

LEGIONELLA RISK ASSESSMENT



Geo Tag: ,
Customer: Believe Housing
Site: Woodland Hall Woodland Road Esh Winning, DH7 9JJ
Date: 2nd February 2024
Risk Assessor: Carleton Waite
Report No: J052355 - 664704

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1 Introduction

1.1 General Introduction and Survey Objectives

Legionellosis is the collective term used to describe the group of diseases caused by *Legionella* bacteria. Legionellosis is contracted by inhaling the bacteria contained in aerosols from contaminated water systems.

There is a chain of events (Causal Chain) leading to an individual becoming infected with Legionellosis:

- | The water system needs to become contaminated with the bacteria
- | Conditions have to exist within the water system for the amplification of the bacteria to sufficient concentrations to cause infection
- | The contaminated water usually needs to be dispersed into droplets fine enough to form an aerosol for transmission into the lungs
- | Inhalation of contaminated aerosols or, in rare cases, aspiration of contaminated water

If exposed individuals have a suppressed or depleted immune system they will be more susceptible to infections.

HBE have completed this Risk Assessment in accordance with the UK Health & Safety Executive recommendations contained within the document '*Legionnaires' disease – The control of Legionella bacteria in water systems – Approved code of practice & guidance' on Regulations L8 (Fourth edition), HSG 274 Part 1–3 and Health Protection Surveillance Centre, National Guidelines for the Control of Legionellosis in Ireland, 2009.*

The objectives of this survey are as follows:

1. To enable the responsible person to make an informed decision regarding the adequacy of precautions currently in place to minimise the risk to health from Legionellosis to both building occupants and the general public.
2. To provide documented evidence as to the state of the water systems, control systems and management structure at the time of the assessment.
3. To provide guidance and recommendations on how to control and minimise future risk of *Legionella* proliferation by:
 - | Identifying and assessing likely sources of risk
 - | Recommending schemes to help control the risk
 - | Suggesting a suitable routine monitoring programme
 - | Checking current record keeping procedures
 - | Clarifying lines of responsibility
 - | Identifying training deficiencies
 - | Providing recommendations
4. It also enables the person on whom the statutory duty falls to demonstrate that all the pertinent factors, and the steps needed to prevent or minimise the risk, have been considered.

1.2 Relevant Legislation and Normative References

This survey has been completed by HBE with reference to current legislation and best practice guidelines. The specific legislation that is referred to in this report includes:

England / Scotland / Wales

1. The Health & Safety at Work Etc. Act 1974.
2. The Control of Substances Hazardous to Health Regulations 2002 (COSHH).
3. The Management of Health and Safety at Work Regulations 1999.
4. The Notification of Cooling Towers and Evaporative Condensers Regulations 1992.

Northern Ireland

1. The Health & Safety at Work (Northern Ireland) Order 1978.
2. The Control of Substances Hazardous to Health Regulations (Northern Ireland) 2003 (COSHH [NI]).
3. The Management of Health & Safety at Work Regulations (Northern Ireland) 2000.
4. The Notification of Cooling Towers and Evaporative Condensers Regulations 1992.

Republic of Ireland

1. Statutory Instrument (S.I.) No. 10 of 2005 – The Safety, Health and Welfare at Work Act 2005.
2. Statutory Instrument (S.I.) No. 299 of 2007 – The Safety, Health and Welfare at Work (General Applications) Regulations 2007.
3. Statutory Instrument (S.I.) No. 619 of 2001 – The Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001.
4. Statutory Instrument (S.I.) No. 572 of 2013 – The Safety, Health and Welfare at Work (Biological Agents) Regulations, 2013.
5. Statutory Instrument (S.I.) No. 370 of 2016 – The Safety, Health and Welfare at Work (Reporting of Accidents and Dangerous Occurrences) Regulations 2016.

Guidance

1. HSE document L8 (Fourth edition) – Legionnaires Disease, The control of Legionella bacteria in water systems: Approved Code of Practice and Guidance on Regulations.
2. HSE document HSG274 Part 1 – The control of Legionella bacteria in evaporative cooling systems.
3. HSE document HSG274 Part 2 – The control of Legionella bacteria in hot and cold water systems.
4. HSE document HSG274 Part 3 – The control of Legionella bacteria in other risk systems.
5. National Guidelines for the Control of Legionellosis in Ireland, Published by Health Protection Surveillance Centre (HPSC), 2009.
6. BS 8580-1:2019 Water quality. Risk assessments for Legionella control. Code of Practice.
7. BS 8558:2015 - Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
8. BS 8554:2015 - Code of practice for the sampling and monitoring of hot and cold water services in buildings.
9. BS PD 855468:2015 - Guide to the flushing and disinfection of services supplying water for domestic use within buildings and their curtilages.
10. TM 13:2013 CIBSE Technical Memorandum - Minimising the Risk of Legionnaires Disease.
11. WMSoc Guidance Documents.
12. UK HSE document “Working safely with metalworking fluids - good practice manual” (2011).
13. BS 7592:2022 Sampling for Legionella bacteria in water systems - code of practice.
14. HSE document HSG 282 The control of Legionella and other infectious agents in spa-pool systems.
15. The Water Supply (Water Quality) Regulations 2010.
16. The Water Supplies (Water Quality) (Scotland) Regulations 2011.
17. The Water Supply (Water Fittings) Regulations 1999.
18. BSEN 671-1-2012 Fixed Fire Fighting Systems.
19. BSEN12845-2004-A2-2009 Fixed Fire Fighting Systems Design and Maintenance.
20. BSEN 806-1 Specification for installations inside buildings conveying water for human consumption.
21. ANSI Z 358.1 2009 Drench Showers, Eyewash, Eye / Face Wash, Portable Eyewash, and Combination Eyewash & Drench Shower units.
22. Water for Scotland 2nd Edition.
23. Private Water Supply Scotland: Technical manual.

