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INTRODUCTION

Client Address	Hampshire County Council PBRs Three Minsters House 76 High Street Winchester Hampshire SO23 8UL
Site Name	Copper Beeches OPH
Site Address	Woodlands Way London Road Andover Hampshire SP10 2QU
Site contact	Lynn McGloughlan
Site telephone number	01264 353703
Last risk assessment carried out by	Freeston Water Treatment Limited
Date of risk assessment	June 2011
Date of previous review	N/A
Date of new review	20th April 2012
Review carried out by	Mr Chris Wilson

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).

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The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid.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.

LOG BOOK

Is there a copy of the last Risk Assessment carried out on the domestic water system?	Yes	A copy of the original Risk Assessment was seen filed within the duty office.
Is there a domestic water systems logbook in place?	Yes	A water systems log book is in place and was being used at the time of this Review; this was located within the duty office.
Are the management structure duty holder, responsible person and deputies nominated in writing?	Yes	The duty holder and responsible person have been nominated in writing but no deputy responsible persons have been nominated.
Are contact details written in writing within the logbook documentation?	Yes	The contact details for the duty holder and responsible person was seen written within the logbook documentation.

MONITORING

Is hot water temperature monitoring being carried out on a monthly basis and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the domestic hot water system is being carried out and recorded in the relevant section of the logbook.
Is cold water temperature monitoring being carried out on a monthly basis and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the domestic cold water system is being carried out and recorded in the relevant section of the logbook.
Are hot water calorifiers flow temperatures being taken and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the hot water calorifiers is being carried out and recorded in the relevant section of the logbook.
Are hot water calorifiers return temperatures being taken and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the hot water calorifiers return is being carried out and recorded in the relevant section of the logbook.
Are monitoring records recorded within the logbook documentation up to date?	Yes	Monitoring was up to date at the time of this Review.
Is weekly flushing of infrequently used outlets being carried out and recorded within the logbook documentation?	Yes	It should be ensured that all infrequently used outlets are flushed through at least on a weekly basis; record in logbook documentation when carried out.

COLD WATER STORAGE

Have cold water storage tanks where fitted been cleaned and disinfected annually?	Yes	The cold water storage tanks are being cleaned and disinfected annually if required.
Have storage tank cleaning and disinfection certification been filed within the logbook documentation?	No	No storage tank cleaning and disinfection certification was seen within the logbook documentation.
Storage tank cleaning and disinfection was last carried out on?		24 th June 2011
Are water storage tanks being inspected on a six monthly basis and temperatures recorded within the logbook documentation when carried out?	No	The cold water storage tanks should be inspected on a six monthly basis and temperatures from the tanks and remote from the ball valves be recorded within the logbook documentation.

SHOWERS

Are showerheads being cleaned and descaled on a quarterly basis or as required?	Yes	All showerheads and hoses are being inspected / cleaned and descaled at least quarterly or as required.
Is it being recorded within the logbook documentation when showerheads are cleaned and descaled?	Yes	Showerheads are being inspected /cleaned and descaled and documented within the logbook documentation when carried out.
Is showerhead cleaning and descaling up to date?	Yes	Showerhead inspection / cleaning and descaling were up to date at the time of this Review.

DRAWINGS

Are schematic drawings up to date with any changes made to the domestic water systems?	Yes	Schematic diagrams are filed within the Risk Assessment. It is thought that no changes have been made to the systems.
Are schematic drawings suitable and show all relevant storage and system details?	Yes	Schematic diagrams were seen to show relevant storage areas and system details. Copies should be filed within the logbook documentation.

TMV's

Are TMV's where fitted being serviced and maintained?	Yes	TMV's should be serviced and maintained as directed by the manufacturers.
Is documentation available to indicate when TMV's were last serviced / maintained?	No	TMV's should be serviced and maintained as directed by the manufacturers; and recorded within the logbook documentation when carried out. I was informed that this was carried out by outside contractors approximately every six months but no records or documentation were seen within the logbook.

