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## INTRODUCTION

<b>Client Address</b>	<b>Hampshire County Council PBRS Three Minsters House 76 High Street Winchester Hampshire SO23 8UL</b>
<b>Site Name</b>	<b>Addenbrooke OPH and Day Centre</b>
<b>Site Address</b>	<b>Willis Road Gosport Hampshire PO12 1NA</b>
<b>Site contact</b>	<b>Sue Webber</b>
<b>Site telephone number</b>	<b>02392 581088</b>
<b>Last risk assessment carried out by</b>	<b>Freeston Water Treatment Limited</b>
<b>Date of risk assessment</b>	<b>May 2011</b>
<b>Date of previous review</b>	<b>N/A</b>
<b>Date of new review</b>	<b>2<sup>nd</sup> April 2012</b>
<b>Review carried out by</b>	<b>Mr Chris Wilson</b>

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The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid.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

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 flow is being carried out and recorded in the relevant section of the logbook.
Are hot water calorifier 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?	N/A	There are no domestic cold water storage tanks on site
Have storage tank cleaning and disinfection certification been filed within the logbook documentation?	N/A	There are no domestic cold water storage tanks on site
Storage tank cleaning and disinfection was last carried out on?	N/A	There are no domestic cold water storage tanks on site
Are water storage tanks being inspected on a six monthly basis and temperatures recorded within the logbook documentation when carried out?	N/A	There are no domestic cold water storage tanks on site

## 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?	Yes	TMV's should be serviced and maintained as directed by the manufacturers; and recorded within the logbook documentation when carried out. An outside contractor carried out servicing and adjustment of the TMV's in November 2012. The records were found within another folder I would recommend that copies are also files within the water 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>Yes</p>	<p>Documentation within a separate file stated that Hampshire Scientific Service had taken water samples for Legionella analysis on the following dates with regular positive Legionella results until the 9<sup>th</sup> January 2012 which showed nil detected:- 3-3-2011, 13-4-2011, 25-8-2011, 6-12-2011, 23-12-2012, 9-1-2012</p> <p>The bathroom within unit 4 has had an ongoing positive Legionella issue and during this Review I removed various panels to try and find a possible problem which could cause this.</p> <p>A dead leg pipe was found and is described in greater detail in the Recommendations section of this report.</p> <p>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 - water softener for the calorifiers. Sensory room - two bubble tubes.
Is ancillary equipment being serviced and maintained to the manufacturer's recommendations?	Yes	Boiler Room - water softener for the calorifiers. This should be cleaned / disinfected, serviced and maintained in line with the manufacturer's recommendations. It is not thought that this is being carried out. Sensory room - two bubble tubes. 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 Addenbrooke OPH and Day Centre is by two gas fired calorifiers located within the Boiler Room. Both calorifiers are identical, were manufactured by Andrews Water Heaters and are supplied mains cold water via pressure reducers and a water softener also located within the Boiler Room.

The calorifiers are of a stainless steel construction and have insulation under the factory fitted metal outer casings and replaced the existing calorifiers in late 2009.

There is a return system fitted to the calorifiers. There are two return pipes which connect together into one pipe and then split into two pipes again to feed each calorifier. This means that there are two return pipes that need temperatures taken monthly but the returns to the calorifiers themselves are common and therefore the individual return temperatures are not pertaining to any individual calorifier.

I have referred to them in this report as the 'top return pipe' and 'bottom return pipe' as they are sited on top of each other.

The flow pipes from the calorifiers join together to a common header and then split again and have a circulation pump fitted to each of the two separated flow pipes.

At the time of the survey both return circulation pumps were in service and appeared to be working correctly.

There are temperature gauges on the on flow and return pipes. The second temperature gauges from calorifier on the flow pipes of both calorifiers are inaccurate. They should be replaced but in reality there were gauges on the existing pipework when the new calorifiers were installed. New gauges were fitted at the time nearer to the calorifiers and therefore these gauges are not needed.

The inaccurate gauges are on pipes that are too long and should be removed anyway and this is covered in greater detail along with other dead leg pipes within the 'Recommendations' section of this report.

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. I was informed that it is not thought that this is being carried out.

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.

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 adjustment of BOTH calorifiers to achieve this as soon as is practicable.**

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

Calorifier No. 1 (Left side)	Storage	59.3°C	Not Satisfactory
Calorifier No. 2 (Right side)	Storage	55.0°C	Not Satisfactory
Top Return Pipe	Return	53.0°C	Satisfactory
Bottom Return Pipe	Return	51.1°C	Satisfactory

## **COLD WATER STORAGE**

There is no domestic cold water storage at Addenbrooke OPH and Day Centre.

There is small feed and expansion water storage tank for the heating boilers. As this is a 'closed system' it does not pose a Legionella risk in normal operation and is therefore not covered by this survey.

## ADDITIONAL PHOTOGRAPHS

### Tank Room

Dead leg on the mains cold water supply to the feed and expansion tank.



### Tank Room

Dead leg on the mains cold water pipe that used to be connected to the outlet pipe of the now disconnected domestic cold water tank.



