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INTRODUCTION

Client Address	Hampshire County Council PBRS Three Minsters House 76 High Street Winchester Hampshire SO23 8UL
Site Name	Bickerley Green NCU
Site Address	Kingsbury Lane Ringwood Hampshire BH24 1EL
Site contact	Jacque Milford
Site telephone number	01425 473312
Last risk assessment carried out by	Freeston Water Treatment Limited
Date of risk assessment	April 2011
Date of previous review	N/A
Date of new review	4th 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The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid.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 admin 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 main 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

<p>Is hot water temperature monitoring being carried out on a monthly basis and results recorded within the logbook documentation?</p>	<p>Yes</p>	<p>Monthly temperature monitoring of the domestic hot water system is being carried out and recorded in the relevant section of the logbook.</p>
<p>Is cold water temperature monitoring being carried out on a monthly basis and results recorded within the logbook documentation?</p>	<p>Yes</p>	<p>Monthly temperature monitoring of the domestic cold water system is being carried out and recorded in the relevant section of the logbook.</p>
<p>Are hot water calorifier and hot water storage vessel flow temperatures being taken and results recorded within the logbook documentation?</p>	<p>Yes</p>	<p>Monthly temperature monitoring of the hot water calorifier flow is being carried out and recorded in the relevant section of the logbook. Monthly temperature monitoring of the hot water storage vessel flow was not being carried out and recorded in the relevant section of the logbook but I was informed that this will commence with immediate effect.</p>
<p>Are hot water calorifier and hot water storage vessel return temperatures being taken and results recorded within the logbook documentation?</p>	<p>Yes</p>	<p>Monthly temperature monitoring of the hot water calorifier return is being carried out and recorded in the relevant section of the logbook. Monthly temperature monitoring of the hot water storage vessel return was not being carried out and recorded in the relevant section of the logbook but I was informed that this will commence with immediate effect.</p>
<p>Are monitoring records recorded within the logbook documentation up to date?</p>	<p>Yes</p>	<p>Monitoring was up to date at the time of this Review.</p>

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.
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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?		9 th May 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

<p>Are TMV's where fitted being serviced and maintained?</p>	<p>Yes</p>	<p>TMV's should be serviced and maintained as directed by the manufacturers.</p>
<p>Is documentation available to indicate when TMV's were last serviced / maintained?</p>	<p>No</p>	<p>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 an outside contractor carried out servicing an adjustment on the TMVs approximately six months ago but no records were found within the logbook.</p>

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>Yes</p>	<p>Documentation within the logbook stated that Hampshire Scientific Service had taken water samples on the 2nd April 2012 but no results had yet been received. Ensure all water sampling test results if taken are filed within the relevant section of the water systems logbook.</p>

REMEDIAL WORKS

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

Is there any ancillary equipment on site?	Yes	Boiler room - inline scale reducer on the boosted cold water pipe to the calorifier. Sensory room- bubble tube.
Is ancillary equipment being serviced and maintained to the manufacturer's recommendations?	No	Boiler room - inline scale reducer. It is unknown if this has been cleaned / replaced. I would recommend that the manufacturer is contacted for maintenance recommendations. Sensory room - bubble tube It is unknown if this has been cleaned / disinfected and is dosed with a biocide. I would recommend that the manufacturer is contacted for maintenance recommendations.

HOT WATER STORAGE

Hot water storage at Bickerley Green - NCU is by one calorifier and one hot water storage vessel located within the boiler room. The calorifier was manufactured by Andrews Water Heaters and is supplied by the domestic cold water storage tanks within the loft via a pressure reducer and booster pump set. The calorifier has insulation under the factory fitted metal outer casings, is of a stainless steel construction and is directly heated by gas. The hot water storage vessel was manufactured by Andrews Water Heaters and has insulation under the factory fitted metal outer casings and is of a stainless steel construction.

The calorifier supplies the storage vessel that in turn supplies all the hot water on site. There is an anti stratification pump that takes some of the hot water from the flow pipe of the storage vessel and returns it to the calorifier to be reheated. At the time of the survey the anti stratification pump appeared to be working correctly.

ACoP L8 recommends that destratification / shunt pumps are operated automatically by a time clock and run for one hour every day before first use. This pump is left on continuously which I would consider satisfactory.

The return pipework from the building returns to the storage vessel via a circulation pump which at the time of the survey also appeared to be working correctly.

The booster pump set has two pumps that appeared to switch automatically.

I would recommend that the calorifier and storage vessel 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. I was informed that this is not being carried out.

ACoP L8 recommends that calorifiers and storage vessels are checked internally for scale and sludge on an annual basis. I was informed that this is not being carried out.

There are temperature gauges on the calorifier to show the storage and return temperature from the storage vessel from the anti stratification pipe.

There are temperature gauges on the hot water storage vessel to show the storage and return temperature from the building.

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

I would recommend that calorifier no.2 is adjusted to achieve this as soon as is practicable.

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

Calorifier	Storage	61.0°C	Satisfactory
Calorifier	Return	57.3°C	Satisfactory
Hot Water Storage Vessel	Storage	57.0°C	Not Satisfactory
Hot Water Storage Vessel	Return	55.0°C	Satisfactory

COLD WATER STORAGE

Domestic cold water storage at Bickerley Green - NCU consists of two domestic cold water storage tanks located within the roof space. There is also a water storage tank for the fire sprinkler system of both Bickerley Green OPH and NCU located outside. As this a 'closed system' it does not pose a Legionella risk in normal operation and is therefore not covered by this survey.