1.3 Executive Summary

HBE have been contracted by Believe Housing to carry out a comprehensive Legionella and Water Hygiene Risk Assessment on domestic water systems within Woodland Hall Woodland Road Esh Winning, DH7 9JJ as directed by the customer, in accordance with the HSE Approved Codes of Practice & Guidance on Regulations document L8 (*Fourth edition*): *the control of Legionella bacteria in water systems* / HSG 274 / *National Guidelines for the Control of Legionellosis* in Ireland, Published by Health Protection Surveillance Centre (HPSC), 2009 and Believe Housing tender / order specification.

At present full lines of communication for the Duty Holder, Responsible Person and Deputy Responsible Person involved in the implementation of the legionella control scheme have been put in place.

Site personnel involved in the implementation and undertaking tasks associated with a legionella control scheme have been appropriately trained for their role.

Currently there is a legionella risk control scheme in place within these premises. It is essential that this is fully implemented to reduce the actual legionella risk associated with the water systems on this site.

All incoming mains water supply distribution temperatures were considered satisfactory for legionella control at the time of the assessment, at below 20°C.

All hot water outlets achieved at least 50°C within 1 minute; this is adequate for Legionella control.

Instant water heaters were found to be successfully heating water to or in excess of the minimum required temperature of 50°C.

A number of deadends were identified. Deadends are areas of minimal or no flow in a water system. This can allow water to grow stagnant and can provide conditions which support the proliferation of contaminating micro-organisms. Such deadends of pipework should be removed from the system ensuring that no stubs remain i.e., all elbow and tee joints should be replaced with flush joints.

A number of temperature mixing valves have been installed on site. Whilst these valves assist in blending water to minimise the potential for users being scalded, they can harbour and provide a favourable environment for microbial growth. It is essential that these valves are inspected and maintained on an annual basis.

The presence of connected “Quick fill loops” for heating/chilled systems was observed. Disconnect the quick fill when not in use to prevent the potential of stagnant water contaminating the domestic water system. If a dead leg is created, then it will require flushing on a weekly basis and recorded within the logbook.

Refer to table 3.1 Remedial Action to Water Systems for further details!

The risk assessment has been carried out with an asset register provided by HBE.

Water systems found at Woodland Hall Woodland Road Esh Winning are captured in table 4.1 *Overview of Water Systems*.

1.4 Allocation of Risk Rating

Items of plant constituting a risk to health have an Inherent Risk and an Actual Risk. The aim of a complete Risk Assessment is to firstly identify all plant with an inherent risk and then make an assessment of its actual risk.

In making a valued assessment of the actual risk condition of the plant, maintenance procedures, location, compliance with current guidelines and codes of practice should all be examined.

Inherent Risk Rating

Each risk assessment should be accompanied by an explanation of the inherent risk, with the actual risk reported and based on the grading system below. This should enable the responsible person to prioritise future actions.

Minimal Risk	Low Risk	Medium Risk	High Risk	Very High Risk

In general terms the following broad categories may apply:

i.	<u>Very High Risk System:</u>	A very high risk system is one where high aerosol release such as cooling water systems and spa baths if found.
ii.	<u>High Risk System:</u>	A high aerosol generation systems such as showers, spray booths, fountains and humidifiers if found.
iii.	<u>Medium Risk System:</u>	Stored water systems such as cold water storage tanks, calorifiers, combination water heaters if found.
iv.	<u>Low Risk System:</u>	Mains water systems, with minimal storage and without aerosol generators if found.
v.	<u>Minimal Risk System:</u>	Mains water systems, without storage and without aerosol generators if found.

Risk Type	Risk Rating
Inherent risk	Low Risk

Actual Risk

Accompanying each section of the assessment should be the recommendations to minimise the actual risk, these may involve changes to the plant and upgrading maintenance regimes and documentation procedures amongst others. The conclusions and recommendations contained in this assessment are based upon information supplied by the Site's responsible person and/or his/her deputies.

	Very High Risk / Category 1 To be completed as soon as reasonably practicable
	High Risk / Category 2 To be completed as soon as reasonably practicable
	Medium Risk / Category 3 Implementation within 6 months
	Low Risk / Category 4 Implement within 12 months
	Minimal Risk / Category 5 To be completed during next plant shut down or where budgetary restrictions allow.

Should further information subsequently become available which may impact on this assessment, a review of the assessment may be required.

This report has determined the risk rating from the water systems below. The scoring takes into account factors such as severity of plant present, persons exposed, the written scheme, system condition and any relevant training.

This highlights the importance of effective *HSG 274 / L8 based* and *HPSC* risk management programme. In the case of Woodland Hall Woodland Road Esh Winning the risk is managed by implementation of an *HSG 274 / L8* and *HPSC* monitoring programs for water systems.

Risk Factors	Risk Rating
Population Vulnerability Potential	Low
Aerosol Exposure Risk	Low
Proliferation Risk	Medium
Management of the water systems	Low

Asset Type	Risk Rating
Deadend DE1	High
Instantaneous water heaters IWH1	Low
Mains water supply MAINS 1	Low
Quick Fill Loops QFL1	Low
TMVs TMV1	Low

RA Review Within	Risk Rating
2 year	Medium

It is recommended that this site be reviewed no later than 02/02/2026.

1.5 Scope and Application of Risk Assessment

HBE have been contracted by Believe Housing to carry out a comprehensive Legionella and Water Hygiene Risk Assessment domestic water systems within Woodland Hall Woodland Road Esh Winning. The Community Centre is currently in use.

Carleton Waite of HBE conducted this Risk Assessment on the 2 Feb 2024. Carleton Waite has completed Legionella specific training such as the WMSoc, City & Guilds and BOHS P901. HBE ensure, through appropriate training, that surveyors have the appropriate instruction, information, resources and equipment to carry out risk assessments in a competent and safe manner. Certification for training is included in the appendices of this report.

Site should ensure that suitable control measures are in place and that all recommendations are completed to ensure that the risk from all systems is controlled.

Limitations of Survey

Although every care is taken to detect all relevant pipe work and systems on site, it is possible that some elements may remain hidden from inspection (e.g. dead legs and underground pipes) and shall be detailed in the executive summary.