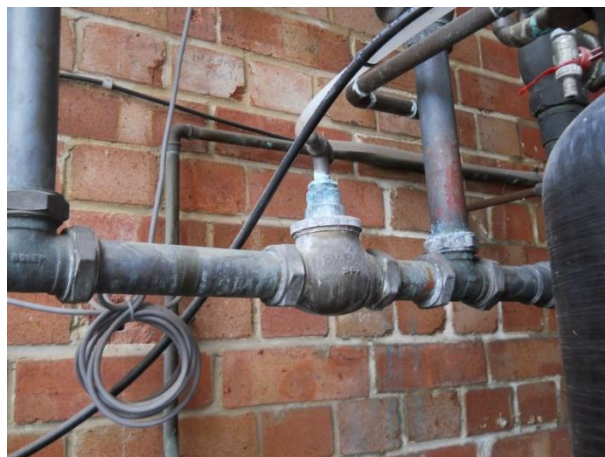
### Tank Room

Dead leg on the mains cold water pipe in the void space under the plasterboards.



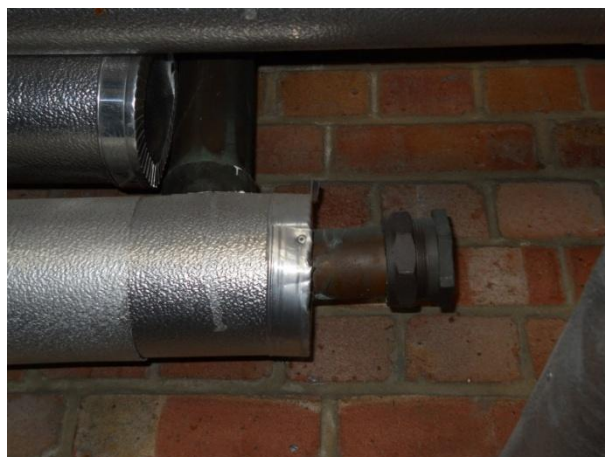
### Boiler Room

Dead legs either side the shut valve on the bypass pipe on the water softener.



### Boiler Room

Dead leg on the softened mains water pipe at the rear of the room.



### Boiler Room

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





### Boiler Room

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



### Boiler Room

The pipe to the temperature gauge on the flow pipe of calorifier no. 2 is too long and is creating a dead leg.



### Boiler Room

The pipe to the temperature gauge on the flow pipe of calorifier no. 2 is too long and is creating a dead leg.



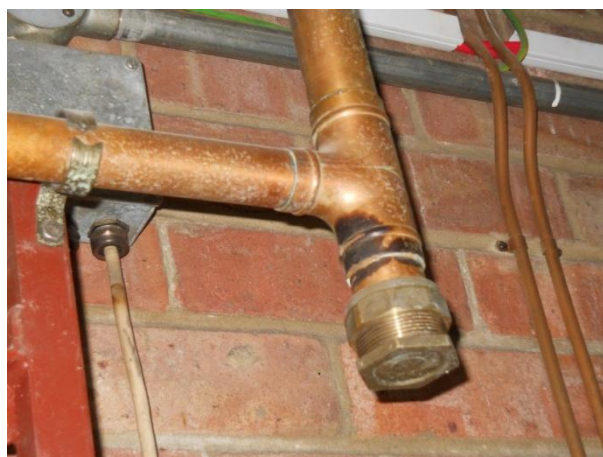
### Boiler Room

One of the four dead legs on the flow circulation pump assembly.



### Boiler Room

One of the four dead legs on the flow circulation pump assembly.



### Boiler Room

One of the four dead legs on the flow circulation pump assembly.





### Boiler Room

One of the four dead legs on the flow circulation pump assembly.



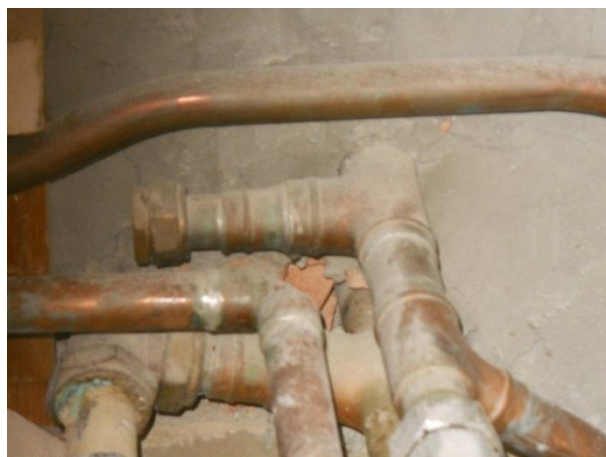
### Boiler Room

The pipe to the temperature gauge on the return pipe is too long and is creating a dead leg.



### Unit 4 Bathroom

Dead leg behind the panel.



**Unit 4 Bathroom**

Dead leg behind the panel.



