

CONTENTS

PREFACE	Page 2
INTRODUCTION	Page 3 - 4
BACKGROUND TO LEGIONELLA	Pages 5 - 6
ASSESSMENT OF RISK	Pages 7 - 8
REVIEW OF RISK ASSESSMENT AND OBSERVATIONS	Pages 9 - 18
SITE SURVEY HOT & COLD DISTRIBUTION	Pages 19 - 26
WATER DISTRIBUTION TEMPERATURES	Pages 27 - 30
GENERAL	Pages 31 - 33
RECORDS & ADDITIONAL PHOTOGRAPHS	Pages 34 - 35
REMEDIAL RECOMMENDATIONS	Pages 36 - 39

PREFACE

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Date of Review: 23rd January 2013

Date of next Review: January 2015

INTRODUCTION

This report relates to the Second Legionella Risk Assessment Review carried out by Mr Chris Wilson of Freeston Water Treatment Ltd on the 23rd January 2013 on behalf of Marina Developments Ltd.

The First Risk Assessment Review was carried out by Mr Chris Wilson of Freeston Water Treatment Ltd on the 9th August 2010 on behalf of Marina Developments Ltd. The survey was carried out at Hythe Marina Village, Shamrock Way, Hythe, Southampton, Hampshire SO45 6DY.

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 Review of Recommendations highlighted in the previous Risk Assessment were undertaken in order to comply with the Health and Safety Executive requirements on the control and prevention of Legionellosis. This Review has been carried out in accordance with ACoP L8 'The control of Legionella bacteria in water systems' (APPROVED CODE OF PRACTICE & GUIDANCE) and BS 8580 (RISK ASSESSMENTS FOR LEGIONELLA CONTROL-CODE OF PRACTICE).

The Review has been limited to the terms of reference agreed between Marina Developments Limited 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 the ACoP in the Observations section of the report.

A recommendations section 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 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 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 has been shown to colonise certain types of water fittings, pipework 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 habitat and nutrients in which Legionella can survive and multiply.

The formation of biofilms within water systems is undesirable and may also provide harbourage and favourable conditions for Legionella growth. The presence of Legionella in biofilms and in enclosures within protozoa may protect the organisms from any remedial measure employed to eradicate the bacterium.

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.

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.

For water samples collected and returned to the laboratory, Legionella pneumophila is recovered by propagation of the organism on a specially supplemented nutrient growth medium. Such samples are normally then incubated at around 37°C. It may take up to 7 days for colonies of Legionella to appear. Legionella can be recognised by visual examination of the colonies followed by a number of laboratory techniques to identify species and serogroup.

ASSESSMENT OF RISK

Rationale

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. ACoP L8 requires this identification and assessment.

The assessment must be completed for routine system operation and also for circumstances such as breakdown, 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) Water temperature.
- D) The water turnover rate.
- E) The susceptibility of persons exposed to droplets.
- F) The population density exposed to droplets.

Water droplets are normally created in various ways such as by spraying, bubbling and following impact onto hard surfaces. Large drops may be reduced to irrespirable size by further impact or evaporation. Smaller particles can remain airborne 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:

- 1) The population exposed contains a relatively high number of people susceptible to Legionella, for example in Hospitals and Nursing Homes.
- 2) The density of population is high and therefore the number of people at potential risk is high.

The Risk Assessment should be reviewed 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:

- 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.

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. The scheme should be implemented together with a planned preventative maintenance schedule in line with that contained within the general recommendations section of this report. This will meet the requirements of the ACoP.

REVIEW OF RISK ASSESSMENT AND OBSERVATIONS

The Review was commissioned in order to identify and assess the risk of Legionellosis from the water sources on the premises using the previous Risk Assessment. 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.

The specific observations made in this Review, together with the most recent Risk Assessment should be read in conjunction with the practices and procedures detailed in the recommendations section and also with ACoP 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 survey was commissioned in order to identify and assess sources of risk from the water storage and distribution systems in the premises and this Review highlights the remedial works and recommendations from that Report.