This Risk Assessment is the considered opinion of the consultant involved, based on the evidence found at the time of inspection, and covers only the systems and facilities listed within.

Since supply water quality, weather conditions and several other factors will vary over the course of time and as a result of seasonal changes, the findings of this study and resultant recommendations should be taken in the context of the current situation. Future conditions may lead to the establishment of significantly different risk levels.

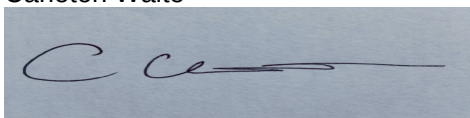
Neither HBE nor its representatives are qualified to offer any medical opinion regarding Legionella based diseases or the likely effects of any particular level of bacteria on site.

NOTE

Any property that has a prolonged shutdown (greater than 1 week) must ensure that a weekly flushing programme is implemented to replicate normal water usage. i.e. school closed during summer holidays or sports pavilions during off season.

1.6 Risk Assessment Handover

HBE have provided an independent assessment to this customer, and have highlighted the requirements and recommendations to control the risk from Legionella. It is the responsibility of the customer to ensure the full implementation of all remedial work and recommendations on site.

HBE Legionella Risk Assessor Signature
Carleton Waite 
Legionella Risk Assessor Name
Date: 2nd February 2024

The record of the assessment is a living document that should be reviewed to ensure it remains up-to-date. Arrange to review the assessment regularly and specifically whenever there is reason to suspect it is no longer valid. An indication of when to review the assessment and what to consider should be recorded.

This may result from, e.g.:

- (a) Changes to the water system or its use;
- (b) Changes to the use of the building in which the water system is installed;
- (c) The availability of new information about risks or control measures;
- (d) The results of checks indicating that control measures are no longer effective;
- (e) Changes to key personnel;
- (f) A case of legionnaires' disease/legionellosis associated with the system.

See ACOP, L8 (Fourth edition) Para 47 and HPSC, Legionella Guidelines 2009, Chapter 5.

2 Overview of Site

2.1 Site Details

Building use:	Community Centre
Frequency of use:	Weekly

Occupancy Levels

Number of Occupants and Potential Contractors:	10
Is Building Open to General Public?	Yes
Susceptible Groups:	Present While previously healthy people may develop legionnaires' disease, there are a number of factors, which increase susceptibility: - Increasing age, particularly above 45 years; - Newborn infants; - Gender: males are three times more likely to be infected than females; - Existing respiratory disease which makes lungs more vulnerable to infection; - Illnesses, such as cancer, diabetes, kidney disease or alcoholism, which weaken the natural defences; - Smoking, particularly heavy cigarette smoking, because of the probability of impaired lung function; - Patients on renal dialysis or immune-suppressant drugs, which inhibit the body's natural defences against infection. While the above risk groups may not be present on this site it is vital for the Health and Safety of all occupants, visitors and residents that risk systems are operated in a manner which reduces any potential risk as outlined in this survey.

2.2 Lines of Communication

Inadequate management, lack of training and poor communication have all been identified as contributory factors in outbreaks of Legionnaires' disease. This is particularly important where several people are responsible for different aspects of the treatment or precautions.

Legislative Requirements

If you are an employer or a person with responsibilities for control of premises, you are defined as the dutyholder and you have legal responsibilities for the health and safety of employees and non-employees affected by your work activities.

The principal legislation that applies are the (UK) Health and Safety at Work etc. Act 1974, COSHH 2002 and the Management of Health and Safety at Work Regulations 1999; (NI) The Health and Safety at Work Order 1978, COSHH 2003 and The Management of Health and Safety at Work Regulations 2000, Statutory Instrument (S.I) The Safety, Health and Welfare at Work Act No. 10 of 2005, At Work (General Applications) No. 299 of 2007, At Work (Chemical Agents) No. 619/2001, At Work (Biological Agents) No. 572 of 2013, At Work (Reporting of Accidents and Dangerous Occurrences) No. 370 of 2016.

Responsibilities

The ACoP / HPSC states that, if you are the dutyholder, to comply with your legal duties you should:

- | Identify and assess sources of risk in a written risk assessment
- | Appoint a person to be managerially responsible for the water system
- | Prepare a written scheme for preventing or controlling the risk
- | Implement and manage precautions
- | Keep records of the precautions

In addition, the ACoP / HPSC sets out the responsibilities of suppliers of services such as water treatment and maintenance as well as manufacturers, importers and installers.

In law you are not required to do everything that is contained in the ACoP / HPSC but you should do all that is reasonably practicable to eliminate or control a foreseeable risk of people being exposed to Legionella bacteria within an aerosol. If you fail to follow the guidance in the ACoP and accompanying HSG274 / HPSC or do not implement equivalent control measures you are likely to be subject to enforcement action by the HSE / HSA or your local Environmental Health Officer. You do not have to cause cases of Legionnaires' disease to be liable for prosecution under the HSWA or COSHH. You can be prosecuted for failing to implement reasonable measures to prevent or control the risk or because of a failure of the control measures that could lead to exposure to Legionella bacteria.

Communications should be 'fail-safe'. The record system is the method to ensure that precautions continue to be carried out and that information is available for checking what is done in practice.

ACOP L8 (Fourth edition) Paragraphs 48 - 51 and HPSC, Legionella Guidelines 2009 Chapter 5 highlights the requirement for identified lines of communication and a clear structure of responsibility, which should be put in place to ensure competent management of the risk management program.

Risk Rating	
Management and Written Scheme Risk Rating	Low

Duty Holder: The person on whom the statutory duty falls. The duty holder has overall responsibility for the Legionella program and should appoint a responsible person to supervise the day to day running of all Legionella related issues (ACOP L8 (Fourth edition), Para 48) and HPSC, Legionella Guidelines 2009, Chapter 5).

Name	Alan Smith
Position	Position Chief Executive
Telephone Number	0191 814 2854
Mobile Number	07894 838649
E-mail address	alan.smith@believehousing.co.uk

Responsible Person: Appointed by the statutory duty holder. The responsible person is charged with responsibility for implementing the risk assessment recommendations and the Legionella risk management program. The responsible person reports to the duty holder (ACOP L8 (Fourth edition), Para 51) and HPSC, Legionella Guidelines 2009, Chapter 5).

