LEGIONELLA
RISK ASSESSMENT

For

Central Depot Building
Chapel Road
Northam
Southampton
SO14 5GL

Prepared By

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1st July 2019

Central Depot Building

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PREFACE

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Date of Assessment:	**1st July 2019**
Date of Review	**July 2021**

INTRODUCTION and LEGIONELLA CONTROL

This report relates to a Legionella Risk Assessment carried out by Peter Smith of Freeston Water Treatment Ltd on the 1st July 2019 on behalf of Southampton City Council. The survey was carried out at the Central Depot Building, Chapel Road, Northam, Southampton SO14 5GL. During the course of the survey the water systems within the building were risk assessed; these systems were chosen as being fully representative of the water systems within the Central Depot Building.

The survey and risk assessment were undertaken in order to comply with the Health and Safety Executive requirements on the control and prevention of Legionellosis. The risk assessment has been carried out in accordance with ACoP L8:2013 - The control of Legionella bacteria in water systems (Approved Code of Practice and Guidance on Regulations), HSG274:2013 Legionnaires Disease: Technical Guidance and BS8580 Water Quality – Risk Assessments for Legionella Control – Code of Practice.

The survey has been limited to the terms of reference agreed between Southampton City Council and Freeston Water Treatment Ltd. Observations relating to system conditions and other factors applicable to the requirements of ACoP L8 and HSG274 have been recorded during the survey and specific references are made to compliance with the ACoP and the Technical Guidance in the Observations section of the report.

A Summary of Recommendations concludes the report. ACoP L8:2013 and HSG274 place 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 these requirements.

Legionella Bacteria

- Legionellaceae are common environmental bacteria found in most natural water resources, including lakes and rivers. They can also survive water treatment processes in small numbers and can occur within mains water. Should these bacteria then enter any water service where they can multiply, and where a means of creating and transmitting water droplets is present, people using or in the vicinity of these services may be at risk.

- Infections caused by Legionella pneumophila bacteria or other organisms within the family Legionellaceae are termed Legionellosis. Legionnaires' disease is the worst of these and causes a pneumonia which can be fatal. Those most at risk are the very old and very young, the immunosuppressed and smokers etc.

- Legionella bacteria can also cause other, less harmful illnesses such as Pontiac fever and Lochgoilhead fever, which can affect all people.

The primary route of infection is caused by inhaling airborne water droplets that contain Legionella and are small enough to pass deep into the lung. It is also now believed that the disease can be contracted by inhaling Legionella bacteria following:

- Ingestion of contaminated water by susceptible individuals. It cannot be spread from person to person.

- The majority of individual cases or outbreaks of disease have been attributed to domestic water services within buildings, evaporative cooling towers and whirlpool spas, etc.

Legionnaire's disease is most commonly caused by the inhalation of 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 assessed.

A number of factors are required to create a risk of Legionellosis:-

- The presence of Legionella bacteria.
- Conditions suitable for the proliferation of those bacteria.
- A means of creating and disseminating an aerosol.
- The presence of individuals who may be exposed.

The conditions favouring the proliferation of Legionella are: -

- Moisture
- Temperature between 20.0°C and 45.0°C
- Availability of nutrients, for example, from sediment, sludge, organic material, scale, rust, compatible organisms and materials used in construction of water systems
- Presence of biofilm (bacterial slime) on surfaces in contact with water

The elimination of as many of these conditions as possible forms the basis of control of the risk. Treatment regimes to eradicate or reduce the proliferation of Legionella (based on physical or chemical disinfection of water systems) also help to control the risk but do not prevent it.

Under the ACoP, a suitable and sufficient assessment is required to identify and assess the risk of exposure to Legionella bacteria from work activities and water systems on the premises and any necessary precautionary measures.

Management Control

The Health and Safety Executive (HSE) highlights that poor management control and lack of record keeping can be major factors contributing to the inadequate control of Legionella bacteria. At all times there should be a documented Statutory Duty Holder, Responsible Person, Deputies and a suitable communication pathway list.

All personnel involved with Legionella management should be suitably trained and competent. Refresher training should be undertaken as required.

A Written Scheme is required to be prepared to ensure that all necessary controls and procedures are maintained, monitored and remain effective. BS8580 states – 'Note- the Risk Assessment does not involve the preparation of the written scheme but rather provides information that is critical to the preparation'.

Regulations and guidance regarding the Written Scheme can be found in ACoP L8 Paragraphs 58-64.

The assessment is carried out by or on behalf of Southampton City Council.

- The employer, where the risk from their undertaking is to their employees or to other; or

- A self-employed person, where there is a risk from their undertaking to themselves or to others; or

- The person who is in control of the premises or systems in connection with the work where the risk is present from systems in the building (e.g. Tenants where the building is let. However, the landlord retains responsibility for its maintenance).

The assessment needs to be reviewed regularly and, in any case, whenever there is reason to believe that the original assessment may no longer be valid.

L8:2013 - The control of Legionella bacteria in water systems (Approved Code of Practice and Guidance on regulations), which was published by the Health and Safety Executive, highlights at paragraph 49 the importance of using competent service providers, it states;

"Those appointed to carry out the risk assessment and draw up and implement precautionary measures should have such ability, experience, instruction, training and resources to enable them to carry out their tasks competently and safely".