Further Action

Following receipt of the Review, all recommendations and remedial work should be carried out at the earliest opportunity.

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 operational on the site for all of the water services and systems. Direct labour and contract staff should undertake the work. Procedures and records for the various maintenance activities must be documented and the particular procedures relative to the control of Legionellosis are documented within an operational logbook.

Further Action Required

A written scheme for preventing or controlling the risks from Legionellosis identified in the Risk Assessment must be drawn up to maintain and provide a monitoring function for the relevant equipment and water systems.

A control and record-keeping logbook document should be prepared for the premises and the scheme contained within the logbook must be implemented and monitored in order to meet the requirements of ACoP L8.

A logbook system will meet the requirement for maintaining records of precautions implemented. The logbook documentation should include:

- Definition of Management responsibilities.
- Description of systems and inclusion of available system schematic drawings and plans.
- A record of Risk Assessment.
- Details of system operation relevant to controlling the risk.
- The precautions to be implemented.
- System inspection and check procedures.
- All details of precautions carried out including checks, inspections, cleaning and disinfection.

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 logbook should contain simple schematic diagrams of the domestic hot and cold water systems indicating the areas of storage and areas of distribution. This information may already be available in the building record drawing systems but for ease of reference simple line diagrams should be considered for the logbook.

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 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.

The present precautionary measures and maintenance activities should continue and the measures should be reviewed on an ongoing basis dependant on feedback on systems conditions and updated knowledge on the control of Legionella bacteria.

Consideration should be given to the inclusion of periodic water quality tests in order to monitor and record changes in local water conditions i.e. cold water from storage tanks, calorifiers and associated outlets.

This Review relates to observations made and information supplied from the existing Risk Assessment together with information supplied by others.

The following observations and recommendation were made in the 2010 Risk Assessment.

I was informed that the showers within the toilet blocks are not used as frequently in the winter months as they are in the summer months. All infrequently used outlets, wash basins, showers; disabled toilets etc. create dead legs and should therefore be flushed on a weekly basis and recorded in a systems water logbook when carried out.

This is being carried out and recorded but has not been carried out this month.

There are mains supplied hose reels around the pontoons in the Hythe Marina. The hose reels are not used as often in the winter months and therefore can become dead legs. Other infrequently used outlets on site include the hose tap in the flowerbed near the fountain, the hand basin in basin B plant room, the hot and cold taps out basin C plant room, the cleaner's taps in basin B & C toilets and the hose tap on the second floor stairwell at the north end of building 3A5. These should all either be removed or put on a weekly flushing regime and recorded in the logbook.

Some flushing is being carried out but not all and I therefore reiterate the recommendation.

The Pontoon hose reels are supplied by a blue UPVC type plastic water hose that is run along the side of the pontoons. This is un-insulated and I would expect the water temperature in the summer to exceed the recommend maximum of 20.0°C, as outlined in L8. I would recommend that temperature monitoring and flushing of the hose is carried out as regularly as needed to keep the water temperature to below 20.0°C.

I reiterate the recommendation although the hoses are flushed on a weekly basis and recorded within the logbook.

All showerheads should be cleaned/descaled and chlorinated on a quarterly basis and recorded in a water system logbook. I would recommend showerheads be removed when flushing to prevent the creation of aerosols.

This is being carried out and recorded within the logbook.

Most of the taps within the Hythe Marina Village are push down type that were fitted with spray inserts, these spray inserts can reduce the flow of water when they scale up therefore they should be removed and cleaned/descaled on a regular basis.

This is not being carried out and I therefore reiterate the recommendation.

There are two fountains at Hythe Marina Village and I was informed that the water is tested monthly and chlorine added as needed. This should continue but must be recorded in the logbook.

This is still not being recorded within the logbook.

I was informed that it is unknown when the water storage tanks and calorifiers were last cleaned and disinfected and I would therefore recommend that this is carried out as soon as is practicable and certificates kept in the logbook.

Certificates within the logbook show that all the cold water storage tanks (with the exception of the tank in Flat 35) were last cleaned and disinfected between 13th - 15th January 2013.