Name	Emma Jorgenson
Position	Compliance Manager
Telephone Number	0191 814 2900
Mobile Number	07384 523636
E-mail address	emma.jorgenson@believehousing.co.uk

Deputy Responsible Person: Appointed by the statutory duty holder or responsible person. The deputy responsible person is charged with responsibility for implementing the risk assessment recommendations and the Legionella risk management program in the absence of the responsible person.

Name	Andrew Graham
Position	Compliance Officer
Telephone Number	03001 311999
Mobile Number	07901 510712
E-mail address	andrew.graham@believehousing.co.uk

Site Contact: Appointed by the responsible person. Point of contact between site and water treatment specialists/consultants. Involved in the day to day running of the risk management program. Person nominated by site to give assistance and information on day of survey.

Name	Andrew Graham
Position	Compliance Officer
Telephone Number	03001 311999
Mobile Number	07901 510712
E-mail address	andrew.graham@believehousing.co.uk

Water Treatment Company: Appointed by the duty holder. The water treatment company provides information on current legislation and industry best practice in relation to Legionella. May also be required by site to implement management programmes, provide chemical dosing programmes and technical support.

Company Name

Name	HBE UK & Ireland
System Involved	Domestic
Telephone Number	0333 207 5744
Mobile Number	N/A
E-mail address	http://enquiries@hberm.com/

Water Hygiene Consultants: Appointed by the duty holder/water treatment company to complete the Legionella risk assessment on site. The water hygiene consultant provides information on current legislation and industry best practice in relation to Legionella. May also be required by site to implement management programmes, provide chemical dosing programmes and technical support.

HBE Account Manager

Name	Lloyd Neary
Position	Account Manager
Telephone Number	0845 6399673
Mobile Number	07885 969616
E-mail address	l.neary@hberm.com

HBE Legionella Risk Assessor

Name	Carleton Waite
Position	Legionella Risk Assessor
Telephone Number	
Mobile Number	07515993281
E-mail address	carleton.waite@hberm.com

Lines of Communication Information Received From

Name	Andrew Graham
Position	Compliance Officer

Cooling Water System Records/Information Received From

Name	N/A
Position	N/A

Leisure Centre Information Received From

Name	N/A
Position	N/A

Legionella Monitoring Scheme - Domestic Water

Where a scheme of control is in place, HBE risk assessors shall undertake a detailed appraisal and audit of the scheme and report on its adequacy. In order to ensure that the risks from legionella are controlled, *HSG 274 Part 2 and HPSC, Legionella Guidelines 2009* recommends that a programme of checks, inspections and monitoring of the risk systems be put in place. Detailed below are these tasks and their scheduled frequencies for domestic water systems. Where this survey has found that an item is not completed, or completed at an inadequate frequency, site shall implement remedial action to ensure the appropriate checks and tests are in place for an adequate system of control, as recommended by *HSG 274 Part 2 Table 2.1* and *HPSC, Legionella Guidelines 2009, Table 4*.

Details are specified in the table below. Any actions required by site are detailed in Section 3.

Action	Frequency	Currently Carried Out On Recommended Interval
Measure Temperature of Sentinel Outlets Cold / Hot	Monthly	Contractor
TMV Sentinel Temperature Checks	Monthly	Contractor
Measure Temperatures of Water Heater	Monthly	Contractor
Inspection and servicing of TMV's	Annually	Contractor
Measure Temperature of Incoming Mains	Annually	Contractor
Measure Temperature of Representative Selected Outlets	Annually	Contractor
Review Meeting With Customer	Annually	Client
Disinfect Hot and Cold System (Remedial Action)	Annually	Contractor
Review Results	Annually	Client

Inspection of Record Systems - Domestic Water

An assessment of the risk should be carried out and those appointed shall record the significant findings and ensure appropriate records are kept as highlighted in *ACOP L8 (fourth edition)* and *HPSC, Legionella Guidelines 2009*. This should include any groups of employees identified as being particularly at risk and the steps taken to prevent or control risks. If the employer has less than five employees there is no statutory duty to write anything down, but it may be useful to keep a written record of what has been done.

Item	Information	Satisfactory Yes/No	Reference Source
Management Structure / Lines Of Communication	Do persons responsible for water hygiene and safety have responsibilities detailed in writing?	Yes	Electronic Records Held
Suitable Record Keeping	Are records relating to water hygiene and control scheme documents located centrally?	Yes	Electronic Records Held
Written Control Scheme In Place	Is there a written control scheme in place and implemented fully?	Yes	Electronic Records Held
Where System Drawings Available – Where Are They Located	Are schematic drawings available?	Yes	Current Risk Assessment
Site Visits And Inspections	Are site visits relating to water hygiene logged?	Yes	Electronic Records Held
Cleaning And Disinfection Records	Are disinfection records held on site?	Yes	Electronic Records Held
Training Records Of Personnel	Are training records held on site?	Yes	Electronic Records Held
Training Records For All Positions	Are duty holders training to the standards required? Are staff involved in water hygiene trained to standards required?	Yes	Electronic Records Held
Training Records For Third Party	Are training records held on site?	Yes	Electronic Records Held
Remedial Work Completed And Recorded	Are records kept of any remedial works on site?	Yes	Electronic Records Held
Legionella Risk Assessment	Has a risk assessment been carried out previously?	Yes	Electronic Records Held
Safe Operation Of Risk Systems	Are systems that pose substantial risk operated safely and documentation located on site?	Yes	Electronic Records Held
Water Safety Plan/Policy And Escalation Procedures	Is there a water safety policy created for this site? Is there an adequate written escalation plan to ensure that during an outbreak at this site, or site nearby, that appropriate persons and government bodies are contacted and media and communication requirements covered?	Yes	Electronic Records Held
Calibration Records For Monitoring Thermometers	If site carries out temperature monitoring themselves, do site calibrate their thermometers?	Yes	Temperature Monitoring Contracted

3 Recommendations and Requirements

3.1 Remedial Action to Water Systems

The recommendations of the risk assessment are itemised below. This log should be used to monitor and maintain a signed record of the completion of all recommendations made in the Legionella Risk Assessment. This log should be completed by a person of suitable authority i.e. Duty Holder, Responsible Person or other nominated personnel.

