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INTRODUCTION

Client Address	**Hampshire County Council** **PBRS** **Three Minsters House** **76 High Street** **Winchester** **Hampshire** **SO23 8UL**
Site Name	**Westholme NCU**
Site Address	**55 Harestock Road** **Winchester** **Hampshire** **SO22 6NT**
Site contact	**Christine Chirimumimba**
Site Telephone Number	**01962 881481**
Last Risk Assessment Carried Out By	**Freeston Water Treatment Limited**
Date of Risk Assessment	**June 2011**
Date of Previous Review	**10th April 2012**
Date of New Review	**12th March 2014**
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The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid.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 Review 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 and the last Review were seen filed within the Managers 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 Managers 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 calorifier and hot water storage vessel flow temperatures being taken and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the hot water calorifiers and hot water storage vessel flow is being carried out and recorded in the relevant section of the logbook.
Are hot water calorifier and hot water storage vessel return temperatures being taken and results recorded within the logbook documentation?	Yes	Monthly temperature monitoring of the hot water calorifier and hot water storage vessel 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?	Partially	Monitoring was partially 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?	No	The cold water storage tanks are not 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?		Unknown
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?	No	Schematic diagrams are filed within the Risk Assessment but need updating as changes have been made to the systems.
Are schematic drawings suitable and show all relevant storage and system details?	No	Schematic diagrams were seen not to show relevant storage areas and system details as a new calorifier has been installed. 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 but no records or documentation were seen within the logbook.

SAMPLING

Has any Legionella or bacteriological water sampling been carried out on the domestic water systems?	No	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. No records of sampling being carried out were seen within the logbook.
Have Legionella or bacteriological water sampling test results if taken been filed within the logbook documentation?	No	No records of sampling being carried out were seen within the logbook.

REMEDIAL WORKS

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

ANCILLARY EQUIPMENT

Is there any ancillary equipment on site?	Yes	Boiler Room - Inline scale reducer on the boosted domestic cold water pipe. Boiler Room - Strainer on the domestic down service cold water pipe to the booster pumps.
Is ancillary equipment being serviced and maintained to the manufacturer's recommendations?	No	Boiler Room - Inline scale reducer on the boosted domestic cold water pipe. It is unknown if this has been cleaned / replaced. I would recommend that the manufacturer is contacted for maintenance recommendations. Boiler Room - Strainer on the domestic down service cold water pipe to the booster pumps. It is unknown if this has been cleaned / replaced. I would recommend that the manufacturer is contacted for maintenance recommendations.

HOT WATER STORAGE

At the time of the 2012 Review ,hot water storage at Westholme - NCU was by one calorifier and one hot water storage vessel located within the Boiler Room. In early 2014 a second calorifier was installed and commissioned on the 4th March 2014.

The existing calorifier (Calorifier no. 1) 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 newly installed calorifier (Calorifier no. 2) was manufactured by Andrews Water Heaters and is a NEOflo SC 25/200 model. The calorifier 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 two calorifiers supply the storage vessel by a common flow pipe that in turn supplies all the hot water on site.

The return pipework from the building returns to the storage vessel and the two calorifiers via two circulation pumps which at the time of the survey appeared to be working correctly.

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

ACoP L8 recommends that calorifiers and the 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 vessel are checked internally for scale and sludge on an annual basis. It is not thought that this has been carried out.

There are temperature gauges on the calorifiers to show the storage and return temperatures.

There is a temperature gauge on the return pipework but not on the flow pipe of the hot water storage vessel and I would recommend that one be fitted.

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.

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

Calorifier No 1	Storage	56.0°C	Not Satisfactory
Calorifier No 1	Return	60.0°C	Satisfactory
Calorifier No 2	Storage	62.0°C	Satisfactory
Calorifier No 2	Return	60.0°C	Satisfactory
Hot Water Storage Vessel	Storage	61.0°C	Satisfactory
Hot Water Storage Vessel	Return	60.0°C	Satisfactory

I would recommend adjustment of Calorifier no. 1 as soon as is practicable to achieve these temperatures.

HOT WATER STORAGE PHOTOGRAPHS

The new Calorifier (no. 2).

COLD WATER STORAGE

Domestic cold water storage at Westholme NCU consists of two domestic cold water storage tanks located within the roof space of the Jay Wing. There is also a water storage tank for the fire sprinkler system of both Westholme NCU and OPH located outside the Laundry on Westholme OPH. As this a 'closed system' it does not pose a legionella risk in normal operation and is therefore not covered by this survey. It is thought that the domestic cold water storage tanks supply the calorifier and all cold outlets and appliances (with the exception of the heating boilers pressurisation unit and outside tap by the Boiler Room) via a two pump booster set. The booster pumps switch automatically ensuring that neither pump becomes a dead leg.

Domestic cold water storage tank no. 1 is of a GRP, sectional construction. There is a screened vent on the lid and a screen on the overflow pipe and overflow warning pipe. This vessel has integral insulation to the body, lid, access hatch and inlet valve housing.

