LIVERPOOL HOPE UNIVERSITY
1844

Corporate Written Scheme for the Control of Legionella Bacteria and the Management of the Associated Risk within Liverpool Hope University Premises

Liverpool Hope University

Hope Park

L16 9JD

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Written Scheme for Legionella Compliance

Document Details

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Name of Document	Written Scheme for Legionella Compliance
Relevant Legislation	Approved Code of Practice and guidance on regulations – L8 (fourth edition) HSG274 Part2: The control of Legionella bacteria in hot and cold-water systems Health and Safety at Work Act 1974 Management Agreement of Health and Safety in the Workplace 1999 Control of Substances Hazardous to Health (COSHH) 2002

Amendment History

Issue No	Date	Details of changes	Issued by
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Contents

1.0 Introduction

1.1 Legionellosis is a collective term for diseases caused by Legionella bacteria including the most serious Legionnaires' disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires' disease is a potentially fatal form of pneumonia and everyone is susceptible to infection. The risk increases with age, but some people are at higher risk, e.g. people over 50, smokers and heavy drinkers, people suffering from chronic respiratory or kidney disease, diabetes, lung and heart disease or anyone with an impaired immune system.

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

1.3 Outbreaks of the illness generally occur from exposure to Legionella growing in purpose-built systems where water is maintained at a temperature which encourages growth, e.g. cooling towers, evaporative condensers, hot and cold-water systems, water features and spa pools used in all sorts of premises (work and domestic).

1.4 Legionnaires' disease is normally contracted by inhaling small droplets of water (aerosols), suspended in the air, containing the bacteria. Certain conditions increase the risk from Legionella if:

(a) the water temperature in all or some parts of the system may be between 20–45 °C, which is suitable for growth;
(b) it is possible for water droplets to be produced and if so, they can be dispersed;
(c) water is stored and /or re-circulated;
(d) there are deposits that can support bacterial growth, such as rust, sludge, scale, organic matter and biofilms.

1.5 Legionnaires disease is fatal in approximately 12% of reported cases. It is similar in its early stages to influenza: patients suffer high body temperature, fever and chills, general malaise and muscle pain. A dry unproductive cough then develops and difficulty in breathing, which can become severe. Approximately half of those infected become confused and delirious while a lesser number suffer vomiting and diarrhoea. Incubation from the time of

exposure to the onset of symptoms is usually three to six days but can be as short as two or as long as ten

1.6 It is important to control the risks by introducing measures which do not allow proliferation of the organisms in the water systems and reduce, so far as is reasonably practicable, exposure to water droplets and aerosol. This will reduce the possibility of creating conditions in which the risk from exposure to Legionella bacteria is increased.

2.0 Purpose

2.1 As owners and managers of property, Liverpool Hope University (referred to as LHU in this document) accepts it has a responsibility to protect; students, employees, residents and others who may be affected by its activities against the risk of legionella infection (Legionellosis), arising from plant, equipment, facilities, work or work-related activities. This extends to ensuring that residents and visitors are safe from the risks associated with legionella bacteria and other contaminants.

This document outlines the management and control procedures which are undertaken by LHU across its property portfolio and/or work buildings; owned, occupied and/or operated by them and where LHU has maintenance or managerial responsibilities to minimise the risk presented by the Legionella bacteria.

2.2 It is the purpose of these procedures to ensure the achievement of compliance with the following guidance documents so far as is reasonably practicable:

- The control of Legionella bacteria in water systems: Approved Code of Practice and guidance on regulations – L8 (fourth edition)
- HSG 274 Part 2: The control of Legionella bacteria in hot and cold-water systems
- HSG 274 Part 3: The control of Legionella bacteria in other risk systems

2.3 The Statutory Duty Holder (referred to as SDH in this document): Vice Chancellor is responsible for ensuring that the Written Scheme satisfies the requirements of the Approved Code of Practice L8 and HSG274.

2.4 Minimising the risk presented by Legionella through applying the guidance documents detailed above will ensure that Liverpool Hope University remains in compliance with the requirements of the following legislation and regulations, and in doing will meet the requirements of Liverpool Hope University Health and Safety Policy:

- The Health and Safety at Work Act 1974
- The Management of Health and Safety in the Workplace 1999
- Control of Substances Hazardous to Health (COSHH) 2002
- Health Protection Regulations (Notifiable) (Wales) 2010
- The Notification of Cooling Towers and Evaporative Condensers Regulations 1992

In addition, LHU are committed to comply with:

- Workplace (Health, Safety & Welfare) Regulations 1992 (as amended)
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)
- The Water Supply (Water Fittings) Regulations 1999
- British Standard 8580:2010 Water Quality – Risk assessments for Legionella control – Code of Practice

LHU requires its approved contractors to abide by relevant legislation and technical guidance as well as the Liverpool Hope University Contractor Health and Safety Induction and guidance contained within, and to be SSIP accredited.

2.5 The result of the achievement of compliance as set out above is to ensure the protection of students, employees, residents, contractors, visitors and the general public from exposure to the Legionella bacteria.

2.6 The management and control procedures specified within this document will minimise so far as is reasonably practicable the potential for inoculation and growth of the Legionella bacteria within all water systems and minimise so far as is reasonably practicable the potential for persons to be exposed to aerosols and water droplets generated by site water systems.

3.0 Scope

3.1 This document covers the management and control of all manmade water systems located across the LHU property portfolio where it has responsibility as detailed in Section 2 above.

3.2 Primarily this includes all hot and cold-water systems and other ‘at risk’ water systems. A list of asset types covered by this document can be found in Section 8 ‘Control Measures.

3.3 A copy of this document, the ‘Corporate Written Scheme’, must be made available to all relevant personnel either as a ‘controlled’ hard copy or in electronic format. A ‘master copy’ of the document is to be stored in the Estates Office along with building specific log books.

Any amendments to the document, will be communicated to all those involved with the management of risk from Legionella by email notification.

3.4 Where LHU only has maintenance or managerial duties in a building, but is not the owner, the nature of responsibilities to manage Legionella is dependent upon the contract, or lease agreement, that is in place in regard to that specific building and will be clearly detailed in ‘allocation of responsibilities’ as part of the contract, or lease agreement.

3.5 Where LHU acts in the capacity of ‘landlord’ for the property a contract, or tenancy agreement, should detail who has responsibility for managing the risk from Legionella and where this is not specified then the duty is placed on

whoever has control of the premises and to avoid any risk of non-compliance LHU should adopt responsibility should there be any ambiguity on who has control of the premises.

Appendix 8 lists those properties where LHU are deemed to be the 'landlord' and details a copy of a typical tenancy agreement addendum covering aspects of Legionella management.

3.6 The Written Scheme will be reviewed on an annual basis, or following an outbreak, change in ACoP L8 and/or guidance or if deemed to be no longer adequate by the Statutory Duty Holder and/or Responsible Person (referred to as RP in this document).

Annual review is to be carried out by the RP and/or Health & Safety Advisor, with awareness of Head of Legal Services and Governance and SDH and/or Health & Safety Committee being informed of any significant changes to the Written Scheme document. A record of the review, signed and dated, and a copy of revised Written Scheme, is to be held by the RP.

The review is to assess the Written Scheme for; effectiveness, impact of changes from associated legislation, see Section 2, lessons learnt from significant incidences, impact of changes to key personnel, new roles or corporate restructuring, and changes to approved contractors and/or consultants.

4.0 Risk Assessment and Schematic Diagrams

4.1 LHU will carry out a detailed risk assessment on all water systems as specified in Section 8 with specific reference to the Legionella bacteria. The risk assessment will be sufficient and in compliance with the guidance documents specified in Section 2. Whilst the SDH is responsible for ensuring there has been an adequate assessment of risk the Director of Estates as the RP has been appointed responsibility for ensuring a risk assessment is in place for all portfolio properties together with an action plan to meet compliance with guidance as detailed in Section 2.2

4.2 The Legionella risk assessment will be undertaken by either an in-house competent person or an external consultant with specific specialist knowledge in the areas of Legionella control and water treatment. (Note: registration to the LCA Code of Conduct and UKAS accreditation to ISO 17020 is a means of assessing competency and quality procedures but is not a legal requirement). The current approved external consultant for this purpose is detailed in Appendix 1 at the rear of this document.

4.3 The Legionella risk assessment shall be carried out in accordance with BS8580:2010 and shall include consideration of the following:

- Contamination – the likelihood of legionella contamination at source
- Amplification –the conditions prevailing to take account of the likelihood of legionella proliferating
- Transmission – aerosol generation, dissemination and exposure

- Exposure – the risk that water droplets will be inhaled
- Host Susceptibility – the likely susceptibility of those exposed

4.4 Reference should be made to up-to-date, building specific schematic drawings when developing the risk assessment, if these are not available or are deemed unsuitable then they should be revised, or created, as part of the risk assessment.

The schematics should be considered an integral part of the risk assessment and they should be stored and/or recorded in the same location as key documents being routinely reviewed at the same time as the risk assessments.

All risk assessments and schematics are stored electronically in addition to the logbooks stored at the Estates Office.

4.5 In the event of subsequent modifications occurring to any water systems then the schematic drawings are to be reviewed/updated by the Risk Assessor (referred to as RA in this document), and/or approved contractor, then reviewed by the RP, or their deputy, or their deputy and issued/updated to the relevant building log book.

4.6 The Legionella risk assessments and 'Written Scheme', will be reviewed regularly by the RP, or their deputy, and/or their deputy to ensure it remains up-to-date. Increased frequency may be recommended by the risk assessor, and should always be required if the following conditions occur and there is reason to suspect it is no longer valid:

- The frequency is specified in the existing/previous Legionella risk assessment and is linked to level of risk identified
- There are physical changes to site water systems or their use
- There are changes to the use of the building in which the water system is installed
- New information about risks or control measures becomes available
- Results of routine testing/monitoring indicates that current control measures are no longer effective
- There are changes to key personnel on the site
- A case of Legionnaires disease/Legionellosis is associated with any of the site water systems

4.7 Legionella risk assessments should be held electronically by the Estates Office and managed by the RP, or their deputy, for a minimum of five years. These should be maintained as a 'living document' reflecting any necessary changes agreed during review and under the management of the RP and/or their deputy.

4.8 Recommendations and remedial actions identified in the Legionella risk assessment document are to be assessed by the Responsibly Person or their Deputy, and thereafter arranged for remedial works and agreed actions to be carried out on a risk-based priority.

Following the assessment, agreed recommendations will be either included in the relevant Planned Maintenance schedule(s), as managed via Quantarc, or in

the case of urgent remedial works forwarded to the appropriate personnel or external contractor to be undertaken as quickly as is deemed reasonable. Should any such work be deemed to have substantial cost implications to LHU, which cannot be financed out of the normal budgetary expenses, then the RP will advise the Executive Director of Finance Services & Resources (referred to as EDFSR in this document), see Section 5.7, as to the urgency of the work and if not financed in a timely manner will escalate the issue in-line with escalation process detailed in Appendix 2.