Then at paragraph 57 it states;

"Dutyholders should make reasonable enquiries to satisfy themselves of the competence of contractors in the area of work"

Paragraph 57 further states:

"An illustration of the levels of service to expect from Service Providers can be found in the Code of Conduct administered by the Legionella Control Association"

Freeston Water Treatment Ltd is registered with The Legionella Control Association (LCA). To be registered with the LCA a service provider has to agree to meet nine key service provider commitments and they are required each year, as evidence that they meet these commitments, to submit to the LCA secretariat an up to date statement of compliance. The statement should explain how the registering company complies with the nine commitments in terms of the Legionella control services that it provides.

Other Important Information

HSG274 Part 2 makes specific comments and recommendations regarding Thermostatic Mixing Valves – please note the extracts below: -

Section 2.74

TMVs are valves that use a temperature sensitive element and blend hot and cold water to produce water at a temperature that safeguards against the risk of scalding, typically between 38.0°C and 46.0°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.

Section 2.75

The use and fitting of TMVs should be informed by a comparative assessment of scalding risk versus the risk of infection from legionella. Where a risk assessment identifies the risk of scalding is insignificant, TMVs are not required.

The most serious risk of scalding is where there is whole body immersion, such as with baths and showers, particularly for the very young and elderly, and TMVs should be fitted at these outlets. Where a risk assessment identifies a significant scalding risk is present, e.g. where there are very young, very elderly, infirm or significantly mentally or physically disabled people or those with sensory loss, fitting TMVs at appropriate outlets, such as hand washbasins and sinks, is required.

The above recommendations mean that consideration should be given to removing TMVs where a scalding risk (as outlined above) is not significant. Where hot water temperatures are likely to be elevated it would be advisable to affix a Hot Water warning sign adjacent to the outlet.

Periodic Review

Risk assessments should be reviewed when: -

- Significant changes have been made to a system, e.g. remedial works or planned modifications have been implemented. The assessment must be completed for routine system operation and also for circumstances such as breakdown, abnormal operation, commissioning, or other unusual circumstances.

- Changes have been made to the management and/or maintenance of the system, e.g. 6 months after a new maintenance company has been appointed.

- Significant changes have occurred in the way a system is being used, e.g. a formerly fully occupied building is now only partially occupied. If there is a doubt about what circumstances should initiate a review of the risk assessment, particularly at a complex or developing site, then a programme of annual reviews of audits should be considered.

- The availability of new information about risks or control measures.

- The results of checks indicating control measures are no longer effective.

- A case of Legionnaires disease/Legionellosis associated with the system.

HOWEVER, IT IS OUR RECOMMENDATION THAT A REVIEW SHOULD BE CARRIED OUT AT A MINIMUM FREQUENCY OF EVERY TWO YEARS.

The risk assessment report relates to observations made and information supplied at the time of the survey. Every effort has been made to examine as much of the domestic water system as possible although some areas, such as pipework beneath floors or behind walls, would not have been inspected due to restricted access.

SITE SURVEY

The following section contains the condition survey reports for all water systems and associated plant located within the buildings premises. This includes where fitted:

- Cold Water Storage Tanks
- Calorifiers / Hot Water Cylinders
- Local Water Heaters <15 litres
- Local Water Heaters > 15 litres
- Showers
- Water Softeners
- Hot and Cold-Water Distribution Temperatures
- Any Other Water Systems

Any points of note or results that are out of parameter are highlighted in red.

System Reference	**Domestic Water Systems**
Location	**Central Depot Building**
Method	**Visual Assessment and Temperature Profiling**

Management Control

The Health & Safety Executive (HSE) highlights that poor management control and lack of record keeping can be major factors contributing to the inadequate control of Legionella bacteria. At all times there should be a documented responsible person and a suitable communication pathway list. All personnel involved with Legionella management should be suitably trained.

At the time of this assessment there was seen to be a Southampton City Council water systems logbook in place for the buildings water systems; the logbook was seen filed in the reception office area; the duty holder, responsible person and deputies were seen recorded in section two of the logbook documentation at the time of this assessment; it should be ensured this is maintained up to date with the relevant people.

Monthly Legionella control monitoring for the Central Depot is being carried out by contractors Freeston Water Treatment Ltd; this was seen to be up to date as of June 2019. Monthly monitoring records seen indicated that the hot water calorifier flow and return is being monitored; good storage and return temperatures were recorded; sentinel and additional outlets are monitored along with hot water temperature to the TMVs; records were seen for weekly flushing of the shower this is being recorded in the logbook documentation.

There were no records seen to indicate when the showerhead was last cleaned and descaled; this must be inspected / cleaned on a quarterly basis and recorded when carried out. The logbook was last seen to have been audited in August 2017; I would recommend this be carried out at least on an annual basis.

COLD WATER STORAGE

There is no cold-water storage within the Central Depot Building all cold water is supplied directly from the mains water services which was seen to rise in the lady's toilet area. The mains water pipe work is fitted with back flow protection; this was seen in the area above the calorifier cupboard space; all mains water pipe runs were seen to be well insulated to help prevent heat gain.

HOT WATER STORAGE

Hot water within the Central Depot Building is by a Megaflo type calorifier; the calorifier is located in the cupboard space area by the ladies' toilet; the calorifier has a capacity of 250 litres and is supplied directly from the mains water service via an inline pressure reducer. This calorifier is heated by two electric elements; one located at the base and one at the middle of the vessel; the calorifier insulation is factory fitted located beneath the outer casing. This calorifier system has a return system fitted; this has a single circulating / return pump which appeared to be operating correctly at the time of this assessment; all distribution and return pipe work seen was well insulated helping to prevent heat loss. There is single temperature gauge fitted to the flow pipe work only; consider fitting a thermal patch or gauge to aid monitoring on the return pipe work.

