Property Survey Notes on the Legionella Risk Assessment of:

Carn Hill

Property:

Carn Hill
Newtownabbey
Northern Ireland
BT36
United Kingdom

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1.0 INTRODUCTION

This report relates to a water source risk assessment carried out by Geopure LLP, who visited site on 28/06/2021 on behalf of CGN Europe Energy. During the course of the survey a total of 3 water sources within the building were risk assessed. These sources represent the overall water systems and outlets within the building.

The survey and risk assessment was undertaken in order to comply with the Health Protection Surveillance Centre Guidelines for the Control of Legionellosis in Ireland, 2009 - Approved Code of Practice & Guidance (L8). The assessment has also been carried out to the requirements set in out in the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), Safety, Health and Welfare at Work (Biological Agents) Regulations 1994, as amended in 1998 (S.I. No. 146 of 1994 and S.I. 248 of 1998) Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001, as amended in 1998 (S.I. No. 619 of 2001)

The survey has been limited to the terms of reference agreed between Geopure LLP and CGN Europe Energy. Observations relating to system condition and other factors applicable to the requirements of the Health Protection Surveillance Centre Guidelines for the Control of Legionellosis in Ireland, 2009 and ACOP (L8) and the European Standard EN 806-5:2012 Water quality - Risk assessments for Legionella control - Code of practice have been recorded during the survey and specific references are made to compliance in the recommendations section of the report.

The recommendations section places responsibility on employers and others to prepare a scheme for preventing or controlling the risk from Legionellosis. Adoption of a monitoring scheme in conjunction with a regime of preventative maintenance and associated record keeping will meet those requirements.

1.1 Site Description

Carn Hill Windfarm is located just outside Whiteabbey and is supplied by a main fed water supply, the control room building has one toilet with a water heater and wash hand basin. No other water systems on site.

1.2 Risk Assessor and Scope of Assessment

David Myers of Geopure LLP conducted this Risk Assessment on the 28/06/2021. Having worked in the Water Hygiene Industry for over 7 years David Myers has completed various training coursesincluding Legionella Awareness & Management training at the City & Guilds Management of Legionella in Building Water Systems and other Health and Safety courses.David Myers has worked at all levels from Risk Assessing, Disinfection of Systems, Sampling for accredited UKAS/INAB testing through to Monitoring Systems and Reviewing Management Structures in controlling the risks.David Myers is also an elected member of the Water Management Society.

The site must ensure that all recommendations are completed to ensure that the identified risks from the systems are controlled.

Although every care is taken to ensure that all systems and associated pipework are behind walls or under floor areas.

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

Water supply quality, weather conditions, seasonal changes and other factors will vary over the course of time, the content of this assessment is based on the current findings and it should be noted that other changes as well as those listed above may significantly alter the risk levels on the systems, it is for this reason regular monthly monitoring and system checks must be carried out and the findings logged.

Geopure LLP or its staff are not qualified to offer medical opinions regarding Legionella based diseases or the effects of any level of bacteria on site.

1.3 Background to Legionella

Legionella is the bacterium, which causes Legionnaires disease. Of this genus, Legionella pneumophila is one species and is the species most commonly associated with disease outbreaks. Legionnaire's disease is identified as a pneumonia type of infection of the lower respiratory tract. The infection is most commonly acquired by the inhalation of airborne droplets or particles containing viable Legionella. Exposure to Legionella can also cause
a short feverish illness without pneumonia known as Pontiac Fever.

Research and investigations indicate that the occurrence of Legionella contamination is greatest in water cooling towers, evaporative condensers, hot and cold water services, water spray humidifiers, air washers, spa baths and pools etc where water is agitated and recirculated. The contamination from a cooling water tower will cover a far larger area than any other likely source.

Sediment, scale, and organic materials present in water systems, can provide nutrients and give protection for Legionella. Legionella have been shown to colonise certain types of water fittings, pipe work and materials used in the construction of water systems.

The presence of these materials may provide nutrients for Legionella and make eradication difficult. Other organisms in water systems such as bacteria, amoeba and algae can provide a suitable nutrient and habitat in which Legionella can survive and multiply.

The formation of biofilms within a water system is undesirable and may provide a harborage and favorable conditions for Legionella growth. Incorporation of Legionella in biofilms and within protozoa can protect the organisms, which, in time can become freely suspended into water.

Legionella is most likely to proliferate in water systems which have a temperature between 20°C and 45°C. Human blood temperature of approximately 37°C is the most ideal temperature for proliferation. Stagnant water within the above temperature range appears to provide the most ideal conditions to promote colonisation by Legionella.

Legionella will survive at temperatures below 20°C but is considered to be in a dormant state with no growth activity. The bacterium does not survive temperatures maintained consistently at 60°C or above.

2.0 Management Procedures Management Monitoring and Maintenance Issues

RAR / Survey Results Reference		Comments and Action Required
High		A written scheme for preventing or controlling the risks form Legionellosis identified in the risk assessment must be maintained and provide a monitoring function for the relevant equipment and water systems A log book system is not in place for this site.
High		A control and record-keeping logbook document should be maintained for the premises and the scheme contained within the logbook requires implementing and monitoring in order to meet the requirements of the Approved Code of Practice (ACoP). A logbook system of control documentation will best achieve the requirement for maintaining records of precautions implemented. The logbook documentation should include: (a) names and positions of people responsible, and their deputies, for carrying out the various tasks under the written scheme; (b) a risk assessment and a written scheme of actions and control measures; (c) schematic diagrams of the water systems; (d) details of precautionary measures that have been applied/implemented including enough detail to show that they were applied/implemented correctly, and the dates on which they were carried out; (e) remedial work required and carried out, and the date of completion; (f) a log detailing visits by contractors, consultants and other personnel; (g) cleaning and disinfection procedures and associated reports and certificates; (h) results of the chemical analysis of the water (if appropriate); (i) results of any biological monitoring (if appropriate); (j) information on other hazards, eg treatment chemicals (if appropriate); (k) cooling tower and evaporative condenser notification (if appropriate); (l) training records of personnel; (m) the name and position of the person or people who have responsibilities for implementing the written scheme, their respective responsibilities and their lines of communication; (n) records showing the current state of operation of the water system, eg when the system or plant is in use and, if not in use, whether it is drained down; (o) either the signature of the person carrying out the work, or other form of authentication where appropriate. Site records are not in place for this site which are dealt with below:

High		**General/Management** • The management responsibility structure has not been defined, the management responsibilities and lines of communication are not documented. All staff involved in Legionella management should have defined documented responsibilities (including service provider staff). which should be acknowledged and accepted inwriting. • No training records are available for the responsible (Appointed) person, deputy responsible (Appointed) person or on site technicians. • Regular refresher training should be implemented for all staff involved in Legionella management. • No competence records are available for site personnel. • There is not an effective audit trail of document changes. • There are no defined lines of communication for when control results are out of specification.
High		**Water Heater/s** • There are no procedures present relating to the cleaning, maintenance and monitoring of the water heaters.
Low		**Cold Water Storage Tank/s** • There are no cold water storage tank/s.
High		**General Monitoring Procedures** • Monitoring procedures are not in place for this site. • All temperature monitoring devices/thermometers used should be calibrated on an annual basis A logbook, documentation and operation should be audited on a periodic basis in order to ensure that the system conditions and precautionary procedures are being maintained and to verify the record documentation. The precise procedures relating to the precautionary measures i.e. cleaning of water heaters together with start up and shut down procedures for water heaters should be maintained within the log book system and updated as required. The details of persons who are trained and competent to undertake the works should also be recorded in the log with details of the training undertaken. This also applies to specialist contractors who may undertake part of these duties. The operating logbook document should state the details of the persons appointed as being responsible for the operational policy and management of precautions regarding control of Legionellosis on the site. The responsibilities should be clearly set out and lines of communication defined. Any specialist water treatment company providing a service on site and persons responsible for any auditing of the system operation and documentation should also be defined within the structure. Precautionary measures and maintenance activities should be implemented, and the measures should be reviewed on an ongoing basis dependent on feedback on systems conditions and updated knowledge on the control of Legionella bacteria. *For further guidance see:* • *Legionnaires' disease: The control of legionella bacteria in hot and cold water systems. HSG274 Part 2 Published 2014.*

2.1 Systems Conditions Hot Water Services

RAR / Survey Results Reference		Comments and Action Required
Low		In disabled facilities, there is a risk of scalding for vulnerable customers or staff, the very young and older people. Therefore it is recommended that thermostatic mixing devices (TMV's) should be fitted for hot water outlets used by vulnerable people. The TMV strainers or filters should be inspected, cleaned, descaled and disinfected annually. Safe hot water and delivery devices are summarized as follows: • Thermostatic Mixing Valves must be fitted to all disabled access areas wash hand basins to lower the hot water temperature to 41°C. • Thermostatic Mixing Valves should be fitted to all other sinks and sluices to lower the hot water temperature to 55°C. *For further guidance see:* • Legionnaires' disease: The control of legionella bacteria in hot and cold water systems. HSG274 Part 2 Published 2014. • HTM 04-01 Part A - Water systems Health Technical Memorandum 04-01: The control of Legionella, hygiene, "safe" hot water, cold water and drinking water systems Part A: Design, installation and testing.2006.

2.2 Systems Conditions Hot Water Storage

RAR / Survey Results Reference		Comments and Action Required
		There is/are 1 water heaters located on site.
High Flow 44°C Return °C Water heater is not used for long periods of time, ensure flushed for 5 minutes when arriving on site and		WH 01 is a POU (ATC) located in the Control room Toilet supplying the Wash hand basin. The following remedial work should be undertaken to the water heater: • The water heaters should be regularly cleaned and maintained according to the ACoP (L8) and manufacturer's instructions and records kept. • Ater heater flow temperature should be monitored and recorded on a monthly basis. All actions must be recorded within the sites log book. • The outlet temperature from the water heater must be kept above 60°C leaving the water heater and at least 50°C prior to the outlets or thermostatic mixing valve(s) which should be fitted. The water heaters have a primary supply from the main water supply. *For further guidance see:* • *Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005)* • *Safety, Health and Welfare at Work (General Application) Regulations, 2007 (S.I. No. 299 of 2007)* • *Safety, Health and Welfare at Work (Biological Agents) Regulations 1994, as amended in 1998 (S.I. No. 146 of 1994 and S.I. 248 of 1998)* • *Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001, as amended in 1998 (S.I. No. 619 of 2001)* • *National Guidelines for the Control of Legionellosis in Ireland, 2009*

2.3 Systems Conditions Cold Water Storage

RAR / Survey Results Reference		Comments and Action Required
Low		NO Cold Water Storage tanks on Site

2.4 Systems Conditions General/Other Issues

RAR / Survey Results Reference		Comments and Action Required
Low		It is recommended that if infrequently used the following outlets are removed or flushed on a weekly basis with the retained water flushed immediately to waste before use without the generation of aerosols and the details recorded within the site log book:
Low		If the infrequently used outlets detailed above are designated redundant it is recommended that the redundant pipes and units are removed and pieced through to the main supply. *For further guidance see:* • *Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005)* • *Safety, Health and Welfare at Work (General Application) Regulations, 2007 (S.I. No. 299 of 2007)* • *Safety, Health and Welfare at Work (Biological Agents) Regulations 1994, as amended in 1998 (S.I. No. 146 of 1994 and S.I. 248 of 1998)* • *Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001, as amended in 1998 (S.I. No. 619 of 2001)* • *National Guidelines for the Control of Legionellosis in Ireland, 2009*

Low		No access was available to the following areas at time of survey: All areas where accessable
		For further guidance see: • *Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005)* • *Safety, Health and Welfare at Work (General Application) Regulations, 2007 (S.I. No. 299 of 2007)* • *Safety, Health and Welfare at Work (Biological Agents) Regulations 1994, as amended in 1998 (S.I. No. 146 of 1994 and S.I. 248 of 1998)* • *Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001, as amended in 1998 (S.I. No. 619 of 2001)* • *National Guidelines for the Control of Legionellosis in Ireland, 2009*

Risk Assessment Rating (RAR): Recommendations to be Completed:

Low	Within one Year
Medium	Within 6 Months
High	Within 3 Months

Note:

Note that any proposed alterations to the water supply system must be notified to the Water Undertaker and approval given by them within 10 working days before the commencement of work. The Water Undertaker may make certain conditions on their acceptance of any proposals. However if no conditions are made within 10 days of the notification, work may begin.

All work must be carried out in accordance with the Water Supply (Water Fittings) Regulations 1999 however should you choose to use an approved contractor there is no requirement to give Notice to the Water Undertaker.

Owners and occupiers of premises and anyone who installs plumbing systems or water fittings have the legal duty to ensure that the systems satisfy the Water Supply (Water Fittings) Regulations 1999. It is a criminal offence to breach the Regulations and offenders may face prosecution.

