Aquastat
water treatment specialists

LEGIONELLA RISK ASSESSMENT

THE PREVENTION AND CONTROL OF LEGIONNAIRES' DISEASE

Client:	Wessex RFCA
Site:	ARC Dorchester
Address:	Poundbury Road, Dorchester, DT1 1SL
Risk Rating:	Medium
Report Ref:	AQRA/AQST/LRA/087
Surveyed By:	Jon Barton
Survey Date:	7th August 2023
Report Date:	10th August 2023
Recommended Review Date:	August 2025

Contents

Artius Property Protection Limited T/A Aquastat
Registered Office: SBC House, Restmor Way, Wallington, Surrey SM6 7AH
Registered in England No. 09632816

1. EXECUTIVE SUMMARY

This document is intended to identify the risk of developing legionnaire's disease from the building water system. The Health and Safety Executive Approved Code of Practice recommends Risk Assessments should be reviewed on a regular basis and in accordance with the current ACOP recommendations.

The Health and Safety commission issued an Approved Code of Practice for "Prevention of Legionellosis (including legionnaires' disease)" which came into effect on 15th January 1992, requiring a risk assessment to be undertaken. Guidance notes were issued by the Health and Safety Executive in the form of HS(G)70 and on the 8th January 2001 the Approved Code of Practice L8 came into force and BS8580:2019. This risk assessment is structured around the requirements of these documents, ACOPL8 revised and HSG274 Parts 1, 2 and 3 and The Water Regulations Guide.

Legionellosis is the term used for infections caused by legionella pneumphila and other bacteria from the family Legionellaceae. Legionnaire's Disease is a pneumonia that principally effects those who are susceptible due to age, illness, immunosuppression, smoking etc. and may be fatal. Legionellae can also cause less serious illnesses that are not fatal or permanently debilitating but which can affect all people. Infection is attributed to inhaling legionellae, either those water droplets which are small enough to penetrate deeply into the lung, or in droplet nuclei (particles left when water has evaporated). Legionellae are widespread in natural sources of water. They may enter man-made systems or water services, where they can multiply under certain conditions, and if there is a means of creating the transmitting water droplets, people in the vicinity may be at risk. Between 200-400 cases of legionellosis are reported in England and Wales every year.

For a risk to be present a chain of events has to occur:

* System infection
* Legionellae proliferation enhanced by system conditions
* Aerosol formation
* Inhalation of aerosol by susceptible individual

Since aerosol formation and inhalation is difficult to avoid the onus falls on the operator to prevent system infection and to eliminate conditions in which legionellae thrive. The aim is to reduce the risk to an acceptable level by controlling the conditions necessary for proliferation of the bacterium. As a general rule, in practice this means: Keeping the hot water storage temperature at greater than 60^0C, maintaining cold water temperatures at less than 20^0C, keeping water systems clean and in good condition and controlling contamination of the water systems. It is, however, understood that some small systems, particularly when instantaneous water heaters are being used as a hot water source, may not be able to achieve these parameters and further recommendations will be given as required.

In order to achieve this aim, a detailed legionellosis risk assessment has been carried out, the results of which are used to produce recommendations for the control of the bacterium.

Full details of the required actions are enclosed.

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This risk assessment does not involve the preparation of the written scheme of control, but rather provides information that is critical to its preparation, improvement, and review.

Ensuring that there is a written scheme of control is a legal requirement of the duty holder, though they might instruct the risk assessor to advise or prepare the scheme of control on their behalf as a separate commission. It is important that operation and maintenance individuals are consulted.

The survey and assessment were conducted by Jon Barton of Aquastat on 07/08/2023 on behalf of the RFCA**.**

This risk assessment only covers those water systems identified and made accessible to the assessor at the time of the survey.

Location: Within an industrial area in close proximity to the town centre.

Site Description: TA centre with additional garages, cadet building and caretakers accommodation.

Site Layout: Two storey building with a central drill hall. The garages, cadet building, and caretakers' accommodation (no access) are detached from the main building.

Mains Cold Water Services (MCWS): Mains water supplies all cold outlets as well as supplying the make-up to three cold water storage tanks and all water heaters.

Cold Water Storage Tank(s) (CWST) and Cold-Water Down Services (CWDS): There are three cold water storage tanks on site (within the TA centre) which supply the make-up to two hot water storage vessels. The supply to the mixed showers is also believed to be tank fed.

Hot Water Storage Vessel(s) and Hot Water Systems (HWS): There are two hot water storage vessels on site (labelled as Cal 1 and Cal 2). Cal 1 supplies hot water to hot taps (other than those fed from water heaters) and Cal 2 supplies the make-up to mixed showers. Both operate on a circulatory flow and return system.

Thermostatic Mixer Valves (TMV) and Thermostatic Mixer Taps (TMT): None on site.

Showers and Spray Outlets: Showers are located in the male and female changing rooms. All showers are supplied via mixers other than one electric shower within the male shower area.

Water Heaters: Water heaters are located within the bar and main kitchen (TA centre) and also within the ATC building, the MT garage and caretakers' accommodation (combi boiler, no access).

Expansion Vessels: One small expansion vessel located in the bar area only.

Water Softeners: None on site.