HSG274 recommends that hot water calorifiers be purged to drain to check the water quality at least annually; also inspect internally on an annual basis. This should be recorded within the logbook when carried out.

At the time of this risk assessment the calorifier's hot water storage and return temperatures were:

Calorifier Flow	**62.2°C**	**This is Satisfactory.**
Calorifier Return	**60.0°C**	**This is Satisfactory.**

ACoP L8 recommends hot water should be stored at no less than 60.0°C and the return where fitted maintains 50.0°C or more at all times.

Calorifier ID / Location	**Megaflo Type / Cupboard Space**
Calorifier Storage Temperature	**62.2°C This is Satisfactory.**
Calorifier Return Temperature	**60.0°C This is Satisfactory**
Heat source	**2 x Electric Element**
Linked/Single	**Single**
Insulation	**Factory fitted beneath outer casing**
De-Stratification pump	**Not fitted**
Temperature Gauges	**Flow pipe work only**
Return System	**Yes fitted**
Number of Return Pumps	**1 x Return pump**
Standby Pump	**Not seen**
Drain	**Fitted on cold feed pipe work**
Purged	**No records seen**
Notes	**Consider fitting a thermal patch or gauge on the return pipe work to help aid with monthly monitoring.**

HOT WATER STORAGE PHOTOGRAPHS

P1

The hot water calorifier serving the Central Depot had a good storage temperature at the time of this assessment; records seen indicate this is normally satisfactory.

P2

The hot water calorifier return pump; a good return temperature was recorded at the time of this assessment; records seen indicate this is normally satisfactory.

DOMESTIC WATER DISTRIBUTION

Domestic water systems are very susceptible to colonisation by Legionella bacteria where favourable conditions occur. Poorly designed, inadequately maintained systems, or those that operate at unsuitable temperatures, can aid the rapid multiplication of bacteria such as Legionella within these services.

Any water system achieving temperatures within the band 20.0ºC to 45.0ºC may allow the establishment and proliferation of Legionella bacteria. These conditions may occur within hot water services, including calorifiers or heaters, in "deadlegs", intermittently used water services, or indeed cold-water services where due to insufficient lagging, over-capacity and/or stagnation, warming occurs.

The direct risk comes from the generation of aerosols (fine water droplets). This may happen from any water outlet within the premises although the risk is low from non-spray outlets. Where showers, spray taps etc. are installed within the building water services, the risk is increased.

Mains cold water within the Central Depot building rises in the lady's toilet area and serves all cold-water outlets, electric shower, toilet and urinal flush, drinking water cooler, hot water boiler, outside taps, pressure washer and the hot water calorifier.

Hot water storage within the Central Depot building is from the single Megaflo type calorifier located in the cupboard space area; this calorifier serves all hot water outlets in the depot building.

In all areas of distribution and use, inspection, test and measurement was undertaken at representative positions in order to evaluate conditions and areas of potential risk.

At the time of the survey (within one minute) for hot water and (within two minutes) for cold water outlets in the buildings were recorded as follows:-

Location	Temperature °C			Comments
	Hot	Cold	Mixed	
Ladies Toilet	60.0	18.0	40.5	Satisfactory
Accessible Toilet	60.2	18.1	39.0	Satisfactory
Gents Toilet	61.0	18.1	39.5	Satisfactory
Kitchen	59.8	18.0		Satisfactory
Hygiene Room	58.5	18.3		Satisfactory

Temperatures taken at the time of this assessment were all found to be satisfactory

SHOWERS

Location	**Accessible Toilet**
Number of showerheads fitted	**1**
Type of showers?	**Electric**
Water Source Serving Showers?	**Mains water**
Are showers fitted with a TMV?	**Shower has thermostatic control**
Are Showerheads Cleaned & Inspected?	**No records were seen for the inspection / cleaning and descaling of the showerhead at the time of this assessment; ensure this is carried out quarterly or at the rate of fouling or other risk factors and recorded in the logbook documentation.**
Shower risk rating	**High due to aerosol creation**
Are showers being used on a regular basis?	**I was informed the shower is being used on a regular basis. The shower is also being flushed through every week on a Monday morning and recorded when carried out.**

It is essential that showers are used on a regular basis; if showers are not used regularly then they should be flushed at least on a weekly basis and recorded when carried out. Care should be taken when flushing showers consider removal of showerhead to prevent aerosol creation. Showerhead inspection / cleaning and descaling should be carried out quarterly or at the rate of fouling or other risk factors and recorded within the water systems logbook when carried out.

