

ESTATES COMPLIANCE ARRANGEMENT (ECA)

DRAFT - ECA 08 – Water Hygiene Compliance



1.0 Policy Link (Level 1 Document)

This arrangement has been written in line with the relevant UoL Legionella Policy which can be found at [Health and Safety Department \(sharepoint.com\)](#)

2.0 Purpose

The purpose of this document is to explain the processes for the Estates Department managed water hygiene tasks within the University's water systems.

3.0 General

Legionella bacteria is commonly found in water. The bacteria multiply where temperatures are between 20-45°C and nutrients are available. The bacteria are dormant below 20°C and do not survive above 60°C. Legionnaires' disease is a potentially fatal type of pneumonia, contracted by inhaling airborne water droplets containing viable legionella bacteria. Such droplets can be created by:

- hot and cold-water outlets.
- atomisers.
- wet air conditioning plant.
- whirlpool or hydrotherapy baths.

Anyone can develop Legionnaires' disease, but those with underlying health conditions are at more risk.

4.0 Procedure

The majority of the University of Lincoln properties have some form of hot and cold-water systems therefore deeming it necessary to have procedures in place to minimise the risk of Legionellosis.

The Water Risk Assessments and logbooks are computer based. Information regarding assessments and the buildings' log books are recorded and filed electronically, accessible by the Estates Department. Inspections of water systems are recorded in the logbook and the water risk assessment is updated following any works, alterations, or subsequent re-assessments. Appropriately trained contractors are used to manage these systems.

Duties and responsibilities

See Appendix 1 for all duties and responsibilities.

Risk assessments

A risk of contracting Legionnaires' disease may be present in any building containing a water system. There is a statutory requirement to assess this risk in all buildings containing water systems and this includes residential accommodation provided by Landlords.

Each owned and managed building where a water system is present must have a valid Water Risk Assessment (WRA).

If the risk is found to be low risk, then no further action or controls may be necessary. There is no requirement to re-assess the risk unless there is a change to the system or another factor that may

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affect the validity of the original WRA, at which point a new WRA must be carried out. If a risk is found to be significant then controls must be implemented.

The “Legionnaires’ disease: The control of legionella bacteria in water systems 2013 (Approved Code of Practice) – L8” document outlines the requirements for the completion of Risk Assessments in paragraphs 31/32 and 47. Please see embedded link below:

[Legionnaires' disease: The control of legionella bacteria in water systems. Approved Code of Practice and guidance on regulations L8 \(hse.gov.uk\)](https://www.hse.gov.uk/legionnaires/)

WRA Review

The Responsible Person (as defined in L8 and detailed in Appendix 1) is to review the WRA every two years for hot and cold water systems.

All high-risk areas will have the risk assessment reviewed by a specialist contractor on an annual basis.

Risk assessments validity

Whenever the WRA is no longer valid (e.g., something has changed the risks, such as the building occupancy changing, or a significant alteration is made to the water system) then a new risk assessment will need to be completed by a qualified and competent risk assessor.

If any changes have been made to the water system or its use has been altered since the last risk assessment and a new risk assessment has not been provided, then it will be necessary to have a new risk assessment completed to meet the requirements of ACOP L8.

Significant changes are defined as changes to the hot and cold water systems that affect the existing monthly monitoring regimes (written scheme) from the existing risk assessment. Examples include:

- The adding or removal of a cold-water storage tank or calorifier.
- A change in method of heating water.
- Change in building use or building refurbishment involving alterations to the cold and/or hot water system.
- Building being brought back into use after being vacated.

Replacement of a calorifier or other heat source like for like would not require a revised risk assessment.

All orders for risk assessments and formal reviews will be arranged through the Planon system. (For further details on how the Planon System is managed for PPM works please contact the Estates Department)

Communication of risk assessments

The Estates Department will ensure the following takes place:

- The Water Risk Assessments and logbooks are recorded on Planon.
- Monitoring and inspection of water systems is recorded in the logbook and the Water Risk Assessment is updated following any works, alterations, or subsequent re-assessments.

