



Homewood

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INTRODUCTION

This report relates to a **Review** of the Legionella Risk Assessment that was carried out by Freeston Water Treatment in April 2009; this is the latest Risk Assessment for this building. The Review Survey was carried out at Homewood, Enham Lane, Charlton, Andover, Hampshire SP10 4AN. The Review of Recommendations highlighted in the previous Risk Assessment was 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 as asked for by Hampshire County Council in accordance with ACoP L8 'The control of Legionella bacteria in water systems' (APPROVED CODE OF PRACTICE & GUIDANCE) only:

The Review 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 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 re-circulated. 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, pipe work and materials used in the construction of water systems. The presence of these materials may provide nutrients for Legionella and make eradication difficult. Other organisms in water systems such as bacteria, amoeba and algae can provide a suitable 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.

REVIEW COMPLIANCE

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.

The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid. An indication of when to review the Assessment and what needs to be reviewed should be recorded.

This may result from example:

Changes to the water system or its use

Changes to the use of the building in which the water system is installed

The availability of new information about risks or control measures

The results of checks indicating that control measures are no longer effective

A case of Legionnaires disease/Legionellosis is associated with the system

SITE REVIEW

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

During this Review Survey it was identified that temperature monitoring of the domestic hot and cold water systems is being carried out and recorded in the water systems logbook. A new water systems logbook has now been issued for 2011 by Hampshire County Council; monitoring and checks are being recorded within the logbook; most were found to be up to date at the time of this Review.

TMV temperature monitoring does not appear to be being carried out; there was some confusion with the site staff as to what they have been told to monitor; this must be addressed as soon as possible. Water temperatures to sentinel TMV's and additional TMV's should be monitored on a monthly basis. It must be ensured that all monitoring and checks are kept up to date; this will be achieved if the monthly logbook audit is carried out by the site manager; at the time of this Review audits have been carried out on the logbook documentation but only up to April 2011.

At the time of this Review it was found that the hot water calorifier flow and return temperatures are being recorded but only from the calorifier flow temperature gauge mounted on the common manifold. There are two calorifiers linked in parallel which means there should be two calorifier storage temperatures recorded and not just the one where they link at the common manifold.

There were no records seen in the logbook documentation for cold water storage tank inspections and no certificates were seen for the last cleaning and disinfection of the storage tanks which was last carried out in November 2010.

The duty holder, responsible persons and operational staff have been identified and nominated in writing within the logbook.

I was informed that TMV's within Homewood are being serviced on a six monthly basis by contractors EMCOR and that it had been carried out quite recently; no certification was seen for this as it could not be found within the filing system.

Weekly flushing is being carried out on all outlets within the building and signed for when carried out; this was found to be up to date as of June 2011.

The procedures which have been implemented by Hampshire County Council regarding the showerheads is being carried out and recorded within the logbook documentation. The showerheads are being cleaned and disinfected on a weekly basis and the showerheads are being descaled on a quarterly basis; again this is being recorded when carried out. It was recommended in the Risk Assessment that the adjustable showerheads be replaced with new non adjustable type; this has not been carried out.

COLD WATER STORAGE

Cold water storage within Homewood is by four plastic round storage tanks located in the roof void area. Since the original Risk Assessment was carried out the remedial works that had been recommended have been addressed. All four storage tanks have had the lids insulated and all are now fitted with screened vents; the overflow pipe work has been fitted with insect screens and the returning vent pipe work has been re-routed to a tundish. All four water storage tanks have had foil backed rock wall fibre sheet insulation fitted; this was in a good order at the time of this Review.

At the time of this Review there was seen to be some surface stagnation within two of the water storage tanks possibly due to the lack of water turn over; it appears that the storage tanks are linked.

All four water storage tanks were last cleaned and disinfected in November 2010; at the time of this Review there was seen to be slight sediment build up within the tanks; I would recommend that all storage tanks are cleaned and disinfected annually if required. Some tank lids still do not fit properly due to the roof beams being in the way; I would recommend this is addressed to prevent the ingress of contaminants.

The water temperature of the storage tanks at the time of the Review Survey was:

No.1 Storage Tank	19.1°C	This is Satisfactory
No.2 Storage Tank	19.2°C	This is Satisfactory
No.3 Storage Tank	19.0°C	This is Satisfactory
No.4 Storage Tank	15.4°C	This is Satisfactory

The F&E Tank also located within the roof void has been removed from service and the mains water supply to this tank has just been capped off creating deadleg pipe work on the mains water service which should be removed.

Water storage tanks located in roof void have had remedial works carried out since the Risk Assessment.



Internal view of no.1 water storage tank at time of Review. Slight sediment seen continue to clean and disinfect annually if required.



Internal view no.2 water storage tank at time of Review. Surface stagnation occurring possibly due to lack of water turn over or plumbing arrangement of tanks; recommend this is addressed and continue to clean and disinfect annually if required.