There is a good cross flow of water through the tank as the outlet and inlet pipes are at opposing ends of the vessel.

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

It is unknown when this vessel was last cleaned and disinfected and I would recommend that this be carried out within the near future.

The cold water storage temperature of the Tank no. 1 was:-

12.5^{o}C Satisfactory

Domestic cold water storage tank no. 2 is of a GRP, sectional construction and at the time of the survey was drained and out of service

There is a screened vent on the lid and a screen on the overflow pipe and overflow warning pipe. This vessel has integral insulation to the body, lid, access hatch and inlet valve housing. If in service there would be a good cross flow of water through the tank as the outlet and inlet pipes are at opposing ends of the vessel.

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

It is unknown when the vessel was last cleaned and disinfected and I would recommend that this be carried out if it is to be put back into service.

The cold water storage temperature of the Tank no. 2 was:-

EMPTY

COLD WATER STORAGE TANK PHOTOGRAPHS

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

ADDITIONAL PHOTOGRAPHS

DL1 Boiler Room

The drain on the inlet pipe to the booster pumps from the tanks is too long and creating a dead leg.

DL2 Roof Space above Jay Wing

The valve on the mains cold water pipe to the inlet of Tank no. 2 is shut and creating a dead leg.

DL3 Roof Space above Jay Wing

The valve on the outlet pipe of Tank no. 2 is shut and creating a dead leg on the outlet header pipe.

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
Wren Wing OT Room Hand Basin	58.8	13.1	41.6	Satisfactory
Jay Wing Lounge Sink	51.3	14.4	40.2	Satisfactory
Dove Wing Room 1 Hand Basin	59.6	13.4	41.1	Satisfactory
Lark Wing Room 15 Hand Basin	50.3	15.6	41.8	Satisfactory

HAMPSHIRE COUNTY COUNCIL

ACoP L8 DOCUMENTATION/LOGBOOK AND RISK ASSESSMENT / REVIEW AUDIT

SITE NAME:	Westholme NCU
LOCATION:	55 Harestock Road Winchester Hampshire SO22 6NT
CONTACT ON SITE:	Christine Chirimumimba
DATE OF AUDIT:	12-3-2014
NAME OF AUDITOR:	Mr Chris Wilson – Freeston Water Treatment Limited

ITEM	TASKS		COMMENTS
		YES / NO	
1.	Audit Date	12-3-2014	
2.	Site Management Audit signed	YES	
3.	Contact details complete and up to date	YES	
4.	Responsibility details complete and up to date	YES	No Deputy Responsible Person listed
5.	6 monthly water tank inspections up to date	NO	
6.	Training records present and up to date	YES	E-Learning only. Last carried out on 5-2-2014 by the Maintenance Operative
7.	Contractor visits recorded	YES	
8.	Monthly boiler/calorifier temps checked	YES	
9.	Monthly temperature – taps checked	YES	
10.	Weekly all outlets flushed and recorded	YES	
11.	Weekly low use outlets flushed and recorded	YES	
12.	Weekly shower disinfection and clean and recorded	PARTIALLY	Not for the last three weeks
13.	Quarterly shower descale and recorded	YES	
14.	Monthly sentinel taps temps checked and recorded	YES	

15.	Six monthly temperature probe calibration	NO	
16.	Defects entry made when test off spec	NO	There is no records page within the logbook for this to be recorded
17.	Appropriate corrective action undertaken for Item 16	NO	See above
18.	Each task dated	YES	
19.	Each task signed for	YES	
20.	Laboratory TVC certificates up to date	NO	
21.	Laboratory LP certificates up to date	NO	
22.	Disinfection certificates up to date	NO	

ACoP L8 RISK ASSESSMENT / REVIEW AUDIT

Risk Assessment / Review Date		12-3-2014		
REF	**Risk Assessment Summary of Recommendations**	**COMPLETE? YES / NO**	**COMMENTS**	**PIC REF**
1	Boiler Room – The drain on the inlet pipe to the booster pumps from the tanks is too long and creating a dead leg.	NO		
2	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.	YES		
3	Boiler Room – The pipe to the temperature gauge on the flow pipe of the calorifier is too long and creating a dead leg.	YES		
4	Boiler Room – The pipe to the temperature gauge on the flow pipe of the calorifier is too long and creating a dead leg.	YES		

5	Boiler Room – The pipe to the pressure gauge on the flow pipe of the calorifier is too long and creating a dead leg.	YES		
6	Roof space above Jay Wing – The valve on the mains cold water pipe to the inlet of Tank No 2 is shut and creating a dead leg.	NO	Shunt pump has now been removed	
7	Roof space above Jay Wing – The valve on the outlet pipe of Tank No 2 is shut and creating a dead leg on the outlet header pipe.	NO		
8	Purge the calorifier and hot water storage vessel to drain on at least an annual basis and record when carried out.	UNKNOWN		
9	If access allows, visually inspect the calorifier and hot water storage vessel internally for scale and sludge on an annual basis.	UNKNOWN		
10	Commence monthly temperature monitoring of inlet pipe to the TMVs (not just the blended water outlet) and record in the water systems logbook.	NO		

