



111 Leigh Road
Hampshire County Council

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PREFACE

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Date of Assessment: 15th August 2011

Date of Review: August 2013

INTRODUCTION

This report relates to a water source Risk Assessment carried out by Mr Chris Wilson of Freeston Water Treatment Ltd on the 15th August 2011 on behalf of Hampshire County Council. The Survey was carried out at the 111 Leigh Road, Eastleigh, Hampshire SO50 9DS. During the course of the Survey water systems within the properties were risk assessed. These sources were chosen as being fully representative of the overall domestic water systems and outlets within the buildings.

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 - The control of Legionella bacteria in water systems (Approved Code of Practice and Guidance).

The Survey has been limited to the terms of reference agreed between Hampshire County Council and Freeston Water Treatment Ltd. Observations relating to system conditions and other factors applicable to the requirements of L8 have been recorded during the Survey and specific references are made to compliance with these documents in the Observations section of the report.

A Summary of Recommendations concludes the report. ACoP L8 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 these requirements.

BACKGROUND TO LEGIONELLA

Legionella is the bacterium that causes Legionnaires disease. Of this bacterium, Legionella pneumophila 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 indicates that Legionella can occur in hot and cold water services.

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

The formation of bio films within water systems is undesirable and may also provide harbourage and favourable conditions for Legionella growth. Legionella is most likely to proliferate in water systems that have a temperature between 20°C and 50°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 ideal conditions for proliferation of Legionella.

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 control of the system is lost, thereby allowing Legionella to proliferate.

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.

ASSESSMENT OF RISK

The Legionella risk

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.

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

Risk assessment categories:-

- A) The potential for the formation of droplets.
- B) The condition of the water.
- C) Water temperature.
- D) The water turnover rate.
- E) The susceptibility of persons exposed to droplets.
- F) The population density exposed to droplets.

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, due to their age and in many cases poor health.

Risk Assessment Review

The Risk Assessment should be reviewed every 2 years as stated in the HSC's ACoP L8 or otherwise for any of the reasons below:-

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

OBSERVATIONS

General and specific observations on the systems made during the course of the Survey are recorded and the more general requirements of L8 are commented where applicable, although references are made to compliance with the requirements of L8.

Compliance with ACoP L8 may be classified into two distinct categories:

- a) Management Procedures - The management procedures, which have been implemented, to ensure that all control measures, record keeping and monitoring are adequate and effective.
- b) Systems Conditions - The physical conditions 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 as seen during the course of the Survey.

General Management Compliance

ACoP L8 para 23 - Identify Sources of Risk

Observations

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

General Management Compliance

ACoP L8 para's 39, 53 and 66 - Prepare a Scheme for Preventing or Controlling the Risk - Implement and Manage Precautions - Maintain Records

Observations

A regime of repair and breakdown maintenance should be implemented for the building at 111 Leigh Road for all of the water services and systems. Procedures and records for the various maintenance activities must be documented and the Written Scheme recommendations be implemented in order to control Legionellosis. The precautions taken must be documented within an operational logbook.

Further Action Required

A Logbook should be prepared and records kept within it, as outlined in our recommendations. The logbook, documentation and operation should be audited on a periodic basis in order to ensure that the system conditions and precautionary procedures are being carried out satisfactorily.

The precise procedures relating to the precautionary measures, i.e. cleaning of water tank systems and calorifiers together with start up and shut down procedures for calorifiers, should be maintained within the logbook system and updated as required. The details of persons who are trained and competent to undertake the works should also be recorded in the logbook along with details of the training undertaken. This also applies to specialist contractors who may undertake part of these duties.

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 water system as possible although some areas, such as pipe work beneath floors or behind walls would not have been inspected due to restricted access.

SITE SURVEY

A responsible person should be appointed to take day-to-day responsibility for the Written Scheme. If the assessment shows that there is a reasonably foreseeable risk and it is reasonably practicable to prevent exposure or control the risk from exposure, the person on whom the statutory duty falls (see paragraph 23) should appoint a person or persons to take managerial responsibility and to provide supervision for the implementation of precautions. (Paragraph 39 HSC's ACoP L8)

There is no dedicated water systems logbook in place and I would recommend that one is created and used as soon as is practicable.

Monthly temperature monitoring of the hot and cold outlets is not being carried out and recorded and should be commenced as soon as is practicable.