2.5 Summary of Recommendations

Management **Monitoring and Maintenance Issues:** **Comments and Action Required**
Maintain and develop the logbook for preventing or controlling the risks form Legionellosis in the noted areas. Specific improvements should be made in the following areas: •Management structure. •Monitoring programme. •Servicing schedule •Flushing programme
Hot Water Services: **Comments and Action Required**
•Consider fitting TMV's to hot water outlets if a scald risk. •Ensure all TMV's comply with MES D08 standards and are tested by the Build Cert TMV scheme. •Ensure water temperatures reach the outlets @ no less than 50°C.
Hot Water Storage: **Comments and Action Required**
•Carry out remedial works to listed water heaters in section 2.2 that are faulty and or do not comply with the requirements in maintaining a minimum of 50°C at outlets, Monthly temperature checks must be carried out to ensure that the Point of use water heaters maintain a stored temperature of no less than 60°C.
Cold Water Storage: **Comments and Action Required**
•There is no cold water storage tank that needs to be cleaned and disinfected annually.
General/other Issues: **Comments and Action Required**
•Develop and implement a flushing regime for infrequently used outlets or if deemed redundant remove the units and associated pipe work and piece through to the main branches. •Remove all dead legs and any others that may be identified outwith this survey by removing them as close to the live source as possible. •Ensure designated engineers clean and maintain the air conditioning, condensing units on site. •Insulate all distribution pipe work and fittings.

3.0 ASSESSMENT OF RISK

Rationale

Legionnaire's disease is caused by the inhalation of aerosols/water droplets contaminated with the Legionella bacteria. It is therefore important that systems susceptible to colonisation by Legionella and which incorporate a potential means for creating and disseminating water droplets should be identified and the risk they present should be assessed. This identification and assessment is required under the Approved Code of Practice (L8)

The assessment must be completed for routine system operation and use and also for circumstances such as breakdowns, abnormal operation, commissioning or other unusual circumstances.

Once the assessment has been completed a strategy can be prepared for preventing or controlling the risk. The strategy will be based on a sound knowledge of the varying levels of attention required by the differing risk sources within the building.

The assessment takes account of:

A) The potential for formation of droplets.

B) The condition of the water.

C) Hot water temperature.

D) Cold water temperature.

E) The water turnover rate.

F) The susceptibility of persons exposed to droplets.

G) The population density exposed to droplets.

Water droplets are created in various ways such as by spraying, bubbling and following impact onto hard surfaces. Large drops may be reduced to aerosol size by further impact or evaporation. The smaller aerosols can persist for long periods and will be carried on air currents.

In undertaking the risk assessment and drawing up precautions particular attention must be paid to situations where:

- The population exposed contains a relatively high number of people susceptible to Legionella, for example older individuals or persons with compromised immunity.
- If the density of population is high, and therefore the number of people at potential risk is high.

The risk assessment should be reviewed regularly or whenever there is reason to believe that the original assessment may no longer be valid and ideally an annual review of all sources should be undertaken. The original assessment may be compromised if:

- Changes are made to plant or water systems or its use.
- Changes are made to building use in which the water system is installed.
- New information about risks or control measures becomes available.
- Results of checks indicate that control measures are no longer effective.

Once a risk has been identified and assessed, a scheme should be prepared for preventing or controlling it. The risk is heightened when conditions are not monitored and controlled and Legionella is allowed to proliferate.

The scheme should be implemented together with planned preventative maintenance in line with that contained within the general recommendations section of this report. This will meet the requirements of (L8), and 'prepare a scheme for preventing or controlling the risk'.

3.1 Method of Risk Assessment

The method of risk assessment takes account of the principle parameters, which govern the risk associated with each water source in the building. Selective and planned water sampling may also be carried out in order to confirm absence of Legionella. The following assessment parameters and associated risk factors have been developed in order to derive a numerical risk value and overall risk rating:

	Risk Parameter	Risk Rating	Numerical Value
A)	Formation of Droplets		
*	Still Water	Low	10
*	Droplets	Medium	20
*	Aerosol	High	30
B)	Water Condition		
*	Chemical Regime	Low	10
*	Clean	Low	15
*	Contaminated	Medium	25
*	Heavily Contaminated	High	30
C/D)	Water Temperature		
*	Below 20 deg C	Low	10
*	21 deg C - 25 deg C	Medium	20
*	26 deg C - 45 deg C	High	30
*	46 deg C - 50 deg C	Medium	20
*	Above 50 deg C	Low	10
E)	Water Turnover		
*	Stagnant	High	30
*	Low Turnover	Medium	20
*	Moderate Turnover	Medium	15
*	High Turnover	Low	10

Risk Parameter	Risk Rating	Numerical Value
F) <u>Susceptibility of Exposed Persons</u>		
* Average Population	Medium	20
* Susceptible Population	High	30
G) <u>Population Density of Exposed Persons</u>		
* Low Density	Low	10
* Medium Density	Medium	20
* High Density	High	30

3.2 Legionella Positive Rating Factor

For sources sampled and found Legionella positive an additional weighting factor shall be applied to the assessment. 2 shall multiply the total numerical value for the infected source.

Immediate steps must be taken to eradicate the infection.

3.3 Source Risk Rating

The Source Risk Rating is calculated by addition of numerical values for each of the risk parameters of each source and a weighting factor if applicable.

Total Numerical Value	Overall Risk Rating
70 - 106.	Low
107 - 143.	Medium
144 - 180.	High

The overall risk rating for each source must be evaluated in conjunction with other influences observed during the course of the survey and with consideration for the factors highlighted in (L8) i.e. system breakdowns, abnormal operations, commissioning and other unusual circumstance.

To summarise overall site risk rating:

Aerosol Risk Category	Criteria
A30 + B15 + C/D30 + E15 + F20 +G10 Total: (120) MEDIUM RISK	• Mains fed basin taps that incorporate pressure reduction, or incorporate outlet diffusers • Moderate pressure taps that are not used extensively, or by small numbers of people (<10 for example) • Some susceptible or elderly persons using outlets. • Little used outlets not flushed weekly when not in use or are not used at all • Management programme not in place. • Monitoring programme not in place.

3.4.1 Survey Results

Customer Details		System Risk Assessment Details	
Company Name :	Carn Hill	Reference Number:	0
Address :	Newtownabbey Northern Ireland BT36 United Kingdom	Location:	0
		Assessors Name :	David Myers
		Date :	28 June 2021

Location	Outlet Type	No.	TMV	Hot	Cold	RAR Hot	RAR Cold	Sentinel	Recommendations Reference / Comments
Control Room Toilet	Basin Toilet	1 1		44°C	15°C	High	Low	✓	Outlet Temperature below 50°C Please increase hot water temperature to reach outlet at no less than 50°C. Cold water is main supplied.
									Water heater is not used for long periods of time, ensure flushed for 5 minutes when arriving on site and temperature of 50 degrees is maintained whilst in use.