4.9 Subsequently all recommendations and remedial actions are to be managed, where possible, through the electronic management system, 'Quantarc', and the RP and/or their deputy, so that they are logged and tracked through to completion. Reactive requests are managed by Quantarc, however risk assessment remedial works are managed using a separate action plan. Actions are tracked and reported on during monthly contractor meetings.

The Estates Helpdesk Admin team will regularly generate and review a status report to ensure successful closing off and completion of all outstanding actions, any persistent non-conformances or failure to complete outstanding actions will be escalated by the RP, or their deputy, to those responsible for carrying out the required actions and if not completed in a timely manner should be escalated to the SDH and/or EDFSR.

5.0 Management Structure

5.1 In accordance with the ACoP L8 and HSG274, the responsibility for the implementation and execution of this 'Written Scheme' rests with the SDH and the RP and/or their deputy.

5.2 The Statutory Duty Holder: Vice Chancellor, as named in Appendix 1, is ultimately responsible for appointing all persons involved in the control of Legionella across the LHU property portfolio, and in particular those roles and individuals detailed in Appendix 1 which make up the corporate management team responsible for Legionella compliance.

The SDH, acting as the employer on behalf of LHU, has a responsibility to support this Written Scheme by ensuring the allocation of sufficient resources including; an adequate budget, suitable and sufficient equipment, personnel, time and training.

In the absence of any named person, the SDH will be deemed to be the Vice Chancellor.

5.3 The corporate management team organogram providing details on the position, name, contact details of all senior personnel involved in the management and control of Legionella across the corporate property portfolio, including service providers(s), is located in Appendix 1 of this document.

5.4 Appendix 1 contains details of the escalation point for each person named within the Legionella management structure.

5.5 The allocation of the responsibilities to each individual involved (by position) for each specific task mentioned within this document is detailed in Appendix 3.

5.6 The Responsible Person: Director of Estates, as named in Appendix 1, has been appointed by the SDH as the competent person to take day-to-day responsibility for managing and controlling the risk from Legionella across the corporate property portfolio through the implementation of the 'Written Scheme' and compliance with the guidance in Section 2.2 of this document.

The RP, and/or their deputy, also has a responsibility to ensure records are kept to confirm that this Written Scheme has been implemented, and that suitable 'competent' service providers, and contractors, are engaged by LHU to ensure that water systems are designed, installed, operated and managed in a safe manner with respect to general Health and Safety at work and in particular to the risks presented by Legionella.
Financial Control – whilst the RP has fiscal control of the maintenance budget, which should be such that it allows; the full implementation of this 'Written Scheme', completion of remedial tasks as identified in risk assessments or as a consequence of non-conformances identified through on-going control measures and monitoring, and to implement recommendations to undertake new compliance improvements, there may be a requirement for additional financial resources to maintain LHU legislative compliance.

In this case the RP will submit in writing, along with the normal financial submission, to the EDFSR the reasons why the additional funds are required to ensure LHU compliance and the associated risk of not implementing the improvements.

5.7 The Deputy Responsible Person (referred to as DRP in this document): Head of Maintenance, as named in Appendix 1, has been appointed by the SDH. The DRP provides support to the RP and assists in the delivery of their duties including covering the duties of the RP during periods of absence for annual leave or other reasons.

5.8 Nominated Departmental Operatives (referred to as NDO in this document), as required for specific buildings as detailed in Appendix 9, will be responsible for ensuring water hygiene tasks and control measures detailed in this 'Written Scheme' are completed with all tasks being issued by, and duly recorded, via Quantarc.

5.9 The Maintenance Contractor with key personnel named in Appendix 1 has responsibility for the safe operation of plant, equipment and facilities, implementing the scheme of precautions and doing so using safe working practices. The Maintenance Contractor is also the Legionella Control Monitoring Service Provider so has responsibility for undertaking those duties outlined to control legionella which are allocated to them and detailed in Appendix 3 – Allocation of Responsibilities.

5.10 The Health & Safety Advisor, as named in Appendix 1 is responsible for periodically auditing compliance with the Written Scheme in conjunction with the RP, investigating and reporting to LHU Health and Safety Consultative

Committee and Senior Management Team on any alleged incident of Legionella Outbreak and for ensuring reporting of incidents under RIDDOR where appropriate.

LHU's Personnel Department, or Director of Personnel, is also responsible for notification to the University's Occupational Health Service should any member of staff be involved in an incident of Legionellosis in order that occupational advice can be given if required.

5.11 Risk Assessor (referred to as RA in this document), as named in Appendix 1, has been appointed by the RP as suitably qualified and experienced, and will have the responsibility for undertaking risk assessment for the LHU premises and for reviewing these risk assessments at an agreed time or whenever there is any change of circumstance relative to risk.

5.12 Occupational Health Service is responsible for; providing occupational health advice to management and staff on issues relating to Legionella. The Occupational Health Service is managed by the University's Personnel Office.

5.13 Appendix 2 details lines of communication between those involved in Legionella management.

6.0 Training and Competency

6.1 The SDH will ensure all employees involved in work that may expose an employee or other person to Legionella are given suitable and sufficient information, instruction and training. This includes information, instruction and training on the significant findings of the risk assessment and the appropriate precautions and actions they need to take to safeguard themselves and others. This should be reviewed and updated whenever significant changes are made to the type of work carried out or methods used. Training is an essential element of an employee capability to carry out work safely, but it is not the only factor: instructions, experience, knowledge and other personal qualities are also relevant to perform a task safely.

6.2 LHU will ensure that all personnel involved in the control of Legionella across all their buildings will have a suitable and sufficient level of training and competency commensurate with their responsibilities to execute their duties to a satisfactory standard. Refresher training will be provided as required.

6.3 Training provided to NDO will be sufficient to cover their duties with regards to the control of Legionella bacteria in their building(s) in accordance with ACoP L8 and HSG274 guidance, for example 'why flushing of little used outlets is important'.

6.4 All records of initial and refresher training and competency for persons named in Appendix 1 are to be held in centrally in CiPHR, the HR database, and managed by the Personnel Office.
Records for building specific personnel; covering adherence to standard operating procedures (SOP) such as flushing infrequently used outlets, should

be stored in relevant log book (under 'Training and Competency Records') and held in Estates Office.

6.5 The SDH retains the responsibility of assessing competency and ensuring training is up to date for RP and their deputy, operators and service providers involved in Legionella control as per the below table.

This table is not however exhaustive as other site factors and conditions, Legionella risk assessment or service provider recommendation may indicate a requirement for additional training or competency assessment.

Position	Training/competency	Renewal frequency
Statutory Duty Holder (*), Responsible Person, Deputy Responsible Person (*) SDH should decide on his/her level of competency and the need for specific Legionella training	Accredited (such BOHS) Responsible Persons course in Legionella control - by external provider such as current provider AEC	A refresher course every 3 – 5 years (dependent on LHU specific risks, system changes, changes to 'best practice' advice and Statutory Duty Holder assessment)
Nominated Departmental Operatives	Site based training on the Control of Legionella in premises and compliance to ACoP L8 and HSG 274, with an emphasis to reflect their designated duties	As required
Estates Operational Staff	Site based training on the Control of Legionella in premises and compliance to ACoP L8 and HSG 274, and by external providers	As required
Service provider(s)	Evidence of individual's competency and if applicable evidence of audited training for Legionella Control Association membership or other professional bodies	As required by LCA accreditation if applicable
Laboratory used by service provider for analysis of water samples for Legionella and any other parameter	UKAS accreditation in relevant discipline	As required by UKAS to maintain accreditation
All persons named in Appendix 1	Instruction/refresher in written scheme, control procedures, and Legionella awareness training	As a result of internal audit findings

Any newly appointed person(s) involved with Legionella management and compliance to receive a minimum of Legionella awareness training within 3 months of commencing the role.

7.0 System operation

7.1 As much of the day-to-day maintenance is carried out by third party service providers, LHU is to request, prior to commencement of work, suitable clear and concise mechanical operating instructions, or standard operating procedures (SOP), covering normal conditions including normal start up and shutdown procedures, and long term shutdown and subsequent start up procedures for all systems detailed in Section 8 to compliment the control measures employed to minimise the risk from Legionella. These will usually form part of the contractors Risk Assessment and Method Statement (RAMS) documentation.

7.2 As these documents are acquired, or are developed by LHU, accessible copies should be stored electronically or as hard copy in the Estates Office and managed by the RP, copies of any building/system specific mechanical operating instructions/SOPs will also be held within respective building log book.

8.0 Control Measures

8.1 LHU will consider the level of risk present at each building through review of; the risk assessment, competency of operational personnel, and the 'at risk population' and if it is deemed by the RP or their deputy that the building does not have the means to ensure that all operational procedures and control measures are carried out in a timely and effective manner then the SDH should be advised accordingly.

The SDH, working with the RP, should then look to appoint people from outside the organisation and should take all reasonable steps to ensure the competence of those carrying out work that are not under their direct control and that responsibilities and lines of communication are properly established and clearly laid down.

SDH, RP or their deputy should make reasonable enquiries to satisfy themselves of the competence of contractors in the area of work before they enter into contracts for the treatment, monitoring, and cleaning of the water system, and other aspects of water treatment and control. This assessment of competency should also apply to those carrying out risk assessments across LHU property portfolio.

8.2 LHU should give due consideration to Legionella risks prior to purchasing new equipment, this should include the likely impact on the risk assessment for individual buildings, alterations to established control measures and the need to engage with external contractors and service providers to ensure safe installation.

In the event that the Estates Department is retrospectively informed of equipment purchased by other departments then the RP, and/or their Deputy, should ensure adequate control measures are implemented to minimise any associated risk from Legionella.

8.3 Legionella monitoring requirements for individual buildings, depending on the risk levels identified, will be incorporated into the supplementary building specific control measure page contained with the logbook.

8.4 Control measures as specified in the following section form part of the “Control Scheme” having a defined frequency as a recurring task and are assigned to the SDH, RP or their deputy or to a competent person/contractor to ensure that the task is completed on time.

8.5 Compliance to these measures as part of the ‘Control Scheme’ will be reviewed on a quarterly basis between the RP and their deputy and if required nominated competent person(s) or service provider(s).

8.6 A summary of all control measures can be found in Appendix 3 ‘Allocation of responsibilities.

8.7 Hot and cold-water systems

8.7.1 Control measures implemented on the hot and cold-water systems present in individual buildings, and detailed in the logbooks and are to be in accordance with HSG 274 Part 2: The control of Legionella in hot and cold-water systems; with additional control measures implemented as specified in the most up to date risk assessment.

8.7.2 The control measures utilised to minimise the risk from Legionella are such as to maintain the systems in a clean and serviceable condition and to ensure the operating temperatures within the system remain within the control limits specified below.

System area	Temperature control limit
Cold water distribution and storage	<20ºC
Hot water storage	>60ºC
Hot water distribution	>50ºC

8.7.3 The control measures implemented on the hot and cold-water system are summarised in the table(s) below, which have been extracted from HSG 274 Part2 – Table 2.1 ‘Checklist for hot and cold-water systems.