Priority Rating Key:

1. Very High Risk - To be completed as soon as reasonably practicable
2. High Risk - To be completed as soon as reasonably practicable
3. Medium Risk - Implementation within 6 months
4. Low Risk - Implement within 12 months
5. Minimal Risk - To be completed during next plant shut down or where budgetary restrictions allow

System Ref	General	Priority	Assigned To	Comments	Date Completed	Signed
DE1	Dead end pipework should be permanently removed from the distribution system or, alternatively, site should investigate installing a drain and flush once a week.	High / Category 2				

This risk assessment was conducted by HBE. Whilst every effort has been made to ensure that the assessment has been as comprehensive as possible, it should be recognised that it is impossible to guarantee that every system has been identified and so no liability can be accepted for omissions from this report. Diligence should be maintained in regarding the potential risk of all water systems. If a system is identified which has a potential for harbouring Legionella bacteria, for which no precautions are currently detailed, then HBE should be contacted with a view to advising on the implementation of suitable procedures and updating the risk assessment.

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4 Appraisal of Water Systems

4.1 Overview of Water Systems

It is believed that this list is comprehensive, however it should be recognised that it is impossible to guarantee that every system has been identified. It is from inspection of the systems described below that the comments and recommendations in Section 3.1 are made.

Mains Water System

Asset No.	Location	Serving
MAINS 1	Undetermined	Building

Sentinel Outlet Identification

Supplied from	Sentinel	Location/System Ref
IWH1	NH - Nearest Hot	Kitchen, .
	FH - Furthest Hot	Female WC, .
MAINS 1	NC - Nearest Cold	Kitchen, .
	FC - Furthest Cold	Female WC, .

Thermostatic Mixing Valves

Asset No.	Location	Hot Supply	Cold Supply	Approximate Number
TMV1	Accessible WC	IWH1	Mains	1

Instantaneous Water Heaters

Asset No.	Location of heaters	Fed from	Number of outlets
IWH1	Kitchen	Mains	5

Other Water System on Site

Asset No.	Location	System Type	Fed From
QFL1	Kitchen	Quick Fill Loops	Mains

Hot and Cold Water Outlets

Location
Refer to the schematic drawing for full location of hot and cold water outlets

Water Source

The water supply to a premises normally presents a low legionella risk due to the temperature of the incoming water which is generally well below control temperature. Even though legionella is a naturally occurring bacterium in the water, the relatively low temperature will render the bacteria dormant.

However, if the water supply is from an unusual source, for example a bore hole, natural wells, rain water harvesting system or even natural water bodies such as rivers and streams these may have the potential to contain debris and other factors could make bacterial proliferation a problem.

The investigation of any filtration systems and chemical treatment along with temperature profiling should give a good indicator of the risk of legionella.

Water source details are specified in the table below. Any actions required by site are detailed in Section 3.

Appraisal of Water Systems

	Asset No.	MAINS 1
	Location	Undetermined
Details	Mains Supply Stop Cock Location Serving Mains Supply Source	Undetermined Building Local Water Board
Material of Construction	Water Treatment In Place Temperature Of Mains Supply Supply Pipework Distribution Pipework Incoming Pipework Insulated Strainer Fitted Strainer Fitted Correctly Water Meter Installed Drinking Water Outlets Labelled WRAS Approved Materials	
Records	Chemical Dosing System Filtration System UV System	
	Temperatures	NC 7.0°C FC 7.0°C

Risk Rating	
System Risk	Low

Instantaneous Water Heater

Instantaneous heaters present a low legionella risk due to the fact that they store little or no water. These systems are typically found in smaller buildings such as domestic dwellings and small office buildings where cold water outlets are fed directly from the water supply without storage. Instantaneous water heaters, including combi boilers, provide hot water directly from the cold water supply by heating the water as it passes through the heater. These units supply continuous hot water at a rate that is usually limited by their power rating. High flow rates through the units can result in warm water leaving the heater before the target temperatures are reached.

Water Heater details are specified in the table below. Any actions required by site are detailed in Section 3.

Asset No.	IWH1
Location	Kitchen
Water Heater Details	
Fed from	Mains
Power Supply To Units	On
Number Of Outlets	5
Max Temperature	52.0°C
WRAS Approved Materials	Yes
High Turn Over	Yes
Is Aerosol Likely	No
Condition Of Units Satisfactory	Yes
Spray Head Fitted	N/A
Scale Present	No
Algae Growth Present	No
Heat Source	Gas
Temperatures	NH 52.0°C FH 52.0°C

Risk Rating	
System Risk	Low



Thermostatic Mixing Valves

TMVs use a temperature sensitive element to blend hot and cold water to produce water at a temperature that safeguards against the risk of scalding. The mixed temperatures are typically set between 38°C and 46°C depending on outlet use. The blended water downstream of TMVs may provide an environment in which legionella can multiply, thus increasing the risks of exposure.

Where TMVs are fitted, consideration should be given to the following factors:

- | where practicable, TMVs should be incorporated directly in the tap fitting as mixing at the point of outlet is preferable;
- | the risk is increased where TMVs are fitted with low flow rate spray taps on hand washbasins;
- | TMV valves should be as close to the POU as possible to minimise the storage of blended water;
- | the risk can also be increased where a single TMV serves multiple tap outlets.

TMV details are specified in the table below. Any actions required by site are detailed in Section 3.