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Maintenance

The day-to-day L8 management of water hygiene is outsourced to the Estates Department's FM delivery partner. Examples of their responsibilities include checking tap temperatures, tank cleanliness, shower head cleans.

With the exception of flushing regimes being managed by Accommodation staff (please see flushing records below) routine maintenance and specialist routine maintenance will be programmed and managed by the Estates Department using our FM provider/approved contractor.

Regimes created as a result of the WRA will be entered into Planon and managed by the PPM team within Estates, this should include the flushing of little used outlets.

Reactive or specialist works required for the maintenance and management of the University's water systems and legionella testing must be notified to the Responsible Person and services procured in line with ECA02 with orders placed through the Planon system.

Flushing records

Staff within accommodation buildings are responsible for the operation and control of spaces and shall be responsible for flushing and maintaining flushing records. The extent and details of the flushing will be set out in the Water Risk Assessment.

- The staff who use the space will be the ones who will know which outlets are used more than once a week and which are not used so often and will need flushing.

For more information on the management of legionella in hot and cold-water systems please see the link embedded below:

[Managing legionella in hot and cold-water systems \(hse.gov.uk\)](https://www.hse.gov.uk/legionella/)

Alterations to water systems

No alterations to the water systems shall be carried out unless approved by the Responsible Person or the Estates Department.

Testing and disinfection

The following scheme has been put in place in line with the L8 ACOP for the management of legionella within the university's water systems. This list is not exhaustive and should you require specific details on a building or shared space, please contact the Estates Compliance Team for further information.

- Bi-annual audit of all water services to all buildings on every Campus.
- Annual cleaning and disinfection of all hot water calorifiers including individual point of use water heaters.
- Inspection of water storage tanks annually. Drawdown checks over a 24hr period annually on all static cold-water tanks to check a sufficient flow through them.
- Visual checks of temperatures and settings of calorifiers every month, random water samples taken for testing of presence of legionella to ensure all covered within a 12-month period.
- Temperatures of hot and cold-water outlets every month (sentinel taps).

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- Point of use water heaters checked monthly for temperature setting within 60 seconds of opening tap.
- Legionella water samples to be taken annually (where appropriate)
- Descaling and disinfection of shower heads (quarterly) flushing of infrequently used outlets.
- Re-assessment of individual water systems when changes made to them to check for impact on legionella risk assessments.
- Checking all other outlets on a rotational basis over a 12 month period recording temperatures in logbook.

Legionella sampling

Legionella sampling will be conducted annually (where appropriate).

In the event of a positive water sample returning from the laboratory or any findings which give concern, All information received shall be forwarded to the Responsible Person and the nominated deputy for immediate action to be arranged, through our approved contractor.

Please see Appendix 3 for details of water sample results general guidance.

Disinfection of water services

As identified above, water services shall be disinfected for any of the following reasons:

- New installations before being taken into use, to remove contamination which may have occurred during construction.
- If any routine inspection shows it to be necessary.
- If the system or part of it has been substantially altered or entered for maintenance purposes, in a manner that may lead to contamination.
- Following an outbreak or suspected outbreak of legionellosis or any other water borne infection/disease.
- If the building has been previously removed from service and is required to be brought back into use. for any period of time.

Disinfection shall be carried out in accordance with BS6700

New building and refurbishment works

All new buildings and refurbishment work will be added to the UoL Asset Register to comply with our current asset management system and added to the electronic compliance system in use.

The Responsible Person and/or deputy shall obtain confirmation that any new build or refurbishment work complies with the requirements of the L8 ACOP.

The WRA will be part of the handover documentation on completion and must be provided to the Estates Department for review and inclusion into the PPM management schedule

Please see the new projects approval process in Appendix 2.

Communication

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Information relating to the management of water systems shall be made available to any persons responsible for the management or monitoring of the University's water systems. Information shall be provided to any contractors or third parties, as required, and can be obtained by contacting the Estates Compliance Team or the Responsible Person.

In the event that a legionella outbreak is discovered, it will be managed in line with the requirements of "Legionnaires' disease Technical Guidance - HSG 274 (2014)" Part 1, Appendix 3 for cooling towers or Part 2, Appendix 2.3 for hot and cold water systems. All communications will be managed and coordinated by the Director of Estates and the Estates Compliance Team.