2. SUMMARY OF RECOMMENDATIONS and RISK RATING

This Risk Assessment has been carried out in order to ascertain the possible risk of contracting Legionellosis, including Legionnaires' disease, from water systems and to identify the maintenance activities required to control or prevent the risk from Legionella, including any remedial works that may be required to improve upon the findings of this assessment.

The water systems throughout this building, unless otherwise stated, have been surveyed utilising the specific asset survey forms within section six of this assessment. Each question is answered and, depending upon the survey findings, a risk score is allocated utilising the matrix below.

This matrix is designed to indicate possible risk or problematic areas within the assets or water systems.

Multiple questions will be asked for all aspects of the water asset or services present on the site.

The results from these questions will then be scored upon the risk of Legionella. The key to this scoring is:

KEY

	Risk Level	Action
N/A	The risk from Legionella is not applicable under normal operating conditions.	No action required for the control of Legionella. Other remedial actions may be applicable.
LOW	There is a low risk under normal operating conditions.	No additional actions required above ensuring compliance with ACoP L8
MEDIUM	There is a medium risk under normal operating conditions.	Implement risk reduction measures in compliance with ACoP L8 e.g.: Remedial Works or Control Scheme.
HIGH	There is a high risk under normal operating conditions.	Implement Immediate or more radical risk reduction measures e.g. Emergency disinfection. / System changes or prohibition of use.

Where Legionella management and training is insufficient or lines of communication are not established, which are quantifiable on the surveyor's experience and knowledge.

The assessor will use the knowledge of others as well as his own technical knowledge in the judgement of the water systems assessed within this document.

We cannot guarantee that all pipe work passing underground or through floors, walls and ceilings has been traced, and it is possible that certain system dead-ends or dead-legs may not have been identified. As a result, the schematic diagram(s) contained within this report only details the visible or assumed pipe work.

Whilst every effort has been made to ensure the accuracy of the content of this document, Aquastat will accept no responsibility for any omissions that are not included.

OVERALL SYSTEM RISK STATUS

The susceptibility of personnel upon this site to the cause and effects of Legionnaires' disease have been assessed within the known range for specific Legionella susceptibility. Understandably, not every person has been interviewed to their susceptibility. Therefore, assumptions have been made as appropriate, based upon visual observations and communication during this assessment.

Population Profile	
Health of Users	Young healthy adults represent a low/moderate risk from legionella exposure. Older adults represent a moderate risk.
Property Occupancy	The TA centre is used weekly by reservists. The cadets use their facilities on a weekly basis. 3

Risk Assessment	LOW 1-2	MEDIUM 3	HIGH 4-5
Are conditions suitable for multiplication of bacteria including Legionella Pneumophila? *E.g. where optimum temperatures for microbial growth and stagnation occur, e.g. dead legs and infrequently used outlets*.		**3**	
Are nutrients present within the system? *E.g. sludge, scale, rust, algae and other organic matter.*			**4**
Is there a means of creating and disseminating breathable droplets? *E.g. aerosol generated by a shower.*			**4**
Are high risk groups using the water services? *E.g. persons over the age of 45, those with impaired or underlying health issues and compromised immune systems.*		**3**	
Are control systems in place and checks currently being carried out? *E.g. Is monitoring being carried out at correct intervals? is it effective? Have there been positive legionella cases identified?*	**2**		
Risk Factor	**16**	**MEDIUM**	
Low 5-11; Medium 11-19; High 19+			
Important Note: Low risk does not mean no risk and all recommendations highlighted within this document should be addressed.			

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SYSTEM TYPES			RISK RATING
	COLD WATER MAINS:		
	Galvanised pipework located on the incoming mains water supply and distribution pipework. Due to the age of the pipework and discoloration noted in some areas, consideration should be given to a long term view of replacement of galvanised pipework.		Medium
	Actioned date:	Company/initials:	
	Fit a double check valve at the point where the mains water T's off to supply the pressurisation unit (lever valve located behind Cal 1). This will protect the mains water from possible back contamination from stagnant water supplying the pressurisation unit/quick fill.		Medium
	Actioned date:	Company/initials:	
	Dead legs located which require removal. See section 6.6 for further details.		High
	Actioned date:	Company/initials:	
	COLD WATER STORAGE TANKS:		
	As noted above, corrosion observed from galvanised pipework. This was observed within Tank 1-2. Replace the link pipe and outlets from Tank 1-2 with a suitable WRAS approved material.		Medium
	Actioned date:	Company/initials:	
	HOT WATER CALORIFIERS:		
	Cal 2 (boiler room) was not on during the survey, resulting in no hot water at associated outlets. This is due to the boilers supplying the heat source not being operational. There is an immersion within the vessel which is not operational. Repair the boilers and/or replace the immersion heater to ensure water is stored at 60.C.		High
	Actioned date:	Company/initials:	
	Cal 1 storage temperature slightly below 60.C (50.C). Increase to 60. C.		Medium
	Actioned date:	Company/initials:	
	POINT OF USE WATER HEATERS:		
	Satisfactory		
	SHOWERS AND SPRAY OUTLETS:		
	Satisfactory		
	GENERAL: Control Schemes		
	Ensure a responsible person is appointed, has received Legionella training, and audits the logbook annually		High
	Actioned date:	Company/initials:	
	Replace flexible hoses with hard copper		Low
	Actioned date:	Company/initials:	