Asset No.	TMV1
Location	Accessible WC
TMV Details	
Approximate Number	1
TMV Type	TMV
Fed from Hot	IWH1
Fed from Cold	Mains
Accessible	Yes
At Each Individual Outlet	Yes
Supplying Multiple Outlets	No
Number of outlets	1
Temperature	
Hot Supply To TMV Temperature	52.0°C
Cold Supply To TMV Temperature	7.0°C
Nearest Non-TMV Tap- Max Hot Temperature	N/A
Nearest Non-TMV Tap- Max Cold Temperature	N/A
TMV Outlet Temperature	41.0°C
Can TMV be moved closer to the POU	No
Can TMV be removed from system	No

Risk Rating	
System Risk	Low



Dead Ends

A dead end is a length of pipework where the end has been capped off. This creates an area for sediment and water to stagnate. Once again, this water may aid in the proliferation of legionella and back contaminate the original water source.

Dead end details are specified in the table below. Any actions required by site are detailed in Section 3.

Asset No.		DE1
Location		Kitchen
General	Dead Ends present	Yes
	Fed From Hot	-
	Fed From Cold	Mains
	Flush	N/A
	Remove	Yes

Risk Rating	
System Risk	High



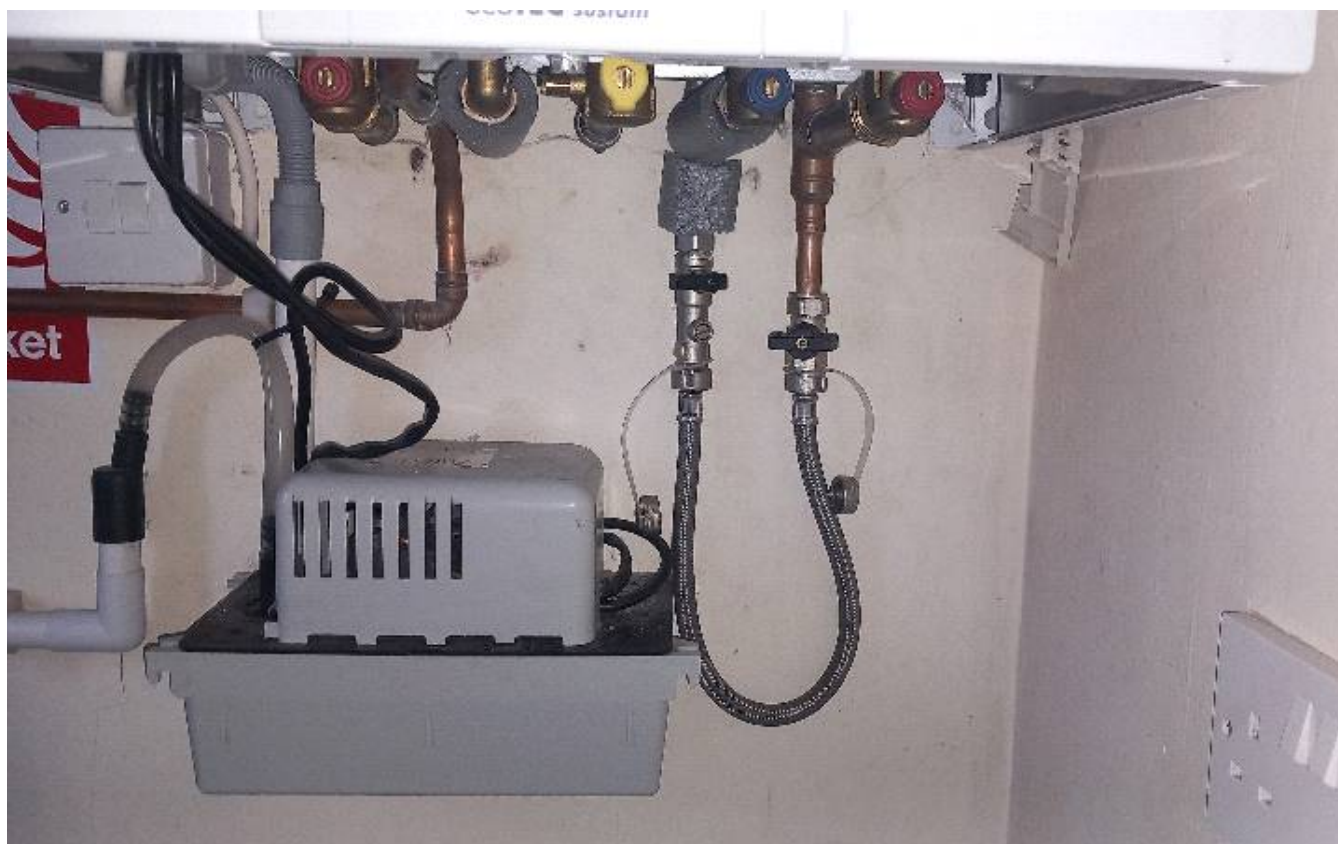
Quick Fill Loops

Heating and chilled water system quick filling loops should be disconnected when not in use. These are a temporary filling link between mains and closed systems.

Quick fill loop details are specified in the table below. Any actions required by site are detailed in Section 3.

	Asset No.	QFL1
	Location	Kitchen
General	Satisfactory	Yes
Fed From	Fed From	Mains
	Comments	-

Risk Rating	
System Risk	Low



5 Testing of Water Systems

5.1 Water Temperature Measurements

OBJECTIVE To confirm that hot and cold water services are being maintained at temperatures which minimise the risk of proliferation of Legionella bacteria. The aim of the survey is to take a representative number of outlets to give an overall impression of the conditions within the distribution system. All other outlets should operate within the recommended temperature range.

METHOD Measurement of water temperature by the use of an electronic penetration and surface wet probe thermometer. The hot water temperatures recorded from those outlets that are supplied via thermostatic mixing valves (TMV) are taken from the hot and cold flow pipe work before the TMV. This gives the temperature of the water supplied to the TMV.

Where temperature is used as a control method, hot water shall be stored at a minimum of 60°C and distributed so it reaches a minimum temperature of 50°C within one minute at outlets. Where circulation is not possible, trace heating is sometimes used to maintain the water temperature in the spur so that it delivers at 50°C within one minute of running.