Service/Asset	Action to take	Frequency
Calorifiers	Inspect Calorifier internally by removing the inspection hatch or using a boroscope and clean by draining the vessel. The frequency of inspection and cleaning should be subject to the findings and increased or decreased based on conditions recorded.	Annually, or as indicated by the rate of fouling.
	Where there is no inspection hatch, purge any debris in the base of the Calorifier to a suitable drain. Collect the initial flush from the base of hot water heaters to inspect clarity, quantity of debris and temperature.	Annually, but may be increased as indicated by the risk assessment or result of inspection findings.
	Check Calorifier flow temperature (thermostat settings should modulate as close to 60^{o}C as practicable without going below 60^{o}C). Check Calorifier return temperatures (not below 50^{o}C, in healthcare premises not below 55^{o}C).	Monthly
Hot water services	For non-circulating systems: take temperatures at sentinel points (nearest outlet, furthest outlet and long branches to outlets) to confirm they are at a minimum of 50^{o}C within one minute (55^{o}C in healthcare premises).	Monthly
	For circulating systems: take temperatures at return legs of principal loops (sentinel points) to confirm they are at a minimum of 50^{o}C (55^{o}C in healthcare premises). Temperature measurements may be taken on the surface of metallic pipework.	Monthly
	For circulating systems: take temperatures at return legs of subordinate loops, temperature measurements can be taken on the surface of pipes, but where this is not practicable, the temperature of water from the last outlet on each loop may be measured and this should be greater than 50^{o}C within one minute of running (55^{o}C in healthcare premises). If the temperature rise is slow, it should be confirmed that the outlet is on a long leg and not that the flow and return has failed in that local area.	Quarterly (ideally on a rolling monthly rota)
	All HWS systems: take temperatures at a representative selection of other points (intermediate outlets of single pipe systems and tertiary loops in circulating systems) to confirm they are at a minimum of 50^{o}C (55^{o}C in healthcare premises) to create a temperature profile of the whole system over a defined time period.	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for Legionella control.
POU water heaters (no greater than 15 litres)	Check water temperatures to confirm the heater operates at 50-60^{o}C (55^{o}C in healthcare premises) or check the installation has a high turnover.	Monthly-six monthly, or as indicated by the risk assessment.
Combination water heaters	Inspect the integral cold-water header tanks as part of the cold-water storage tank inspection regime, clean and disinfect as necessary. If evidence shows that the unit regularly overflows hot water into the integral cold-water header tank, instigate a temperature monitoring regime to determine the frequency and take precautionary measures as determined by the findings of this monitoring regime.	Annually
	Check water temperatures at an outlet to confirm the heater operates at 55-60^{o}C.	Monthly
Cold water tanks	Inspect cold water storage tanks and carry out remedial work where necessary.	Annually
	Check the tank water temperature remote from the ball valve and the incoming mains temperature. Record the maximum temperatures of the stored and supply water recorded by fixed maximum/minimum thermometers where fitted.	Annually (Summer) or as indicated by the temperature profiling

Service/Asset	Action to take	Frequency
Cold water services	Check temperatures at sentinel taps (typically those nearest to and furthest from the cold tank, but may also include other key locations on long branches or floor levels). These outlets should be below 20°C within two minutes of running the cold tap. To identify any local heat gain, which might not be apparent after one minute, observe the thermometer reading during flushing.	Monthly
	Take temperatures at a representative selection of other points to confirm they are below 20°C to create a temperature profile of the whole system over a defined time period. Peak temperatures or any temperatures that are slow to fall should be an indicator of a localised problem.	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for Legionella control.
	Check thermal insulation to ensure it is intact and consider weatherproofing where components are exposed to the outdoor environment.	Annually
Showers and spray taps	Dismantle, clean and descale removable parts, heads, inserts and hoses where fitted.	Quarterly or as indicated by the rate of fouling or other risk factors e.g. areas with high risk patients
Base exchange softeners	Visually check the salt levels and top up salt, if required. Undertake a hardness check to confirm operation of the softener.	Weekly, but depends on the size of the vessel and the rate of salt consumption
	Service and disinfect.	Annually, or according to manufacturer guidelines.
Infrequently used outlets	Consideration should be given to removing infrequently used showers, taps and any associated equipment that uses water. If removed, any redundant supply pipework should be cut back as far as possible to a common supply (e.g. to the recirculating pipework or the pipework supplying a more frequently used upstream fitting) but preferably by removing the feeding 'T'. Infrequently used equipment within a water system (i.e. not used for a period equal to or greater than seven days) should be included on the flushing regime. Flush the outlets until the temperature at the outlet stabilises and is comparable to supply water and purge to drain. Regularly use the outlets to minimise the risk from microbial growth in the peripheral parts of the water system, sustain and log this procedure once started. For high risk populations, e.g. healthcare and care homes, more frequent flushing may be required as indicated by the risk assessment.	Weekly, or as indicated by the risk assessment
TMVs	Risk assess whether the TMV fitting is required, and if not, remove. Where needed, inspect, clean, descale and disinfect any strainers or filters associated with TMVs. To maintain protection against scald risk, TMVs require regular routine maintenance carried out by competent persons in accordance with the manufacturer's instructions, including 'failsafe tests'.	Annually or on a frequency defined by the risk assessment, taking account of any manufacturer recommendations
Expansion vessels	Where practical, flush through and purge to drain.	Monthly-six monthly, as indicated by the risk assessment

LHU will adopt the frequencies recommended by the Risk assessor or as required based on any out-of-tolerance results highlighted during monthly review of log books.

8.7.4 Appendix 4 details the course of action to be taken in the event of out of specification parameters from the above control regime.

8.8 Vapac Evaporative Coolers, Health Sciences Building, Hope Campus

8.8.1 Control measures have been developed for the Vapac evaporative coolers as advised in HSG 274 Part 3: The control of Legionella bacteria in other risk systems, with reference to the current risk assessment and manufacturer's documentation. Any significant change to Health and Safety advice, risk assessment or manufacturer's advice should prompt a review of these control measures.

Note: Consideration should be given as to the need for these units and the requirement to produce humidified air. Whilst under normal operating conditions there should be no water droplets entrained with the air entering the building's air intake/handling system, failure to correctly maintain or any breech in the efficiency of the drift eliminators (droplet separators) could increase the risk.

The systems are designed to completely drain the tank/sump when cooling/humidification is not required. Furthermore, the units should be out of service for a minimum of 4 hours per operational day to allow the cooling/humidifier media/packing to completely dry out as a means of limiting bacterial activity.

If required the sump/tank should be cleaned and chlorinated prior to any refill/return to service following any extended period of isolation, or no operational demand, however, do not pass chlorinated water over the packing media as it may damage the material.

8.8.2 The Vapac units cannot not be treated with chemicals such as biocide, as detailed in manufacturer's documentation, to provide bacterial control as this can damage the cooling/humidifier packing media,

Control measures are therefore limited to period inspection of the units for the build-up of debris, assessment of bacterial activity when operational and mechanical checks as recommended by the manufacturer.

What to inspect	How to inspect	What to look for
Checking correct operation of UV in accordance with manufacturer's recommendations	Check for correct operation and internal cleanliness of UV housing	▪ Presence of any deposition which might reduce efficacy of the UV lamp ▪ Faulty lamp
Inspection of filter element and housing in accordance with manufacturer's recommendations	Visually inspect internals of filter unit and filter media	▪ Deposits such as silt, scale debris and organic fouling ▪ Potential for poor flow rate through filter ▪ Physical damage to filter media
Inspection of tank/sump in accordance with	Visual assessment after draining during operating cycle when unit not calling for	▪ Build-up of deposits such as silt/scale ▪ Evidence of contamination

What to inspect	How to inspect	What to look for
manufacturer's recommendations	cooling/humidification or when taken out of service	▪ Biofouling; biofilms, algae and organic matter such as leaves
Inspection of drift eliminators (droplet separator) in accordance with manufacturer's recommendations	Remove the cooling/humidification cassette and visually inspect for build-up of contaminants on media and drift eliminators/droplet separator	▪ Build-up of deposits such as silt/scale ▪ Evidence of contamination ▪ Biofouling; biofilms, algae and organic matter such as leaves

The frequency of inspection will be as recommended by the manufacturer and carried out by the Maintenance Contractor with the results of the inspections recorded in the appropriate building specific log book.

Section 10.2 details remedial actions depending on the nature of contamination identified during inspections; any remedial action should be recorded in the appropriate building specific log book and/or Defect Log by the Maintenance Contractor

8.8.3 The control limits for bacterial activity and air flow rate through the unit to minimise the risk from Legionella are detailed below. It maybe that bacterial sampling cannot be carried out when Maintenance Contractor attends units as the sump/tank may be empty due to the automatic drain down when not operational to prevent the build-up of contaminants in the system. If this occurs then an appropriate comment should be entered in the logbook reflecting the internal condition of the sump/tank and that a dip slide and/or Legionella sampling was not possible.

Parameter	Frequency of analysis	Control limit
Microbial activity – dip slide (cfu/ml)	Weekly	$\leq 10^4$
Legionella analysis (cfu/l)	Quarterly	Not detected or $<10^2$
Check air flow rate through the Vapac unit	In accordance with manufacturer's recommendations	<3 m/s unless drift eliminator/droplet separator fitted

The RP, and/or DRP, should consult with the Maintenance Contractor in the event that results are outside the control limits detailed above, remedial actions are not correcting identified non-conformances or additional technical advice is deemed necessary, this may require contacting the manufacturer.

8.9 Water Fountains/Features

8.9.1 Control measures have been developed for the water fountains/features as advised in HSG 274 Part 3: The control of Legionella bacteria in other risk systems, with reference to the current risk assessment and through consultation with the Specialist Contractor detailed in

Appendix1. Any significant change to Health and Safety advice, risk assessment or change of Specialist Contractor should prompt a review of these control measures.

Note: Consideration should be given to leaving the ponds drained, permanently if possible, or for extended periods of time when there may be an increased risk of bacterial proliferation e.g. during the summer period when water temperatures may exceed 20°C

Note: sand filters should remain fully flooded to prevent the media 'drying' out and solidifying, if possible water should be periodically circulated through the sand filter to minimise risk of stagnation and possible bacterial growth.

The sump, tank(s) or pond and associated distribution pipe work should be cleaned and chlorinated prior to any drain down and refill/return to service as advised by the Specialist Contractor.

8.9.2 All the water fountains/features are treated with bromine-based biocide to control general bacterial activity in the water system and to minimise the risk of Legionella proliferating and growing throughout the sump, tank(s) or pond and associated distribution pipe work.

The degree of automatic control, such as pH and bromine levels via suitable in-line test probes, varies across the water fountains/features managed by LHU; see fountain specific risk assessment for details.

However, all systems will be maintained as detailed in Section 8.9.3 with respect to pH, bromine and bacterial control and a regime of inspection as detailed below:

What to inspect	How to inspect	What to look for
General system condition	Visually inspect the accessible parts during normal operation and particularly during shutdown	▪ Damage to protective finishes ▪ Scaling and/or corrosion ▪ Biofilm/biofouling ▪ Build-up of dirt and debris
Water distribution system	Visually inspect during shutdown – (ensure safe means of access)	▪ Deposits in strainers, nozzles ▪ Poor water circulation ▪ Physical damage
Feature/fountain tank, sump or pond	Visual assessment after draining, but a more limited assessment should be routinely made by probing a sump without draining	▪ Build-up of deposits ▪ Evidence of contamination ▪ Biofouling; biofilms, algae and organic matter such as leaves

The frequency of inspection will be as recommended by the Specialist Contractor detailed in Appendix1, and contractually agreed with LHU, and the results of the inspections recorded in the appropriate building specific log book.