SAMPLING

<p>Has any Legionella or bacteriological water sampling been carried out on the domestic water systems?</p>	<p>Yes</p>	<p>Legionella water sampling should be carried out on the domestic water systems if the relevant water temperatures as recommended in the ACoP L8 and BS8580 are not constantly maintained.</p>
<p>Have Legionella or bacteriological water sampling test results if taken been filed within the logbook documentation?</p>	<p>No</p>	<p>Documentation within the logbook stated that Hampshire Scientific Service had taken water samples on the 29th March 2012 but no results could be found within the logbook. Ensure all water sampling test results if taken are filed within the relevant section of the water systems logbook.</p>

REMEDIAL WORKS

<p>Has any remedial works identified within previous Risk Assessments / Reviews been carried out?</p>	<p>Yes</p>	<p>Remedial works highlighted within the Risk Assessment have been carried out in some areas.</p>
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ANCILLARY EQUIPMENT

<p>Is there any ancillary equipment on site?</p>	<p>Yes</p>	<p>Boiler room - inline scale reducer on the inlet pipe of the boosted domestic cold water pumps.</p> <p>Main kitchen - water softener for the dishwasher</p> <p>Boiler room- silver / copper ionisation unit on the mains cold water pipe.</p>
<p>Is ancillary equipment being serviced and maintained to the manufacturer's recommendations?</p>	<p>No</p>	<p>Boiler room - inline scale reducer on the inlet pipe of the boosted domestic cold water pumps. It is unknown if this has been cleaned / replaced. I would recommend that the manufacturer is contacted for maintenance recommendations.</p> <p>Main kitchen - water softener for the dishwasher. This may require servicing and disinfecting; this has not been carried out. I would recommend that the manufacturer is contacted for maintenance recommendations.</p> <p>Boiler Room- silver / copper ionisation unit on the mains cold water pipe. At the time of the Risk Assessment I contacted the supplier of the unit and was told that the following procedures must be followed :-</p>

	<ul style="list-style-type: none">• Test copper levels within the water from the ionisation unit on a <u>weekly</u> basis and record.• Service the silver / copper ionisation unit approximately every two months (due to the hardness of the local water supply).• Take water samples on at least an annual basis for laboratory analysis to ascertain the level of silver within the water from the silver / copper ionisation unit. <p>No records or documentation within the logbook or anywhere within the office was found to confirm if any of the procedures are being followed.</p>
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HOT WATER STORAGE

Hot water storage at Copper Beeches OPH is by two calorifiers located within the boiler room. The calorifiers were manufactured by AO Smith Water Products Company and are supplied by the domestic cold water storage tank also within the boiler room via pressure reducers, a silver/copper ionisation unit and a booster pump set. The calorifiers have insulation under the factory fitted metal outer casings, are of a steel construction and are directly heated by gas.

The calorifiers supply all the domestic hot water on site. The return pipework from the building returns to the calorifiers individually. There are two circulation pumps on the flow pipes which at the time of the survey appeared to be working correctly.

The booster pump set has three equal sized pumps that appeared to switch automatically.

I would recommend that the calorifiers be purged to drain to check the water quality on at least an annual basis and recorded within a water systems logbook when carried out. Both calorifiers were descaled by Freeston Water Treatment on the 21st March 2012.

ACoP 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 are temperature gauges on the calorifier flow and return pipes.

ACoP 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 No. 1	Storage	63.0°C	Satisfactory
Calorifier No. 1	Return	54.0°C	Satisfactory
Calorifier No. 2	Storage	60.0°C	Satisfactory
Calorifier No. 2	Return	54.0°C	Satisfactory

COLD WATER STORAGE

Domestic cold water storage at Copper Beeches OPH consists of two domestic cold water storage tanks. The tank no. 1 is located within the roof space of Primrose Wing and supplies the flushing cistern on the two sluices. The tank no. 2 is located within the boiler room and supplies the calorifiers and many cold water outlets.

Tank no. 1 is of a sectional, double skinned GRP construction and in good condition. There is a screened vent on the lid, gauze screens on the inlet valve housing and a screen on the overflow pipe. As this vessel is less than 1000 litres in capacity there is no requirement for an overflow warning pipe to be fitted.

The vessel has integral insulation to the body but the lid is single skinned and not insulated, I would recommend that this be insulated if the stored water temperature becomes elevated to near 20°C in the hotter months.

There is a satisfactory cross flow of water through the tank as the vessel is quite small.

The inside of the tank showed a light deposit of sediment on the base and a slight amount of biofilm on the sides. Sediment, corrosion and biofilm act as nutrients and an ideal environment for the proliferation of bacteria including Legionella.

The vessel was last cleaned and disinfected on the 24th June 2011 and I would recommend that this be carried out again within the near future.

The cold water storage temperature of domestic cold water storage tank no. 1 was:-

14.1°C Satisfactory

Tank no. 2 is of a one piece, double skinned GRP construction and is in good condition and is supplied by the mains cold water supply via a silver /copper ionisation disinfection unit. There is a screened vent on the lid, gauze screens on the inlet valve housing and screens on the overflow pipes and overflow warning pipes.

