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INTRODUCTION

Client Address	Hampshire County Council PBRS Three Minsters House 76 High Street Winchester Hampshire SO23 8UL
Site Name	Fleming House NCU
Site Address	Heron Square Eastleigh Hampshire SO50 9JD
Site contact	Wendy Burrett
Site telephone number	02380 626640
Last risk assessment carried out by	Freeston Water Treatment Limited
Date of risk assessment	April 2011
Date of previous review	22nd March 2012
Date of new review	4th 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The Assessment should be reviewed regularly (at least every two years) and whenever there is reason to suspect it is no longer valid.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 Office.
Is there a domestic water systems logbook in place?	Yes	A water systems log book is in place and this was located within the 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>Partially</p>	<p>Monthly temperature monitoring of the domestic hot water system is being carried out and recorded in the relevant section of the logbook. Sentinel taps not recorded since January 2014.</p>
<p>Is cold water temperature monitoring being carried out on a monthly basis and results recorded within the logbook documentation?</p>	<p>Partially</p>	<p>Monthly temperature monitoring of the domestic cold water system is being carried out and recorded in the relevant section of the logbook. Sentinel taps not recorded since January 2014.</p>
<p>Are hot water calorifier flow temperatures being taken and results recorded within the logbook documentation?</p>	<p>Partially</p>	<p>Monthly temperature monitoring of the hot water calorifiers storage temperatures are being carried out and recorded in the relevant section of the logbook. Temperatures not recorded since January 2014.</p>
<p>Are hot water calorifier return temperatures being taken and results recorded within the logbook documentation?</p>	<p>Partially</p>	<p>Monthly temperature monitoring of the hot water calorifiers return temperatures are being carried out and recorded in the relevant section of the logbook. Temperatures not recorded since January 2014.</p>
<p>Are monitoring records recorded within the logbook documentation up to date?</p>	<p>Partially</p>	<p>Monitoring was partially up to date at the time of this Review.</p>
<p>Is weekly flushing of infrequently used outlets being carried out and recorded within the logbook documentation?</p>	<p>Yes</p>	<p>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.</p>

COLD WATER STORAGE

Have cold water storage tanks where fitted been cleaned and disinfected annually?	No	The cold water storage tank is 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?		25/05/2011
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 tank should be inspected on a six monthly basis and temperatures from the tank and remote from the ball valve 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 was 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?	No	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. No records were seen within the logbook to show when this was last carried out.

SAMPLING

<p>Has any Legionella or bacteriological water sampling been carried out on the domestic water systems?</p>	<p>No</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. No records of sampling being carried out were seen within the logbook.</p>
<p>Have Legionella or bacteriological water sampling test results if taken been filed within the logbook documentation?</p>	<p>No</p>	<p>No records of sampling being carried out were seen within the 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>Main Kitchen - Water Softener for the dishwasher.</p> <p>Boiler Room - Inline scale reducer on the boosted cold water pipe to the calorifier.</p> <p>Boiler Room - A strainer on the down services cold water pipe to the booster pumps.</p> <p>Sensory Room - Bubble tube.</p>
<p>Is ancillary equipment being serviced and maintained to the manufacturer's recommendations?</p>	<p>No</p>	<p>Main Kitchen - Water Softener 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 - Inline scale reducer. It is unknown if this has been cleaned / replaced. I would recommend that the manufacturer is contacted for maintenance recommendations.</p> <p>Boiler Room - The strainer on the down services cold water pipe to the booster pumps. It is unknown if this is being cleaned and disinfected regularly.</p>

	<p>Sensory Room - Bubble Tube</p> <p>I was informed that the old bubble tube was cleaned / disinfected and was dosed with a biocide but this was not recorded.</p> <p>At the time of this Review a replacement bubble tube had been in place for approximately two weeks and I was informed that the manufacturer would be contacted for maintenance and biocide dosing recommendations.</p>
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HOT WATER STORAGE

At the time of the 2012 Review ,hot water storage at Fleming House - NCU was one calorifier and one hot water storage vessel located within the Boiler Room. In approximately January 2014 a second calorifier was installed.

The existing 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 (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 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 since July 2012.

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

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.