Number	Location	Source	Hot °C	S / NS	Source	Cold °C	S / NS	CWS >2°C from CWST
1	Kitchen, .	IWH1	52°C	S	MAINS 1	7°C	S	N/A
2	Female WC, .	IWH1	52°C	S	MAINS 1	7°C	S	N/A
Control parameters –		Cold ≤ 20°C within 2 minutes Hot ≥ 50°C within 1 minute Hot ≥ 50°C within 30 seconds for subordinate loops Hot ≥ 60°C water poses a risk to scalding if no TMV is fitted S = Satisfactory / NS = Not Satisfactory						

6 Appendices

6.1 List of Abbreviations and Acronyms

Standards and methods used in this report are taken from the most appropriate references available. Sources quoted are often given as abbreviations and acronyms and their full names are given here for easy reference.

ug/m ³	microgrammes per cubic metre
BMS	building management system
CAL	calorifier
cfu/l	colony forming units per litre
cfu/ml	colony forming units per millilitre
CHW	chilled water
COSHH	the control of substances hazardous to health regulations
CT	cooling tower
CWH	combination water heater
CWST	cold water storage tank
DCW	domestic cold water
DCWS	domestic cold water system
DHW	domestic hot water
DHWS	domestic hot water system
DE	dead end
DL	dead leg
FC	furthest cold
FH	furthest hot
GRP	glass reinforced plastic
HBE	health built environment
HSWA	the health & safety at work etc. act
IUO	infrequently used outlets
IWH	instant water heater
LPHW	low pressure hot water
mg/m ³	milligrammes per cubic metre
MSDS	material safety data sheets
MW	mains water
NWAM	non wras approved materials
ACS	air conditioning systems
AHU	air handling unit
AS	scrubber system
CD	chlorine dioxide unit
CH	chilled water
CHD	cyclone style hand dryer

DC	dental chairs
EP	exposed pipe work
EUT	utility taps
FCA	fire control systems
FE	feed & expansion tank
FH	flexible hose connectors
FIL	filters
GW	grey water
HE	humidification equipment
INC	incubators
MB	mothballing
MT	lathes / machine tool systems
PAC	portable air conditioning systems
PPW	process production water
PU	pressurisation unit
PV	expansion / pressure vessels / pump accumulators
QFL	quick fill loops
RO	ro unit
RPZ	rpz valves
SOT	scale on taps
SP	swimming pools
SPA	spa baths
ST	spray taps
SPW	spray pressure washers
SR	strainers
SSS	safety shower & emergency eye wash
TSP	tanning spray booths
UV	uv light
VW	vehicle wash
WF	water feature
WP	water purification for dental chairs
WS	water softeners
N/A	not applicable

DHCWS	domestic hot & cold water systems
NC	nearest cold
NH	nearest hot
PHE	plate heat exchanger
POU	point of use
ppb	parts per billion
ppm	parts per million
SH	shower/s
TMV	thermostatic mixing valves
TVC	total viable colonies
U/D	undetermined
UKAS	united kingdom accredited service
WH	water heater
WHB	wash hand basin
WMSoc	the water management society
WRAS	water regulations advisory scheme

6.2 Additional Certification



Legionella Control Association
KEEPING WATER SYSTEMS SAFE

Legionella Control Association

A Code of Conduct for Service Providers

Certificate of Registration

This is to certify that the following company has submitted a registration under the Conditions of Compliance as laid out in the LCA's Code of Conduct for Service Providers

Name of Company: HBE

Registration Number: 2008/1339 Certificate valid until: 31st August 2024

Registration under the following services categories:

- (1) Legionella Risk Assessment Services**
 - 1.1 Hot and Cold Water Systems Risk Assessment
 - 1.2 Evaporative Cooling Systems Risk Assessment
 - 1.3 Process and Other Systems Risk Assessment
 - 1.4 Healthcare Risk Assessment
- (2) Water Treatment Services**
 - 2.1 Hot and Cold Water Systems Water Treatment
 - 2.2 Evaporative Cooling Systems Water Treatment
 - 2.3 Process and Other Systems Water Treatment
- (3) Hot and Cold Water Monitoring and Inspection Services**
- (4) Cleaning and Disinfection Services**
 - 4.1 Hot and Cold Water Systems Cleaning and Disinfection
 - 4.2 Evaporative Cooling Systems Cleaning and Disinfection
 - 4.3 Process and Other Systems Cleaning and Disinfection
- (5) Independent Consultancy Services**
- (6) Training Services**
- (7) Legionella Monitoring Services**
 - 7.1 Sampling
 - 7.2 In Field Analysis
 - 7.4 Interpretation of Analysis
- (8) Plant and Equipment Services**
 - 8.1 Design and Supply
 - 8.2 Installation
 - 8.3 Servicing/maintenance
 - 8.4 Refurbishment

This Certificate is only valid if the Company named is listed on the LCA website www.legionellacontrol.org.uk/directory.php



WWS
THE WATER MANAGEMENT SOCIETY

Signed: 



Chairman, Executive Committee

Certificate Secretary



BCA
British Chemicals Association

Legionella Control Association Limited. www.legionellacontrol.org.uk

Registered in England and Wales No. 8502723

The legal duty to comply with relevant health and safety legislation (including avoidance or control of risk to exposure to Legionella bacteria) rests solely with the statutory dutyholder, being either the employer or the person in control of the premises or systems where any relevant risk is present, and this cannot be delegated. Specific functions (e.g. carrying out risk assessment) can be delegated and the Legionella Control Association (LCA) Code of Conduct is designed to help service providers, who also have duties under health and safety legislation, to establish appropriate management systems for the prevention or control of risk from Legionella bacteria. The LCA assesses the management systems of LCA members upon initial registration, reviews annually upon re-registration, and re-assesses by annual company audits. The LCA cannot and does not carry out other regular supervision of its members' commitments to the Code of Conduct nor their compliance with other LCA guidelines. A valid LCA certificate of registration (which is only valid if the Company named is listed on the LCA website www.legionellacontrol.org.uk/directory.php) confirms only that a service provider has satisfied LCA requirements at registration and its most recent company audit. It does not confirm the service provider's actual or continuing compliance with their commitments to the LCA Code of Conduct and/or other LCA guidelines. The LCA does not approve specific products or services as being effective in controlling Legionella or verify the competence of service providers' staff and sub-contractors, which is the duty of the service provider and the statutory dutyholder. The LCA accepts no liability for any omission or any act carried out in reliance on the LCA Code of Conduct or other LCA guidelines, or any loss or damage resulting from non-compliance with such documents.