Certificates within the logbook show that the tank in Flat 35 was last cleaned and disinfected on 22nd March 2011. It could not be accessed at the time of this Review to be inspected.

The calorifiers have not been inspected internally or had drain water samples taken and I therefore reiterate the recommendation.

I was informed that it is not known when legionella and bacteriological water samples were last taken. I would recommend that this is carried out annually or more frequently if temperatures fall outside the required limits.

No samples have been taken since the Risk Assessment.

I would recommend that any buildings on Hythe Marina Village that are currently occupied should be risk assessed for legionella if they become unoccupied for a prolonged length of time. They should have their water outlets flushed weekly and recorded in the logbook.

I reiterate this recommendation.

Start temperature monitoring of the domestic hot and cold water systems.

This is being carried out on the hot and cold outlets only (and recorded within the logbook) but the calorifier temperatures are not being taken and I therefore reiterate the recommendation.

Fit sparge pipes to outlet pipes where needed, to create a good cross flow of water through cold water storage tanks.

This has not been carried out and I therefore reiterate the recommendation.

Fit ball valve to tank no.10 to create surface agitation to prevent surface stagnation.

This has not been carried out and I therefore reiterate the recommendation.

Fit temperature gauges to the flow pipe work on hot water storage cylinders for monthly temperature monitoring.

This has not been carried out and I therefore reiterate the recommendation.

Add poly fibre jackets to hot water storage cylinders where needed to prevent heat loss where insulation has been worn away.

This has been carried out on some of the cylinders but not all and I therefore reiterate the recommendation.

Weekly flushing of all low use infrequently used facilities showers, disabled toilet outlets, pontoon wash down hose reels, cleaners taps etc. and record when carried out, especially in winter months when facilities are not used.

Some outlets and the pontoon hoses are on a weekly flushing regime but some are not and I therefore reiterate the recommendations.

Ensure all water heaters are adjusted to achieve 50.0°C at the outlet within one minute.

This has not been carried out and I therefore reiterate the recommendation.

System Reference	Hythe Marina Village
Location	MDL Buildings
Method	Visual Assessment and Temperature Profiling

HOT WATER STORAGE

Hot water storage within Hythe Marina Village Toilet Blocks consists of two gas fired boilers supplying four hot water storage cylinders in each of the three toilet block plant rooms. I was unable to accurately assess exactly which services each hot water storage cylinder supplied. The hot water is supplied to the hand basins and showers.

For ease of identification the gas fired water heaters and the hot water storage cylinders are identified on this risk assessment by the following, from the far (left hand side) of the plant room to the right hand side

Basin A	Toilet Block Plant Room	Hot Water Cylinder 1
Basin A	Toilet Block Plant Room	Hot Water Cylinder 2
Basin A	Toilet Block Plant Room	Hot Water Cylinder 3
Basin A	Toilet Block Plant Room	Hot Water Cylinder 4
Basin B	Toilet Block Plant Room	Hot Water Cylinder 5
Basin B	Toilet Block Plant Room	Hot Water Cylinder 6
Basin B	Toilet Block Plant Room	Hot Water Cylinder 7
Basin B	Toilet Block Plant Room	Hot Water Cylinder 8
Basin C	Toilet Block Plant Room	Hot Water Cylinder 9
Basin C	Toilet Block Plant Room	Hot Water Cylinder 10
Basin C	Toilet Block Plant Room	Hot Water Cylinder 11
Basin C	Toilet Block Plant Room	Hot Water Cylinder 12

The water heaters are gas fired heaters with return pipework which heat the hot water cylinders by an internal coil. The water within the cylinder is then heated and feeds hot water to the toilet areas by way of circulating pumps and shower pumps. There are still no temperature gauges fitted to the hot water cylinders for the monthly monitoring of water temperatures; I would therefore reiterate the recommendation that these be fitted. Some of the cylinders still have insulation missing on the top of the cylinder, I would therefore reiterate the recommendation that adequate insulation is fitted.