Section 10.3 details remedial actions depending on the nature of contamination identified during inspections; any remedial action should be recorded in the appropriate building specific log book and/or Defect Log by the Specialist Contractor

8.9.3 The control limits for pH, bromine and bacterial activity to minimise the risk from Legionella are:

Parameter	**Frequency of analysis**	**Control limit**
pH	Weekly	6.0 – 8.0
Bromine – as free bromine (mg/l)	Weekly	1.0 – 8.0 (*)
Microbial activity – dip slide (cfu/ml)	Weekly	$\leq 10^4$
Legionella analysis (cfu/l)	Quarterly	Not detected or $<10^2$
Temperature	As required	For information only

(*) As recommended by Specialist Contractor detailed in Appendix 1, a change of contractor may result in a modification of control limit.

Section 10.3 details remedial actions depending on the test results for pH, bromine and bacterial activity. The RP, and/or DRP, should consult with the Specialist Contractor in the event that results are outside the control limits detailed above as reported by Maintenance Contractor following routine monthly monitoring, or if remedial actions are not correcting identified non-conformances.

8.10 Lawn Sprinkler System

This system is considered redundant and LHU Estates have decommissioned the system.

In the event that the system is recommissioned at the next review of this Written Scheme suitable ‘Control’ measures should be developed.

8.11 Other ‘at risk’ water systems

8.11.1 The RP should ensure that the risk of Legionella associated with any specialised water equipment, feature (see Section 8.9 above) or system under their control is risk assessed and suitable control measures are in place and are managed in keeping with this ‘Written Scheme.

Control measures should reflect the severity of risk identified and be based on ‘best practice’ advice as specified in HSG 274 Part 3 and using principals of control as detailed in HSG 274 Part2.

8.11.2 Details of other ‘at risk’ water systems can be found in HSG 274 Part 3.

8.12 Any noncompliance results, and associated recommended actions or remedial works required to return a premises/building or system back to an adequate level of control, should be reported to the RP, or their deputy, by those involved with implementation of the Control Measures, or externally appointed service

provider, they should arrange for any such recommendations or remedial works to be undertaken as quickly as is deemed reasonable.

Should any such work be deemed to have substantial cost implications then the RP will submit the appropriate documentation as required for additional funds with supporting documentation, as referred to in Section 5.7, to ensure continued compliance and safe management of risk.

If funds or corrective action is not carried out in a timely manner then the RP should follow the escalation procedure detailed in Appendix 2.

8.13 In addition to the specific control measures detailed in this 'Written Scheme' the following general arrangements will ensure safety to individuals and minimise the risk from water systems:

- No person should prepare or undertake any changes or alternations to water systems that would increase the risk of Legionella once any remedial work has been completed.
- All proposed changes or alterations to water systems must be reviewed and approved by the RP, or their deputy.
- Responsibility for informing consultants and / or contractors about the Legionella arrangements within this 'Written Scheme' rests the RP and/or with the person organising any associated remedial work

9.0 Record Keeping

9.1 LHU will arrange that a Legionella log book is provided for each building for the purpose of recording all tasks and outcomes associated with the control measures detailed in Section 8.0, the management and maintenance of the records will be through the RP, or their deputy, and where applicable the service provider detailed in Appendix 1 and will be accessible for review by either manual hard copy document stored in the Estates Office or electronically via Quantarc and SimPro (Kimpton system).

9.2 The RP, or their deputy, will inspect/review all building log books on a regular basis to ensure that each building is complying with the requirements set out in the risk assessment, Written Scheme and associated control measures, and that those recommendations, where appropriate, are being acted upon and recorded, any persistent non-compliance issues will be escalated by the RP.

9.3 Health & Safety Advisor in consultation with the Head of Legal Services, Governance and Risk and working with the RP, will carry out routine audits of all records to ensure adherence to this Written Scheme as well as an annual review of this Written Scheme.

9.4 The main record keeping repositories are to be; Quantarc used by LHU Estates for managing scheduled tasks and remedial works, SimPro (Kimpton) for monthly hygiene reports and contracted activities as detailed in Appendix 3, CiPHR the HR based system for training records, and hardcopy building specific log books for monitoring records and control measure compliance stored in Estates Office and overseen by the RP, or their deputy.

All records relating to Legionella control, and water treatment were appropriate, **MUST** be retained in these systems with the SDH retaining ultimate responsibility for maintaining these documents.

Records held within these system(s) should include:

- Control scheme and associated measures
- Legionella risk assessment, 'living document' copies and reviews
- Schematic diagrams
- Management structure and responsibilities
- Training and competency records (copies of certificates etc.)
- Service provider monthly report sheets (e.g. Maintenance Contractor's monthly review report)
- Weekly testing regimes
- Laboratory analysis certificates
- Clean and disinfection certificates and photographic reports
- Monthly condition inspections, planned maintenance schedules
- Weekly, monthly, quarterly, annual hot and cold-water system monitoring records
- Procedures – system operation, clean and disinfection method statement etc.
- Legionella incident plan (copy of that held in 'Written Scheme')
- Defect log
- Chemical data sheets

All records must be retained for at least 5 years.

9.5 Additional records to be held by the SDH/RP should include detailed minutes of review meetings with Maintenance Contractor, outstanding and closed off remedial actions, completed risk assessment review documents to maintain validity and establish need for review/renewal.

9.6 Records of **ALL** checks carried out on hot and cold-water systems must be recorded in the building specific log book or referenced back to the appropriate electronic storage repository, and managed by the RP, or their deputy; this may require printed reports from Quantarc covering specific activities and time frames.

9.7 All hard copy records will be reviewed on a monthly basis between the RP, their deputy and service provider(s), regular audit/reviews of all electronic records are to be carried out by the RP and their Deputy with any non-conformance being addressed by the RPand service providers.

Any persistent non-conformance or outstanding corrective activities identified during reviews are to be escalated by the RP.

9.8 This document, the Corporate Written Scheme, is to be held electronically by LHU Estates with any copies being circulated as a 'controlled document', and should be subjected to an internal review on at least an annual basis by the

Health & Safety Advisor in consultation with the Head of Legal Services, Governance and Risk on behalf of the SDH in conjunction with the RP.

All records are to be audited against the requirements set out in this document and the results are to be communicated to those detailed in the lines of communication in Appendix 2.

10.0 Remedial Actions

10.1 Hot and cold-water systems

10.1.1 The principal control of Legionella in hot and cold-water systems is maintaining system temperatures as detailed in Section 8.7.2, routine inspection, monitoring and cleaning as detailed in Section 8.7.3 and minimising stagnant water conditions within the system.

Appendix 4.1 details specific actions that should be taken in the event that temperatures are identified as falling outside of those specified in Section 8.7.2.

10.1.2 Flushing of infrequently used outlets is the approved methodology of reducing the risk associated with these assets as detailed in HSG274 Part2. To assist the Estates Department in carrying out this activity there are 'Nominated Departmental Operatives' for various facilities managed by LHU, see Appendix 9, which receive instruction via Quantarc with respect to this activity.

10.1.3 When flushing protocols have been compromised, or there is concern over buildings being returned to use, then all hot and cold systems will be chlorinated prior to occupancy.

10.2 Vapac Evaporative Coolers

10.2.1 The principal control of Legionella in Vapac evaporative coolers is through routine inspection for build-up of contaminants as detailed in Section 8.8.2, cleaning in accordance with manufacturer's recommendations and through routine monitoring of critical parameters as detailed in Section 8.8.3

Appendix 4.2 details information on the types of fouling which may be identified in the system, as well as a comparison chart for reading bacterial levels using dip slides and a table detailing the significance of the recorded bacterial levels.

Whilst this information is applied to the Water Fountains/Features these types of debris/fouling will potentially occur in the Vapac units, and method of using dip slides to measure aerobic bacterial activity is the same. If results require the unit to be cleaned then manufacturer's recommendations should be followed to limit risk of damaging the units.

Appendix 5.1 details specific actions in the event that Legionella is identified as being present in any of the Vapac evaporative coolers.

10.3 Water Fountains/Features

10.3.1 The principal control of Legionella in water fountain/features systems is through routine inspection for build-up of contaminants as detailed in Section 8.9.2 and maintaining adequate levels of biocide, bromine, to minimise bacterial activity including the proliferation of Legionella through routine monitoring of critical parameters as detailed in Section 8.9.3

Appendix 4.2 details specific actions that should be taken in the event that test parameters, bacterial activity and levels of contamination are identified as falling outside of those specified in Section 8.9.3

Appendix 5.1 details specific actions in the event that Legionella is identified as being present in any of the water fountain/features.

10.4 Lawn Sprinkler System

This system is considered redundant and LHU Estates are looking to decommission the system.

In the event that the system is recommissioned at the next review of this Written Scheme then suitable 'Remedial actions' should be developed.

10.5 Other 'at risk' water systems

10.5.1 Due to the diverse nature of these types of systems it is not practical to detail specific remedial actions within this 'Written Scheme', these should be developed as part of the risk assessment and held within the building specific control measures documentation.

10.5.2 Management and reporting of monitoring or inspections falling outside of applied control limits should be in accordance with procedure detailed in Section 10.6 and 10.7

10.6 In the event that any system is found to be non-compliant as a result of testing, monitoring or inspection then corrective actions should be carried out to rectify the situation immediately.

Any non-compliant results and subsequent action must be recorded in the building specific log book held in the Estates Office, and/or relevant electronic systems if applicable, and managed by the RP and/or their deputy.

Details of remedial actions must be clearly referenced against the specific out of specification result or condition inspection and reported in the appropriate 'Defect Log'.

10.7 Any remedial actions identified which cannot be rectified immediately are to be recorded in building specific log book, reviewed by the RP and actioned accordingly and then managed within the specified escalation process.

10.8 ***Note: if in doubt as to corrective actions required for any system(s) please contact RP or their deputy immediately.***

10.9 In the event of major failures with system integrity or essential Legionella control equipment then additional specific control measures must be put in place, these will be produced and agreed between the RP and the service provider as specified in Appendix 1.

10.10 The time limit placed on the completion of remedial actions will be dependent on the severity of the defect encountered and LHU will aim for a quick a turnaround as possible while remaining achievable, prioritisation of such remedial actions will be managed by the RP.

10.11 Repeated out of specifications parameters or inspection results of the same asset or parameter will trigger a review of the control regime and/or the Legionella risk assessment.

10.12 Any outstanding remedial actions having been identified by the RP over two consecutive reviews should be escalated as detailed in Appendix 2.

11.0 Incident Plan – emergency procedures

11.1 The procedure for dealing with Legionella positive results or a possible case of Legionnaires disease associated with LHU systems are detailed in Appendix 5 and are managed by the RP.