Notes: AC- Air Conditioner DD- De-ionised water DM- Drinks machine DW- Drinking water DWD- Drinking water dispenser HR- Hose reel LHS- Left hand side RHS- Right hand side PreWa-Pressure Washer RBP Redundant branch pipe POU- Point of use heater TMV- Thermostatic mixing valve FH- Flexi hose OT- Outside Tap WT- Wall Tap UU- Unvented unit IM- Ice machine WB- Water boiler WM- Washing Machine WHB- Wash hand basin DiW- Dish washer CW- Cold Water HW- Hot Water IES- Independent Electric Shower WH- Water heater As.Bath- Assisted Bath. EMSH-Emergency Shower WRAS- Water Regulations Advisory Scheme UC- Urinal Closet

1. The control of legionella requires that the nearest and furthest outlets be sampled for temperature after one minute of running hot water and two minutes of running cold water however, more outlets should be tested to obtain a more representative survey for risk assessment purposes.
2. A separate form should be completed for any outlets not associated with this system as referenced above.
3. Any temperature found to be below 50°C within 1 minute of operation on unvented unit supply is regarded as a failure for the hot water and above 20°C within two minutes of operation for the cold water.
4. The WH or POU water supply to the Thermostatic Mixing Valve (TMV) temperature should be at least 50 ± 2°C within a minute of running the water. One way of measuring this is to use a surface temperature probe on the hot water inlet to the valve. Outlet temperature should also be measured and should be 43±2°C for office staff only wash hand basins, 41±2°C in disabled wash hand basins and showers and 55±2°C for sluices and sinks.

3.5 Site Water Services Register:

We understand that the extent of water service installations on site at the time of the review is as detailed in the register below:

Installations :	Tick if present	No.of Systems
1. Mains Water Supply to Site	✓	1
Other Water Supplies to Site		
2. Cold Water Storage and Distribution Services		
3. Domestic Hot Water Services		
(i) Storage Calorifiers & buffer vessels		
(ii) Plate Exchanger with buffer vessel		
(iii) Point of Use Water Heaters	✓	1
(iv) Instant Water Heaters		
4. Showerheads		
5. Cooling Towers and Evaporative Condensers		
6. Ventilation and Air Conditioning Systems		
7. Humidification Systems		
(i) Wet Humidifiers		
(ii) Foggers and Water Misting Systems		
(iii) Air Washers		
(iv) Steam Humidifiers		
(iv) Wet Scrubbers		
8. Water Softeners		
Pre-Treatment Plant		
9. Closed Systems		
10. Display Fountains / Indoor Water Features		
11. Miscellaneous Systems :		
(i) Emergency Showers and Eyewash Stations		
(ii) Sprinkler and Hose Reel Systems		
(iii) Lathe and Machine Tool Coolant Systems		
(iv) Spa Pools / Whirlpools		
(v) Horticultural Misting Systems		
(vi) Dental Equipment		
(vii) Vehicle Washing Systems/Spray Booths/Water Curtains		
(viii) Industrial Process Waters		
(ix) Adiabatic Coolers		
(x) Others [ ]		

4.0 OBSERVATIONS

The survey and investigation was commissioned in order to identify and assess the risk of Legionellosis from the water sources on the premises. General and specific observations on the systems made during the course of the survey are also recorded and the more general requirements of (L8) are also commented on where applicable. Although references are made to compliance with the requirements (L8) the survey cannot be considered to have addressed all aspects of the guidance note.

The specific observations made in this report should be read in conjunction with the practices and procedures detailed in the recommendations section and also with the documents the Approved Code of Practice (L8).

Compliance with (L8) may be classified into two distinct categories:

Management Procedures - The management procedures which have been implemented to ensure that all control measures, record keeping and monitoring are adequate and effective.

Systems Conditions and Description - The physical conditions and description of the water systems in the building must be considered when assessing the risk from Legionellosis.

This report therefore addresses the above categories. A general overview of existing Management Procedures is included and followed by comprehensive observations of the Systems Conditions and Systems Description as seen during the course of the survey.

4.1 General Management Compliance

The survey was commissioned in order to identify and assess sources of risk from the water storage and distribution systems.

The assessments are detailed in the relevant sections of this report.

The assessments of risk must be used as guidance for the preparation and implementation of an ongoing scheme for control of Legionella bacteria.

The assessments must be reviewed regularly (every two years) or whenever there is a reason to believe that the original assessment may no longer be valid due to circumstances such as systems physical changes, failure of control measures etc.

A review of the assessment should be considered where there has been a change to any of the systems originally assessed to pose a risk and to other water systems, which may cause them to pose a higher risk.

A review should also be undertaken if there is change in the use of the premises or activities undertaken which may have a bearing on systems operations and occupant's susceptibility. A review should also be considered when new information becomes available and if monitoring checks indicate that control regimes may no longer be effective.

Depending on the level of change the review of assessment may be more specific than general and whichever is the case, the findings should be recorded formally and any changes to existing practices and control measures should be undertaken if appropriate.

Responsibility for deciding whether it may be appropriate to review an assessment will normally be the decision of the person appointed managerially responsible for Legionella precautions. If the ongoing auditing and monitoring of the systems conditions and operation of control procedures is undertaken by an independent body, any situation requiring re assessment should be reported to the responsible person by them.

4.2 Systems Conditions

Hot Water Systems

Customer Details		System Risk Assessment Details	
Company	Carn Hill	Reference:	Water Heater 1
		Location:	Control room toilet
Address	Newtownabbey Northern Ireland BT36 United Kingdom	Assessor:	David Myers
		Date	28 June 2021

Heater Reference No.	WH 01
Type (unvented, Instant, multi point, combination cylinder or point of use)	Point of Use
Make and model	Atc
Heater capacity	10Lt
Cistern capacity	10Lt
Method of heating	Electric
Size of inlet	15mm
Size of outlet	15mm
Cistern condition and conformity to Regulations	Good
Actual temperature of heater flow ^{0}C	44°C
Is cold water supply treated and type	Mains - Untreated

Cold Water System Details

Customer Details		System Risk Assessment Details	
Company	Carn Hill	Reference:	Mains Cold Water
		Location:	Toilet
Address	Newtownabbey Northern Ireland BT36	Assessor:	David Myers
		Date	28 June 2021

Type (unvented, Instant, multi point, combination cylinder or point of use)	Mains Fed
Size of Inlet	15mm
Size of outlets at sentinel points	15mm
System condition and conformity to Regulations	Good
Actual temperature of flow	15°C
Is cold water supply treated and type	Mains - Untreated

COLD WATER DOWN SERVICES
None

4.3 Systems Description

STORAGE CISTERNS		
There are	0	Unvented
There are	0	Instant Water Heater
There are	0	Multi Point
There are	0	Combination
There are	1	Point of Use
There are	0	Fortic
There are	0	Plate Exchanger
There are	0	Calorifier

HOT WATER CALORIFIERS/HEATERS

Total Water Heaters 1

WH 01 is a POU (ATC) located in the Control room Toilet supplying the Wash hand basin.