The temperature of the stored water within the hot water cylinders at the time of the survey was:

No.1 Hot Water Cylinder - Storage	46.1°C	Not Satisfactory
No.2 Hot Water Cylinder - Storage	48.5°C	Not Satisfactory
No.3 Hot Water Cylinder - Storage	51.7°C	Not Satisfactory
No.4 Hot Water Cylinder - Storage	53.9°C	Not Satisfactory
No.5 Hot Water Cylinder - Storage	61.9°C	Satisfactory
No.6 Hot Water Cylinder - Storage	63.5°C	Satisfactory
No.7 Hot Water Cylinder - Storage	65.0°C	Satisfactory
No.8 Hot Water Cylinder - Storage	67.5°C	Satisfactory
No.9 Hot Water Cylinder - Storage	57.4°C	Not Satisfactory
No.10 Hot Water Cylinder - Storage	51.4°C	Not Satisfactory
No.11 Hot Water Cylinder - Storage	60.0°C	Satisfactory
No.12 Hot Water Cylinder - Storage	61.0°C	Satisfactory
Building 3A6-Flat 35 -		
Hot Water Cylinder - Storage	52.0°C	Not Satisfactory

ACoP L8 recommends hot water should be stored at 60°C at all times.

I would that the units that do not achieve this are adjusted as soon as practicable.

COLD WATER STORAGE

Hythe Marina Village is fed by mains cold water and at the time of the survey:-

The incoming mains temperature was:

5.0°C Satisfactory.

Cold water storage within the Hythe Marine Toilet Blocks consists of storage tanks located within the roof space of each building. For ease of identification they are listed on this risk assessment as:-

Basin A	Ladies Toilet Block Roof Space	Westerly Tank	Tank 1
Basin A	Ladies Toilet Block Roof Space	Easterly Tank	Tank 2
Basin A	Gents Toilet Block Roof Space	Westerly Tank	Tank 3
Basin A	Gents Toilet Block Roof Space	Easterly Tank	Tank 4
Basin B	Ladies Toilet Block Roof Space	Westerly Tank	Tank 5
Basin B	Ladies Toilet Block Roof Space	Easterly Tank	Tank 6
Basin B	Gents Toilet Block Roof Space	Westerly Tank	Tank 7
Basin B	Gents Toilet Block Roof Space	Easterly Tank	Tank 8
Basin C	Ladies and Gents combined Roof Space	Westerly Tank	Tank 9
Basin C	Ladies and Gents combined Roof Space	Easterly Tank	Tank 10

Many of the cold water storage tanks have returning vent pipes fitted into the lids and I would recommend that they are removed and piped to a foul drain via an air gap. The holes in the lids should be covered with a WRAS approved material.

In basin A toilet block roof space there are four cold water storage tanks. I was unable to accurately assess which water heaters and storage vessels each tank served.

All of the tanks were of the same plastic construction and have now been fitted with lids, poly fibre insulation to the bodies and lids, screened lid vents and screens to the overflow pipes. On all of the tanks the inlet pipe work was on the same end of the vessel as the outlet pipes giving a poor cross flow of water. I would therefore reiterate the recommendation that sparge pipes are fitted to rectify this problem.

Certificates within the logbook show that they were last cleaned and disinfected on the 14th January 2013 and were found to be clean at the time of this Review.

Sediment acts as a nutrient to bacteria and can therefore aid its proliferation. ACoP L8 recommends that cold water storage tanks be inspected annually and cleaned and disinfected if required.

The temperature of the water within the storage tank at the time of the survey was:

No.1 Tank 11.9°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.2 Tank 9.3°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.3 Tank 5.8°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.4 Tank 5.9°C Satisfactory

In basin B toilet block roof space there are four cold water storage tanks. I was unable to accurately assess which water heaters and storage vessels each tank served.

All of the tanks were of the same plastic construction and have now been fitted with lids, poly fibre insulation to the bodies and lids, screened lid vents and screens to the overflow pipes. On all of the tanks the inlet pipe work was on the same end of the vessel as the outlet pipes giving a poor cross flow of water. I would therefore reiterate the recommendation that sparge pipes are fitted to rectify this problem.