12.0 Additional Health and Safety Information

12.1 Material safety data sheets associated with chemicals used in the treatment of the water systems present on site are to be kept in the appropriate building specific log book and at the point of use of the particular chemical with a ‘master’ copy being held in the Estates Office.

12.2 Disposal of spent dip slides, if used to monitor bacterial TVC levels in water systems, is to be by autoclaving and/or treating then as ‘clinical waste’. If this activity involves external contractors/consultants then LHU must satisfy that safe disposal procedure is in place.

12.3 All service provider and contractor personnel working on site are to have under gone appropriate induction process.

Appendix 1 Management structure

STATUTORY DUTY HOLDER			
NAME:	Professor Clare Ozanne	**RESPONSIBILITIES:**	Vice Chancellor
LOCATION:	Liverpool Hope University, Hope Park Campus	**REPORTS / ESCALATES TO:**	University Council
EMERGENCY CONTACT DETAILS:	Emergency contact list held at each LHU campus Security Lodge	**DEPUTY IF ABSENT:**	Sue Beecroft Executive Director of Finance Services & Resources
DATE APPOINTED:	2023	**SIGNATURE:**	

RESPONSIBLE PERSON			
NAME:	James Ellison	**RESPONSIBILITIES:**	Director of Estates
LOCATION:	Liverpool Hope University, Estates & Accommodation Office	**REPORTS / ESCALATES TO:**	Executive Director of Finance Services & Resources
EMERGENCY CONTACT DETAILS:	0151 291 3914 07394547140	**DEPUTY IF ABSENT:**	John Begley Head of Maintenance
DATE APPOINTED:		**SIGNATURE:**	

DEPUTY RESPONSIBLE PERSON			
NAME:	John Begley	**RESPONSIBILITIES:**	Head of Maintenance
LOCATION:	Liverpool Hope University, Estates & Accommodation Office	**REPORTS / ESCALATES TO:**	James Ellison Director of Estates
EMERGENCY CONTACT DETAILS:	0151 291 3764 07720 073006	**DEPUTY IF ABSENT:**	n/a
DATE APPOINTED:		**SIGNATURE:**	

Senior Management – Support to SDH and RP, or their deputy,			
NAME:	Sally Merriman	**RESPONSIBILITIES:**	Head of Legal Services and Governance
LOCATION:	Liverpool Hope University, Legal Services and Governance	**REPORTS / ESCALATES TO:**	Deputy VC and Provost
EMERGENCY CONTACT DETAILS:	0151 291 3478	**DEPUTY IF ABSENT:**	HEALTH AND Safety Advisor
DATE APPOINTED:		**SIGNATURE:**	

HEALTH AND SAFETY ADVISOR			
NAME:	Eddie Fahy	**RESPONSIBILITIES:**	H&S and procedure audit
LOCATION:	Liverpool Hope University, Personnel Office	**REPORTS / ESCALATES TO:**	Director of Personnel
EMERGENCY CONTACT DETAILS:	0151-291-3835	**DEPUTY IF ABSENT:**	n/a
DATE APPOINTED	06.01.2023	**SIGNATURE:**	
Campus Managers - Security			
NAME:	Steve Foran and/or John Berry	**RESPONSIBILITIES:**	Campus Manager - Security
LOCATION:	Liverpool Hope University, Hope Park Security Lodge	**REPORTS / ESCALATES TO:**	Dave Kerry Estates Services Manager
EMERGENCY CONTACT DETAILS:	0151 291 3520 and/or 0151 291 3800	**DEPUTY IF ABSENT:**	n/a
DATE APPOINTED:		**SIGNATURE:**	

Cleaning Services Manager			
NAME:	Mo Caldwell	**RESPONSIBILITIES:**	Domestic Services Manager
LOCATION:	Liverpool Hope University, Estates & Accommodation Office	**REPORTS / ESCALATES TO:**	Dave Kerry Estates Services Manager
EMERGENCY CONTACT DETAILS:	0151 2913522	**DEPUTY IF ABSENT:**	n/a
DATE APPOINTED:		**SIGNATURE:**	

OPERATIONAL STAFF			
NAME:	Phil Brand	**RESPONSIBILITIES:**	Estates Operative
LOCATION:	Liverpool Hope University, Estates & Accommodation Office	**REPORTS / ESCALATES TO:**	John Begley Head of Maintenance
EMERGENCY CONTACT DETAILS:	07739591243	**DEPUTY IF ABSENT:**	n/a
DATE APPOINTED:		**SIGNATURE:**	

MAINTENANCE CONTRACTOR	
COMPANY NAME:	Kimpton Energy Solutions

ADDRESS:	Unit 6, Hawkshead Road, Greenfields Technology Park, Bromborough, Wirral CH62 3RJ		
SERVICES PROVIDED:	Water hygiene management in accordance with ACOP L8 for all sites including upkeep of log books and undertaking temperature monitoring and chlorination services of water systems. Additionally disinfecting of all shower heads and maintenance of water tanks as detailed within service contract		
ESCALATES TO:	Responsible Person		
CONTACT NAME:	**TELEPHONE:**	**MOBILE:**	**E-MAIL:**
Service Director	0151 343 5904	07967821451	andy.morgan@kimpton.co.uk
DATE APPOINTED:		**SIGNATURE:**	

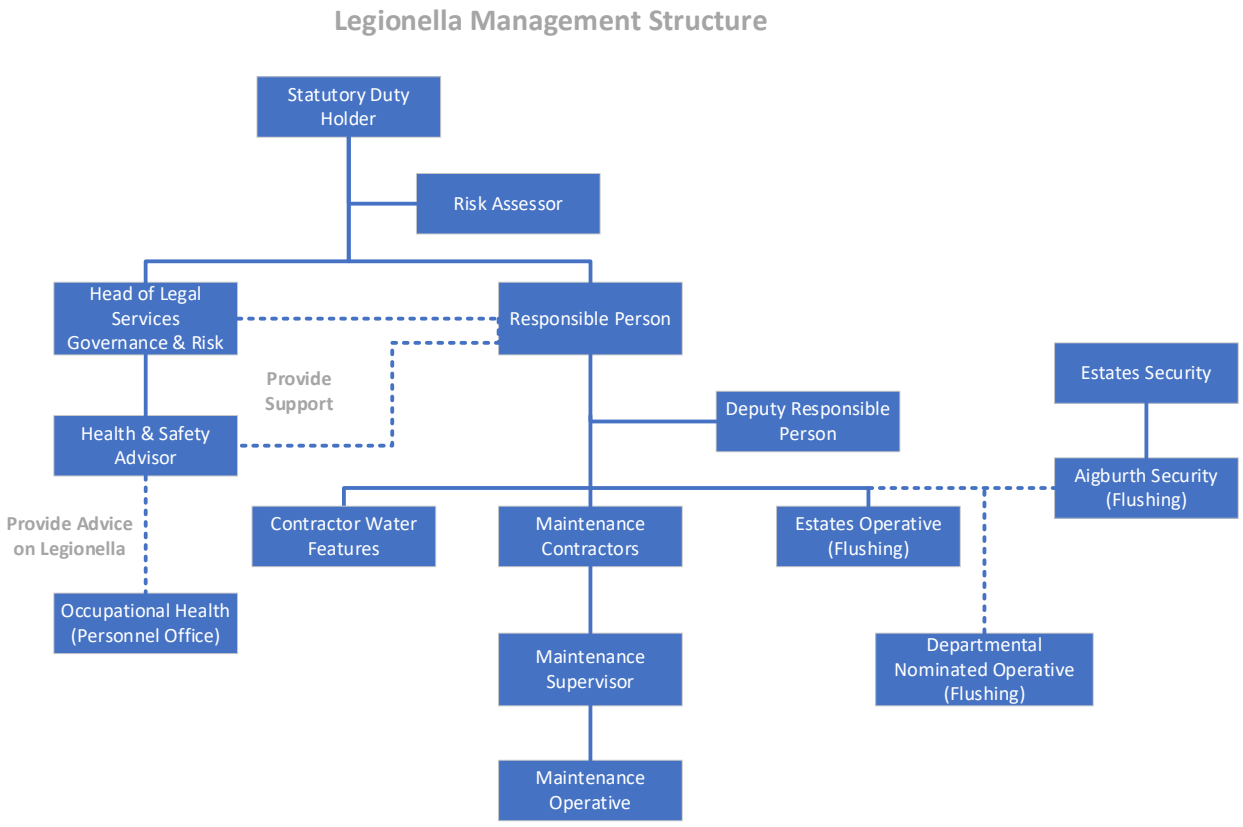
MAINTENANCE CONTRACTOR			
COMPANY NAME:	Kimpton Energy Solutions		
ADDRESS:	As above		
SERVICES PROVIDED:	As above		
ESCALATES TO:	Responsible Person		
CONTACT NAME:	**TELEPHONE:**	**MOBILE:**	**E-MAIL:**
Rob Brine Key Account Manager	0151 343 3140	07816 779406	rob.brine@kimpton.co.uk
DATE APPOINTED:		**SIGNATURE:**	

SPECIALIST CONTRACTOR			
COMPANY NAME:	Fountains & Features Limited		
ADDRESS:	Unit 3, The Meridian Business Centre, King St, Oldham OL8 1EZ		
SERVICES PROVIDED:	Maintenance of water features in accordance with their recommended ‘SLA’		
ESCALATES TO:	Responsible Person		
CONTACT NAME:	**TELEPHONE:**	**MOBILE:**	**E-MAIL:**
Andrew Harrison	0161 870 3550	07887 415520	aharrison@fountainsandfeaturesltd.co.uk
DATE APPOINTED:		**SIGNATURE:**	