The vessel has integral insulation to the body and lid but the inlet valve housing lid is single skinned and not insulated, I would recommend that this be insulated if the stored water temperature becomes elevated to near 20°C in the hotter months.

There is a satisfactory cross flow of water through the tank with the inlet being at one end of the vessel and the outlet being on the bottom.

The inside of the tank showed a light deposit of sediment on the base but no biofilm on the sides. Sediment, corrosion and biofilm act as nutrients and an ideal environment for the proliferation of bacteria including Legionella.

The vessel was last cleaned and disinfected on the 24th June 2011 and I would recommend that this be carried out again within the near future.

It is unknown precisely which outlets and appliances are supplied by this vessel other than the calorifiers. The 'as fitted' drawings created during the 2010 refurbishment state that the mains cold water supplies 'outlets, kitchen and laundry'. It is suspected that other than the main kitchen and the laundry all other cold outlets and appliances are actually supplied by tank no. 2 (via a booster pump set), with the exception of the sluice cisterns which are supplied by tank no. 1. **I would recommend that further investigation is carried out to confirm this.**

The cold water storage temperature of domestic cold water storage tank no. 2 was:-

11.8°C Satisfactory

COLD WATER STORAGE TANK PHOTOGRAPHS

An internal view of domestic cold water storage tank no. 1.



An internal view of domestic cold water storage tank no. 2.



ADDITIONAL PHOTOGRAPHS

Boiler Room

The valve on the hot flow balance pipe between the circulation pumps of the calorifiers is closed and therefore creating dead legs either side of it.



Boiler Room

The pipe to the pressure gauge on the flow pipe of calorifier no. 1 is too long and creating a small dead leg.



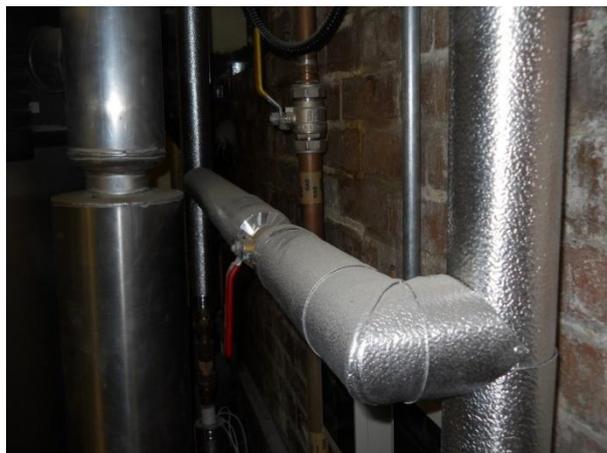
Boiler Room

The valve on the ionisation unit bypass pipe is closed and therefore creating dead legs either side of it.



Boiler Room

The valve on the hot return balance pipe to the calorifiers is closed and therefore creating dead legs either side of it.



SELECTED HOT & COLD WATER TEMPERATURES TAKEN AT REVIEW

Domestic water services should operate at temperatures that prevent the proliferation of Legionella. ACoP 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, obtainable at user outlets within two minutes of opening.

The temperature of mixed/ blended water from thermostatic mixing valves should be no more than 43°C to prevent scalding and ideally no less than 39 °C.

The following hot and cold water temperatures were taken at selected outlets as follows:-

Location	Hot °C	Cold °C	Mixed °C	Comments
Primrose Wing Room 27 Hand Basin	52.6	14.8	43.0	Satisfactory
Tulip Wing Lounge Sink	51.8	13.1	42.5	Satisfactory
Poppy Wing Lounge Sink	53.7	13.4	42.6	Satisfactory
Reception Area Main Kitchen Sink	58.0	11.7	N/A	Satisfactory
Orchid Wing Room 6 Hand Basin	54.7	13.1	42.9	Satisfactory
Lilac Wing Lounge Sink	50.1	13.4	41.4	Satisfactory