LOG BOOK DOCUMENTATION/RECORD KEEPING

PREMISES : ARC Dorchester

Is there a water hygiene log book on site	YES	
If yes - please confirm the following:		
Where is the log book located?	Caretakers' office	
Name and position of person responsible for log book?	Joe Stanko	
Has this person received the appropriate training in Legionella Control & is there evidence		NO
Does the log book contain a copy of the existing Legionella Risk Assessment?	YES	
Does the log book contain written scheme for Legionella control?	YES	Generic scheme within the previous risk assessments
Are there any non-conformances outstanding from previous Risk Assessments		NO
Are monthly temperature checks being taken and regularly recorded?	YES	
Is there an attendance log sheet in the book?	YES	
If applicable are showers being dismantled, cleaned and disinfected on a regular basis and regularly recorded?	YES	
Are CWST's and Hot Water Storage Vessels being monitored on a 6 monthly or Annual basis?	YES	
If applicable are little used outlets being flushed weekly and regularly recorded?	YES	
If applicable are mixer valves being serviced on an annual basis and regularly recorded?		N/A
If no log book on site, please advise the following:		
Is the log book held at a different location?		
If yes - please give name of responsible person and full address and telephone number	We understand copies of all related works are held centrally and uploaded onto a shared drive	
Is there an asset register on site?	YES	
Are Safety Data Sheets held for chemicals associated with Legionella control?		NO

If there is no log book on site, or held at a different location this represents a non-compliance with the Approved Code of Practice

All records and inspection reports should be kept in the site legionella control logbook for a period of 5 years

If the log book is held at a different premises, it is the duty of the responsible person to ensure the above checks are carried out and fully recorded.

Control Scheme	Is it Actioned	Carried out by whom	Frequency	Is it logged	Comments
Infrequently used outlet flushing	Yes	Site	Weekly	Yes	Required Weekly
Hot and cold sentinel outlets temperature monitoring	Yes	Aquastat	Monthly	Yes	Required Monthly
Hot and cold representative outlet monitoring	Yes	Aquastat	Monthly	Yes	Required Monthly
Shower, rinse hose, spray outlet descales	Yes	Aquastat	Quarterly	Yes	Required Quarterly
Hot Water Storage Vessel flow and return temperature monitoring	Yes	Aquastat	Monthly	Yes	Required Monthly
Hot Water Storage Vessel internal inspections	Yes	Aquastat	Annually	No	Required Annually
CWST inspections	No	N/A	N/A	N/A	Required Annually
CWST temperature monitoring	Yes	Aquastat	Annually	Yes	Required Annually
CWST clean and disinfection	Yes	Aquastat	When required	Yes	When required
Risk Assessment	Yes	Aquastat	Every two years	Yes	This assessment replaces out of date LRA
Log Book Audit	No	Site	Annually	No	Log book required for implementation of control schemes
Regular reviews of Control schemes, Training and competency.	No	Site	Annually	No	Required
Sampling (Legionella or TVC)	Yes	Aquastat	Annually	Yes	As Required

3. GENERAL PRECAUTIONS AND ACTIONS

The list below indicates the essential practical maintenance/management actions for which the head of site is responsible for ensuring.

1. Operate hot water systems at or above the approved minimum temperature. Storage should be above 60°C. Outlet (tap) temperatures should be above 50°C (unless fitted with a thermostatic mixing valve (TMV). Terminal fittings or communal showers in buildings used by young children/the very old and those with sensory loss should be supplied with water through thermostatic mixing valves so that the temperature of the water discharged at the outlets does not exceed 43 degrees C.

2. Maintain cold systems at or below the approved maximum water temperature. It is acceptable for the temperature to be 2°C greater than the incoming mains water temperature. However, this should not exceed 25°C.

3. Infrequently used outlets should be removed and any dead legs capped off at the main circulation or added to a flushing regime. Where showers are required and retained, they are to be run at least once per week or if possible, daily. Shower heads should be cleaned and disinfected in accordance with HSG274 at least on a quarterly basis.

4. Avoid the creation of unnecessary aerosols of water.

5. Ensure that the system is cleaned and disinfected if you become aware of any activity or occurrence, which you believe, may jeopardise water hygiene. Should a disinfection be required an Aquastat representative could advise?

6. Maintain records of temperature checks – regular temperature checks should be taken from selected tap outlets after one running minute. A standard UKAS calibrated thermometer held under the water flow is all that is needed. The temperature should be recorded in the legionella log book. The results recorded on a simple temperature record table. When temperatures consistently fail to comply with the approved ranges your water hygiene company should be contacted for further guidance and advice.

8. When the site is unused for more than 72 hours it is advisable to run hot and cold tap outlets on entry to the building to ensure stagnant water is removed from the pipework before use. **

9. After plumbing (i.e. new water heater or pipework alterations etc.) have been carried out, the site should be chlorinated to BS8558 standard - it may be necessary to fit an injection point to enable this process.