5.0 GENERAL RECOMMENDATIONS

The hot and cold-water services and systems must be operated and maintained in a correct and safe manner and adequate precautionary measures must be taken against the risk from Legionellosis.

The following general recommendations should be read in conjunction with the observations of systems conditions, system description, specific recommendations sections and the advice and guidance should be followed where appropriate.

5.1 Basic Requirements

The available guidance regarding the design and maintenance of hot and cold-water services systems is widely available and comprehensive.

Through all aspects of the available guidance it is good policy to fall back on four basic principles when assessing the requirements for system operation:

- Maintain cold water at a sufficiently low temperature.
- Maintain hot water at a sufficiently high temperature.
- Keep water on the move.
- Keep the water and the storage and distribution systems clean.

5.2 Cold Water Storage

Location

The water supply regulations state that:

- Water storage cisterns shall be installed in a place or position such that the inside may be readily inspected and cleansed.
- Any float operated valve or other device used for controlling of the inflow of water may be readily installed repaired, renewed or adjusted. To this end the storage cistern must be located for satisfactory access by maintenance personnel.
- If the storage cistern has more than 1,000 litres operating capacity then it should be provided with an access hatch so that maintenance can be carried out without having to remove the complete lid. The lid should also be fitted with a suitable vent, which should be screened against ingress of insects etc. (Note BS8558:2012)

Heat Gain

The normal location for cold-water storage cisterns in roof spaces and roof top plant rooms makes them liable to extraneous heat gain. In order to minimise heat gain the use of natural ventilation should be considered or mechanical ventilation under exceptional circumstances. If the storage cisterns are installed in warm areas they should be fitted with adequate thermal insulation in order to reduce heat gain. (Note BS8558:2012) To restrict microbiological growth it is important that stored water is kept at the lowest practicable temperature and (L8) specifies that cold water storage and distribution should be maintained at 20°C or below.

Fittings

All cold-water storage cisterns must be provided with adequate lids with over-lapping edges, which are secured to the tank. Lids should be adequately vented. All overflows from the cisterns should be protected with fine mesh screens in order to prevent ingress of insects and other vermin. The drain valve fitted to the lowest part of the storage cisterns must provide a fast drainage facility for times when the cisterns are cleaned.

Water Turnover

Cold-water storage cisterns should be sized so as to provide a good water turnover throughout the cistern. A maximum of 24 hours storage capacity is recommended and the quality of the water stored must be carefully assessed in relation to the daily load requirement so that a reasonable rate of turnover can be achieved. Water quality will significantly deteriorate if stagnation is allowed to occur.

Turnover of stored water can be best checked by the isolation of the inlet serving the valve and by noting the rate by which the water level falls during a period of normal use. If this test indicates that low turnover is apparent then steps should be taken to improve the turnover. It may be possible where two cisterns are installed providing a common service, for one of them to be left empty and blanked off with the pipe sections drained off. An alternative method would be to reduce the normal water level in the tank by adjusting the inlet of the water valve.

Multiple Installations

On occasions storage cisterns are connected in multi sets or they have multi sections. With this arrangement it is very important to ensure that stagnation and stratification of the stored water does not occur and in order to achieve this the mains water inlets and series connections outlets must be positioned at a high and low level respectively and at the opposite side of the cistern.

In some existing installations it would be a major modification to achieve this recommendation and consideration should be given to the installation of extended discharge pipes and the use of only one of the ball valves to control the water levels in the cistern.

The outlet on the ball valve may be piped into each cistern. In multiple or multi section installations, the valving arrangements must permit isolation of individual cisterns or cistern sections for cleaning treatment. These valves should be positioned at points on the distribution, which ensure that no dead leg areas can occur.

Inspection and Treatment

All cold water storage cisterns must be regularly examined, (L8) specifies that this should be annually or more frequently if there is a reason to suspect contamination. The inspections should indicate the presence of foreign objects, biological material, excessive corrosion and deterioration and also build up of debris.

Cold water storage cisterns should be cleaned and disinfected when routine inspections shows it to be necessary, the cold water storage cisterns should be thoroughly cleaned and then disinfected to the standard required under BS8558:2012. It is not necessary to charge the distribution system with chlorine unless substantial work is being carried out or inspections and tests indicate a degrading water condition. For this purpose a total bacteria count can act as a general indicator of microbiological contamination. The bacteria count will not provide any direct information on the presence of Legionella but it will give a guide to the extent of colonisation by other micro organisms. The bacteria count can be used with other observations in order to determine the requirement for disinfection routines.

During the cleaning and treatment of water storage cisterns the internal surfaces should normally be treated with a protective coating. The coating must be listed and approved under the WRC directory of water fittings and materials as being suitable for application in situ. Prior to treatment with the protective coating, any pitting caused by corrosion must be thoroughly cleaned off and treated.

5.3 Domestic Hot Water Storage Calorifiers and Cylinders

For hot water storage calorifiers and cylinders the flow to the hot water distribution system is normally taken from the top vessel together with the open vent. The cold feed make-up is usually taken in towards the bottom of the vessel and the secondary hot water return is normally taken in approximately 1/3 from the top.

Storage calorifiers and cylinders must be suitably arranged for isolation and they should incorporate drain connections at the lowest points, which are large enough to permit the removal of sludge and to drain the plant quickly. The drain valve size should ideally allow drainage within 30 minutes and for the large installations drain off should not take more that 1-hour. The drains must be positioned to ensure adequate access and this is particularly important in the case of vertical storage calorifiers.

Operating Temperature

L8 requires that the operating temperatures for the hot water storage calorifiers and cylinders etc. should be a minimum of 60°C and that this temperature should be evident throughout the storage vessel. The temperature on the return should not be less than 50°C

Temperature Gauge

A suitable temperature gauge should be sited near to the calorifier / cylinder water supply outlet so that a quick visual indication can be made of the operating temperature. The temperature gauges should be checked and re-calibrated on a periodic basis.

Stratification and Stagnation

Stratification and stagnation must be reduced to a minimum. Stagnation in calorifiers may result from a number of causes, including the location of the cold feed and re-circulation tappings and possibly the capacity and general design. Stagnation can be minimised by modification of circulation arrangements within the calorifier. Stratification can occur in any calorifier or cylinder and there will be some temperature gradient across the vessel depending on the heat input and rate of draw.

