect it is no longer valid e.g.:

- 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 risks or control measures;
- the results of checks indicating that control measures are no longer effective;
- changes to key personnel; or
- a case of Legionnaires' disease and legionellosis associated with the system.
- In summary these risk assessments will consider and evaluate:
- clear allocation of management responsibilities;
- competence and training of key personnel;
- a description of the water system, including an up-to-date schematic diagram;
- an evaluation of the risk;
- safe operating procedures for the water system, including controls in place to control risks;
- monitoring, inspection and maintenance procedures;
- results of monitoring, inspection and any checks carried out;
- limitations of the legionella risk assessment; and

- arrangements to review the risk assessment regularly and particularly when there is reason to suspect it is no longer valid.

5.3 Day-to-day responsibilities

The DBC will appoint a service provider to take day-to-day responsibility for controlling any identified risk from legionella bacteria. We will ensure that the appointed person, known as the responsible person(s), will have sufficient competence and knowledge of the installation.

We will make sure that they have a good understanding of the organisations safety management system, be suitably informed, instructed and trained and their suitability assessed. We will also provide information relating to the water system, any equipment associated with the system and its constituent parts where available.

However, we expect the service provider will be able to identify if the water systems are likely to create a risk from exposure to legionella bacteria and inform us of any risks identified and how the system can be operated and maintained safely, where e.g.:

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

5.4 Preventing or controlling the risk

The DBC will consider when designing a new water system how the risk from legionella can be prevented and risk assess the system before it is commissioned to check that it is performing to design specifications.

Designers are to ensure that:

- All new works take into account the requirements of L8 such as conditions that encourage the proliferation of legionella do not exist and comply with all water authority local requirements; seeking advice where necessary.
- Materials specified comply with the water supply and fitting regulations 1999.
- At handover of new works, that the appropriate L8 test and disinfection commissioning / certificates are provided by the contractor
- We will implement a legionella written control scheme that is tailored to the systems covered by the risk assessment relating to:
- the release of water spray is properly controlled;
- avoid conditions that support growth of microorganisms, including legionella;

- water cannot stagnate anywhere in the system by regular movement of water in all sections of the systems and by keeping pipe lengths as short as possible, and/or removing redundant pipework and deadlegs;
- avoid using materials that harbour bacteria and other microorganisms or provide nutrients for microbial growth;
- we keep the system and the water in it clean;
- treat water to either control the growth of microorganisms, including legionella, or limit their ability to grow;
- monitor any control measures applied; and
- keep records.

5.5 Water treatment and control programmes

The DBC will consider the introduction of control measures that include water treatment techniques where the risk assessment had identified a problem with preventing water stagnating in the hot or cold water systems and point of use (POU) filters.

However, we recognise that the selection of a suitable system for the control of legionella is complex as there is no single water treatment control regime that is effective in every case and each control method has both benefits and limitations, for this reason, we will also consider introducing additional measures, to include, microbiological monitoring and cleaning and disinfection.

5.6 Microbiological monitoring

- The DBC will consider the introduction of control measures that include legionella monitoring where the risk assessment had identified a problem with the effectiveness of the control regime or where the recommended temperatures, disinfectant concentrations or water systems treated with biocides where water is stored, or distribution temperatures are reduced;
- water systems where the control levels of the treatment regime, e.g. temperature or disinfectant concentrations, are not being consistently achieved;
- high-risk areas or where there is a population with increased susceptibility, e.g. in healthcare premises including care homes and some schools; and
- water systems suspected or identified in a case or outbreak of legionellosis where it is probable the Incident Control Team will require samples to be taken for analysis.
- other precautions are not being consistently achieved throughout the system e.g.:

Where monitoring for legionella is considered appropriate in hot and cold water systems, sampling will be carried out in accordance with BS 7592, ‘Sampling for Legionella organisms in water and related materials’.

Analysis of water samples for legionella will be performed in a UKAS accredited laboratory with current ISO standard methods for the detection and enumeration of legionella included within the scope of accreditation and participate in water microbiology proficiency testing scheme accredited to ISO 17043 or 17994.

5.7 Cleaning and disinfection

The DBC will clean, flush and disinfecting hot and cold water services on an annual basis as part of their overall management preventative control and also where the risk assessment has identified that there are technical difficulties in maintaining the required temperatures or where the build-up of biofilm or scale can reduce the efficacy of the control measures significantly.

However, the water systems will also be cleaned and disinfected e.g.:

- on completion of a new water installation or refurbishment of a hot and cold water system;
- on installation of new components, especially those which have been pressure tested using water by the manufacturer (see the manufacturer's instructions);
- where the hot and cold water is not used for a prolonged period and has not been flushed as recommended or the control measures have not been effective for a prolonged period;
- on routine inspection of the water storage tanks, where there is evidence of significant contamination or stagnation;
- if the system or part of it has been substantially altered or entered for maintenance purposes that may introduce contamination;
- following water sampling results that indicate evidence of microbial contamination of the water system; or
- during, or following an outbreak or suspected outbreak of legionellosis linked to the system.