10. All outside bib taps should be fitted with a double check valve to prevent back flow.

11. Buildings with mixtures of lead, copper and iron pipework should be considered for refit in the long-term budget.

12. Dedicated drinking water tap should be clearly labelled.

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13. Intermittently Used Buildings:

** On entry to a building after period of closure one senior nominated person should ensure the following before any personnel are allowed to use the water systems.

a. The furthest tap from the mains entry point should be turned on and flushed – this will ensure that any water lying dormant within the building or trapped in the feed pipe from the mains supply is thoroughly flushed and allowing the cold water to attain towns water temperatures at outlets. Approximately 2-3 minutes constant running of a mains tap if the building is close to the towns water stop tap, or 10 minutes if over 100yds should be sufficient.

b. Instantaneous water heaters are not designed to store hot water at 60 degrees as the guidelines suggest but we would recommend that the heaters are turned on and allowed at least 5 minutes for the temperature to rise to over 45 degrees C before use.

14. Positive Legionella Results

14.1 Positive Legionella results from a water system are reported to the client's responsible person by the fastest means available. This is usually a telephone call or email which will be confirmed by emailing the laboratory's analysis report and setting down in writing the initial corrective measures that we and/or our client should be undertaking.

14.2 The corrective measures advised will depend on individual circumstances and will be based on the guidance notes form HSE's ACOP HSG274 Parts 1,2,3 and will be instigated as quickly as possible after receiving an order from client.

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4. GENERAL SITE INFORMATION

Building Description and type of use	Army reserve centre with additional cadet building, caretakers' accommodation, and garages.
Approx. number of occupants and overall age group	Unknown occupation.
Normal operational hours of this building	In constant use.
On site contact name at date of LRA	Joe Stanko.

SCOPE OF RISK ASSESSMENT

- Non-intrusive Site inspection visit of the agreed survey site to determine the current condition and usage of plant associated with domestic water systems on site.
- Non-intrusive Site inspection visit of the agreed survey site to determine the current condition of the management control of plant associated with domestic water systems on site.
- Produce a written report to relay the results generated from the site visit.
  Produce a site-specific asset register.
  Produce a site-specific and up to date schematic of the water systems of the survey site.

The temperatures have been taken and recorded from all areas that were accessible to the assessor during the survey; however, in larger complex buildings a representative number of temperatures may only be taken and recorded.

The following areas of the site have not been assessed:

Location:	Assets:	Reason:
Caretakers' accommodation	Unknown	Access denied.

These listed water systems will only be assessed for risk of Legionellosis and not for any other factor.
The extent of the Risk Assessment is reliant on information supplied from site at time of survey and on observable conditions.
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5. LINES OF COMMUNICATION AND RESPONSIBILITY

At this site the following key contacts have been identified.

	NAME	ADDRESS	TEL NOS
Duty holder: *Individual with the legal responsibility to ensure that health and safety is managed effectively*			
	Mark Armstrong	Wessex RF & CA Mount House Mount Street Taunton TA1 3QE	01823 217940 wx-estatesn@rfca.mod.uk
Nominated on site responsible person: *Individual appointed with and who has accepted responsibility under the authority of the duty holder for ensuring that for the control of Legionella all those assigned to carry out tasks are competent to do so.*			
	Kelvin Walker	Wessex RF & CA Mount House Mount Street Taunton TA1 3QE	01823 217942 wx-estatess@rfca.mod.uk
Deputy on site responsible person: *In a large undertaking there may be more than one responsible person*			
Deputy on site responsible person	Joe Stanko	On site	01305 264060
Water Supply Company	Wessex Water	Claverton Down Road Clavertin Down Bath BA2 7WW	01225 526000
Mechanical contractor or Maintenance company	Wessex RF & CA	Mount House Mount Street Taunton TA1 3QE	01823 217940
Electrical contractor or maintenance company	Wessex RF & CA	Mount House Mount Street Taunton TA1 3QE	01823 217940
Water Treatment Company for this assessment	Aquastat	Unit N – The Old Parlour Purn House Farm, Bleadon Weston-Super-Mare North Somerset BS24 0QE	Tel: 01934 811264 Email - enquiries@aquastat.co.uk
	1st Company contact	Gary Ford General Manager	As above or email gary.ford@aquastat.co.uk
	2nd Company contact	Louise Blakemore	As above or email louise.blakemore@aquastat.co.uk
Water Treatment company for Compliance tasks as per HSG274	Aquastat	Unit N – The Old Parlour Purn House Farm, Bleadon Weston-Super-Mare North Somerset BS24 0QE	Tel: 01934 811264 Email - enquiries@aquastat.co.uk

NB: If any of the above are not available at the time of inspection it may represent a gap in management procedures which could lead to a risk of infection through miscommunication.

NNB: Any changes in the above structure must be recorded as soon as they take effect, and all parties must be notified.