To prevent stagnation where the cold feed and/or the return water connections are incorrectly sited, the modification of tappings or installation of sparge pipes can be employed.
Temperature stratification can be overcome by the use of small pump units, which can circulate water from the top to the bottom of the calorifier. The direction of flow is important in order to prevent redistribution of sludge, which may accumulate in the base sections. The pumps should be run from a timer at periods of low draw-off. The running time should be sufficient to eliminate the temperature gradient and frequency of operation and run time may be established from experience of the particular installation involved.

Another means of reducing possible stratification is by the repositioning of the hot water circulation return pipe to the base of the calorifier either by direct fitting or by use of an internal sparge pipe correctly sized and positioned. It may be possible to re-site the position of the cold feed also. By undertaking these measures they should ensure that during a significant period of the operating day, the total contents of the heating vessel would be raised to 60°C.

5.4 Hot and Cold Water Distribution Systems

L8 states that water services should operate at temperatures that prevent the proliferation of Legionella. Hot water distribution should be maintained at a temperature of at least 50°C (55°C in healthcare premises) obtainable at the taps within 1 minute of running.

Cold water storage and distribution should be at a temperature of 20°C or below after 2 minutes.

Hot Water Distribution

The design of the hot water distribution systems should be such as to minimise the length of any dead leg or dead end. The hot water service return connection should be taken as close as is practical to any draw-off as stated under BS8558:2012. Secondary circulation must extend to the service point from the supply.

Care should be taken when hot water services are run in the same service ducts and void as the cold-water services. Heat transfer can occur and the cold services may be warmed up to an unacceptable level. Insulation must be adequate and maintained in good order.

Cold Water Distribution

All cold water distribution pipe work, mains and cold water down feeds should be located as far as is practicable to minimise heat gains from the environment. All pipe work should be insulated and arranged to eliminate or minimise dead legs or dead ends. The cold water should be distributed at a temperature of 20°C or below.

5.5 Routine Inspection and Maintenance

L8 requires that the water services shall be routinely checked and inspected and that they should be well maintained.

Maintenance of the hot and cold-water distribution system should indicate a regime of cleaning at the water outlets, i.e. taps, showers, etc. in order to reduce any build-up of scale or any other contamination, which may provide a nutrient for bacteria.
The temperatures of the distribution systems and temperatures at outlet positions must be checked on occasions in order to ensure that temperatures are correct. As a minimum precaution the temperature at all outlets should be checked at least once a year and a representative number, which would normally be the sentinel outlets (nearest and furthest from the hot water or cold water source), should be checked on a more frequent, monthly basis.

Tests may also be carried out on the cold water systems in order to determine the bacterial quality. This measure will assist in determining the requirement for cleaning and disinfection procedures for the storage and distribution services.

5.6 Cold Water Pressurisation Pumps

In some cases there may be duty or standby pump arrangements installed for pressurising systems. In order to prevent any danger of stagnation, the pumps should be changed over regularly to ensure that the back-up pump is regularly in service.

5.7 Direct Fired Domestic Hot Water Heaters

These units are in many cases replacing the traditional calorifier systems where a decentralised hot water service is developed. They are utilised on sites where there are many individual outbuildings and where the running of pipe work from a centralised source would be impracticable.

These heaters, such as the 'Andrews' or 'Lochinvar' are normally directly gas fired and the heat source is at the base of the unit. They normally have a good distribution of temperature throughout the water storage area.

The manufacturers of these water heaters provide guidance on the maintenance and operation and this guidance must be closely adhered to.

With regard to the risk from Legionellosis, the manufacture's guidance, with respect to the maintenance of the waterside of the unit, must be strictly adhered to. On occasions the waterside needs opening and cleaning in order to remove sludge and scale which can accumulate within the waterways and which can provide a nutrient for bacteria and harbourage for Legionella. The drain valves should also be purged on occasions, usually annually.

5.8 Instantaneous Water Heaters for Single or Multi-Point Outlets

These devices such as the 'Santon' usually serve one or several draw-off and are either electrically or gas heated. BS8558:2012, details the general principal and limitations of use.

The hot water flow rate is limited and is dependent upon the heaters power rating.

Where restricted rates of delivery are acceptable the heater can deliver continuous hot water without requiring time to re-heat.

They are susceptible to scale formation in hard water areas, where they will require frequent maintenance.

This form of hot water heating should only be considered for smaller premises or where it is not economically viable to run hot water circulation to a remote outlet.

5.9 Combination Water Heaters

On these units the make-up of water is normally delivered through a water inlet ball valve to a small reservoir, which is covered by a lid. When the outlets are opened, water transfers from the water reservoir to the heating section of the unit and then on to the tap outlets via distribution pipe work. By the very nature of configuration, there will normally be a temperature rise from the water heating section through the cold-water storage section and a rise in cold-water storage temperature will result.

In order to maintain good hygiene conditions within the cold-water storage section there must be a good water turnover and a programme of regular cleaning and disinfection must be introduced.

During the cleaning and disinfection process the water storage and the unit heater should be treated in a similar fashion to a cold water storage cistern, i.e. fill the system and add sodium hypochlorite to give a free residual chlorine concentration of 50 mg/l in the water, leave to stand for 1 hour and then draw-off water through each tap outlet until chlorine is present. Leave charged for a further 1 hour and then check chlorine concentration at the tap furthest from the unit. If free residual chlorine is less that 30 mg/l, repeat the disinfection process.

The lids to the water storage section of the unit heaters must be close fitting in order to prevent ingress of contaminants to the storage facility.

5.9 Thermal Disinfection and Chlorination

Water services may be disinfected in two ways:

- Using a chemical disinfectant. The most popular means being by chlorination. This is more commonly used when it is necessary to disinfect the whole system including storage tanks.
- Thermal disinfection is the procedure whereby the water system is raised to a temperature at which Legionella cannot survive.

Chlorination

Chlorination should be carried out in accordance with BS8558:2012 specification for the design, installation, testing and maintenance of services supplying water for domestic use and their curtilages.

Where a hot water system is to be disinfected by this procedure, the system must be allowed to cool prior to chlorination and the system must be vented adequately. For pressurised systems, specialist advice must be sought.