Monthly temperature monitoring of the calorifier storage is not being carried out and recorded and should be commenced as soon as is practicable.

System Reference	111 Leigh Road
Location	Site Buildings
Method	Visual Assessment and Temperature Profiling

HOT WATER STORAGE

Hot water storage at 111 Leigh Road is by one calorifier located within the cupboard within the first floor rear/side office. The calorifier was manufactured by Heatrae Sadia and is a Megaflo model. The unit is supplied by the mains cold water supply via a pressure reducer. The calorifier has insulation under the plastic outer casing, is of a steel construction and is indirectly heated by central heating boiler via an internal coil. The unit also has one electrical element as a back up.

At the time of the Survey the calorifier was not being heated by either the internal coil from the central heating boiler or the electrical element. I would recommend that the calorifier is brought back into service as soon as is practicable and brought up to 70°C for one hour before use to create a thermal disinfection and then kept at a minimum of 60°C at all times. There is no return system fitted to this unit.

I would recommend that the calorifier be purged to drain to check the water quality on at least a six monthly period and recorded within a water systems logbook when carried out. I was informed that it is unknown if this is being carried out.

L8 recommends that calorifiers are checked internally for scale and sludge on an annual basis. It is unknown if this is being carried out.

There is no temperature gauge on the calorifier flow pipe and I would recommend that one be fitted.

L8 recommends hot water storage to be a minimum of 60°C and the return to be maintained at a minimum of 50°C at all times.

The temperature of the water at the time of the Survey was:-

Calorifier	Storage	24.6°C	Not Satisfactory
Calorifier	Return		No return system fitted

PHOTOGRAPHS

Cupboard in first floor rear/side office

Calorifier.



COLD WATER STORAGE

There is no domestic cold water storage at 111 Leigh Road. There is a feed and expansion tank in the Boiler Room that supplies the central heating boiler. As this is a closed system and poses no Legionella risk in normal operation it is not covered by this Risk Assessment.

DOMESTIC WATER DISTRIBUTION

Domestic water services should operate at temperatures that prevent the proliferation of Legionella. L8 specifies that hot water should be stored at no less than 60°C and distributed at no less than 50°C, obtainable at user outlets within one minute of opening. Cold water should be stored and distributed at no more than 20°C.

Domestic hot water within the 111 Leigh Road is by one Heatrae Sadia Megaflo calorifier located in a cupboard within the first floor rear/side office. The calorifier is supplied by the mains cold water supply via a pressure reducer and is indirectly heated by an internal coil from the central heating boiler and also has one electrical element as a back up. The calorifier supplies all the domestic hot water on site.

There is no domestic cold water storage at 111 Leigh Road.

Mains cold water within 111 Leigh Road supplies all the domestic cold water outlets and appliances, the calorifier and the feed and expansion tank for the central heating boiler.

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) these hot water outlets within the buildings were recorded as follows:-

111 Leigh Road Hot Water Outlet Temperatures	
First Floor Toilet Wash Basin	24.6°C Not Satisfactory
Ground Floor Kitchen Sink	24.6°C Inlet to TMV Not Satisfactory 24.6°C TMV Outlet Satisfactory
Ground Floor Toilet Wash Basin	24.6°C Not Satisfactory

L8 recommends that the hot water should achieve 50°C, obtainable at user outlets within one minute of opening.

TMV's (Thermostatic Mixing Valves) are fitted to ensure that the water temperature at hot water outlets does not exceed 43°C and scald users.

The hot water supplying the TMV's should be 50°C at the TMV inlet as recommended in L8.

At the time of the Survey (within two minutes) the cold water outlets within the buildings were as follows:

111 Leigh Road	
Cold Water Outlet Temperatures	
First Floor Toilet Wash Basin	16.5°C Satisfactory
Ground Floor Kitchen Sink	15.8°C Satisfactory
Ground Floor Toilet Wash Basin	15.6°C Satisfactory

L8 recommends cold water should be stored and distributed at no more than 20°C.