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

Calorifier No. 1	Storage	58.0°C	Not Satisfactory
Calorifier No. 1	Return	47.0°C	Not Satisfactory
Calorifier No. 2	Storage	65.0°C	Satisfactory
Calorifier No. 2	Return	47.0°C	Not Satisfactory
Hot Water Storage Vessel	Storage	63.0°C	Satisfactory
Hot Water Storage Vessel	Return	47.0°C	Not Satisfactory

I would recommend adjustment of the calorifiers as soon as is practicable to achieve these temperatures.

HOT WATER STORAGE PHOTOGRAPHS

The hot water storage vessel is on the left, the existing Calorifier (no.1) is on the right and the new Calorifier (no.2) is in the middle of the picture.



COLD WATER STORAGE

Domestic cold water storage at Fleming House - NCU consists of two domestic cold water storage tanks located within the roof space. The access hatch is opposite Room 38.

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 and lid but the lid hatches are single skinned and not insulated, I would recommend that they be insulated if water temperature becomes elevated to near 20°C in the hotter months.

There is a satisfactory cross flow of water through the tanks with the inlets and outlets being almost at opposing ends of the vessel.

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

The inside of the tank no. 2 showed a medium deposit of sediment on the base and a heavy 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 25th May 2011 and I would recommend that this be carried out again as soon as is practicable.

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:-

12.6°C Satisfactory

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

10.1°C Satisfactory

COLD WATER STORAGE TANKS PHOTOGRAPHS

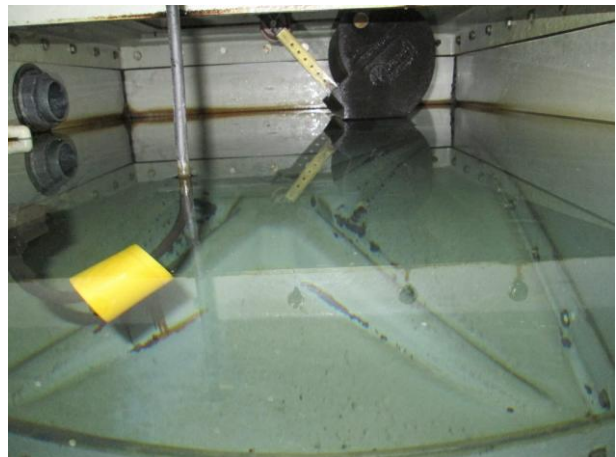
Internal view of cold water storage tank no.

1.



Internal view of cold water storage tank no

2.



ADDITIONAL PHOTOGRAPHS

DL1 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

The first of two return circulation pumps to the calorifiers and the hot water storage vessel.



Boiler Room

The second of two return circulation pumps to the calorifiers and the hot water storage vessel.



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
Robin Wing Kitchenette Sink	50.6	14.0	40.8	Satisfactory
Wren Wing Room 42 Hand Basin	53.6	10.5	40.0	Satisfactory
Dove Wing Toilet (near Office) Hand Basin	50.0	11.8	39.5	Satisfactory
Lark Wing Room 7 Hand Basin	51.4	11.4	40.1	Satisfactory

HAMPSHIRE COUNTY COUNCIL

ACoP L8 DOCUMENTATION/LOGBOOK AND RISK ASSESSMENT / REVIEW AUDIT

SITE NAME:	Fleming House NCU
LOCATION:	Heron Square Eastleigh Southampton Hampshire SO50 9JD
CONTACT ON SITE:	Wendy Burrett
DATE OF AUDIT:	4-3-2014
NAME OF AUDITOR:	Mr Chris Wilson Freeston Water Treatment Limited

ITEM	TASKS		COMMENTS
		YES / NO	
1.	Audit Date	4-3-2014	
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 11-2-2014 by the Operations Manager
7.	Contractor visits recorded	NO	
8.	Monthly boiler/calorifier temps checked	NO	Flow and return temps not taken since January 2014
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	YES	
13.	Quarterly shower descale and recorded	YES	
14.	Monthly sentinel taps temps checked and recorded	NO	Sentinel tap temps not taken since January 2014

15.	Six monthly temperature probe calibration	YES	
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	The records only show when and where the samples were taken from and <u>not</u> the actual test results
21.	Laboratory LP certificates up to date	NO	The records only show when and where the samples were taken from and <u>not</u> the actual test results
22.	Disinfection certificates up to date	NO	No cleaning and disinfection certificates were seen within either the 2013 or 2014 logbooks