ASSET REGISTER

Domestic Water Asset Register		
Floor Level	**Area**	**Asset Type**
Ground Floor	Ladies Toilet	1 x Wash Basin 1 x WC 1 x TMV (Sentinel Nearest Hot & Cold)
Ground Floor	Accessible Toilet	1 x Wash Basin 1 x WC 1 x TMV Tap 1 x Shower
Ground Floor	Gents Toilet	2 x Wash Basins 2 x WC 2 x Urinals 1 x TMV
Ground Floor	Cleaners Room	1 x Butler Sink
Ground Floor	Kitchen	1 x Sink 1 x Water Boiler 1 x Drinking Water Cooler 1 x Vending Machine (Sentinel Furthest Hot & Cold)
Ground Floor	Hygiene Area	2 x Sinks (Sentinel Furthest Hot & Cold)
Ground Floor	External Compound	3 x Tap Outlets 1 x Pressure Wash System 1 x Hose Reel (Sentinel Furthest Cold)

GENERAL

- Deadleg pipe work is an ideal area for bacteria proliferation and should be removed or flushed without creating an aerosol at least on a weekly basis and recorded when carried out. Deadleg pipe work was seen in the following areas:-

  - DL1 – There is a small deadleg pipe work where the mains water supply has been fitted to serve the drinking water cooler in the kitchen; this has left a short stub of pipe work; recommend removal.

- Ensure all tap outlets within the central depot building are kept free of scale build up as this is an ideal nutrient for bacteria proliferation; clean on a regular basis.

- Ensure any infrequently used outlets within and external to the central depot building are flushed through at least on a weekly basis; record when carried out in the logbook documentation.

- The showerhead should be inspected / cleaned and descaled on a quarterly basis or as indicated by the rate of fouling or other risk factors and recorded when carried out.

- Ensure all flexile pipe fittings within the central depot building are WRAS approved as these are ideal areas for bacteria proliferation; when kinked they will break down internally.

- TMVs fitted within the central depot building should be serviced and maintained to the manufacture's recommendations; HSG274 Part 2 makes specific comments and recommendations regarding Thermostatic Mixing Valves (see page 11 of this report).

- Ensure the outside pressure washer wash down system is used when minimal or no personal are in the vicinity of the wash due to aerosol creation; I would recommend operators of the wash down wear face protection to prevent possible inhalation of aerosol's created when being used.

- Inline filters / strainers are ideal areas for bacteria proliferation and should be changed / cleaned on a regular basis or as part of a servicing schedule.

- Drinking water coolers should be maintained in a good clean hygienic condition and ensure there is a good turnover of water through the unit.

ADDITIONAL PHOTOGRAPHS

P3

DL1 – There is a small deadleg pipe work where the mains water supply has been fitted to serve the drinking water cooler in the kitchen; this has left a short stub of pipe work; recommend removal.

P4

The showerhead should be inspected / cleaned and descaled on a quarterly basis or as indicated by the rate of fouling or other risk factors and recorded when carried out.

P5

Ensure the wash down system is used when minimal or no personal are in the vicinity of the wash due to aerosol creation; I would recommend operators wear face protection to prevent the possible inhalation of aerosol's created when being used.

P6

Ensure all tap outlets within the central depot building are kept free of scale build up as this is an ideal nutrient for bacteria proliferation; clean on a regular basis.

P7

TMVs and TMV taps fitted within the central depot building should be serviced and maintained to the manufacture's recommendations

P8

Inline filters are ideal areas for bacteria proliferation and should be changed / cleaned on a regular basis or as part of a servicing schedule.

P9

Inline strainers are ideal areas for bacteria proliferation and should be changed / cleaned on a regular basis or as part of a servicing schedule.

P10

The drinking water cooler should be maintained in a good clean condition and ensure a good turnover of water through the unit.