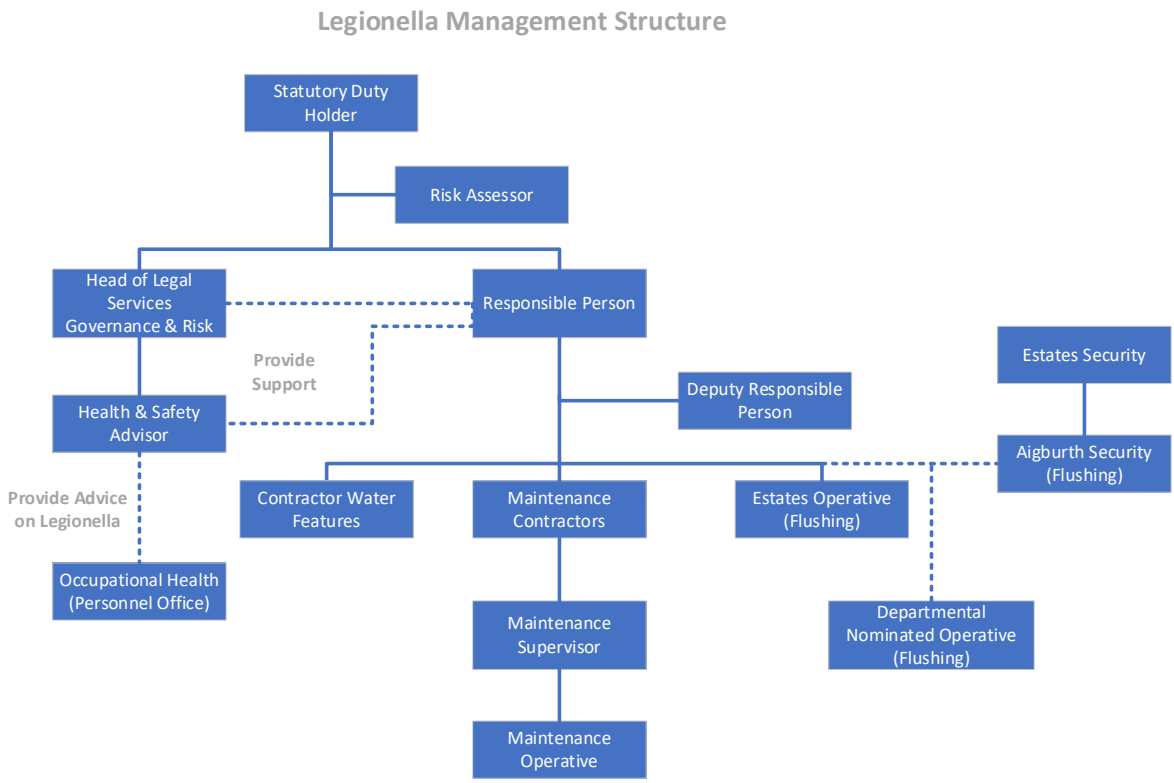
RISK ASSESSOR			
COMPANY NAME:	Safe Aqua Limited		
ADDRESS:	9 Althrey Court, Bangor-on-Dee, Wrexham LL13 0DA		
SERVICES PROVIDED:	Risk Assessor and provider of building specific log books and water system schematics		
ESCALATES TO:	Responsible Person		
CONTACT NAME:	**TELEPHONE:**	**MOBILE:**	**E-MAIL:**
Jamie Harper	01978 806252	07717 838750	jamie.harper@safeaqua.co.uk
DATE APPOINTED:		**SIGNATURE:**	

Appendix 2 Lines of communication

Legionella Management Structure



Legionella IT/Reporting Structure



Escalation Procedure

In the event that the Responsible Person has not been able to secure appropriate funding, for remedial and/or corrective actions for persistent non-conformances not covered by the available maintenance budget, or there has been persistent non-conformance which planned or reactive maintenance has failed to correct then the issues should be escalated as follows:

- **Step1**: EDFSR – line manager to the Responsible Person (RP), should be notified in writing by the RP as to the risk presented as a result of non-conformance and failure to fund necessary remedial and/or corrective actions.

  This written notification should be presented by the EDFSR to the Statutory Duty Holder if required to release appropriate funds.

  If the issue persists for at least 2 months then it should be escalated to **Step2** by the RP.

- **Step2** Consultative Committee on Health and Safety, chaired by the EDFSR, should be notified in writing by the RP for discussion, agreed actions and then recorded in the minutes of the meeting.

  The topic of 'Legionella management and conformance to the Written Scheme' should ideally be a permanent item on the agenda for meetings held by this

committee, with a written status based only on 'non-conformances' being issued and discussed by the Responsible Person.

If the issue persists for at least 1 month following the minutes of the appropriate meeting then it should be escalated to **Step3** by the RP.

- **Step3** University Audit Committee, chaired by a member of LHU Governing Council to which the Vice Chancellor is accountable, and therefore the Statutory Duty Holder (SDH) as detailed in this Written Scheme, should be notified in writing by the RP, and supported by EDFSR, to seek approval from the SDH to release funds for outstanding remedial/corrective actions to return LHU to compliance with this Written Scheme and associated guidance and legislation as detailed in Section 2.

- RP has the authority to bypass any of the steps if required.

Appendix 3 Allocation of responsibilities

Area of Responsibility	Responsible Party		
	Liverpool Hope University	**Service Provider**	**Records held in**
Site management			
Appointment of Responsible Persons, deputies, operational staff and service providers	Statutory Duty Holder		Hard copy of 'Written Scheme' held in Estates Office
Ensure competency of Responsible Persons, operational persons and service providers	Statutory Duty Holder		As above
Arrange appropriate training for Responsible Persons and operational staff	Statutory Duty Holder		As above
Prepare a written scheme of control for all water systems	Statutory Duty Holder (Note SDH MUST sign off Written Scheme)	Risk Assessor	As above
Implement written scheme of control for all water systems	Statutory Duty Holder (with support from Responsible Person)		As above
Risk Assessment			
Carryout a Legionella risk assessment of all water systems	Responsible Person, and Deputy in support of Risk Assessor	Risk Assessor	Master copy with 'Written Scheme', building specific RA in building specific log books held in Estates Office

Area of Responsibility	Responsible Party		
	Liverpool Hope University	**Service Provider**	**Records held in**
Ensure a review of the Legionella risk assessment is carried out as required or specified	Responsible Person	External Risk Assessor or internal competent person	As above
Prepare action plan for completion of recommendations made in the Legionella risk assessment	Responsible Person	Maintenance Contractor / Specialist Contractor / Risk Assessor	As above
Prepare schematic diagrams of all water systems	Responsible Person, and Deputy in support of Risk Assessor	External Risk Assessor or internal competent person	As above
Ensure schematic diagrams are updated as required	Responsible Person	External Risk Assessor or internal competent person	As above
Control Measures – Hot and cold-water systems			
Weekly flushing of infrequently used outlets	Estates Operative and/or Nominated Departmental Operatives		Hard copy building specific log book and electronically via departmental shared file and Estates electronic logs.
Chlorination of hot/cold water systems, when flushing protocols deemed compromised or if required prior to returning facility to occupancy	Overseen by Responsible Person or Deputy	Maintenance Contractor	As above
Monthly temperature monitoring of hot and cold-water systems (calorifiers, water heaters, combination water heaters, sentinel outlets), including a number of representative outlets	As above	Maintenance Contractor	As above
Quarterly cleaning and de-scaling of shower heads and spray taps	As above	Maintenance Contractor	As above
Annual inspection of cold-water storage tank	As above	Maintenance Contractor	As above
Six monthly temperature monitoring of cold-water storage tank (stored water) and supply water	As above	Maintenance Contractor	As above
Clean and disinfection of cold-water storage tank as required based on inspection	As above	Specialist Contractor	As above
Annual blow down and inspection of hot water calorifier / cylinder	As above	Maintenance Contractor	As above
Annual maintenance/servicing of TMVs in accordance with manufacturer's recommendations	Overseen by Responsible Person or Deputy	Maintenance Contractor	As above
Annual inspection of thermal insulation	As above	Maintenance Contractor	As above

Area of Responsibility	Responsible Party		
	Liverpool Hope University	**Service Provider**	**Records held in**
Base exchange softeners, check hardness for correct operation and salt level, top up salt as required (weekly). Service and disinfect units (annually or in accordance with manufacturer's guide)	As above	Maintenance Contractor	As above
Monthly flushing, see risk assessment, of expansion vessels where practicable	As above	Maintenance Contractor	As above
Legionella sampling, using accredited laboratory, if deemed required e.g. identified in Risk Assessment	As above	Maintenance Contractor / Specialist Contractor and/or UKAS Laboratory	As above
TVCs and other sampling if deemed required e.g. identified in Risk Assessment	As above	Maintenance Contractor / Specialist Contractor and/or UKAS Laboratory	As above
Control Measures – Rainwater Tank			
Inspect rainwater harvesting storage tank every three months, or as required depending on rate of accumulating debris. Monitor tank's water temperatures and clean/disinfect as required based on control measures detailed above for cold water storage tank	As above	Maintenance Contractor	As above
Control Measures – Water Features			
Weekly chemical checks for bromine (as free bromine) and pH	As above	Maintenance Contractor	Hard copy building specific log book
Weekly dip slide for aerobic bacterial activity	As above	Maintenance Contractor	As above
Quarterly Legionella sampling	As above	Maintenance Contractor / Specialist Contractor and/or UKAS Laboratory	As above
Equipment and system checks – frequency as agreed with specialist contractor	As above	Specialist Contractor	As above
Inspection of water features for build-up of contaminants such as scale, silt, leaves, algae and biofilm– frequency as agreed with specialist contractor	As above	Specialist Contractor	As above
Control Measures – Evaporative Coolers (AHU)			
Weekly dip slide for aerobic bacterial activity when systems operational (i.e. tank/sump contains water at time of sampling)	Overseen by Responsible Person or Deputy	Maintenance Contractor	Hard copy building specific log book and electronically via Quantarc
Quarterly Legionella sampling in the event the systems are operational for 3 or more months continuously (i.e. tank/sump contains water at time of sampling)	As above	Maintenance Contractor	Hard copy building specific log book and electronically via Quantarc

Area of Responsibility	Responsible Party		
	Liverpool Hope University	Service Provider	Records held in
Checking correct operation of UV, and replacement of lamp, in accordance with manufacturer's recommendations	As above	Maintenance Contractor	As above
Cleaning and/or replacement of filter element and housing in accordance with manufacturer's recommendations	As above	Maintenance Contractor	As above
Inspection of tank/sump for build-up of contaminants such as scale, silt, leaves, algae and biofilm in accordance with manufacturer's recommendations	As above	Maintenance Contractor	As above
Inspection of drift eliminators (droplet separator) for build-up of contaminants such as scale, leaves, algae and biofilm in accordance with manufacturer's recommendations	As above	Maintenance Contractor	As above
Check air flow rate through the unit (must be <3 m/s unless drift eliminator/droplet separator fitted) in accordance with manufacturer's recommendations	As above	Maintenance Contractor	As above
Clean and disinfection of tank/sump as required based on inspection or prior to re-use or system shut down	As above	Maintenance Contractor	As above
Clean and disinfection of drift eliminators (droplet separator) as required based on inspection or prior re-use or system shut down	As above	Maintenance Contractor	As above
Control Measures – Lawn irrigation system			
In the event that the system is not decommissioned at the next review of this Written Scheme the suitable 'Control' measures should be developed			
Record Keeping			
Supply of water services log book and record keeping system		Risk Assessor	All building specific log books to be held in Estates Office
Maintain water services log book records	Overseen by Responsible Person or Deputy	Estates Operatives / Maintenance Contractor / Specialist Contractor	As above
Maintain water features log book records	As above	Specialist Contractor	As above
Maintain evaporative coolers (AHU) log book records	As above	Maintenance Contractor	As above
Audit water services log book records against written scheme	Responsible Person and Health & Safety Advisor		Audit report generated, retained by H&S and submitted to Head of Risk and Governance
Defects / non-conformance			
Rectify out of specification monitoring results	Estates	Maintenance and/or Specialist Contractors	

Area of Responsibility	Responsible Party		
	Liverpool Hope University	Service Provider	Records held in
Carryout remedial actions	Estates	Maintenance and/or Specialist Contractors	