Training

Nominated staff shall be trained ensuring they understand the need for measures to control Legionellosis and the need to take care in the recording and reporting procedure.

Refresher training will be carried out every five years or following a change in the regulation.

Auditing

The Responsible Person must ensure the auditing of all logbooks and the monitoring of all risk assessments is being carried out.

5.0 Estates Department points of contact

Please contact the Estates Compliance Team for clarification or further guidance on these Arrangements.

6.0 Associated Documents

Internal

Level 2 Associated Documents

Reference	Title
Estates PPM Team	PPM regime Process

Level 3 Documentation

Reference	Title
N/A	N/A

External

Source	Title
Legislation	Health and Safety at Work Act 1974
Legislation	The Management of Health & Safety at work Regulations 1999
Legislation	The Control of Substances hazardous to Health Regulations 2002
Legislation	Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 2013

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HSE Technical Guidance	Legionnaires' disease Technical Guidance - HSG 274 Parts 1/2/3 (2013/14) The control of legionella and other infectious agents in spa-pool systems. HSG 282 2017
HSE ACOP	Legionnaires' disease: The control of legionella bacteria in water systems 2013 (Approved Code of Practice) – L8
HSE Leaflet	Legionnaires' disease. A brief guide for duty holders

7.0 Change History

Version	Date	Summary of Changes Made
1	08/02/21	New Estates Compliance Arrangement for Water Hygiene Created
2	07/06/21	Internal Review Board Check
3	11/03/22	RW and SJ review
3.1	08/08/22	RW review of comments before issue
3.2	24/08/22	RW and SB review

8.0 Appendixes

Appendix	Title
1	Duties and responsibilities
2	Water sample results general guidance

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APPENDIX 1

Duties and responsibilities

The Director of Estates

- Is the Duty Holder.
- Appoints a Responsible Person and delegates authority to implement this procedure.

Senior M&E Engineer

- To be the Responsible Person.
- To ensure systems are designed and installed to ensure compliance with HSE Approved Code of Practice L8 (2013).
- To ensure all necessary documentation is completed
- To have sufficient knowledge to ensure hot and cold-water systems comply with HSE document L8 (2013).
- To have a clear understanding of the duties and responsibilities and the overall health and safety management structure and policy.
- All Responsible Persons should hold a relevant qualification.
- To ensure that every relevant University campus building has a Water Risk Assessment.

M&E Maintenance Engineers.

- To be the Deputy Responsible Person and to act on behalf of the Responsible Person in their absence.
- To ensure a suitable and sufficient monitoring regime is adhered to.
- To ensure all flushing regimes of little use outlets are adhered to.
- To ensure all water systems are inspected and tested as required by legislation and good practice.
- To ensure all documentation is completed
- To ensure that no modifications are made to water systems unless approval is obtained from the Estates Department.
- To arrange any remedial works following inspection.

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APPENDIX 2

Water sample results general guidance

Domestic / Drinking Water Systems

LEGIONELLA		
Type of System	Limit (cfu/l) Legionella ⁽¹⁾	Action Required
Hot and Cold Water System	>100 but <1,000	a) If only one or two samples are positive, system should be re-sampled. If a similar count is found again, a review of the control measures and risk assessment should be carried out to identify any remedial actions. b) If the majority of samples are positive, the system may be colonised, albeit at a low level, with Legionella. Disinfection of the system should be considered but an immediate review of control measures and risk assessment should be carried out to identify any other remedial action required.
Hot and Cold Water System	>1,000	The system should be re-sampled and an immediate review of the control measures and risk assessment carried out to identify any remedial actions, including possible disinfection of the system.

TOTAL VIABLE COUNT (TVC)		
Type of System	Limit (cfu/ml) TVC at 22 °C and 37 °C ⁽²⁾	Action Required
Hot and Cold water	1,000	Investigate cause and consider cleaning and disinfection.

COLIFORM OR E.COLI		
Type of System	Limit (cfu/ml) Coliform or E.coli ⁽³⁾	Action Required
Hot and Cold water	1	Isolate from use. Clean and disinfect. Re-sample.