6 SURVEY DETAILS:

6. 1 MAINS WATER SUPPLY REPORT

Source of supply	Mains water
Number of mains cold water supply?	5
Location of main isolation valve?	Main building: Behind Cal 1 MT garage: Right side corner Small garage: Corner Caretakers: No access ATC: female toilet
Is there a water meter installed?	Not seen
Is the pipework labelled?	Yes
Materials of construction	TA centre: Galvanised steel Other areas: MDPE - copper
Are there any materials or fittings visibly present on the mains water system, that do not conform to the Water Regulations Advisory Scheme (WRAS) directory?	No, although galvanised pipework is showing signs of corrosion.
Mains water temperature ˚C (sentinel outlets)	Nearest Tap to Incoming Main: 18.C Furthest Tap from Incoming Main: 18.C
Are all other distribution temperatures that were tested within the correct temperature range? i.e. Below 20 ˚C?	Yes
Are there any non- flow through expansion vessels to any services on this system?	Within bar area only. No action required.
Is the pipework suitably insulated?	Yes
Does the cold-water supply have any inline filters including scale inhibitors/softeners?	No
COMMENTS	
Mains Water Supply Risk Score	**Medium**

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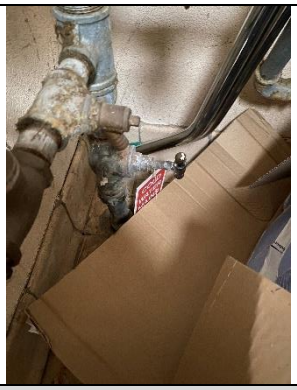
Registered in England No. 09632816

6. 1 MAINS WATER SUPPLY REPORT (continued)

Photos

	
Main stop tap (galvanised)	MT garage stop tap (MDPE)

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6. 2 OTHER ASSETS REPORT

Are dead legs / infrequently used outlets present within system pipework?	Yes, dead legs located. Site flush infrequently used outlets weekly.
Are thermostatic mixer valves present on individual outlets?	No
Are there single mixer valves serving a number of outlets?	No
Is the mixed temperature of the pipework >1m?	N/A
Are flexible hoses fitted to any services on the mains water system?	Yes
Is there any unused equipment connected?	No
Is any scale/debris present on any of the tap outlets?	No
Do any tap outlets have any spray or other inserts fitted?	Yes
Are strainers fitted?	No

Example of the use of flexible hoses (male toilet basins)

6. 3 COLD WATER STORAGE TANK REPORT

Tank Ref : Tank 1-2 (linked)

Location	Exact location of tank	Class 1 – cupboard 5	
Structure	Accurate dimensions lxwxh or dia	500 x 600 round (x2)	
	Materials of tank and any jointing's	Plastic tank with galvanised outlets/link pipe	
	Insulation type and thickness	50mm fibreglass	
Lid Details	Is there a close-fitting lid	Yes	
	Is it securely fixed in place	Yes	
	Accurate dimensions for new lid	-	
	Separate ball valve hatch	No	
	Vent size has it good rodent screen	Yes – 1 ½ each	
Overflow	Size and materials of main overflow	35mm copper	
	Is there a rodent filter	Yes	
	Size and materials of warning pipe	N/A	
	Is there a rodent filter	-	
Supply	Size and materials of pipework	15mm copper (x2)	
	Fed from mains, softener or tank	Mains	
	Insulation type and thickness	Foam	
	Any other return or vent pipes	No	
Outlets	Size and Materials	Insulation type and thickness	
Outlet 1	1 ½ inch galv	Foam	
Outlet 2	1 ½ inch galv	Foam	
Drain valve	Is there a drain valve – size if applicable	N/A	
Water in Tank	Temperature C	Tank 1: 18.5	Tank 2: 18.5
	Degree of sediment	Light	
	Biological slime severe/medium/light	Light	
	Extent of corrosion	Heavy on galvanised pipework	
	Is there adequate crossflow within the tank? i.e. inlet opposed from outlet?	Yes	
	Is the stored water over capacity??	No	
Labels	Is the tank labelled	Yes	
	Supply pipe labelled or coded	No	
	Outlets labelled or coded	No	
Operation	How far to adequate drain	20m	
	Power supply – volts/distance	5m	
	Is lighting adequate	Yes	
	Access limit ht x w	Single door	
CWST Risk Score		**Medium**	

Comments/Recommendations:

- Replace the corroded outlets and link pipe.

6. 3 COLD WATER STORAGE TANK REPORT (continued)

Photos

	
External view	Internal view

Corroded outlet within tank

6. 3 COLD WATER STORAGE TANK REPORT

Tank Ref : Tank 3

Location	Exact location of tank		Class 1 – cupboard 6
Structure	Accurate dimensions lxwxh or dia		2000 x 700 x 650
	Materials of tank and any jointing's		GRP
	Insulation type and thickness		50mm foil faced
Lid Details	Is there a close-fitting lid		Yes
	Is it securely fixed in place		Yes
	Accurate dimensions for new lid		2000 x 700
	Separate ball valve hatch		Yes
	Vent size has it good rodent screen		Yes – 1 ½ each
Overflow	Size and materials of main overflow		1 ½ plastic
	Is there a rodent filter		Yes
	Size and materials of warning pipe		N/A
	Is there a rodent filter		-
Supply	Size and materials of pipework		1 inch galv
	Fed from mains, softener or tank		Mains
	Insulation type and thickness		Foam
	Any other return or vent pipes		No
Outlets	Size and Materials		Insulation type and thickness
Outlet 1	1 ½ inch galv		Foam
Drain valve	Is there a drain valve – size if applicable	N/A	
Water in Tank	Temperature C	18.C	
	Degree of sediment		Light
	Biological slime severe/medium/light		Light
	Extent of corrosion		Light pitting
	Is there adequate crossflow within the tank? i.e. inlet opposed from outlet?		Yes
	Is the stored water over capacity??		No
Labels	Is the tank labelled		Yes
	Supply pipe labelled or coded		No
	Outlets labelled or coded		No
Operation	How far to adequate drain		20m
	Power supply – volts/distance		5m
	Is lighting adequate		Yes
	Access limit ht x w		Single door
CWST Risk Score			**Medium**

Comments/Recommendations:

- Satisfactory. Pitting within tank required ongoing monitoring.