Internal view no.3 water storage tank at time of Review. Surface stagnation occurring possibly due to lack of water turn over or plumbing arrangement of tanks; recommend this is addressed and continue to clean and disinfect annually if required.



Internal view of no.4 water storage tank at time of Review. Slight sediment seen continue to clean and disinfect annually if required.



Some water storage tank lids do not fit properly due to the roof beams; recommend this is addressed to prevent any ingress of contaminants.



HOT WATER STORAGE

Hot water storage within Homewood is by two Megaflo hot water calorifiers located within the boiler room; the calorifiers are linked in parallel and have factory fitted insulation located beneath the outer metal casings. At the time of the Risk Assessment it was recommended that temperature gauges be fitted to the flow and return pipe work to aid with monthly temperature monitoring; this has not been carried out.

There is a single gauge mounted on the common manifold flow pipe work which is being used for monitoring; this does not record the storage temperature of both calorifiers. I would recommend that both calorifiers are monitored on a monthly basis and both recorded in the water systems logbook. The calorifier system is fitted with a single return pump it is not known if it is checked monthly for correct operation.

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.

The calorifier flow and return temperatures at the time of this Review were:

Left Hand Calorifier Flow	60.0°C	This is Satisfactory
Left Hand Calorifier Return	54.0°C	This is Satisfactory
Right Hand Calorifier Flow	60.0°C	This is Satisfactory
Right Hand Calorifier Return	55.0°C	This is Satisfactory

Both calorifiers should be individually monitored monthly to ensure both are storing hot water at the recommended temperatures. At the time of this Review temperatures of both calorifiers were satisfactory.



Calorifier hot water circulating / return pump. Good return temperatures recorded at the time of this Review.



GENERAL

There are several showers within Homewood; it was recommended in the original Risk Assessment that the adjustable showerheads be replaced with new non adjustable showerheads this has not been carried out. The procedures implemented by Hampshire County Council regarding the cleaning and disinfection and descaling are being carried out and recorded within the logbook documentation.

All tap outlets and infrequently used outlets within Homewood are being flushed on a weekly basis and this is being recorded within the water systems logbook when carried out.

Scale build up on tap outlets can act as a nutrient for bacteria proliferation; I would recommend that tap outlets be cleaned and descaled on a regular basis.

The TMV's within Homewood are being serviced and maintained by contractors EMCOR; I was informed this is being carried out on a six monthly basis. No certification was seen at the time of this Review as the last service sheet could not be found but I was informed that it had been carried out very recently. I would recommend that all water systems record and service sheets be filed within their own file for easier access and traceability.

It is unknown when Legionella or bacteriological samples were last taken; it was recommended in the original Risk Assessment that this is carried out on an annual basis or more frequently in areas with 'at risk patients', for example those who are Immuno-Compromised; no records were seen for water sampling at the time of this Review.

General

Ensure all showers are used and continue with current cleaning and descale regime that has been implemented.



Ensure all showerheads are changed to the non adjustable type as recommended in the Risk Assessment.



Continue to service, maintain and adjust if required all TMV's on a six monthly basis; record when carried out.



Ensure inline vessel is in use; the by-pass for this vessel is shut off creating deadleg pipe work. Recommend by-pass is opened weekly to flush deadleg area.



Capped off mains water pipe work to old F&E tank has made deadleg pipe work on the mains water service; recommend this is removed.



Ensure water softener is serviced and maintained to manufacturer's recommendations.



HOT & COLD WATER TEMPERATURES

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.

The following water temperatures were taken at random as follows:-

Flat Kitchen Sink		
Hot	51.0°C to TMV 42.1°C from TMV	Satisfactory Not Satisfactory
Cold	14.8°C	Satisfactory
Flat Bathroom Wash Basin		
Hot	51.0°C to TMV 30.0°C from TMV	Satisfactory Not Satisfactory
Cold	15.6°C	Satisfactory
Ground Floor Michaels Room Wash Basin		
Hot	47.0°C to TMV 42.0°C from TMV	Not Satisfactory Not Satisfactory
Cold	13.9°C	Satisfactory
Main Kitchen Sink		
Hot	51.7°C	Satisfactory
Cold	14.1°C	Satisfactory

Laundry Sink		
Hot	54.5°C	Satisfactory
Cold	14.2°C	Satisfactory
Staff Toilet Wash Basin		
Hot	52.4°C	Satisfactory
Cold	16.5°C	Satisfactory

TMV temperature reference from NHS Estates Guidance (1988) and Thermostatic Mixing Valve Manufacturers Association (TMVA).

RECOMMENDATIONS & SUMMARY

During the Risk Assessment several items were recommended:-

Commence temperature monitoring of the domestic hot and cold water system and record in the logbook.

This is now being carried out and recorded in the water systems logbook.

Clean and disinfect cold water storage cisterns as soon as is practicable and repeat annually if required.

This was carried out in November 2010; recommend this is continued annually if required.

Fit WRAS approved insulation where missing or where required.

This has been carried out.

Fit WRAS approved screened vents to lids.

This has been carried out.