RECOMMENDATIONS

- 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:-
 - Boiler Room – The valve on the hot flow balance pipe between the circulation pumps of the calorifiers is closed and therefore creating dead legs either side of it.
 - Boiler Room – The pipe to the pressure gauge on the flow pipe of calorifier no. 1 is too long and creating a small dead leg.
 - Boiler Room – The valve on the ionisation unit bypass pipe is closed and therefore creating dead legs either side of it.
 - Boiler Room – The valve on the hot return balance pipe to the calorifiers is closed and therefore creating dead legs either side of it.
 - Laundry - The two JLA D30 tumble driers have a fire sprinkler system inside which is piped to the mains cold water supply within the laundry. As this is rarely, if ever, used I would recommend that a suitable backflow protection device is fitted on each tumble drier water supply pipe as close as possible to the main water header pipe.
- Purge the calorifiers to drain on at least an annual basis and record when carried out.
- Commence monthly temperature monitoring of inlet pipe to the TMV's (not just the blended water outlet) and record in the water systems logbook.
- There is an inline scale reducer on the inlet pipe of the cold water booster pump set within the boiler room. These should be cleaned / maintained in line with the manufacturer's recommendations. It is not thought that this is being carried out.
- Test copper levels within the water from the ionisation unit on a **weekly** basis and record.
- Service the silver / copper ionisation unit approximately every two months (due to the hardness of the local water supply).

- Take water samples on at least an annual basis for laboratory analysis to ascertain the level of silver within the water from the silver / copper ionisation unit.
- Commence six monthly temperature monitoring of the cold water storage tanks and record results within the logbook.
- I would recommend Bacteriological and Legionella water samples be taken if the temperatures fall out of the recommended limits.
- Ensure deputy responsible persons are appointed and are competent and adequately trained.
- Ensure the new maintenance operative on site is competent and adequately trained in Legionella management.
- Clean and disinfect domestic cold water storage tank no. 1 and no. 2 within the near future and repeat annually if required.
- I would recommend that further investigation be carried out to confirm that the mains cold water only supplies the domestic cold water storage tanks, the heating boilers (via an RPZ backflow protection device) and the main kitchen and laundry.
- Fit extra insulation to the lid and inlet valve housing lids of the domestic cold water storage tanks if needed in hotter months.
- Ensure the RPZ backflow protection valve is serviced / maintained in line with the manufacturer's recommendations. It is not thought that this is being carried out.

SUMMARY

Since the Risk Assessment was carried out a new water systems logbook has been put in place for 2012. A new maintenance operative has been appointed since the Risk Assessment and I would recommend that he be adequately trained in Legionella management as soon as is practicable.

Some remedial works have been carried out by Freeston Water Treatment Limited since the last Risk Assessment and this is an ongoing planned maintenance agreement between Freeston and Hampshire County Council.

Completed remedial work carried at Copper Beeches OPH includes some dead leg removal, descaling of the calorifiers and cleaning and disinfection of the two domestic cold water storage tanks. I would recommend that the two domestic cold water storage tanks be cleaned and disinfected again within the near future.

Legionella management including temperature monitoring of outlets and calorifier and hot water storage vessel; flushing of infrequently used outlets and showerhead and hose descaling is being carried out and recorded.

The hot outlet temperatures are only being taken from the outlets and not on the inlet pipework to the TMV's (with the exception of the sentinel outlets). I was informed that this will be carried out and recorded within the logbook in future.

Annual purging of the calorifiers is not being carried out.

At the time of the Risk Assessment I contacted the supplier of the silver / copper ionisation unit and was told that the following procedures must be followed:-

- Test copper levels within the water from the ionisation unit on a weekly basis and record.

- Service the silver / copper ionisation unit approximately every two months (due to the hardness of the local water supply).
- Take water samples on at least an annual basis for laboratory analysis to ascertain the level of silver within the water from the silver / copper ionisation unit.

No records or documentation within the logbook or anywhere within the office were found to confirm if any of the procedures are being followed.

I saw a certificate of commissioning and training from Tarn-Pure from the 25th January 2011 which stated that Lynn McGloughlan (the Copper Beeches Manager) had received operation, maintenance and monitoring training and is competent to operate and maintain the silver / copper ionisation unit.

At the time of the Review survey Ms McGloughlan had been absent from work for approximately five weeks and I was informed that she was unlikely to return for several more weeks.

As the hot and cold domestic water temperatures at the time of the Review survey were adequate to control legionella it is not as critical for the ionisation unit to be working as it was at the time of the Risk assessment when domestic water temperatures were unsatisfactory. I would still consider it prudent to carry out all the recommended tests and servicing (and at the correct intervals) as recommend by Tarn-Pure, the suppliers of the unit. I would therefore recommend that the new maintenance operative is fully trained in all aspects of testing, operating and maintaining the unit as soon as is practicable.

It was also noticed at the time of the Review survey that the digital display on calorifier no. 2 (furthest from the door) was displaying the message 'Max Burn Hours - Service Required'.