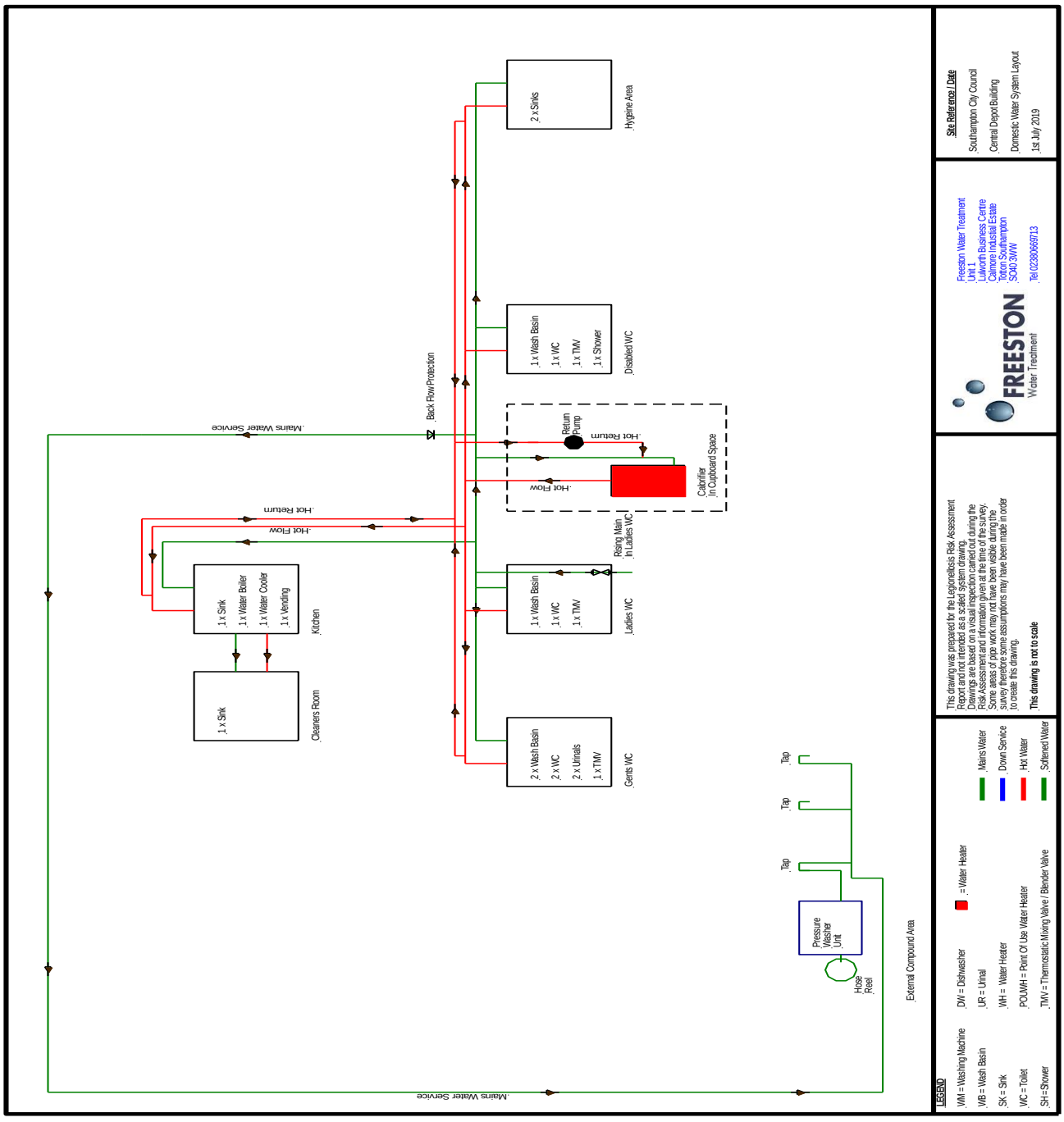
P11

Ensure all flexile pipe fittings within the central depot building are WRAS approved as these are ideal areas for bacteria proliferation; when kinked they will break down internally.

EMERGENCY PROCEURES

There was seen to be no emergency procedures in place relating to an outbreak of Legionnaires Disease at the time of this risk assessment; I would recommend emergency procedures be put in place by referring to Appendix 2.3 and paragraphs 2.124–2.135 of HSG 274 part 2.

DRAWINGS


2 x Sinks
Hygiene Area
1 x Wash Basin
1 x WC
1 x TMV
1 x Shower
Disabled WC
Back Flow Protection
Return Pump
Hot Return
Hot Flow
Cabinfier in Cupboard Space
Mains Water Service
Hot Return
Hot Flow
Rising Main in Ladies WC
1 x Wash Basin
1 x WC
1 x TMV
Ladies WC
1 x Sink
1 x Water Boiler
1 x Water Cooler
1 x Vending
Kitchen
1 x Sink
Cleaners Room
2 x Wash Basin
2 x WC
2 x Urinals
1 x TMV
Gents WC
Trap
Trap
Trap
Pressure Washer Unit
Hose Reel
External Compound Area
Mains Water Service
Site Reference / Date
Southampton City Council
Central Depot Building
Domestic Water System Layout
1st July 2019
Freeston Water Treatment
Unit 1.1
Lulworth Business Centre
Calmore Industrial Estate
Totton Southampton
SO40 3WW
Tel 02380669713
FREESTON
Water Treatment
This drawing was prepared for the Legionellosis Risk Assessment Report and not intended as a scaled system drawing. Dimensions are based on visual inspection carried out during the Risk Assessment and information given at the time of the survey. Some areas of pipe work may not have been visible during the survey therefore some assumptions may have been made in order to create this drawing.
This drawing is not to scale
LEGEND
WM = Washing Machine
WB = Wash Basin
SK = Sink
WC = Toilet
SH = Shower
DW = Dishwasher
UR = Urinal
WH = Water Heater
POUWH = Point Of Use Water Heater
TMV = Thermostatic Mixing Valve / Blender Valve
= Water Heater
Mains Water
Down Service
Hot Water
Softened Water

RECORDS

A water systems log book should be put in place and include records of weekly, monthly, quarterly and annual procedures. These should be carried out as recommended in this risk assessment.

Details of the responsibilities held by the Duty Holder, Responsible Person and Deputy Responsible Person should be included together with items listed as follows:

Annual internal inspections of calorifiers.
Purging of calorifiers
Audit sheet for inspections of the logbook and dated when completed.
Inspection of water storage tanks
Cleaning and disinfection of water tanks
Faults and defects to be recorded.
Flushing of all infrequently used outlets and deadlegs (weekly).
Maintenance carried out on water systems
Monthly and annual temperature monitoring
Servicing of all TMVs
Inspection and cleaning / descaling of showerheads

All of the above should be included in the water systems logbook and signed for when completed.