Certificates within the logbook show that they were last cleaned and disinfected on the 15th January 2013 and were found to be clean at the time of this Review.

Sediment acts as a nutrient to bacteria and can therefore aid its proliferation. ACoP L8 recommends that cold water storage tanks be inspected annually and cleaned and disinfected if required.

The temperature of the water within the storage tank at the time of the survey was:

No.5 Tank 7.6°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.6 Tank 8.6°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.7 Tank 7.9°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.8 Tank 8.0°C Satisfactory

In basin C toilet block roof space there are two cold water storage tanks. There is one smaller tank that is believed to feed the washing machine in the laundry room. As the washing machine is a closed system and there are no aerosols produced, it is not covered in this legionella risk assessment.

I was unable to accurately assess which water heaters and storage vessels each tank served. Both tanks were of the same plastic construction and have now been fitted with lids, poly fibre insulation to the bodies and lids, screened lid vents and screens to the overflow pipes.

Tanks 9 and 10 are linked but tank 9 has no ball valve/ inlet. At the time of the 2010 Review this had caused stagnation on the top of the water as the water is taken mainly from the bottom of the vessel, this was not seen at the time of this 2013 Review as the tanks had only just been cleaned. I would reiterate the recommendation that a ball valve and inlet supply is fitted to this tank to create surface agitation.

Certificates within the logbook show that they were last cleaned and disinfected on 15th January 2013 and were found to be clean at the time of this Review. Sediment acts as a nutrient to bacteria and can therefore aid its proliferation. ACoP L8 recommends that cold water storage tanks be inspected annually and cleaned and disinfected if required.

The temperature of the water within the storage tank at the time of the survey was:

No.9 Tank 7.8°C Satisfactory

The temperature of the water within the storage tank at the time of the survey was:

No.10 Tank 8.2°C Satisfactory

In Building 3A6 - Flat 35 there is a cold water storage tank that feeds a hot water cylinder which is heated by an immersion heater and supplies hot water to this flat only.

At the time of this 2013 survey no access could be gained to the cold water storage tank but I was informed that it had now been fitted with a lid, poly fibre insulation to the body and lid, a screened lid vent and a screen to the overflow pipe.

The inlet pipe work was on the same end of the vessel as the outlet pipes giving a poor cross flow of water. It is not thought that a sparge pipe has yet been fitted to rectify this problem and I would recommend that this is carried out.

Certificates within the logbook show that they were last cleaned and disinfected on 22nd March 2011. I would recommend that this access is arranged for this vessel to be inspected within the near future and cleaned and disinfected if deemed necessary.

Sediment acts as a nutrient to bacteria and can therefore aid its proliferation. ACoP L8 recommends that cold water storage tanks be inspected annually and cleaned and disinfected if required.

The temperature of the water within the storage tank at the time of the survey was:

Building 3A6-Flat 35 - Tank No Access

PHOTOGRAPHS

No internal photographs of the tanks were deemed necessary as all were clean. The tank in Flat 35 could not be accessed.

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 Hythe Marina Village toilet blocks distributes from hot water heaters supplying hot water storage cylinders that are located in the plant room. These serve all hot water outlets within the ladies and gents toilets/shower rooms and disabled toilet.

Cold water down services within Hythe Marina Village toilet block distributes from cold water storage tanks all located within the roof spaces and serve the ladies and gents toilet wash basins and showers, the disabled toilets and all toilet flushing.

Domestic hot water within Hythe Marina, Building 3A6 - Flat 35 distributes from an immersion heater that heats the hot water storage cylinder that is located in a cupboard in the kitchen. This serves the toilet hand basin, bath, shower and kitchen sink.

Cold water services within Hythe Marina, Building 3A6 - Flat 35 distributes from the mains water supply and serve the toilet hand basin, bath, shower, kitchen sink and toilet flushing.