GENERAL

- Thermostatic Mixing Valves (TMV's) are fitted in the ground floor kitchen of 111 Leigh Road; this valve should be serviced and maintained to the manufacturer's recommendations. I was informed that this should be carried out by an outside contractor on a six monthly basis but is not.
- Infrequently used outlets are ideal areas for the proliferation of bacteria. Areas where the outlets are not used at least on a weekly basis should be removed or put on a weekly flushing regime (without creating an aerosol) and recorded. I was informed every outlet that this will be carried out in future.
- Dead leg pipework are ideal areas for the proliferation of bacteria and should be removed or put on a weekly flushing regime (without creating an aerosol) and recorded. Dead legs were found in the following areas:-
 - Ground Floor Toilet – There is a dead leg pipe on the domestic hot water pipe and another on the domestic cold water pipe.
- There are no showers on site.
- It is unknown when Legionella or Bacteriological samples were last taken and I would recommend that this is carried out if temperatures fall outside of the limits as detailed in L8.
- Monthly temperature monitoring of the calorifier flow pipework is not being carried out and recorded and I would recommend that this is commenced as soon as is practicable.

- Monthly temperature monitoring of the hot and cold outlets is not being carried out. The water temperatures of **every** sentinel (the nearest and furthest from the supply) outlet must be taken monthly and recorded. Other representative basis should have temperatures taken on a monthly rotational basis so that over a period of 12 months all outlets will have been covered.

RECORDS

It is recommended that a water quality log book be produced for the site to include records of weekly, monthly, quarterly, six monthly and annual procedures. These should be carried out as recommended in this Risk Assessment.

Details of the responsibilities they hold should be included together with items listed as follows:

Monthly temperature monitoring

Flushing of infrequently used outlets

Annual inspections of the calorifier

Purging of the calorifier

Faults and defects to be recorded

Audit sheet for inspections of the logbook and dated when completed

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

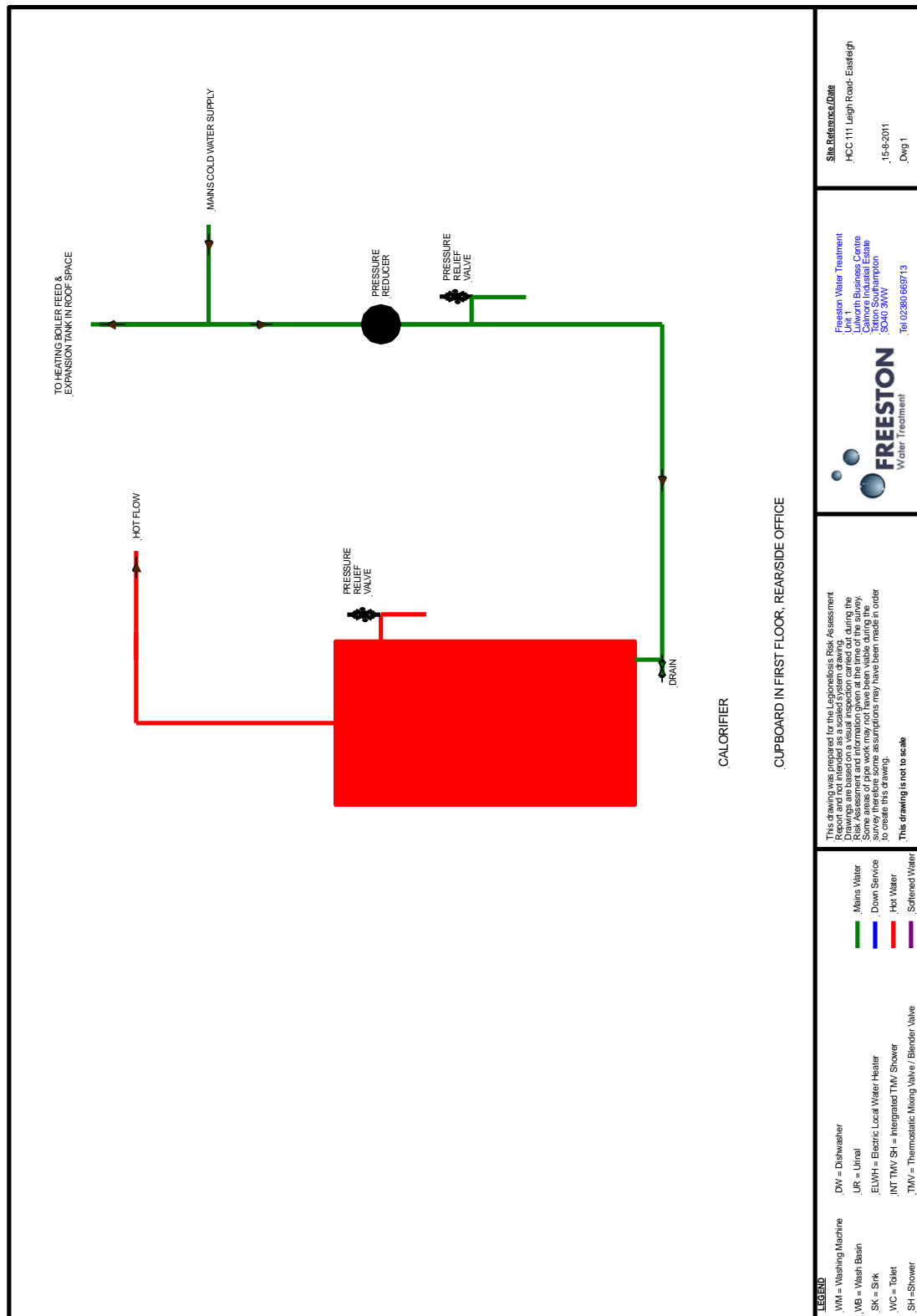
ADDITIONAL PHOTOGRAPHS

Ground floor toilet

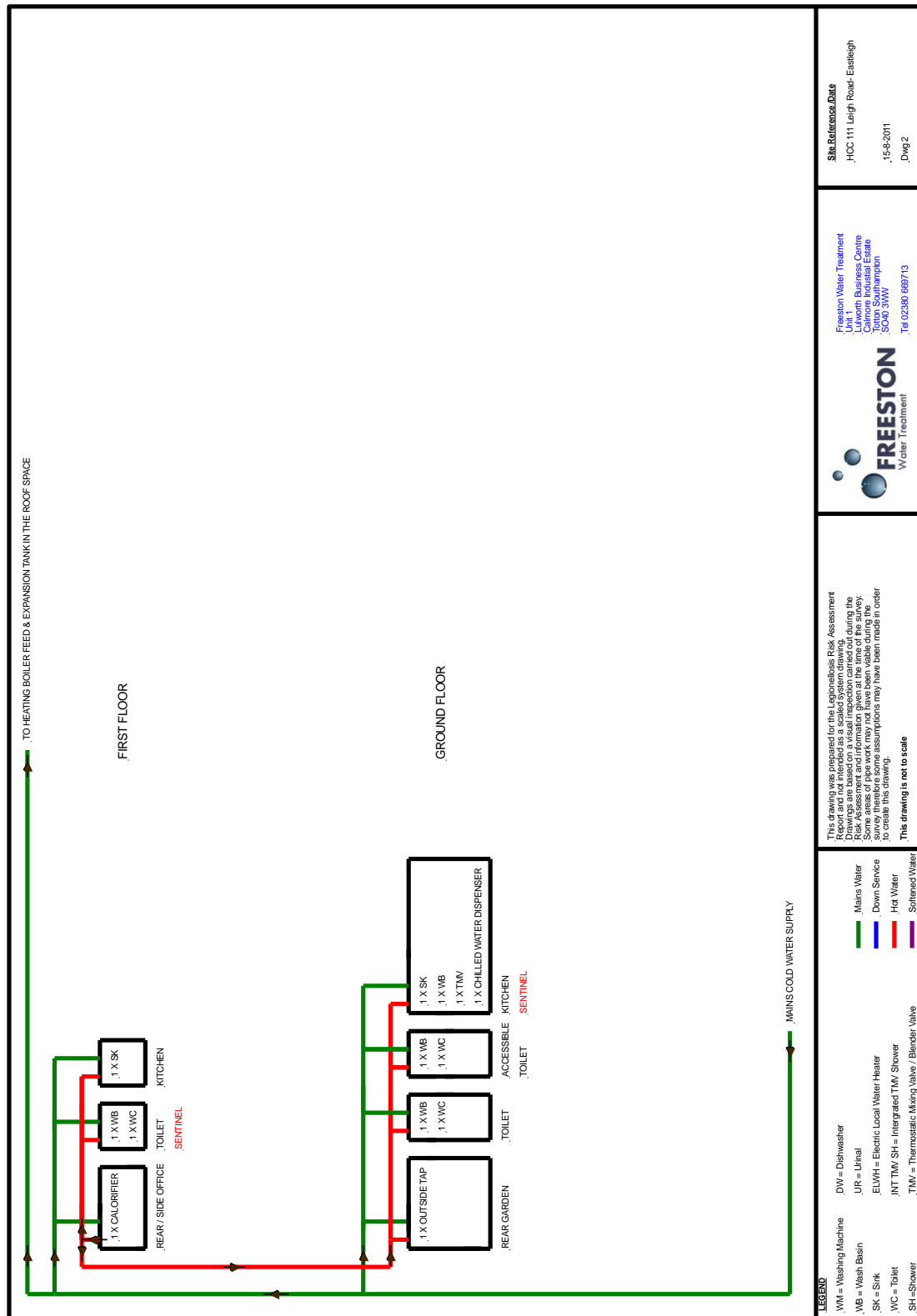
Dead legs on the domestic hot and cold water pipes.