Appendix 4 Actions in the event of out of specification parameters

Appendix 4.1 Hot and cold-water systems

Test outcome	Action required
Outlet cold water temp >20ºC after 2 minutes running	- Check/compare cold water storage tank temperatures - Check/compare incoming mains temperature - If localised check insulation condition - Flush for >2 minutes to see if temperature falls - Retest and if elevated temperature persists >20ºC contact water treatment service provider and consider microbiological sampling
Outlet hot water temp <50ºC after 1-minute running	- Check/compare calorifier storage and return temperature - If localised check insulation condition - Flush for >1 minutes to see if temperature increases - Retest and if low temperature persists <50ºC contact water treatment service provider and consider microbiological sampling
TMV outlet temperature is outside of specified range, and/or hot and cold supply temperatures do not meet requirements detailed above (using surface probe thermometers)	- For incorrect supply temperatures as detailed above follow actions as detailed for cold and hot outlets - If TMV outlet temperature exceeds specified maximum (to limit scalding risk) check supply temperatures and setting of valve and retest - If TMV outlet temperature continues to be too high check 'failsafe' operation and if necessary isolate valve and replace unit
Cold water storage tank temperature >20ºC	- Ensure calorifier vent pipe is not running - Check insulation condition - Check/compare incoming mains temperature - Retest and if elevated temperature persists >20ºC contact water treatment service provider and consider microbiological sampling
Incoming mains temp >20ºC	- Contact water supplier
Calorifier return temp <50ºC	- Check/compare calorifier storage temperature - Check correct operation of circulation pump - Retest and if low temperature persists <50ºC contact water treatment service provider and consider microbiological sampling
Calorifier storage temp <60ºC	- Increase temperature on thermostat - Ensure correct operation - Ensure not excessive demand on system - Retest and if low temperature persists <60ºC contact water treatment service provider and consider microbiological sampling

Test outcome	Action required
Cold water storage tank internal has excessive sediment, scale or other fouling	- Arrange for clean and disinfection
Calorifier internal has excessive sediment, scale or other fouling	- Clean and disinfect

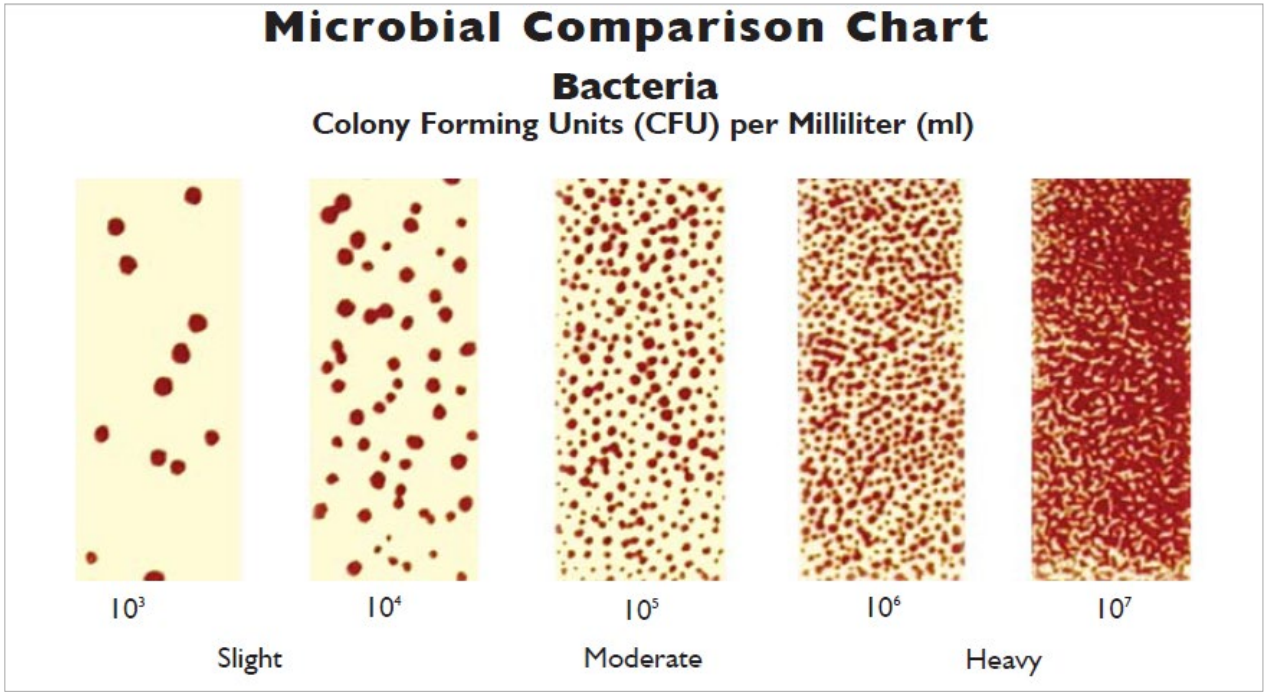
If taking the above action does not rectify an out of specification parameter then the Responsible Person should be contacted in the first instance

Appendix 4.2 Water fountain and features

Test outcome	Action required
First dip slide result is greater than 10^4 cfu/ml (see dip slide comparison chart and more detailed assessment of dip slide results below)	- Check bromine dosing is operating correctly - Check no outside contamination is entering system - Ensure all aspects of system are operating under normal conditions - Resample system with a second dip slide
Second consecutive dip slide result is greater than 10^4 cfu/ml	- Add manual shot dose of bromine to system - Inform water treatment company for advice
pH is less than 6.0	- Ensure chemicals are not over dosing in to the system - Ensure make up water pH is at an acceptable level - Ensure no outside contamination is entering the system
pH is greater than 8.0	- Ensure chemicals are not over dosing in to the system - Ensure make up water pH is at an acceptable level - Ensure no outside contamination is entering the system - Partial drain and refill system to reduce high pH
Bromine is less than 1.0	- Check brominator, or dosing tank, chemical reserve - Check flow through brominator or dosing pump, increase dosing rate if reserve slightly less than 1.0 - Shock dose system with bromine if significantly less than 1.0, and retest reserve - If ORP controlled; check ORP probe cleanliness, check ORP calibration, slightly increase ORP set point and retest after 24 hours - Inform water treatment company
Bromine is greater than 3.0	- Check flow through brominator or dosing pump - Reduce chemical dose rate - If ORP controlled; check ORP probe cleanliness, check ORP calibration, slightly increase ORP set point and retest after 24 hours - If >5.0 partially drain and refill system to reduce level - Retest reserve after 24 hours - Inform water treatment company

Deposit source/ composition	Significance	Recommended actions
Hardness scale	Hardness may provide microbial habitat.	▪ Where necessary, clean with appropriate process ▪ Review maintenance process and frequency

Deposit source/ composition	Significance	Recommended actions
Mud and silt or airborne dust from agriculture, industry, earthworks, building or demolition	Sediment is likely to accumulate in areas where the water velocity is low, such as feature's tank, sump or pond. Sediment can provide a microbial habitat	▪ Where necessary clean with appropriate process ▪ Review maintenance process and frequency ▪ Consider increasing the frequency of cleaning and inspection ▪ Consider additional control measures such as filtration (if not already installed)
Airborne foreign bodies and organic deposits (non-microbial), e.g. leaves	These can provide microbial nutrients	▪ Remove as soon as practicable ▪ Review the frequency of inspection/cleaning
Algae	Algae grow in the light, so they are likely to be found in the features tank, sump or pond. Algae can cause fouling and provide a nutrient source for bacteria	▪ Physically clean to remove ▪ Clean using a suitable disinfectant/algaecide (heavy growth) ▪ Review biocide dosing
Biofilm	Thin deposits may be transparent but detectable by feel. Thicker deposits are often grey or light brown in colour. Biofilm can encourage the growth of legionella and should be considered as high-risk contamination	▪ Disinfect and clean the system as soon as practicable ▪ Review the microbial control measures



Bacteria result- dip slide (cfu/ml)	System Type	Recommended action

<10000 (<10^4)	All water features/fountains	▪ Under control, no action required
10000 – 10000 (10^4 – 10^5)	All water features/fountains	▪ Caution, review programme operation and adjust bromine dosage if needed ▪ Resample after 24 hours
>100000 (>10^5)	All water features/fountains	▪ Action, review programme operation and implement corrective action ▪ Increase bromine dosage or shot dose system ▪ Resample after 24 hours to check effectiveness of corrective action ▪ If high count persists review the control programme and identify remedial actions

Appendix 5 Action to be taken in the event of a positive Legionella result suspected or confirmed case or outbreak of Legionellosis

Appendix 5.1 Positive Legionella result

This sampling, when required, will be carried out by an external consultants and/or Maintenance / Specialist contractor, using a UKAS accredited laboratory, as a method of reviewing the control measures and consequently the effectiveness of the management plan, particularly where there is doubt about the efficacy of the control regime such as recommended temperatures are not being consistently achieved throughout the system(s) or a loss of biocide reserve in water features.

The results of such sampling will be reported back to the Responsible Person in the form of cfu/ l (colony forming units per litre). The Responsible Person, in consultation with the external service provider, will assess the sample results and agree corrective actions.

Legionella bacteria result (cfu/l)	System Type	Recommended action
Not detected	All water systems	▪ 'Not detected' does not necessarily mean that Legionella is not present therefore control measures should be maintained and kept under review
<100 cfu/l	All water systems	▪ In premises with susceptible people, such as care homes, any detection of Legionella should be investigated ▪ Control measures should be maintained and kept under review ▪ System should be re-sampled to confirm the results and monitored for any increase
100-1000 cfu/l	All water systems	▪ Review the system control measures and the current Legionella risk assessment ▪ Identify and carryout appropriate remedial actions ▪ Carryout a re-sample on the system if the minority of samples are positive

Legionella bacteria result (cfu/l)	System Type	Recommended action
		▪ Consider disinfection of the system if the majority of samples are positive as system may have low level colonisation
>1000 cfu/l	All water systems	▪ Inform service provider detailed in the written scheme immediately ▪ Re-sample system ▪ Immediately review the system control measures and the current Legionella risk assessment ▪ Identify and carryout appropriate remedial actions ▪ Consider cleaning and disinfection of the water system ▪ Carryout a re-sample 3 days after disinfection and then at frequent intervals thereafter until a satisfactory level of control is achieved

Appendix 5.2 Suspected or confirmed case or outbreak of Legionellosis

In the event of a suspected case or outbreak of Legionnaires disease associated with any of the water systems owned or managed by Liverpool Hope University the following action will be taken:

- Any microbiological confirmed cases of Legionnaires' disease must be notified to Local Authority Proper Officers under the Health Protection (Notification) Regulations 2010, this includes Local Public Health Authority and Environmental Health Department.
- HSE and/or local Environmental Health Officers along with the local health board will lead the investigation on any outbreaks, defined as two or more cases closely linked in time (weeks not months) with evidence of common source of infection.
- The Statutory Duty Holder will ensure that the above officers receive the full co-operation of the appropriate University employees, in particular the Responsible Person and their Deputy.
- Full co-operation may include, but will not be restricted to: production of repairs and maintenance records, log books and access to centrally controlled database(s) evidencing control measures, current risk assessments and valid schematics; providing statements from key personnel including Responsible Person and their Deputy; providing statements from repairs & maintenance personnel; presenting of statements by contractors or specialist consultants and service provider as detailed in written scheme

- The Statutory Duty Holder will convene a meeting of key personnel, including but not limited to the Responsible Person, their Deputy and service provider(s) specified in the written scheme, within 24 hours of first notification of suspected case or outbreak of Legionnaire disease to review all Legionella management and control information collated from all record keeping sources regarding the system(s) in question and possible sources of the infection identified.
- The service provider(s) specified in the written scheme will be instructed to provide technical advice.
- Any systems already implicated in the case or outbreak of Legionnaires disease that are capable of producing aerosols or water droplets are halted and are not used until sampled (with results available) and/or cleaning is completed. Final clearance to restart the system may be required.
- Any systems already implicated in the case or outbreak of Legionnaires disease will be immediately sampled and then cleaned and treated with an appropriate biocide/disinfectant as recommended by the service provider specified in the written scheme. Sampling before corrective actions will assist the investigation to discover the source of the case or outbreak.
- Occupational Health Service and the Responsible Person to identify and notify those people likely to be affected, inform employees at the first available opportunity, and collate employee health records to discern whether there are any further diagnosed causes of illness and help prepare case histories of people affected.
- Appendix 1.3 of HSG274 Part2 “Action to take if there is an outbreak of Legionellosis” is adhered to.