All visible dirt and debris shall be removed from the cistern. The cistern and distributing pipes shall be filled with clean water and then drained until empty of all water. The cistern shall then be filled with water again and the supply closed. A measured quantity of sodium hypochlorite solution of known strength shall be added to the water in the cistern to give a free residual chlorine concentration of 50 mg/L in the water. The cistern shall be left to stand for at least 1 hour. Then each draw-off fitting shall be opened and then closed when the water discharged begins to smell of chlorine and then measured. The cistern shall not be allowed to become empty during this operation. If necessary, it shall be refilled and chlorinated as above. The cistern and pipes shall then remain charged for a further 1-hour. The required concentration must be maintained in the cistern through the chlorination procedure.

The tap furthest from the cistern shall be opened and the level of free residual chorine in the water discharge from the tap shall be measured. If the concentration of free residual chlorine is less than 30mg/l the disinfection process shall be repeated.

Thermal Disinfection

There is no British Standard for pasteurization and so the following is recommended as a means of pasteurising the system.

Having ensured that the calorifier is vented, increase the temperature in the calorifier so that it is 70°C. Draw water though the drain cock at a pasteurising temperature of 70°C for 2 minutes (preferably longer). Hold the calorifiers at temperature for 1 hour then, starting with the furthest outlet away, and draw hot water through each tap and appliance sequentially at a pasteurising temperature. If the calorifiers cannot produce water at the correct temperature, the procedure must be repeated. If the hot water is at a pasteurising temperature initially, but recovery of the calorifier is insufficient to maintain the water temperature, the procedure must be stopped, the calorifier held above 70°C for a further 1-hour and the procedure re-started at the outlets, which have not been pasteurised.

For the procedure to effective, all parts of the system must reach full pasteurizing temperature.

Both chlorination and pasteurisation should be carried out only when the building and all relevant systems are under full control of the operating contractor, who should ensure compliance with Health & Safety at Work etc Act 1974 and COSHH regulations. Trained personnel who should be closely supervised must carry out the treatments.

ATC POU water heater

Control Room Toilet

Service Logbook for
Hot and Cold Water Systems

Carn Hill

Property:

Carn Hill
Newtownabbey
Northern Ireland
BT36
United Kingdom

Report Date 28 June 2021

Review Date 28 June 2023

17/18 Dean Swift Building
Armagh Businesses Park
50 Hamiltonsbawn Road
BT60 1HW

Introduction

The logbook or written control scheme should be specific and tailored to the system covered by the risk assessment and should include the following information:

Details of the risk assessment
- This must be current (a review period of 1 year is recommended for this site)

The management structure
- including details of the duty holder, responsible person(s) and allocation of responsibilities and the communication pathway.

Up-to-date basic schematic plan
- showing the layout of the system(s) and its location within and around the premises. This should identify piping routes, storage and header tanks, calorifiers and relevant items of plant and all water outlets.

Details of precautionary measures implemented
- precautions to prevent or minimise risk associated with the system

Monitoring, inspection, test and check results
- a record of all results including signatures, dates and what was actioned when out of specification
- a record of analyses (as appropriate)
- an asset inspection record, including subsequent remedial actions
- a record of cleaning and disinfection, including details of chlorination levels, temperatures (during pasteurisation) and certification (as appropriate)

Incident plan, which covers the following situations:
- major plant failure, eg chemical system failure
- very high levels or repeat positive water analyses for legionella
- an outbreak of legionellosis, suspected or confirmed as being centred at the site or believed to be centred in an area which includes the site.*

** This information is available within the risk assessment and logbook provided to site.* ***Records must be recorded on an ongoing basis and kept*** *for all monitoring, inspections etc for at least 5 years.*

Procedures on the safe operation of the system / plant
- including safe start up and shut down procedures
- an operations manual should be available for each individual system

Remedial action
- To be taken in the event that the scheme is shown not to be effective, including control scheme reviews and any modifications made

Health and safety information
- including details on storage, handling, use and disposal of any chemical used in both the treatment of the system and testing of the system water.**

*** This information should be provided by site and records retained for at least 5 years.*

Check list: Hot and cold water services

Service	Task	Frequency
Hot Water Services	Arrange for samples to be taken from hot water heaters, in order to note condition of drain water	Annually
	Check flow temperatures from water heaters (thermostat settings should modulate as close to 60 °C as practicable without going below 60 °C)	Monthly
	take temperatures at sentinel points (nearest outlet, furthest outlet and long branches to outlets) to confirm they are at a minimum of 50°C within one minute.	Monthly
	take temperatures at a representative selection of points to confirm they are at a minimum of 50 °C to create a temperature profile of the whole system over a defined time period	Annually
Cold Water Tanks	Inspect cold water storage tanks and carry out remedial work where necessary	Annually
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 to zones 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 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	Annually
Showers & 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.
Little-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 (eg 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 (ie 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. Sustain and log this procedure once started.	Weekly

Responsibility Structure

Customer Details	
Name of Customer	
Property Name	
Address	
Managing Agent	
Name	
Contact Details	
Facilities Manager	
Name	
Contact Details	
Delegated Responsible Persons	
Name	
Contact Details	
Authorised Deputy Person	
Name	
Contact Details	
Site Manager	
Name	
Contact Details	
Site HVAC Technician	
Name	
Contact Details	

Responsibility Structure (Continued)

Mechanical and Electrical Contractors	
Name	
Contact Details	
Water Treatment Specialist	
Name	Geopure LLP
Contact Details	17/18 Dean Swift Building
	Armagh Businesses Park
	50 Hamiltonsbawn Road
	BT60 1HW
Risk Assessment Providers	
Name	Geopure LLP
Contact Details	17/18 Dean Swift Building
	Armagh Businesses Park
	50 Hamiltonsbawn Road
	BT60 1HW
Contact Name	David Myers
Telephone Number	07718052391
FAX	
Email	david@geopure.co.uk
Delegated Responsible Persons	
Name	
Contact Details	
Local Water Supplier	
Name	Northern Ireland Water
Contact Details	Waterline 08457 440088
Name of Person Responsible For Compiling This Information	
Name	David longworth
Signature	

Notes:

1. This form when completed should record all the competent personnel (where applicable) involved in implementing the scheme designed to minimise the risk from exposure to legionella.
2. The operators of the scheme should be adequately trained in the functions that they carry out and their training should be recorded on the appropriate form.
3. They are collectively responsible for the above functions and compliance with the requirements of the ACOP (L8).