The domestic cold water storage tanks are of a sectional, double skinned GRP construction and are in good condition. There are screened vents on the lids and screens on the overflow pipes and overflow warning pipes. Both vessels have integral insulation to the body, the lid and the access hatch. There is a satisfactory cross flow of water through the tanks with the inlets and outlets being at opposing ends of the vessel.

The inside of the tank no. 1 (nearest to the roof space access hatch) showed a light deposit of sediment on the base and a medium to heavy amount of biofilm on the sides.

The inside of the tank no. 2 showed a light deposit of sediment on the base and a medium 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 vessels were last cleaned and disinfected on the 9th May 2011 and I would recommend that this be carried out again within the near future.

It is suspected that all the cold water outlets and appliances on site (with the exception of the mains fed heating boilers pressurisation unit and the outside tap by the boiler room) are supplied by the boosted cold water from the tanks but this requires further investigation to be confirmed.

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

13.7°C Satisfactory

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

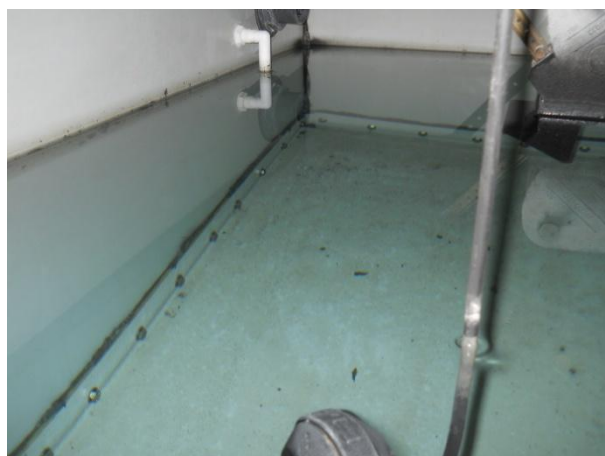
15.9°C Satisfactory

DOMESTIC COLD WATER STORAGE TANK PHOTOGRAPHS

Internal view of cold water storage tank no. 1.



Internal view of cold water storage tank no. 2.



ADDITIONAL PHOTOGRAPHS

Boiler Room

Swan neck dead leg type pipe and also the pipe to the pressure relief valve is too long creating a dead leg. These are on the outlet of the cold water booster pump set.



Boiler Room

Pipe to the pressure gauge on the calorifier flow pipe is too long and creating a dead leg.



Boiler Room

The drain on the pipe from the domestic cold water storage tanks to the booster pump set is too long a creating a dead leg.



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
Brooklands Wing Room 31 Hand Basin	48.6	14.9	41.9	Not Satisfactory
Brooklands Wing Bathroom Hand Basin	48.0	14.6	41.0	Not Satisfactory
Conway Wing Room 20 Hand Basin	52.9	16.0	42.5	Satisfactory
Parry Wing Room 9 Hand Basin	47.1	13.1	41.5	Not Satisfactory
Reception Area Visitors Toilet Hand Basin	55.9	15.1	42.7	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 - There is a swan neck type dead leg pipe to the pressure gauge on the outlet pipe of the booster pump set. The pipe that it is on is to the pressure relief valve, this pipe is too long and also creating a dead leg and should be shortened as far as possible.
 - Boiler Room - The pipe to the pressure gauge on the flow pipe of the calorifier is too long and creating a dead leg.
 - Boiler Room - The drain on the pipe from the tanks to the booster pump set is too long and creating a dead leg.
- Purge the calorifier and hot water storage vessel to drain on at least an annual basis and record when carried out.
- If access allows, visually inspect the calorifier and hot water storage vessel internally for scale and sludge on an annual basis.
- Commence monthly temperature monitoring of inlet pipe to the TMV's (not just the blended water outlet) and record in the water systems logbook.
- The bubble tube in the Sensory room should be dosed with an appropriate and safe biocide, cleaned and maintained in line with manufacturer's recommendations. I was informed that it is not known if this being carried out.
- There is an inline scale reducing device on the cold water booster pump set in the boiler room. This should be cleaned/maintained in line with the manufacturer's recommendations. It is not thought that this is being carried out.

- 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.
- Adjust calorifier no. 2 to achieve a minimum storage temperature of 60°C at all times and a minimum of 50°C on the return at all times.
- If the self contained water feature in the rear garden is re-instated then I would recommend that it is dosed with an animal safe biocide to the manufacturers recommendations.

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 Bickerley Green NCU includes tank cleaning and dead leg removal.

The domestic cold water storage tanks were cleaned and disinfected on the 9th May 2011 but this needs to be carried out again within the near future.

Legionella management including temperature monitoring of outlets and calorifiers; flushing of infrequently used outlets and showerhead and hose descaling is being carried out and recorded.

Monthly temperature monitoring of the hot water storage vessel flow and return pipes was not being carried out and recorded in the relevant section of the logbook but I was informed that this will commence with immediate effect.

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 calorifier and hot water storage vessel and descaling is not being carried out.