HSG 274 CONTROL MEASURES TABLE 2.1 (where applicable) Table 2.1: Checklist for hot and cold-water systems

Action to take		Frequency
Calorifiers	Inspect calorifier internally by removing the inspection hatch or using a boroscope and clean by draining the vessel. The frequency of inspection and cleaning should be subject to the findings and increased or decreased based on conditions recorded	Annually, or as indicated by the rate of fouling
	Where there is no inspection hatch, purge any debris in the base of the calorifier to a suitable drain Collect the initial flush from the base of hot water heaters to inspect clarity, quantity of debris, and temperature	Annually, but may be increased as indicated by the risk assessment or result of inspection findings
	Check calorifier flow temperatures (thermostat settings should modulate as close to 60 °C as practicable without going below 60 °C) Check calorifier return temperatures (not below 50 °C, in healthcare premises not below 55 °C)	Monthly
Hot water services	For non-circulating systems: take temperatures at sentinel points (nearest outlet, furthest outlet and long branches to outlets) to confirm they are at a minimum of 50 °C within one minute (55 °C in healthcare premises)	Monthly
	For circulating systems: take temperatures at return legs of principal loops (sentinel points) to confirm they are at a minimum of 50 °C (55 °C in healthcare premises). Temperature measurements may be taken on the surface of metallic pipework	Monthly
	For circulating systems: take temperatures at return legs of subordinate loops, temperature measurements can be taken on the surface of pipes, but where this is not practicable, the temperature of water from the last outlet on each loop may be measured and this should be greater than 50 °C within one minute of running (55 °C in healthcare premises). If the temperature rise is slow, it should be confirmed that the outlet is on a long leg and not that the flow and return has failed in that local area	Quarterly (ideally on a rolling monthly rota)
	All HWS systems: take temperatures at a representative selection of other points (intermediate outlets of single pipe systems and tertiary loops in circulating systems) to confirm they are at a minimum of 50 °C (55 °C in healthcare premises) to create a temperature profile of the whole system over a defined time period	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for legionella control

POU water heaters (no greater than 15 litres)	Check water temperatures to confirm the heater operates at 50–60 °C (55 °C in healthcare premises) or check the installation has a high turnover	Monthly–six monthly, or as indicated by the risk assessment
Combination water heaters	Inspect the integral cold-water header tanks as part of the cold-water storage tank inspection regime, clean and disinfect as necessary. If evidence shows that the unit regularly overflows hot water into the integral cold-water header tank, instigate a temperature monitoring regime to determine the frequency and take precautionary measures as determined by the findings of this monitoring regime	Annually
	Check water temperatures at an outlet to confirm the heater operates at 55–60 °C	Monthly
Cold water tanks	Inspect cold water storage tanks and carry out remedial work where necessary	Annually
	Check the tank water temperature remote from the ball valve and the incoming mains temperature. Record the maximum temperatures of the stored and supply water recorded by fixed maximum/minimum thermometers where fitted	Annually (Summer) or as indicated by the temperature profiling
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 other points to confirm they are below 20 °C to create a temperature profile of the whole system over a defined time period. Peak temperatures or any temperatures that are slow to fall should be an indicator of a localised problem	Representative selection of other sentinel outlets considered on a rotational basis to ensure the whole system is reaching satisfactory temperatures for legionella control
	Check thermal insulation to ensure it is intact and consider weatherproofing where components are exposed to the outdoor environment	Annually
Showers and spray taps	Dismantle, clean and descale removable parts, heads, inserts and hoses where fitted	Quarterly or as indicated by the rate of fouling or other risk factors, eg areas with high risk patients

POU filters	Record the service start date and lifespan or end date and replace filters as recommended by the manufacturer (0.2 µm membrane POU filters should be used primarily as a temporary control measure while a permanent safe engineering solution is developed, although long-term use of such filters may be needed in some healthcare situations)	According to manufacturer's guidelines
Base exchange softeners	Visually check the salt levels and top up salt, if required. Undertake a hardness check to confirm operation of the softener	Weekly, but depends on the size of the vessel and the rate of salt consumption
	Service and disinfect	Annually, or according to manufacturer's guidelines
Multiple use filters	Backwash and regenerate as specified by the manufacturer	According to manufacturer's guidelines
Infrequently used outlets	Consideration should be given to removing infrequently used showers, taps and any associated equipment that uses water. If removed, any redundant supply pipework should be cut back as far as possible to a common supply (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 Regularly use the outlets to minimise the risk from microbial growth in the peripheral parts of the water system, sustain and log this procedure once started For high risk populations, eg healthcare and care homes, more frequent flushing may be required as indicated by the risk assessment	Weekly, or as indicated by the risk assessment
TMVs	Risk assess whether the TMV fitting is required, and if not, remove Where needed, inspect, clean, descale and disinfect any strainers or filters associated with TMVs To maintain protection against scald risk, TMVs require regular routine maintenance carried out by competent persons in accordance with the manufacturer's instructions. There is further information in paragraphs 2.152– 2.168	Annually or on a frequency defined by the risk assessment, taking account of any manufacturer's recommendations
Expansion vessels	Where practical, flush through and purge to drain	Monthly–six monthly, as indicated by the risk assessment

SUMMARY

As already mentioned at the time of this assessment there was seen to be a Southampton City Council water systems logbook in place for the depots water systems; the logbook was seen filed in the reception office area.

The duty holder, responsible person and deputies were seen recorded in section two of the logbook documentation at the time of this assessment.

Monitoring records seen were up to date as of June 2019

Ensure the outside pressure washer wash down system is used when minimal or no personal are in the vicinity of the wash due to aerosol creation; I would recommend operators of the wash down wear face protection to prevent possible inhalation of aerosol's created when being used.

It should be ensured that any staff involved with the Legionella control for this depot building has adequate training; all training records or copies should be filed within the logbook documentation.