LEAD AND COPPER		
Type of System	Limit	Action Required
Drinking Water	Copper 2mgCu/l Lead 0.01mgPb/l	If either parameter is outside of the drinking water limits the water should not be used for drinking.

PSEUDOMONAS AERUGINOSA		
Type of System	Limit (cfu in 100ml)	Action Required
Domestic Water Systems	0	Satisfactory.
Domestic Water Systems	1-10	Retest and refer back to those responsible for the Water Safety Plan to determine what actions may be required.
Domestic Water Systems	>10	Investigate cause and put corrective actions in place

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Closed Circuit Systems (i.e. LPHW or Chilled)

BACTERIAL ANALYSIS	
Result ⁽⁴⁾	Interpretation
TVC at 22°C and 37°C ≤ 10,000 cfu/ml* AND Pseudomonas < 10 cfu/ml AND Nitrite-reducing bacteria < 10 cfu/ml AND Sulphate-reducing bacteria absent	The water is acceptable. Continued routine monitoring is required.
TVC at 22°C and 37°C ≤ 10,000 cfu/ml AND Pseudomonas between 10 – 50 cfu/ml AND Nitrite-reducing bacteria between 10 – 50 cfu/ml AND Sulphate-reducing bacteria absent	The water quality is acceptable. Increased monitoring may be required to establish if there is an upward trend in bacteria levels. Biocide dosing may also be advisable, depending on the timing of the most recent dose. The chemical cleaning/treatment specialist should advise.
TVC at 22°C and 37°C > 10,000 cfu/ml OR Pseudomonas > 50 cfu/ml OR Nitrite-reducing bacteria > 50 cfu/ml OR Sulphate-reducing bacteria present	Action may be necessary. The chemical cleaning/treatment specialist should advise.
* Colony forming units per millilitre. Conditions : Sample volume must be at least 100ml. NB : The advice given in this table is based on practical experience of bacteria levels in real systems, and has not been validated by independent testing. The interpretation of results cannot, therefore, be viewed as definitive but is considered to be the best advice available at the time of writing.	

TOTAL VIABLE COUNT (TVC)		
Type of System	Limit (cfu/ml) TVC at 30 °C ⁽⁴⁾	Action Required
Closed circuit systems i.e. LPHW or Chilled	10,000	Dose Biocide and consider chemical cleaning. Re-sample.

PSEUDOMONAS		
Type of System	Limit (cfu/ml) Pseudomonas ⁽⁴⁾	Action Required
Closed circuit systems	10-50 cfu/ml	The water quality is acceptable. Increase monitoring may be required to establish if there is an upward trend in bacterial levels. Biocide dosing may also be advisable, depending on the time of the most recent dose.
Closed circuit systems	>50 cfu/ml	Action may be necessary. Consider biocide dosing. Consider chemical cleaning.

Swimming Pools and Spa Pools

MICROBIOLOGICAL	
Microbiological Result	Action Required
Colony Count at 37°C > 10cfu/ml	If a colony count above 10cfu/ml is the only unsatisfactory microbiological result, and residual disinfectant and pH values are within recommended ranges, the water should be retested.
Colony Count at 37°C >100cfu.ml	Check treatment system and manual testing results records immediately and implement any remedial action as required.
Coliforms and <i>E.Coli</i> Present (>1cfu/100ml)	Occasional positive samples may occur if the spa pool has been sampled immediately after a contamination event before the disinfection system had time to be effective. A repeat sample should be taken whenever Coliforms have been detected.
Coliforms >10cfu/100ml	A Coliform count of up to 10cfu/100ml is acceptable provided that the residual disinfectant and pH values are within recommended ranges, there are no <i>E.Coli</i> present and the aerobic colony count is <10/ml.
Coliforms present on repeat test	If Coliforms are found on a repeat test it indicates that the disinfectant regime is ineffective. The pool systems and risk assessment should be reviewed and the pool taken out of action, drained, cleaned and disinfected before re-sampling.
<i>P.aeruginosa</i> present (>50cfu/100ml) With or without raised Coliform, <i>E.Coli</i> or colony count	Take pool out of operation and treat as above.