Where disinfection is considered appropriate in hot and cold water systems, this will be carried out in accordance with BS 8558, 'Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages'.

5.8 Action to take if there is an outbreak of legionellosis

The DBC, Environmental Health Department will notify incidents of Legionnaires' disease under the Health Protection (Notification) Regulations 2010 to the Public Health England (PHE).

Also, DBC, Corporate Health and Safety will notify confirmed cases of Legionnaires' disease under the RIDDOR 2013 to the HSE.

The HSE in HSG 274 Part 2, define an outbreak as:

'*two or more cases where the onset of illness is closely linked in time (weeks rather than months) and where there is epidemiological evidence of a common source of infection, with or without microbiological evidence'*.

6.0 Records

The DBC will retain records for the period they remain current and for at least two years afterwards, with the exception of records kept for monitoring and inspection, which will be kept for at least five years.

We will also keep training records of employees; records of the work of external service providers, such as water treatment specialists; and information on other hazards, e.g. chemical safety data sheets for at least five years.

We will regularly check that our records both written and electronic contain accurate information and contain details of the:

- person or people responsible for conducting the risk assessment, managing, and implementing the written scheme;
- significant findings of the risk assessment;
- written control scheme and details of its implementation;
- details of the state of operation of the system, i.e. in use/not in use;
- results of any monitoring, inspection, test or check carried out, the dates and any resulting corrective actions, as defined in the written scheme of precautions, such as: results of chemical and microbial analysis of the water;
- water treatment chemical usage;
- inspections and checks on the water treatment equipment to confirm correct operation;
- inspections and checks on the water system components and equipment to confirm correct and safe operation;
- records of maintenance to the water system components, equipment and water treatment system; and
- the cleaning and disinfection procedures and the associated reports and certificates.

7.0 Review

This guide should be reviewed at regular intervals or sooner if there is any reason to suppose that the advice is no longer valid, or any of the circumstances of the work have changed significantly.

8.0 Training

The Duty Holder must ensure that the Responsible Person(s), service provider and/or staff appointed to implement the control measures and strategies are suitably informed, instructed and trained and their suitability assessed.

Regular refresher training will be provided and the Responsible Person(s) must ensure that they have a clear understanding of their role and the overall health and safety management structure and policy of the organisation.

9.0 Monitoring

This guide will be monitored regularly by Health and Safety and Corporate Health and Safety Committee.

Appendix B: Glossary

Glossary of terms:

- **aerosol** a suspension in a gaseous medium of solid particles, liquid particles or solid and liquid particles having a negligible falling velocity. In the context of this document, it is a suspension of particles which may contain legionella with a typical droplet size of <5 µm that can be inhaled deep into the lungs.
- **algae** a small, usually aquatic, plant that requires light to grow.
- **bacteria** (singular bacterium) a microscopic, unicellular (or more rarely multicellular) organism.
- **biocide** a substance which kills microorganisms.
- **biofilm** a community of bacteria and other microorganisms embedded in a protective layer with entrained debris, attached to a surface.
- **Borescope** an optical tool used to view areas inside of a vessel that would otherwise not be visible e.g. inside of a calorifier.
- **calorifier** an apparatus used for the transfer of heat to water in a vessel, the source of heat being contained within a pipe or coil immersed in the water.
- **chlorine** an element used as a biocide and for disinfection.
- **chlorine dioxide** a compound used as a biocide.
- **client** the
- owner or occupier of the premises, or his appointed representative, or other person nominated to be the 'responsible person as defined in the HSE document 'Legionnaires' disease - The control of legionella bacteria in water systems, Approved Code of Practice and guidance on regulations (L8 4th Edition)'.
- **cold water service** installation of plant, pipes and fitting in which cold water is stored, distributed and subsequently discharged.
- **contact time** the time a chemical is retained in the system.
- **corrosion inhibitors** chemicals which protect metals by: passivating the metal by the promotion of a thin metal oxide film (anodic inhibitors); or physically forming a thin barrier film by controlled deposition (cathodic inhibitors).
- **dead end/blind end** a length of pipe closed at one end through which no water passes.
- **dead leg** a length of water system pipework leading to a fitting through which water only passes infrequently when there is draw off from the fitting, providing the potential for stagnation.
- **disinfection** the reduction of the number of microorganisms to safe levels by either chemical or non-chemical means (e.g. biocides, heat or radiation).
- **distribution circuit** pipework which distributes water from hot or cold water plant to one or more fittings/appliances.
- **domestic water** hot and cold water intended for drinking, washing, cooking, food preparation or other domestic purposes.
- **fouling** organic growth or other deposits on heat transfer surfaces causing loss in efficiency.
- **hot water service** installation of plant, pipes and fittings in which water is heated, distributed and subsequently discharged (not including cold water feed tank or cistern).
- **Legionella Control Association the** DBC implement the LCA process for selecting a service provider (by highlighting nine critical areas and detailing the commitment that the owner/operator should expect from prospective service providers) when making the competence assessment
- **service providers when making the competence assessment.**
- **legionnaires' disease** a form of pneumonia caused by bacteria of the genus legionella.
- **legionella (plural legionellae)** a bacterium (or bacteria) of the genus legionella.
- **legionellosis** any illness caused by exposure to legionella.
- **mg/l** (milligrams per litre) a measure of dissolved substances given as the number of parts there are in a million parts of solvent. It is numerically equivalent to ppm (parts per million) with respect to water.
- **microorganism** an organism of microscopic size, including bacteria, fungi and viruses.