DRAWINGS



<p>LEGEND</p> <table style="width: 100%; border: none;"> <tr> <td>.WM = Washing Machine</td> <td>.DW = Dishwasher</td> </tr> <tr> <td>.WB = Wash Basin</td> <td>.UR = Urinal</td> </tr> <tr> <td>.SK = Sink</td> <td>.ELWH = Electric Local Water Heater</td> </tr> <tr> <td>.WC = Toilet</td> <td>.INT TMV/SH = Integrated TMV Shower</td> </tr> <tr> <td>.SH = Shower</td> <td>.TMV = Thermostatic Mixing Valve/ Blender Valve</td> </tr> </table>	.WM = Washing Machine	.DW = Dishwasher	.WB = Wash Basin	.UR = Urinal	.SK = Sink	.ELWH = Electric Local Water Heater	.WC = Toilet	.INT TMV/SH = Integrated TMV Shower	.SH = Shower	.TMV = Thermostatic Mixing Valve/ Blender Valve	<p>This drawing was prepared for the Legionnaires Risk Assessment Drawings are based on a visual inspection carried out during the Risk Assessment and information given at the time of the survey. survey therefore some assumptions may have been made in order to create this drawing.</p> <p>This drawing is not to scale</p>	<p style="text-align: center;">FRESTON Water Treatment</p> <p>Freston Water Treatment Luwern Business Centre Luwern Road Totton Southampton SO40 3WW Tel: 02380 669713</p>
.WM = Washing Machine	.DW = Dishwasher											
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		<p>Site Reference/Date HCC 111 Leigh Road- Eastleigh 15-8-2011 Dwg 1</p>										



WRITTEN SCHEME

	Task		Frequency
1	Create a water services logbook.		ASAP
2	Flush infrequently used outlets.		Weekly
3	Record hot water calorifier flow temperatures.		Monthly
4	Record cold water outlet temperatures.		Monthly
5	Record hot water outlet temperatures.		Monthly
6	Purge hot water calorifier to drain and record.		Six Monthly
7	Internally inspect hot water calorifier annually and descale if required.		Annually

REMEDIAL RECOMMENDATIONS

Legionella Risk Category Key

1 = Insignificant risk.

2 = Controlled risk monitoring is being carried out maintain this standard.

3 = Risk is controlled, but deteriorating conditions could increase risk.

4 = Potential hazards identified.

5 = Risk Uncontrolled.

Site Reference/ Address	Remedial/Recommendations	Priority	Date Actioned	Signature
<u>Hot Water Storage & System</u> 111 Leigh Road	Commence full monthly temperature monitoring of the domestic hot water systems; all sentinel outlets. Record within the logbook.	5		
	Commence monthly temperature monitoring of the calorifier storage temperatures and record within the logbook.	5		
	Purge the calorifier to drain on at least a six monthly basis and record when carried out.	3		
	If access allows, visually inspect the calorifier internally for scale and sludge on an annual basis.	3		
	Fit a temperature gauge to the hot flow pipe of the calorifier.	2		
	Ensure that the calorifier is brought back into service as soon as is practicable and brought up to 70°C for one hour before use to create a thermal disinfection and then kept at a minimum of 60°C at all times.	5		

Site Reference/ Address	Remedial/Recommendations	Priority	Date Actioned	Signature
<u>Distribution</u> 111 Leigh Road	Remove dead leg pipe work or put on a weekly flushing regime and record in the logbook when carried out.	5		
	I would recommend Bacteriological and Legionella water samples be taken if the temperatures fall out of the recommended limits.	3		
	Commence weekly flushing of all low use outlets, toilets, showers, outside taps etc and record when carried out.	5		
	Ensure that the TMV is serviced and maintained regularly.	3		
	Create a water services logbook.	4		