REMEDIAL RECOMMENDATIONS

Priority Rating	
	High priority issue - Urgent remedial action required to control a serious risk.
	Medium priority issue - Action is required in the near future to achieve compliance with ACoP L8/HSG274 standards/guidelines.
	Low priority issue - Minor action or remedial work that is beneficial, but may not be directly linked with compliance to ACoP L8/HSG274 standards/guidelines.

RECOMMENDATIONS

RECOMMENDATION						
Risk		**HIGH**	**System**	**DOMESTIC WATER SYSTEMS**		
Ref No	**Picture No**	**Works**		**Comments:**	**Work Assigned To:**	**Date Completed**
1		Continue with the legionella control procedures which are in place for the central depot building and continue to monitor and record in the logbook documentation.				
2	**3**	Remove deadleg pipe work				
3	**5**	Ensure when the compound pressure washer is in use minimal people are in the vicinity as aerosols will be created when operational; operatives should wear face protection to help prevent possible inhalation of aerosols.				

RECOMMENDATION					
Risk		**MEDIUM**	**System**	**DOMESTIC WATER SYSTEMS**	
Ref No	**Picture No**	**Works**	**Comments:**	**Work Assigned To:**	**Date Completed**
4		Ensure any infrequently used outlets within and external to the central depot building are flushed through at least on a weekly basis; record when carried out in a water systems logbook.			
5		Legionella water samples should be taken if the domestic water temperatures constantly fall out of the acceptable limits within the central depot building.			
6	**1**	HSG274 recommends that hot water calorifiers be purged to drain to check the water quality at least annually; also inspect internally on an annual basis. This should be recorded within the logbook when carried out.			
7	**7**	TMVs are fitted within the central depot building; these should be serviced and maintained to the manufacture's recommendations.			
8	**6**	Ensure all tap outlets within the central depot building are kept free of scale build up as this is an ideal nutrient for bacteria proliferation; clean on a regular basis.			

RECOMMENDATION						
Risk		**MEDIUM**	**System**	**DOMESTIC WATER SYSTEMS**		
Ref No	**Picture No**	**Works**		**Comments:**	**Work Assigned To:**	**Date Completed**
9	**4**	The showerhead should be inspected / cleaned and descaled on a quarterly basis or as indicated by the rate of fouling or other risk factors and recorded when carried out.				
10	**8 & 9**	Inline strainers / filters fitted on the cold-water systems are ideal areas for bacteria proliferation and should be cleaned / changed as part of a servicing schedule.				
11	**10**	The drinking water cooler should be maintained in a good clean condition and ensure a good turnover of water through the unit.				
12		It should be ensured that all staff involved with the Legionella control for the central depot building has adequate training; all training records or copies should be filed within the logbook documentation.				

RECOMMENDATION						
Risk		**MEDIUM**	**System**	**DOMESTIC WATER SYSTEMS**		
Ref No	**Picture No**	**Works**		**Comments:**	**Work Assigned To:**	**Date Completed**
13	**11**	Ensure all flexible pipe work fittings within the central depot building are WRAS approved as these can break down internally and are ideal areas for bacteria proliferation.				

GLOSSARY

This section contains the glossary of terms that may have been used within this documentation.

Aerosol	A suspension in a gaseous medium of solid particles, liquid particles or solid and liquid particles having a negligible falling velocity. In the context of this document, it is a suspension of particles which may contain legionella with a typical droplet size of <5 µm that can be inhaled deep into the lungs.
Algae	A small, usually aquatic, plant that requires light to grow.
Bacteria	(Singular bacterium) a microscopic, unicellular (or more rarely multicellular) organism.
Biocide	Substance which kills microorganisms.
Biofilm	A community of bacteria and other microorganisms embedded in a protective layer with entrained debris, attached to a surface.
Calorifier	An apparatus used for the transfer of heat to water in a vessel, the source of heat being contained within a pipe or coil immersed in the water
Chlorine	An element used as a biocide and for disinfection
Chlorine dioxide	A compound used as a biocide.
Cold water service	Installation of plant, pipes and fitting in which cold water is stored, distributed and subsequently discharged.
Contact time	The time a chemical is retained in the system.

Corrosion inhibitors	Chemicals which protect metals by: passivating the metal by the promotion of a thin metal oxide film (anodic inhibitors); or physically forming a thin barrier film by controlled deposition (cathodic inhibitors).
Dead end/blind end	A length of pipe closed at one end through which no water passes.
Dead leg	A length of water system pipework leading to a fitting through which water only passes infrequently when there is draw off from the fitting, providing the potential for stagnation.
Disinfection	The reduction of the number of microorganisms to safe levels by either chemical or non-chemical means (eg biocides, heat or radiation).
Distribution circuit	Pipework which distributes water from hot or cold-water plant to one or more fittings/appliances.
Domestic water	Hot and cold water intended for drinking, washing, cooking, food preparation or other domestic purposes.
Fouling	Organic growth or other deposits on heat transfer surfaces causing loss in efficiency.
Hot water service	Installation of plant, pipes and fittings in which water is heated, distributed and subsequently discharged (not including cold water feed tank or cistern).
Legionnaires' disease	A form of pneumonia caused by bacteria of the genus legionella.
Legionella (plural legionellae)	A bacterium (or bacteria) of the genus legionella.
Legionellosis	Any illness caused by exposure to legionella.
Microorganism	An organism of microscopic size, including bacteria, fungi and viruses.