6. 3 COLD WATER STORAGE TANK REPORT (continued)

Photos

	
External view	Internal view

6. 4 HOT WATER STORAGE REPORT

HWSV Ref : Cal 1

Location of hot water storage vessel	Female WC cupboard
Construction	Copper
Size of hot water storage vessel	1900 x 500
Horizontal/vertical	Vertical
Storage/non-storage	Storage
Main heat source	Immersion
Supplementary heating	No
Insulation type	Pre-insulated
Is there an open vent	Yes
Is there an Expansion Vessel	No
Size of Expansion Vessel	-
IS there a flow through Valve fitted?	-
Is there a drain fitted & what size?	-
What size is access hatch	None
Is there a drain valve – if yes give size	Yes – ½ inch
Does drain valve work	Not attempted
Condition of water from drain valve	-
Size and materials cold feed pipe	28mm copper
Is cold feed valved	Yes
Fed from mains, tank or softened	Tank
Pressure gauge reading	N/A
Temp from main gauge on hot water flow	51.C
Temp from gauge on sec return flow	50.C
Safety valve size	N/A
Is system circulated by sec return (yes/no)	Yes – single
Is calorifier circulated	No
Anti-stratification Pump (yes/no)	No
Has pump got a time clock	-
If yes – how many hours is it set in any 24	-
Isolating valves on flow/return	No
Is calorifier labelled	Yes
Is pipe work coded/labelled	No
Power supply voltage/distance	10m
How far to adequate drain	20m
Periods of availability for working	By prior appointment
Access limit Height x width	Single door
Temperature from nearest hot outlet	N/A – supplies showers only
Hot Water Storage Vessel Risk Score	Medium

Comments/Recommendations:

- The storage temperature should be increased to 60.C.

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6. 4 HOT WATER STORAGE REPORT (continued)

Photos

Cal 1

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6. 4 HOT WATER STORAGE REPORT

HWSV Ref : Cal 2

Location of hot water storage vessel	Boiler room
Construction	Copper
Size of hot water storage vessel	1500 x 450
Horizontal/vertical	Vertical
Storage/non-storage	Storage
Main heat source	Primary coil
Supplementary heating	Immersion
Insulation type	Pre-insulated
Is there an open vent	Yes
Is there an Expansion Vessel	No
Size of Expansion Vessel	-
IS there a flow through Valve fitted?	-
Is there a drain fitted & what size?	-
What size is access hatch	None
Is there a drain valve – if yes give size	Yes – ½ inch
Does drain valve work	Not attempted
Condition of water from drain valve	-
Size and materials cold feed pipe	28mm copper
Is cold feed valved	Yes
Fed from mains, tank or softened	Tank
Pressure gauge reading	N/A
Temp from main gauge on hot water flow	20.C
Temp from gauge on sec return flow	20.C
Safety valve size	N/A
Is system circulated by sec return (yes/no)	Yes – single
Is calorifier circulated	No
Anti-stratification Pump (yes/no)	No
Has pump got a time clock	-
If yes – how many hours is it set in any 24	-
Isolating valves on flow/return	No
Is calorifier labelled	Yes
Is pipe work coded/labelled	No
Power supply voltage/distance	3m
How far to adequate drain	15m
Periods of availability for working	By prior appointment
Access limit Height x width	Single door
Temperature from nearest hot outlet	20.C
Hot Water Storage Vessel Risk Score	**High**

Comments/Recommendations:

- The storage temperature should be increased to 60.C.
- Discoloured water observed from associated outlets (see picture). This is likely to be due to galvanised pipework and lack of use (due to not producing hot water).

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6. 4 HOT WATER STORAGE REPORT (continued)

Photos

	
Cal 2	Discoloured water within the 1st floor female WC area

6.5 SHOWERS & SPRAY OUTLETS

Site : ARC Dorchester

SHOWERS/SPRAY HEADS

Location	Nos of showers	Dismantled/ cleaned and disinfected YES/NO	Overall condition	Any repairs replacements	Regularity of Use
GF female WC	1	No	Good	No	Flushed weekly
GF male WC	6	No	Good	No	Flushed weekly
Caretakers house	?	No	?	?	No access
COMMENTS:					
All showers were free some scale and in good working order. Site flush all showers on a weekly basis.					

Photos

Mixer showers within male WC area

Example of clean shower head

Electric shower within male WC area

6.6 SCHEDULE OF DEAD LEGS/BLIND ENDS

Site : ARC Dorchester

LOCATIONS	SYSTEM	ACTION
2nd floor class 1. Supply to removed tank	Mains	Remove at source
ATC male toilets	Mains	Reinstate flow to the urinals, or if waterless urinals are to be used, remove the supply at source.