**All site**

Ensure all fire hose supply pipes are fully disconnected from the mains cold water supply leaving no dea



## 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
Unit 4 Room 122 Bathroom Arjo Bath Tap	48.9	16.1	41.4	Not Satisfactory
Unit 4 Room 115 Cleaners Room Sink	45.0	17.9	41.4	Not Satisfactory
Unit 3 Room 83 Kitchenette Sink	43.5	13.2	39.8	Not Satisfactory
Unit 2 Room 69 Hand Basin	55.5	16.7	42.8	Satisfactory
Main Kitchen Sink	57.7	13.9	45.5	Not Satisfactory
Day Centre Staff Bedroom Hand Basin	42.7	17.1	41.7	Not 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:-
  - Tank Room - There is a dead leg on the mains cold pipe to the inlet pipe of the heating boilers feed and expansion pipe.
  - Tank Room - There is a dead leg on the mains cold pipe that used to be connected to the domestic cold water storage tank.
  - Tank Room - There is a dead leg on the mains cold water pipe in the void space under the plasterboard panels.
  - Boiler Room - There is a bypass pipe valve on the water softener that is shut. This is creating a dead leg either side of it.
  - Boiler Room - There is a dead leg on the softened cold water pipe at height at the rear of the room.
  - Boiler Room - There is a pipe to a temperature gauge on the new flow pipework on calorifier no. 1 that is too long and should be shortened to remove the dead leg.
  - Boiler Room - There is a pipe to a temperature gauge on the old flow pipework on calorifier no. 1 that is too long and no longer needed and should be removed.
  - Boiler Room - There is a pipe to a temperature gauge on the new flow pipework on calorifier no. 2 that is too long and should be shortened to remove the dead leg.
  - Boiler Room - There is a pipe to a temperature gauge on the old flow pipework on calorifier no. 2 that is too long and no longer needed and should be removed.
  - Boiler Room - There are four dead leg pipes on the hot flow circulation pumps assembly.
  - Boiler Room - There is a pipe to a temperature gauge on the return pipework that is too long and no longer needed and should be removed.
  - Unit 4 Bathroom (wrongly referred to as Unit 3 Bathroom in the Risk Assessment Report) There is a dead leg behind the large panel near the wash basin.

- Unit 4 Bathroom – A new dead leg pipe identified since the Risk Assessment survey was found on the hot water pipe behind the panel under the hand basin. This 15mm copper pipe has a ballofix valve which is in the closed position and is creating a dead leg back to the hot water header pipe. The pipe continues after the valve and enters the wall cavity behind the large panels on the right of the hand basin where it penetrates the floor below and the wall to the left. It should be investigated further to ascertain what the two pipes supply. This dead leg should be removed back to the header pipe or the two pipes it supplies be put back into service.

**If the two pipes are to be brought back into service then it is of paramount importance that they (and all associated pipes and any appliances and outlets that they supply) be cleaned and disinfected before first use.**

- If access allows, visually inspect the calorifiers internally for scale and sludge on an annual basis.
- 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 a water softener for the calorifiers within the boiler room. This should be cleaned / disinfected, serviced and maintained in line with the manufacturer's recommendations. It is not thought that this is being carried out.
- The Arjo bath within the bathroom of Unit 4 is supplied **blended** water from a TMV behind the panels to the right of the hand basin. The Arjo bath has its own TMV inside the unit and should only be supplied with hot water at full temperature and **not** blended water.

- The two bubble tubes 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 is being carried out.
- I would recommend Bacteriological and Legionella water samples be taken if the temperatures fall out of the recommended limits.

Documentation within a separate file to the water systems logbook stated that Hampshire Scientific Service had taken water samples for Legionella analysis on the following dates with regular positive Legionella results until 9-1-2012 which showed nil detected:-  
3-3-2011, 13-4-2011, 25-8-2011, 6-12-2011, 23-12-2012 and 9-1-2012

The bathroom within Unit 4 has had an ongoing positive Legionella issue and during this Review I removed various panels to try and find a possible problem which could cause this. A new dead leg pipe identified since the Risk Assessment survey was found on the hot water pipe behind the panel under the hand basin. This 15mm copper pipe has a ballfix valve which is in the closed position and is creating a dead leg back to the hot water header pipe. The pipe continues after the valve and enters the wall cavity behind the large panels on the right of the hand basin where it penetrates the floor below and the wall to the left. It should be investigated further to ascertain what the two pipes supply. This dead leg should be removed back to the header pipe, put on a weekly flushing regime (without creating an aerosol) or the two pipes it supplies be put back into service as soon as is practicable. **If the two pipes are to be brought back into service then it is of paramount importance that they (and all associated pipes and any appliances and outlets that they supply) be cleaned and disinfected before first use.**

Ensure all water sampling test results if taken are filed within the relevant section of the water systems logbook.

- The fire hoses have been removed but some of the pipework remains. I was unable to ascertain if all this pipework is completely disconnected from the mains water supply or are dead legs. This should be investigated further and appropriate action taken if found to be still connected.

- 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.

## 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 out at Addenbrooke OPH and Day Centre includes some dead leg removal.

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.

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

Annual purging of the calorifiers and descaling is not being carried out.

There has been an ongoing positive Legionella problem within the Unit 4 bathroom and a possible cause for this may have been found and is covered in full detail within the Recommendations section.