Fit WRAS approved screens to overflow pipes.

This has been carried out.

Remove calorifier vent pipe on cistern no. 1 and pipe to a foul drain via an air gap.

This has been carried out and re-routed to a tundish.

Seal vent pipe aperture in lid on cistern no. 1 with WRAS approved material.

This has been carried out.

Take measures to ensure that there is a good cross flow and turnover of water through each cistern.

This does not appear to have been carried out as surface stagnation is occurring in two of the storage tanks.

Ensure all lids are fitted correctly.

Two storage tank lids do not fit properly due to the roof beams being in the way.

Manually check circulating pump monthly to ensure effective operation.

No record of this being carried out.

Fit temperature gauges to the flow and return pipes on the calorifier and storage vessel.

This has not been carried out; there is a single temperature gauge fitted to the common flow pipe work but this does not record the storage temperatures of both calorifiers.

Purge calorifier to drain at least six monthly and record when carried out and condition of water.

No record of this being carried out.

Internally inspect hot water calorifier annually and descale if required.

No record of this being carried out.

Twice weekly flushing of all low use infrequently outlets - showers, toilets, hand basins, sinks, hose reels etc and record when carried out.

All tap outlets and infrequently used outlets are being flushed weekly and recorded when carried out.

Bacteriological and Legionella water samples to be taken annually or more frequently if temperatures fall outside limits or the home has 'at risk' clients.

No record of any water sampling being carried out.

Clean and disinfect showerheads quarterly. Record when carried out.

Showerheads are being cleaned and disinfected weekly and descaled on a quarterly basis; this is recorded when carried out.

Thermostatic mixing valves should be serviced and maintained as per the manufacturer's recommendations.

This is assumed being carried out on a six monthly basis by contractors EMCOR; no records seen for the last service of TMV's as certification could not be found in the files.

Thermostatic mixing valves to be adjusted to achieve the correct outlet temperatures.

This is assumed being carried out at the time of the service and maintenance schedule.

Replace adjustable spray showerheads with non adjustable items as recommended.

This has not been carried out.

Ensure washing machines are appropriate WRAS approved healthcare units.

One washing machine is labelled WRAS approved the other an industrial type washing machine is assumed appropriate for health care units.

Water softener to be serviced and maintained as per the manufacturer's recommendations.

No records seen for this being carried out.

Ensure that the Aquadition unit in the boiler room is still in service and maintained inline with the manufacturers' recommendations.

The mains water flows through this vessel as the by-pass is shut off creating deadleg pipe work. I would recommend the by-pass is opened on a weekly basis to flush the deadleg area. If this vessel is not being used it should be removed from the water services along with associated pipe work.

It is recommended that the following are carried out:-

- Continue with all current procedures implemented by Hampshire County Council and continue to record in water systems logbook.
- Continue monthly temperature monitoring of all domestic sentinel hot and cold water and additional outlets and record in water systems logbook.
- Continue to clean and disinfect cold water storage tanks and continue annually if required. File certification in water systems logbook when carried out.
- Continue with current procedures for showerhead cleaning and descaling or at least on a quarterly basis.
- Continue with weekly flushing of all outlets including infrequently used and record in logbook.
- Start monthly temperature monitoring of both hot water calorifier flows and return temperatures and record in water systems logbook.
- Start monthly TMV temperature monitoring at sentinel outlets water flow to TMV and record in water systems logbook.
- Start purging calorifiers to drain on at least a six monthly basis and record in the water systems logbook when carried out.
- Inspect cold water storage tank on a six monthly basis and take water temperature from tank and ball valve and record in water systems logbook.
- Bacteriological and Legionella water samples to be taken annually or more frequently if temperatures fall outside limits or the home has 'at risk' clients.

SUMMARY

As reported a new water systems logbook has been issued by Hampshire County Council for 2011 for Homewood and monthly temperature monitoring is being carried out by site staff. It should be ensured that the calorifier flows be monitored on both calorifiers and both temperatures are recorded in the water systems logbook; the circulating return pump should be checked for the correct operation on a monthly basis. The cold water storage tank configuration should be investigated as surface stagnation is occurring in two storage tanks; and some lids do not fit properly due to the roof beams. I would recommend consideration be given into the removal of all water storage tanks and serve all cold water from the mains water service.

It should be ensured that the water systems logbook be continued to be audited on a monthly basis by the site manager and the relevant section in the logbook be signed when carried out; this will ensure all the checks and procedures that are in place are being carried out and are maintained up to date.

It was recommended in the last Risk Assessment that all adjustable showerheads be replaced with the non adjustable type; this has not been implemented.

I would recommend that the current procedures and checks that have been implemented be continued; and ensure that the site staff are clear in the monitoring and checks that are required to be carried out. I would recommend that sentinel TMV temperature monitoring is carried out along with additional TMV's; the water temperature to the TMV's should be monitored.

The F&E storage tank has been removed from service and the mains water supply has been capped off creating deadleg pipe work; I would recommend this deadleg this should be removed.