Neonates	Newborn children.
Nutrient	A food source for microorganisms.
Pasteurisation	Heat treatment to destroy microorganisms, usually at high temperature.
pH	The logarithm of the reciprocal of the hydrogen ion concentration in water, expressed as a number between 0 and 14 to indicate how acidic or alkaline the water is. Values below 7 are increasingly acidic, 7 is neutral, and values higher than 7 are progressively alkaline. However, acidity and alkalinity are not proportional to pH.
Planktonic	Free-floating microorganisms in an aquatic system.
Point of use (POU) filters	A filter with a maximal pore size of 0.2 µm applied at the outlet, which removes bacteria from the water flow.
Ppm	Parts per million) a measure of dissolved substances given as the number of parts there are in a million parts of solvent. It is numerically equivalent to milligrams per litre (mg/l) with respect to water.
Risk assessment	Identifying and assessing the risk from legionellosis from work activities and water sources on premises and determining any necessary precautionary measures.
Scale inhibitors	Chemicals used to control scale. They function by holding up the precipitation process and/or distorting the crystal shape, thus preventing the build-up of a hard-adherent scale.
Sentinel taps	For hot water services – the first and last taps on a recirculating system. For cold water systems (or non-recirculating HWS), the nearest and furthest taps from the storage tank. The choice of sentinel taps may also include other taps which represent parts of the recirculating system where monitoring can aid control

Sero-group	A sub-group of the main species.
Sessile	Aquatic microorganisms adhering to a surface, normally as part of a biofilm.
Shunt pump	A circulation pump fitted to hot water service/plant to overcome the temperature stratification of the stored water.
Slime	A mucus-like exudate that covers a surface produced by some microorganisms.
Sludge	A general term for soft mud-like deposits found on heat transfer surfaces or other important sections of a cooling system. Also found at the base of calorifiers and cold-water storage tanks.
Stagnation	The condition where water ceases to flow and is therefore liable to microbiological growth.
Strainers	Coarse filters usually positioned upstream of a sensitive component, such as a pump control valve or heat exchanger, to protect it from debris.
Thermal disinfection	Heat treatment to disinfect a system.
Thermostatic mixing valve	A mixing valve in which the temperature at the outlet is pre-selected and controlled automatically by the valve.
Total viable counts (TVC)	The total number of culturable bacteria (per volume or area) in a given sample (does not include legionella).
Wholesome water	Water supplied for such domestic purposes as cooking, drinking, food preparation or washing; or supplied to premises in which food is produced

If any further information is required, please feel free to contact Freeston Water Treatment Ltd, or the surveyor responsible for the works on your site.

Signed:

Peter Smith

Risk Assessor MWM Soc

Freeston Water Treatment Ltd

TERMS AND CONDITIONS

This assessment is based on information known to Freeston Water Treatment Ltd on the date of survey. Freeston Water Treatment Ltd accepts no responsibility for any loss or claim arising from information contained within this or any other associated document; "All our Risk Assessors are fully trained and competent to carry out Legionella Risk Assessments".

Freeston Water Treatment Ltd reserve the right to allow our client fourteen days in which to notify Freeston Water Treatment Ltd of any inaccuracies contained within this documentation or changes that should be made, after which it will be assumed that our client has accepted the documentation to be satisfactory and fully complete.

In accordance with ACoP L8 (2013), Paragraph 47 – The Risk Assessment must be reviewed regularly and/or whenever there is reason to believe that the original assessment may no longer be valid.

We cannot guarantee that all pipework passing underground or through floors, walls and ceilings has been traced, and it is possible that certain system dead-ends or deadlegs may not have been identified. As a result any schematic diagram(s) contained within this report only detail the visible or assumed pipework.

Whilst every effort has been made to ensure the accuracy of the content of this document, Freeston Water Treatment Limited will accept no responsibility for any omissions.

LEGISLATION

Health and Safety at Work etc. Act 1974

This Act is concerned with health, safety and welfare in connection with work and those people who may be affected by it. The act is primary legislation under which the Secretary of State makes specific regulations affecting the control of Legionellosis.

Management of Health and Safety at Work Regulations 1999

The regulations provide a framework for managing health and safety at work including the requirement for risk assessments and the establishment of appropriate management systems and procedures.

Control of Substances Hazardous to Health Regulations 2002 (as amended)

The aim of the Control of Substances Hazardous to Health (COSHH) Regulations 2002 is to protect persons who may be affected by hazardous substances present in the workplace. This includes both chemical and biological agents. The employer has to assess the risk from such substances, and for certain substances he has to measure the employees' exposure to them.

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)

While Legionnaires' disease as such is not a notifiable disease under public health legislation (except in Scotland), it is reportable under RIDDOR if it could have been contracted in the workplace.

Notification of Cooling Towers and Evaporative Condensers Regulations 1992

These regulations require all premises containing a cooling tower or evaporative condenser to notify the local authority in whose area the building is situated. A form is available from the Environmental Health Department of the local authority. Notification must also be given of changes to the information supplied. It is however inspectors of the Health and Safety Executive who police the safe operation of cooling towers.

Water Supply (Water Fittings) Regulations 1999

These regulations are not directly concerned with the Legionellosis hazard, but govern the design, construction and use of materials in water systems. In particular they cover: -

- Backflow protection, i.e. the use of air gaps and not-return valves to protect the supply.
- The maintenance of water quality, e.g. tank design for hot and cold-water services.
- The use of materials, i.e. those that do not promote bacterial growth.
- Water conservation, i.e. prevention of leakage.