6.3 Schematic Drawings

Schematic drawings have been completed as part of the HBE risk assessment; these are attached at the back of the report.

6.4 Legionella Escalation Procedure

Sampling is routinely completed to confirm the effectiveness of the risk management program for Legionella control. A suitably accredited laboratory (UKAS accredited for *Legionella* analysis) completes the laboratory analysis. This provides information on the effectiveness of the control program and indicates whether further assessment of the risk is necessary. More frequent Legionella sampling may be required from areas of high risk, e.g. Elderly Persons Homes, Hospital Wards with High Risk Patients, or other high risk systems such as Cooling Towers or Spa Baths.

For *Legionella* sampling the table below outlines the actions to be taken in accordance with the guidelines laid down in the "HSE document L8 – *Legionnaires' Disease, The control of legionella bacteria in water systems: Approved Code of Practice and Guidance* and HPSC, Health Protection Surveillance Centre, *National Guidelines for the Control of Legionellosis in Ireland 2009* (Please note that this document is not relevant within a healthcare Environment).

Legionella Bacteria (cfu/l)	Action
Not Detected	System under control, inform Responsible Person, file results and maintain current control regime.
Up to 100 cfu/l	Inform Responsible Person In healthcare, the primary concern is protecting susceptible patients, so any detection of Legionella must be investigated and, if necessary, the system resampled to aid interpretation of the results in line with the monitoring strategy and risk assessment. File results and record any communication with Responsible Person.
>100 cfu/l and up to 1000 cfu/l	Inform Responsible Person and Either ▫ if the minority of samples are positive, the system must be resampled. If similar results are found again, review the control measures and risk assessment to identify any remedial actions necessary or; ▫ if the majority of samples are positive, the system may be colonised, albeit at a low level. An immediate review of control measures and a risk assessment must be carried out to identify any other remedial action required. Disinfection of the system must be considered. File results and record any communication with Responsible Person.
>1000 cfu/l	Inform Responsible Person The system must be resampled and an immediate review of the control measures and risk assessment carried out to identify any remedial actions, including possible disinfection of the system. Retesting must take place a few days after disinfection and at frequent intervals thereafter until a satisfactory level of control is achieved. File results and record any communication with Responsible Person.

6.5 Action to take if there is an outbreak of Legionellosis

1. In England and Wales, legionnaires' disease is notifiable under the Health Protection (Notification) Regulations 2010 and in Scotland under the Public Health (Notification of Infectious Diseases) (Scotland) Regulations 1988 and in Northern Ireland under the Health Protection Agency Order 2007. Under these Regulations, human diagnostic laboratories must notify Public Health England (PHE), Public Health Wales (PHW) or Health Protection Scotland (HPS) and Public Health Agency (PHA) Northern Ireland (see 'Further sources of advice') of microbiologically confirmed cases of legionnaires' disease.
2. An outbreak is defined as two or more cases where the onset of illness is closely linked in time (weeks rather than months) and where there is epidemiological evidence of a common source of infection, with or without microbiological evidence. An incident/outbreak control team must always be convened to investigate outbreaks. It is the responsibility of the Proper Officer to declare an outbreak. The Proper Officer, appointed by the Local Authority, is usually a Consultant in Communicable Diseases Control (CCDC) in England and Wales, or the Consultant in Public Health Medicine (CPHM) in Scotland. If there are suspected cases of the disease, medical practitioners must notify the Proper Officer in the relevant local authority.
3. Local Authorities will have jointly established incident plans to investigate major outbreaks of infectious diseases, including legionellosis, and it is the Proper Officer who activates these and invokes an Outbreak Committee, whose primary purpose is to protect public health and prevent further infection.
4. HSE (UK) or local Environmental Health Officers may be involved in the investigation of outbreaks, their aim being to pursue compliance with health and safety legislation. The local authority, Proper Officer or EHO acting on their behalf will make a visit for public health reasons, often with the relevant officer from the enforcing authorities (i.e. HSE (UK) or the local authority) for health and safety reasons. Any infringements of relevant legislation may be subject to a formal investigation by the appropriate enforcing authority.
5. There are published guidelines (by PHE, PHW and HPS) for the investigation and management of incidents, clusters, and outbreaks of Legionnaires' disease in the community.
6. These are, for England and Wales, Guidance on the Control, and Prevention of Legionnaires' Disease in England and for Scotland, Guidelines on Management of Legionella Incidents, Outbreaks and Clusters in the Community.
7. If a water system is implicated in an outbreak of Legionnaires' disease, emergency treatment of that system must be carried out as soon as possible. This will usually involve the processes detailed in paragraphs 2.124–2.135.
8. In the Republic of Ireland (ROI), the director of public health (DPH)/consultant in public health medicine (CPHM) must:
 - | Arrange appropriate epidemiological investigation of a case or outbreak of legionnaires' disease.
 - | This must be done in liaison with the clinical microbiologist where one is employed
 - | Inform HPSC of a case or outbreak of legionellosis
 - | Inform the HSA of a case or outbreak of legionellosis
 - | Ensure relevant clinicians and general practitioners (GPs) in the area are informed of a case or outbreak where appropriate.

WOODLAND ROAD.

The Frontline Skills Framework - Utilities (5831) - Legionella

**is awarded to
Carleton Waite**

**who attended
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This holder has a number of formal Unit
Credits by which this Award was achieved

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CERTIFICATE OF UNIT CREDIT TOWARDS

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Develop Training Limited

and was successful in the following module

Risk assessment of hot and cold water systems in buildings

Pass

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Chris Jones

Chris Jones
Director-General
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