ACoP L8 RISK ASSESSMENT / REVIEW AUDIT

Risk Assessment / Review Date		4-3-2014		
REF	Risk Assessment Summary of Recommendations	COMPLETE? YES / NO	COMMENTS	PIC REF
1	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.	NO		
2	Boiler Room - There is a swan neck type dead leg pipe to the pressure gauge on the flow pipe of the hot water storage vessel.	YES		
3	Boiler Room – The drain pipe on the anti stratification pipe just below the pump to the calorifier is too long and creating a dead leg. If this is not needed it should be removed.	YES		
4	Purge the calorifier and hot water storage vessel to drain on at least an annual basis and record when carried out.	UNKNOWN		

5	If access allows, visually inspect the calorifier and hot water storage vessel internally for scale and sludge on an annual basis.	UNKNOWN		
6	ACoP L8 recommends that destratification / shunt pumps are operated automatically by a time clock and run for one hour every day before first use. I would recommend that this be carried out as it will become a dead leg if not used within a week.	Yes	Shunt pump has now been removed	
7	Commence six monthly temperature monitoring of the cold water storage tank and record results within the logbook.	NO		
8	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.	NO		

9	Clean and disinfect the domestic cold water storage tank within the near future. Inspect the tank annually and repeat if required.	NO		
10	There is an inline scale reducing device on the outlet pipe of 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.	NO		
11	There is a strainer on the inlet of 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.	NO		
12	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.	YES	I was informed that this has been carried out but not recorded.	

13	There is a water softener for the dishwasher within the Main Kitchen. This should be disinfected and maintained in line with the manufacturer's recommendations. It is unknown if this is being carried out.	NO		
14	Ensure Deputy Responsible Persons are appointed and are competent and adequately trained.	NO		
15	Ensure the maintenance operative on site is competent and adequately trained in Legionella management.	NO	E-Learning only course undertaken.	

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 - 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.
- 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.
- Commence six monthly temperature monitoring of the cold water storage tank and record results within the logbook.
- 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.
- Update the schematic drawings to show changes to the domestic water system e.g. the new calorifier etc.

- Clean and disinfect the domestic cold water storage tanks as soon as is practicable. Inspect the tanks annually and repeat if required.
- There is an inline scale reducing device on the outlet pipe of 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.
- There is a strainer on the inlet of 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.
- 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 and this be recorded within the logbook when carried out. I was informed that the old bubble tube was cleaned / disinfected and was dosed with a biocide but this was not recorded. At the time of this Review a replacement bubble tube had been in place for approximately two weeks and I was informed that the manufacturer would be contacted for maintenance and biocide dosing recommendations.
- There is a water softener for the dishwasher within the Main Kitchen. This should be disinfected and maintained in line with the manufacturer's recommendations. It is unknown if this is being carried out.
- 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. No records were seen within the logbook relating to this being carried out.

- Adjust the calorifiers where needed to achieve a minimum flow temperature of 60°C at all times and a minimum return temperature of 50°C at all times.
- 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.
- Ensure Deputy Responsible Persons are appointed and are competent and adequately trained.
- Records within the Logbook state that the Operations Manager undertook an 'E-Learning' Legionella course on the 11th 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.

A new maintenance operative was employed but has now left leaving other staff to carry out Legionella management and I would recommend that **all** such staff be fully trained in Legionella management as soon as is practicable.

Some of the 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 out at Fleming House OPH includes dead leg removal.

The domestic cold water storage tanks were cleaned and disinfected on the 25th May 2011 and this needs to be carried out again as soon as is practicable.

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

Monthly temperature monitoring of the flow and return temperatures of the calorifiers / hot water storage vessel has not been carried out since January 2014.

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.

Six monthly domestic cold water storage tank temperature monitoring is not being carried out.

It is unknown if purging and descaling of Calorifier no. 1 and hot water storage vessel has been carried out. Calorifier no. 2 was only installed in approximately January 2014.

I was informed that the old bubble tube was cleaned / disinfected and was dosed with a biocide but this was not recorded.

A replacement bubble tube has been in place for approximately two weeks and I was informed that the manufacturer would be contacted for maintenance and biocide dosing recommendations.

The calorifiers should be adjusted to achieve a minimum flow temperature of **60°C** at all times and a minimum return temperature of **50°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. No records were seen within the logbook relating to this being carried out.

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

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