All domestic hot water within Hythe Marina, Building 3A6 - Flats 34, 36 and the Lock House are from mains fed electric point of use heaters.

All cold water within Hythe Marina, Building 3A6 - Flats 34, 36 and the Lock House is from the mains water supply.

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:-

Hythe Marina Village	
Basin A - Gents Toilet Hand Basin	53.5°C Satisfactory
Basin A - Ladies Toilet Hand Basin	50.0°C Satisfactory
Basin B - Gents Toilet Hand Basin	66.8°C Satisfactory
Basin B - Ladies Toilet Hand Basin	66.9°C Satisfactory
Basin B - Mess Room Kitchen Sink	60.0°C Satisfactory
Basin C - Gents Toilet Hand Basin	48.1°C Not Satisfactory
Basin C - Ladies Toilet Hand Basin	58.0°C Not Satisfactory
Basin C - Disabled Toilet Hand Basin	58.7°C Not Satisfactory
Building 3A6 Flat 35 - Kitchen Sink	50.2°C Satisfactory
Lock Office Kitchen Point of use Water Heater	29.0°C Not Satisfactory

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

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

Hythe Marina	
Basin A - Gents Toilet Hand Basin	6.0°C Satisfactory
Basin A - Ladies Toilet Hand Basin	9.9°C Satisfactory
Basin B - Gents Toilet Hand Basin	7.1°C Satisfactory
Basin B - Ladies Toilet Hand Basin	7.7°C Satisfactory
Basin B - Mess Room Kitchen Sink	8.4°C Satisfactory
Basin C - Gents Toilet Hand Basin	7.3°C Satisfactory
Basin C - Ladies Toilet Hand Basin	7.4°C Satisfactory
Basin C - Disabled Toilet Hand Basin	7.4°C Satisfactory
Building 3A6 Flat 35 - Kitchen Sink	7.7°C Satisfactory
Lock Office Kitchen Sink	5.5°C Satisfactory

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

GENERAL

- There are mains supplied hose reels around the pontoons in Hythe Marina. The hose reels are not used as often in the winter months and therefore can become dead legs. Other infrequently used outlets on site include the hose tap in the flowerbed near the fountain, the hand basin in Basin B plant room, the hot and cold taps out Basin C plant room, the cleaner's taps in Basin B & C toilets and the hose tap on the second floor stairwell at the north end of Building 3A5. These should all either be removed or put on a weekly flushing regime and recorded in the logbook.
- The Pontoon hose reels are supplied by a blue UPVC type plastic water hose that is run along the side of the pontoons. This is un-insulated and I would expect the water temperature in the summer to exceed the recommend maximum of 20.0°C, as outlined in L8. I would recommend that temperature monitoring and flushing of the hose is carried out as regularly as needed to keep the water temperature to below 20.0°C.
- Most of the taps within the Hythe Marina Village are push down type that were fitted with spray inserts, these spray inserts can reduce the flow of water when they scale up therefore they should be removed and cleaned/descaled on a regular basis.
- There are two fountains at Hythe Marina Village and I was informed that the water is tested monthly and chlorine added as needed. This should continue but must be recorded in the logbook.

- Legionella and bacteriological water samples should be taken if temperatures fall outside the required limits.
- I would recommend that any buildings on Hythe Marina Village that are currently occupied should be risk assessed for legionella if they become unoccupied for a prolonged length of time. They should have their water outlets flushed weekly and recorded in the logbook.
- The water storage temperature of the hot water cylinder calorifiers should be taken on a monthly basis and recorded within the logbook.
- Ensure that all hot water storage cylinders / calorifiers are in service at all times. Currently they are on timers and 'BS8580 Water Quality – Risk Assessments for Legionella control- Code of Practice' states that it must be ensured that 'hot water is **maintained** at 60°C from the outlet of the calorifiers.
- Purge the calorifiers to drain on at least an annual basis and record when carried out.
- If access allows, visually inspect the calorifiers internally for scale and sludge on an annual basis.
- All routine Legionella management is carried out by on-site MDL personnel. No records were found within the logbook with regards to legionella training. It must be ensured that all personnel who carry out legionella management are competent and adequately trained.