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Customers Annual Risk Assessment Review Sheet

Company Details	Details
Carn Hill	System Ref: Carn Hill
	Responsible Person on Site: David longworth
Newtownabbey Northern Ireland BT36	Date of last review:
	Date of this review:
	Date of next review:

Subject Discussed	Yes/No	Comment Action Agreed
Risk Assessment		
Are the current system details correct		
Is there an up to date hot water survey		
Are the schematic drawing details correct		
Does the risk assessment need updating		
Logbook		
Is the maintenance scheme up to date		
Are the responsible person details up to date		
Is the training log up to date		
Have any training requirements been identified		
Is there an annual review of the system		
Are all log sheet entries up to date		
Has any remedial work been identified and recorded		
Has identified remedial work been rectified		
Are outlets cleaned annually and certificated		
Has the system water been tested for legionella and certificated		
Has the annual mains water analysis been recorded and certified		
Summary of compliance with ACOP		
Has the system been adequately risk assessed		
Is the scheme satisfactory for minimising the risk		
Has the scheme been fully implemented		
Are the records being kept up to date by all responsible/competent personnel		
Does the scheme effectively function in line with the requirements of the ACOP (L8)		

Conclusion

We agree that this review is an accurate assessment of the current conditions

Signed on behalf of:	Signed on behalf of the customer:

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Mains Water Supply (Analytical Data) Log.

Company Details	Details	
Carn Hill	System Ref:	Carn Hill
Newtownabbey Northern Ireland BT36	Cistern(s) Ref.No.	
	Associated Heater Ref :	
	Responsible Person on Site:	David longworth

Date	Appearance	pH	Total Hardness	Free Chlorine	Conductivity	T.V.C.	Other	Signed

Notes:

1. Mains water is not normally identified as a risk for legionellosis but it is advisable to establish whether the water complies with the requirements of the EC Directive and the Water Supply (Water Quality) Regulations. It is recommended that the water is tested at six monthly intervals by an independent laboratory. If a comparrison is required you should contact your local water supplier for a summary mains water quality report for your area (Schedule 4 report DWI requirements)
2. The above tests will indicate whether the water supply to your site is variable in it's constituents. This data can be used to provide background information for any water treatment requirements. They do not imply that the water complies with the standards contained within the above legislation.

Hot Water Heater Log.

Company Details	Details
Carn Hill	System Ref. **Water Heater** 01
	Heater Ref. Control room toilet
Newtownabbey	Associated Heater Ref.
Northern Ireland	Responsible Person on Site
BT36	David longworth

Date	Temperature °C		Drain Water Sampled	Visual Internal Inspection	Clean and Disinfect	Bacteria Test		Initials
	Flow	Return				TVC	Leg.	
Jan								
Feb								
Mar								
Apr								
May								
Jun								
Jul								
Aug								
Sep								
Oct								
Nov								
Dec								

Notes:

» The ACOP (L8) requires that temperatures are taken from each water heater on a monthly basis.

» The water heater(s) and hot water outlets should be inspected, cleaned and if necessary chlorinated on an annual basis. This information should be recorded.

» All bacteria tests (if required) and clean/ chlorinations should be certificated and should be recorded on the certificate of disinfection.

» Any remedial actions required which are taken to resolve identified failures should be recorded on the maintenance log.

» Analysis of water samples for Legionella should be carried out by a UKAS accredited laboratory which takes part in the PHE Water Microbiology External Quality Assessment Scheme for the isolation of Legionella from water. The interpretation of any results should be carried out by experienced microbiologists.

Little Used Outlets, Weekly Flushing Regime

Company Details	Details
Carn Hill	System Ref. Carn Hill
Newtownabbey Northern Ireland BT36	Responsible Person on Site: David longworth

Date	Location	Type of Outlet	Remarks	Signature

Other Risk Systems Maintenance Log

Company Details	Details
Carn Hill	System Ref. Carn Hill
Newtownabbey Northern Ireland BT36	Responsible Person on Site: David longworth

Area	System/Service	Task	Frequency	Compleation	
				Date	Sign

Notes:

1. Details regarding the items and services considered as 'Other Risk Systems' can be found in checklist 3 (page 55) of the ACOP (L8). The information given by this checklist includes the required frequency of inspection or maintenance of the risk system and a description of the work required.
2. The above form can be used to record those items of plant or services falling into the above category together with details of any inspections and maintenance carried out.

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Plumbing Maintenance Log

Company Details	Details
Carn Hill	System Ref. Carn Hill
Newtownabbey Northern Ireland BT36	Responsible Person on Site: David longworth

Date	Company Name	Task	Approved Plumber Yes/No	Compleation	
				Date	Sign

Notes:

1. All work which is carried out on the plumbing system should be recorded on this log sheet and it is recommended that an 'Approved Contractor' is used.
2. If the work is carried out by an 'Approved Contractor' as detailed under Regulation 1 of The Water Supply (Water Fittings) Regulations 1999 then they should supply a contractor's certificate to confirm that the work has being carried out in accordance with the above Regulations.
3. If the work is to be carried out by a non 'Approved Contractor' it is recommended that you notify your local water company in accordance with Regulation 5 of The Water Supply (Water Fittings) Regulations 1999.

Hot and Cold Water Services Microbiological Activity Action Levels

(Extracted From ACOP L8)

Legionella Bacteria cfu / litre	ACTION REQUIRED
All samples 100 (102) or less	No Action Required.
Only one or two samples more than 100 but less than 1000 (103)	**Resample Immediately.** 1. If a similar count is found. Review control measures and identify any necessary remedial action.
Most samples more than 100 but less than 1000	**System may be colonised (at a low level).** 1. Consider disinfecting the system. 2. Review control measures. **3. Identify any necessary remedial action.**
Any samples more than 1000	**System may be colonised.** 1. Resample immediately. 2. Consider disinfecting the system. 3. Immediate review control measures. 4. Identify any necessary remedial action

Action To Be Taken In The Event of Legionella Contamination

Legionella in Tanks /Calorifiers

The following nominated responsible person(s) should be informed of the serotype and number of bacteria.

Name	Works Title	Telephone no. (Work)	Telephone No. (Mobile)
David longworth	Site Manager	+353 (87) 932 9112	+353 (87) 693 0633

Institute a clean and disinfection of the vessel and all the down services leading from the vessel. Care must be taken especially to clean and disinfect showerheads.

Re-test the system following cleaning and disinfection.
Re-assess the routine maintenance regime/system design

Suspected Case of Legionnaires' Disease

The following nominated responsible person(s) should be informed of the serotype and number of bacteria if known at the time. Also advise of the number of suspect cases where they are.

Name	Works Title	Telephone no. (Work)	Telephone No. (Mobile)
David longworth	Site Manager	+353 (87) 932 9112	+353 (87) 693 0633

The nominated responsible person(s) will then inform the Environmental Health Officer/Health and Safety Executive and ask for their immediate advice and assistance. It is normal for them to send in a team to investigate and rectify the problem. It is important for them to be able to trace where the disease has come from. Do not drain any systems until told to do so.
BUT DO ISOLATE them from service.