- **nutrient** a food source for microorganisms.
- **pasteurisation** heat treatment to destroy microorganisms, usually at high temperature.
- **pH** the logarithm of the reciprocal of the hydrogen ion concentration in water, expressed as a number between 0 and 14 to indicate how acidic or alkaline the water is. Values below 7 are increasingly acidic, 7 is neutral, and values higher than 7 are progressively alkaline. However, acidity and alkalinity are not proportional to pH.
- **ppm** (parts per million) a measure of dissolved substances given as the number of parts there are in a million parts of solvent. It is numerically equivalent to milligrams per litre (mg/l) with respect to water.
- **risk assessment** identifying and assessing the risk from legionellosis from work activities and water sources on premises and determining any necessary precautionary measures.
- **scale inhibitors** chemicals used to control scale. They function by holding up the precipitation process and/or distorting the crystal shape, thus preventing the build-up of a hard adherent scale.
- **sentinel taps** for hot water services – the first and last taps on a recirculating system. For cold water systems (or non-recirculating HWS), the nearest and furthest taps from the storage tank. The choice of sentinel taps may also include other taps which represent parts of the recirculating system where monitoring can aid control.
- **service provider** companies or individuals or their sub-contractors who are involved with providing advice, consultancy, operating, maintenance and management services or the supply of equipment or chemicals to the client. See Client and sub-contractor.
- **shunt pump** a circulation pump fitted to hot water service/plant to overcome the temperature stratification of the stored water.
- **slime** a mucus-like exudate that covers a surface produced by some microorganisms. **e** a general term for soft mud-like deposits found on heat transfer surfaces or other important sections of a cooling system. Also found at the base of calorifiers and cold water storage tanks.
- **stagnation** the condition where water ceases to flow and is therefore liable to microbiological growth.
- **strainers** coarse filters usually positioned upstream of a sensitive component, such as a pump control valve or heat exchanger, to protect it from debris.
- **Sub-contractor** a sub-contractor is a company or an individual who carries out unsupervised work, specifically associated with the control of legionella, on behalf of a service provider
- **thermal disinfection** heat treatment to disinfect a system.
- **thermostatic mixing valve** a mixing valve in which the temperature at the outlet is pre-selected and controlled automatically by the valve.
- **total viable counts (TVC)** the total number of culturable bacteria (per volume or area) in a given sample (does not include legionella).
- **wholesome water** supplied for such domestic purposes as cooking, drinking, food preparation or washing; or supplied to premises in which food is produced
- **sludge** a general term for soft mud-like deposits found on heat transfer surfaces or other important sections of a cooling system. Also found at the base of calorifiers and cold water storage tanks.
- **stagnation** the condition where water ceases to flow and is therefore liable to microbiological growth.
- **strainers** coarse filters usually positioned upstream of a sensitive component, such as a pump control valve or heat exchanger, to protect it from debris.
- **thermal disinfection** heat treatment to disinfect a system.
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Appendix C: BUILDING LISTS

A Sites	A Sites	B Sites	B Sites
Betty Patterson House	Christopher Court	Adeyfield APG	Adeyfield CC
Compass Point	Cranford	Apsley CC	Bennetts End CC
Douglas Gardens	Dudley House	Berkhamsted Civic C	Brickfields Ind Estate
Elizabeth House	Emma Rothschild Court	Chaulden APG	Chaulden CC
Evelyn Sharp House	Florence Longman House	Chaulden Sports Pav	Coronation Fields Pav
Gilbert Burnett House	Lagley House	Cupid Green Depot	Cupid Green Pav
Leys Road	Oaklawn	Dacre House	Centre in the park
Phyliss Courtnage House	Pond Close	Gable House	Gadebridge CC
1-6 Rice Close	7-12 Rice Close	Grovehill/Woodfarm APG	Grovehill CC
14-19 Rice Close	26-31 Rice Close	Grovehill Pav	Health Lane Cemetery
38-43 Rice Close	44-49 Rice Close	Highfield CC	48 High Street
50-53 Rice Close	Saturn Way (Upper)	9 High Street	Highstreet Green Pav
Saturn Way (Lower)	Two Beeches	Kings Hill Cemetery	Leverstock Green CC
William Crook House	Willow Edge	Leverstock Pav	Maylands Bus Centre
St.Peters Court	The Elms	Nash Mills W/C Shower	Old Town Hall
51 Woolmer Drive		Pound Meadow Pav	3 St. Marys
		Trefoil house	Tring CC
		Tring Cemetery	Tringford road depot
		Velvet Pav	Victoria Hall
		Warners End CC	Warners End Pav
		Woodhall Farm CC	Woodwell Cemetery