- A Written Scheme should be prepared to ensure that all necessary controls 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’

- Dead leg pipe work is an ideal area for the proliferation of bacteria and should be removed or put on a weekly flushing regime (without creating an aerosol) and recorded within the logbook when carried out. Dead legs were found in the following areas:-
 - Under the Lock Office - There is a mains cold water pipe that runs out and under the wooden ducting boards that is believed to be a dead leg.

RECORDS

It is recommended that a water quality log book be produced 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:

- Maintenance carried out on water systems.
- Cleaning and chlorination of water tanks.
- Inspection of water storage tanks.
- Monthly temperature monitoring.
- Flushing of infrequently used outlets (weekly).
- Annual inspections of calorifiers.
- Purging of calorifiers.
- Changing/cleaning of inline filters.
- 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

Insulation damage on hot water cylinder calorifiers. Cylinder No 7.



Gaps in insulation on hot water cylinder calorifiers that should be covered with insulation. Cylinder No 9.



Lock Office

Dead leg mains cold water pipes under the Lock Office.



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, meaning that a risk has been identified and action is required.

Site Reference/ Address	Remedial/Recommendations	Priority	Date Actioned	Signature
<u>Hot Water Storage</u> <u>Hythe Marina Village</u>	Purge hot water storage cylinders to drain annually and record when carried out.	4		
	Fit temperature gauges to the flow pipe work on hot water storage cylinders for monthly temperature monitoring.	3		
	Add poly fibre jackets to hot water storage cylinders where needed to prevent heat loss where insulation has been worn away and cover over areas at the top where the polyfibre jackets is not covering it adequately	5		
	Ensure that all hot water storage cylinders / calorifiers are in service at all times. Currently they are on timers and 'BS8580 Water Quality – Risk Assessments for Legionella control- Code of Practice' states that it must be ensured that 'hot water is maintained at 60°C from the outlet of the calorifiers.	5		
	Hot water storage cylinders / calorifiers no.'s 1, 2, 3, 4, 9 , 10 and Flat 35 should be adjusted as soon as is practicable to achieve a minimum storage temperature of 60°C at all times.	5		

Site Reference/ Address	Remedial/Recommendations	Priority	Date Actioned	Signature
<u>Cold Water Storage</u> <u>Hythe Marina Village</u>	Fit sparge pipes to outlet pipes where needed, to create a good cross flow of water through cold water storage tanks.	3		
	Arrange for access to inspect the tank in Flat 35 tanks as soon as possible and clean and disinfect if required.	5		
	Fit an inlet ball valve to tank no.9 to create surface agitation to prevent surface stagnation.	5		
	Remove returning vent pipes from cold water storage tanks and pipe to drain via an air gap. Cover the holes with a WRAS approved material.	3		
	Commence six monthly temperature monitoring of the cold water storage tanks and record results within the logbook.	5		

Site Reference/ Address	Remedial/Recommendations	Priority	Date Actioned	Signature
<u>Distribution</u> <u>Hythe Marina Village</u>	Weekly flushing of all low use infrequently used outlets, showers, disabled toilet outlets, pontoon wash down hose reels, cleaners taps etc. and record when carried out. Especially in winter months when facilities are not used.	5		
	I would recommend Bacteriological and Legionella water samples be taken if temperatures fall outside the required limits, as is currently the case.	5		
	Remove spray inserts from tap outlets and clean/descale on a regular basis to maintain a good water flow.	3		
	Ensure all domestic hot and cold water pipes are adequately insulated.	5		
	Ensure all water heaters are adjusted to achieve 50°C at the outlet within one minute.	4		
	Remove any dead legs or put on a weekly flushing regime.	5		
	Ensure that all on-site personnel who carry out Legionella management are competent and adequately trained in Legionella management.	5		
	A full written scheme should be produced to show the procedures and timescale that the recommendations within this report will be carried out to.	5		