11	There is an inline scale reducer on the boosted domestic cold water pipe 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.	NO		
12	There is a strainer on the down service domestic cold water pipe to the booster pumps within 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.	NO		
13	Commence six monthly temperature monitoring of the cold water storage tank and record results within the logbook.	NO		
14	I would recommend Bacteriological and Legionella water samples be taken if the temperatures fall out of the recommended limits.	NO		

15	Ensure Deputy Responsible Persons are appointed and are competent and adequately trained.	NO		
16	Ensure the new maintenance operative on site is competent and adequately trained in Legionella management	NO	E-Learning only course undertaken.	
17	Clean and disinfect domestic cold water storage tank no. 1 as soon as is practicable and repeat annually if required.	NO		
18	Clean and disinfect domestic cold water storage tank no 2 if brought back into service.	N/A	Not in service	
19	Fit a temperature gauge to the domestic hot water return pipe within the Boiler Room.	YES		
20	Remove the cross threaded bolt that secures the access hatch on domestic cold water tank no. 1 and ensure that a new bolt can be bolted down with ease.	YES		

ACoP L8 AUDIT ADDITIONAL COMMENTS/FINDINGS/RECOMMENDATIONS

REF	COMMENTS	PIC REF
1	**Please refer to the RECOMMENDATIONS and also the SUMMARY sections within the main Review document below for all relevant further information and conclusions.**	

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:-

  - DL1 - Boiler Room – The drain on the inlet pipe to the booster pumps from the tanks is too long and creating a dead leg.
  - DL2 - Roof space above Jay Wing – The valve on the mains cold water pipe to the inlet of Tank no. 2 is shut and creating a dead leg.
  - DL3 - Roof space above Jay Wing – The valve on the outlet pipe of Tank no. 2 is shut and creating a dead leg on the outlet header pipe.

- Purge the calorifiers and hot water storage vessel to drain on at least an annual basis and record when carried out.

- If access allows, visually inspect the calorifiers and hot water storage vessel internally for scale and sludge on an annual basis.

- Monthly temperature monitoring of all the sentinel and a representative amounts of hot and cold outlets is being carried out and recorded On non-sentinel outlets, where TMV's (Thermostatic Mixing Valves) are fitted, the temperature is only being taken from the blended water at the outlet. It should be ensured that it is taken from the hot pipe immediately before it enters the TMV.

- There is an inline scale reducer on the boosted domestic cold water pipe 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.

- There is a strainer on the down service domestic cold water pipe to the booster pumps within 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 tank 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.

- The schematic drawings should be updated to show the changes to the domestic water system e.g. the new calorifier etc.

- Clean and disinfect domestic cold water storage tank no. 1 as soon as is practicable and repeat annually if required.

- Clean and disinfect domestic cold water storage tank no. 2 if brought back into service.

- Fit a temperature gauge to the domestic hot water flow pipe on the hot water storage vessel within the Boiler Room.

- Ensure that all Arjo / Malibu etc. type baths are serviced and maintained in line with the manufacturers recommendations e.g. seals and hoses changed, filters cleaned and disinfected etc. This should all be recorded within a logbook when carried out. Although I was informed that this has been carried out in January 2014 there was no facility within the logbook to record this for this date, the records start on the second quarter of 2014.

- Adjust the Calorifiers where needed to achieve a minimum flow temperature of **60^{o}C** at all times and a minimum return temperature of **50^{o}C** at all times.

- Records within the Logbook state that the maintenance operative undertook an 'E-Learning' Legionella course on the 5th February 2014. I would recommend that **full** Legionella training be given to any staff involved with Legionella management.

- 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'.

  Regulations and guidance regarding the Written Scheme can be found in ACoP L8 Paragraphs 52-76.

SUMMARY

Since the 2012 Risk Assessment Review was carried out a new water systems logbook has been put in place for 2014 and is in use.

I would recommend that the maintenance operative and other staff who may carry out Legionella management be fully 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 Review and this is an ongoing planned maintenance agreement between Freeston Water Treatment and Hampshire County Council.

Completed remedial work carried at Westholme NCU includes some dead leg removal.

Domestic cold water storage tank no. 1 is in service and tank no. 2 is empty and not in service.

The domestic cold water storage tanks have not been cleaned and disinfected for many years and I would recommend that this be carried out within the near future on tank no. 1 and also on tank no. 2 if brought back into service.

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

Calorifier no. 1 should be adjusted to achieve a minimum flow temperature of **60^{O}C** at all times and a minimum return temperature of **50^{O}C** at all times.

Ensure that all Arjo / Malibu etc. type baths are serviced and maintained in line with the manufacturer's recommendations e.g. seals and hoses changed, filters cleaned and disinfected etc. This should all be recorded within a logbook when carried out.

A Written Scheme should be prepared to ensure that all necessary controls are maintained, monitored and remain effective.

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