Appendix 6 Examples of log book record sheets

Manual entry record sheets:

COLD WATER STORAGE TANK INSPECTION RECORD SHEET

Date	Tank Location and asset no.	External Condition (insulation, lids etc.)	Bio film present	Internal Condition										Temperature (should be below 20ºC)		Signature
				Sediment					Corrosion					Inlet	Storage	
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			
				1 nil	2 slight	3 moderate	4 heavy	5 severe	1 nil	2 slight	3 moderate	4 heavy	5 severe			

SHOWER HEAD CLEANING AND CHLORINATION RECORDS

Date	Location	No. of showerheads	Descaled (Y/N)	Chlorinated at 50ppm for 1 hr (Y/N)	Signature

Appendix 7 University Buildings 'written scheme'

All premises under the responsibility of Liverpool Hope University's property portfolio will adopt this 'Written Scheme' to minimise the risk presented by the Legionella bacteria.

For each of the buildings under the LHU a log book is to be kept up to date and held in the Estates Office and this must contain, as a minimum, a copy of a building specific; management structure (Appendix 7.1), asset list and control measures (Appendix 7.2), allocation of responsibilities are contained within this written scheme, results of all control activities and monitoring, and a copy of the current Legionella risk assessment and associated schematics and/or stored electronically.

The following provides an example of the building specific documentation, other than the WS, referred to above; the building used for this was Trinity Hall, Aigburth Park and has been based on the asset list provided by the Risk Assessor

Appendix 7.1 Building Management Structure – Trinity Hall, Aigburth Park

STATUTORY DUTY HOLDER			
NAME:		**RESPONSIBILITIES:**	
LOCATION:		**REPORTS / ESCALATES TO:**	
EMERGENCY CONTACT DETAILS:		**DEPUTY IF ABSENT:**	
DATE APPOINTED:		**SIGNATURE:**	

RESPONSIBLE PERSON			
NAME:		**RESPONSIBILITIES:**	
LOCATION:		**REPORTS / ESCALATES TO:**	
EMERGENCY CONTACT DETAILS:		**DEPUTY IF ABSENT:**	
DATE APPOINTED:		**SIGNATURE:**	

DEPUTY RESPONSIBLE PERSON			
NAME:		**RESPONSIBILITIES:**	
LOCATION:		**REPORTS / ESCALATES TO:**	
EMERGENCY CONTACT DETAILS:		**DEPUTY IF ABSENT:**	
DATE APPOINTED:		**SIGNATURE:**	

NOMINATED DEPARTMENTAL OPERATIVE			
NAME:		**RESPONSIBILITIES:**	
LOCATION:		**REPORTS / ESCALATES TO:**	
EMERGENCY CONTACT DETAILS:		**DEPUTY IF ABSENT:**	
DATE APPOINTED:		**SIGNATURE:**	

Appendix 7.2 Building Asset List and Control Measures - Trinity Hall, Aigburth Park

Service/Asset	Action to take	Frequency
Hot water services	For non-circulating systems: take temperatures at sentinel points (nearest outlet, furthest outlet and long branches to outlets) to confirm they are at a minimum of 50^{o}C within one minute (55^{o}C in healthcare premises).	Monthly
	For circulating systems: take temperatures at return legs of principal loops (sentinel points) to confirm they are at a minimum of 50^{o}C (55^{o}C in healthcare premises). Temperature measurements may be taken on the surface of metallic pipework.	Monthly
	For circulating systems: take temperatures at return legs of subordinate loops, temperature measurements can be taken on the surface of pipes, but where this is not practicable, the temperature of water from the last outlet on each loop may be measured and this should be greater than 50^{o}C within one minute of running (55^{o}C in healthcare premises). If the temperature rise is slow, it should be confirmed that the outlet is on a long leg and not that the flow and return has failed in that local area.	Quarterly (ideally on a rolling monthly rota)
	All HWS systems: take temperatures at a representative selection of other points (intermediate outlets of single pipe systems and tertiary loops in circulating systems) to confirm they are at a minimum of 50^{o}C (55^{o}C in healthcare premises) to create a temperature profile of the whole system over a defined time period.	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for Legionella control.
POU water heaters (<15 litres)	Check water temperatures to confirm the heater operates at 50-60^{o}C (55^{o}C in healthcare premises) or check the installation has a high turnover.	Monthly-six monthly, or as indicated by the risk assessment.
Cold water services	Check temperatures at sentinel taps (typically those nearest to and furthest from the cold tank, but may also include other key locations on long branches or floor levels). These outlets should be below 20^{o}C within two minutes of running the cold tap. To identify any local heat gain, which might not be apparent after one minute, observe the thermometer reading during flushing.	Monthly
	Take temperatures at a representative selection of other points to confirm they are below 20^{o}C to create a temperature profile of the whole system over a defined time period. Peak temperatures or any temperatures that are slow to fall should be an indicator of a localised problem.	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for Legionella control.
	Check thermal insulation to ensure it is intact and consider weatherproofing where components are exposed to the outdoor environment.	Annually
Infrequently used outlets	Consideration should be given to removing infrequently used showers, taps and any associated equipment that uses water. If removed, any redundant supply pipework should be cut back as far as possible to a common supply (e.g. to the recirculating pipework or the pipework supplying a more frequently used upstream fitting) but preferably by removing the feeding 'T'. Infrequently used equipment within a water system (i.e. not used for a period equal to or greater than seven days) should be included on the flushing regime.	Weekly, or as indicated by the risk assessment

Service/Asset	Action to take	Frequency
	Flush the outlets until the temperature at the outlet stabilises and is comparable to supply water and purge to drain. Regularly use the outlets to minimise the risk from microbial growth in the peripheral parts of the water system, sustain and log this procedure once started. For high risk populations, e.g. healthcare and care homes, more frequent flushing may be required as indicated by the risk assessment.	
TMVs	Risk assess whether the TMV fitting is required, and if not, remove. Where needed, inspect, clean, descale and disinfect any strainers or filters associated with TMVs. To maintain protection against scald risk, TMVs require regular routine maintenance carried out by competent persons in accordance with the manufactures instructions, including 'failsafe' test.	Annually or on a frequency defined by the risk assessment, taking account of any manufacturer recommendations

Service/assets detailed are specific to Trinity Hall based on asset list supplied by Risk Assessor

Appendix 8 Buildings where LHU are Landlords

LHU are deemed to be Landlord for all the following buildings/premises:

Taggart Avenue: 91, 93, 95, 97, 101, 105, 117
Woolacombe Road: 30, 55
Lanterns Bungalow, Aigburth
Green Lane Annexe: 3 self-contained apartments
The Cloisters Building: 4 self-contained apartments, Malachy Lodge,
These are assured short-hold tenancies

Guest Rooms at Hope Campus; Taggart Lodge, Stand Park Lodge and Eden Suites.
These are short-term lets

The Health and Safety guidance, HSG274 Part2, details specific information on the legal requirements of Landlord with respect to managing risk in their premises.

The following details a document which can be topped and tailed to form a letter to current tenants letting them know what they should do, or be included in any future tenancy agreement, strongly recommended, as an addendum or within the main body of the agreement thereby obtaining a signature from the tenant to their part in minimising the risk from Legionella.

Draft document to tenants or for inclusion in tenancy agreement:

Liverpool Hope University provide residential accommodation such as these premises and as the Landlord we have a legal duty to ensure that the risk of exposure of our residents, tenants and guests to legionella is properly assessed and controlled.

All water systems require a risk assessment, but not all systems require elaborate control measures, a simple risk assessment may show that there are no real risks from legionella. Liverpool Hope University carryout appropriate risk assessments for all our tenanted properties and implement suitable, proportionate and practical measures to; manage, prevent or control the risk; and periodically check that any control measures are effective.

The risk assessment for a tenanted property, the assessment for these premises is available on request, will be reviewed periodically in case anything changes in the system or if concerns are raised by our tenants. However, the frequency of inspection and maintenance will depend on the system and the risks it presents.

Liverpool Hope University implements simple control measures to manage the risk of exposure to legionella, such as:

- Flushing out the system before letting the property
- Avoiding debris getting into the system (e.g. ensure that cold water tanks, where fitted, have a tight-fitting lid)

- Setting control parameters (e.g. setting the temperature of the hot water cylinders, where fitted, to ensure water is stored at 60 °C)
- Making sure any redundant pipework identified is removed

And our advice to tenants to assist in minimising the risk is to:

- Regularly clean and disinfect showerheads using proprietary cleaners to remove lime scale and a solution of bleach to disinfect, following manufacturer's recommendations and safety advice.
- Ensure all hot and cold outlets are used at least once a week to minimise the chance of stagnation, and run all outlets for several minutes following any holiday period when property has been unoccupied.
- If a shower is not used for more than 3-4 days, run it with both hot and cold taps turned on gently for several minutes to flush it through. If the shower has a flexible hose, place the shower head directly over the plughole to minimise airborne droplets, if this is not possible then leave the room shutting the door and don't return until shower has been flushed through, or until all the airborne water droplets have dispersed.
- Advise the landlord if the hot water is not heating properly or if there are any other problems with the system, so that appropriate action can be taken

To minimise disruption to our tenants we will endeavour to carry out, appropriate checks and inspections of the water system when undertaking mandatory visits such as gas safety checks or routine maintenance visits.

Note: this draft document should be reviewed along with the building specific risk assessments to ensure if reflects current advice and amended accordingly.

Appendix 9 Nominated Departmental Operatives

The following departments have a nominated person responsible for ensuring that the flushing of infrequently used outlets have been carried as required in the shared electronic log, managed by the H&S Advisor.

- Plas Caerdeon Centre Manager
- Catering Departmental Manager
- Domestic Services Manager
- Hope Park Sports Manager
- Health Science Lab Technicians
- Geography and Environmental Service Lab Technician
- Capstone Theatre Manager
- Capstone Technician Manager
- Cornerstone & Art Centre Workshops Technicians