PHOTOS:

Tank room dead leg

Isolated urinals within the ATC male toilets

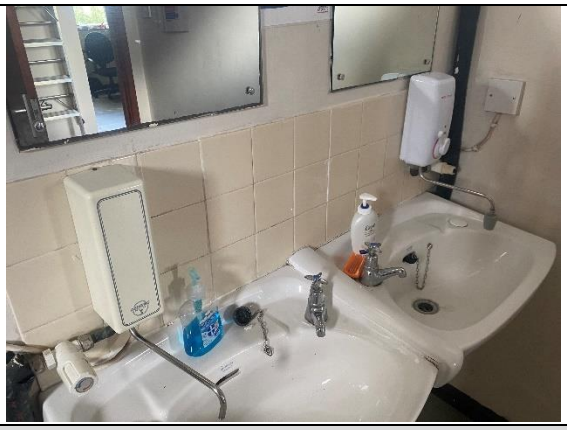
6.7 POINT OF USE WATER HEATERS

Water Heater ID Number	Location	Make/model and capacity of each heater	Mains or tank fed	Full clean possible	EXPANSION VESSEL INFO: Is there a pressure vessel – Yes/No	EXPANSION VESSEL INFO: If yes – make model and size and whether fitted horizontally or vertically
1	Main kitchen	Santon 50	Mains	Yes	No	-
2	Bar	Ariston 10	Mains	No	Yes	2 litre vertical
3	Fitters bay	Triton instant	Mains	No	No	-
4	ATC kitchen	Santon 7	Mains	No	No	-
5-6	ATC male WC	Instant. Redring and Heatstore	Mains	No	No	-
7	ATC female WC	Instant Sector	Mains	No	No	-
8	Caretakers house	Unknown combi boiler	Mains	-	-	No access

Kitchen water heater

Bar water heater

ATC kitchen water heater



Example of instantaneous water heaters (ATC male WC)

For information purposes:

A. All cold water should be stored at less than 20 degrees C.
B. All hot water should be set to produce at least 45 degrees C at outlets after one running minute.
C. Temperatures between 20 degrees C at 45 degrees C produce ideal breeding ground for bacteria and should be avoided at all times.

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6.8 FIRE HOSES

Fire hoses were not located on this site.

6.9 WATER SOFTENER

Water Softeners were not located on site.

7. WATER OUTLETS: SITE: ARC Dorchester

Location	Sentinel /Rep Outlet	Sink	WHB	WC T/M	Other	Shower	Bath	Temperature			Flexible Hose	Expansion Vessels	TMV's	Mains Tap	Tank Tap	Hot Tap	HW Source
								Hot	Cold	Blended							
TA centre cadet area	Y	1	1	1	-	-	-	19	17	-	-	-	-	2	-	1	Cal 2
GF female WC	Y	-	1	1	-	1	-	20	19	-	2	-	-	1	-	1	Cal 1-2
GF male WC	-	-	4	2	1	6	-	20	19	-	8	-	-	5	-	4	Cal 1-2
GF bar	Y	1	-	-	3	-	-	52	18	-	4	1	-	1	-	1	Water heater
GF kitchen	Y	3	-	-	1	-	-	58	18	-	-	-	-	3	-	3	F/C water heater
1st floor male WC	Y	-	5	2	2	-	-	19	18	-	1	-	-	5	-	5	Cal 2
1st floor female WC	-	-	2	2	-	-	-	19	18	-	-	-	-	2	-	2	Cal 2
1st floor kitchen	-	2	-	-	-	-	-	19	18	-	-	-	-	2	-	2	Cal 2
1st floor bar	-	2	-	-	-	-	-	20	18	-	-	-	-	3	-	3	Cal 2
MT garage	Y	-	1	-	-	-	-	70	17	-	-	-	-	1	-	1	Instant w/h
ATC kitchen	Y	1	-	-	-	-	-	65	18	-	-	-	-	1	-	1	Water heater
ATC male WC	-	-	2	1	2	-	-	40 50	18	-	-	-	-	2	-	2	Instant w/h
ATC female WC	Y	-	1	1	-	-	-	45	18	-	-	-	-	1	-	1	Instant w/h

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water treatment specialists

Water Outlet Legend:

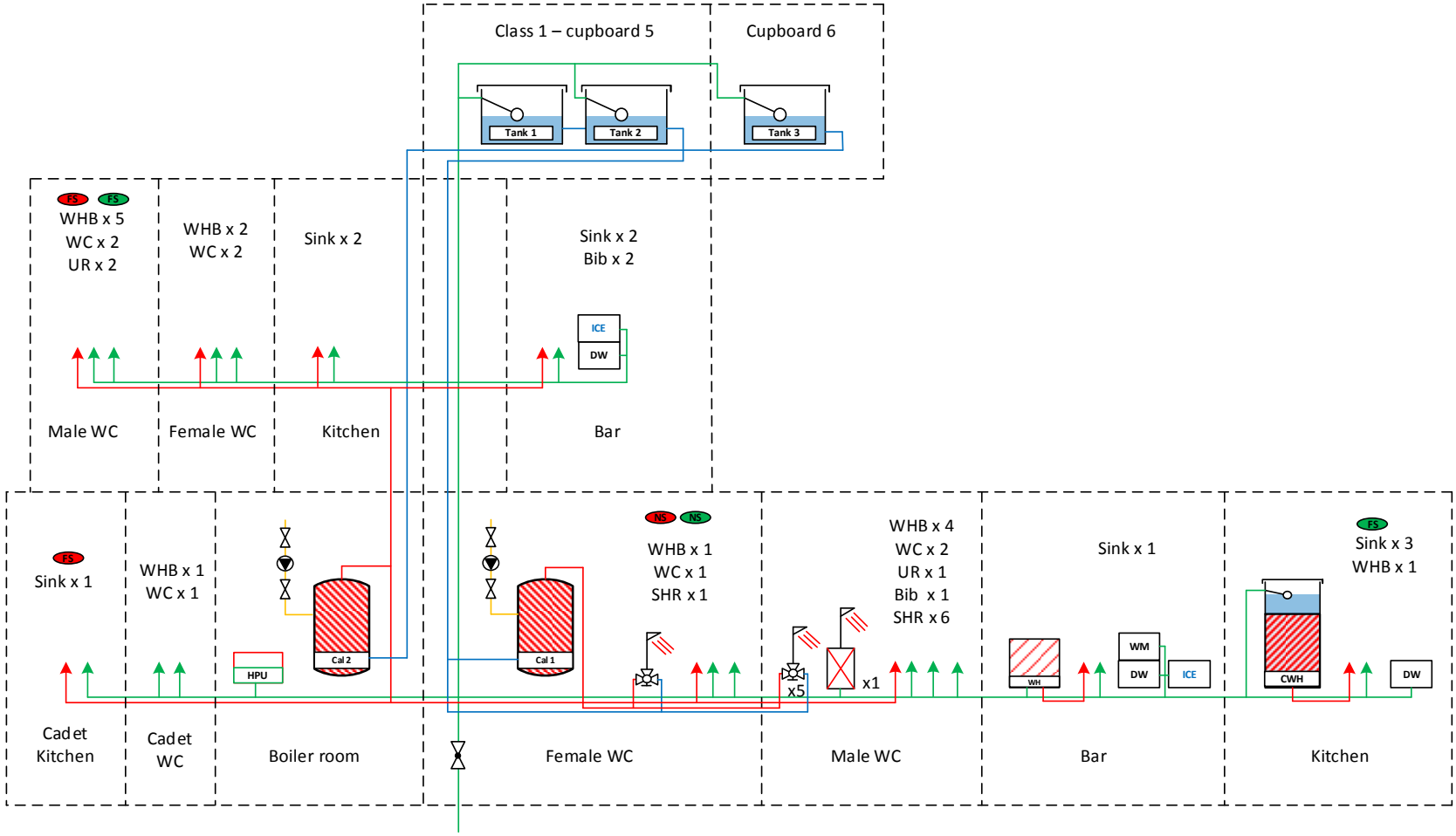
SNK = Sink
UR = Urinal
DWF = Drinking Water Fountain
HBT = Hose Bib Tap
TMV = Thermostatic Mixing Valve
ESH = Electric Shower
QFL = Quick Fill Link
EXP = Expansion Vessel
CM = Coffee machine
RH = Rinse Hose
SPB = Spray Booth
SO = Steam Oven
BIB = Bib tap

WHB = Wash Hand Basin
TSH = Thermostatic Shower
CWD = Chilled Water Dispenser
WSM = Washing Machine
HWB = Hot Water Boiler
CAL = Calorifier
BE = Blind Ends
STR = Strainer
MSH = Mixer shower
CO = Combi Oven
INF = Infrequently
BID = Bidet
TB = Tea Boiler

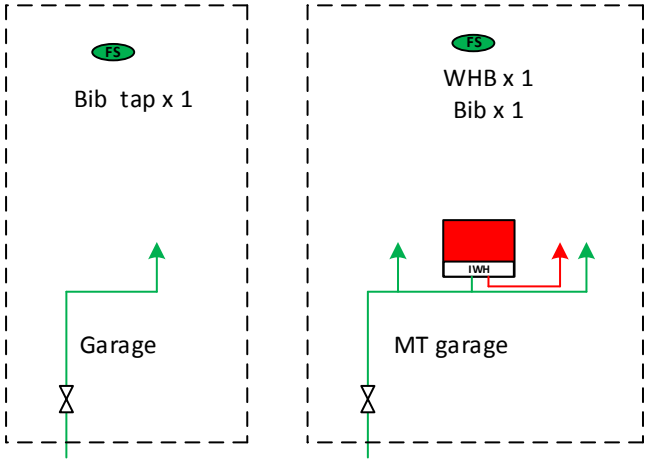
WC = Water Closet
WH = Water Heater
VM = Vending Machine
DSW = Dish Washer
CMB = Combi Boiler
PRU = Pressurisation Unit
DL = Dead Leg
EWC = Electronic Water Conditioner
DWT = Drinking Water Tap
FC = Fume Cupboard
CDU = Chemical Dispensing Unit
HWSV = Hot Water Storage Vessel

8. LINE DRAWINGS OF WATER SYSTEMS SITE: ARC Dorchester

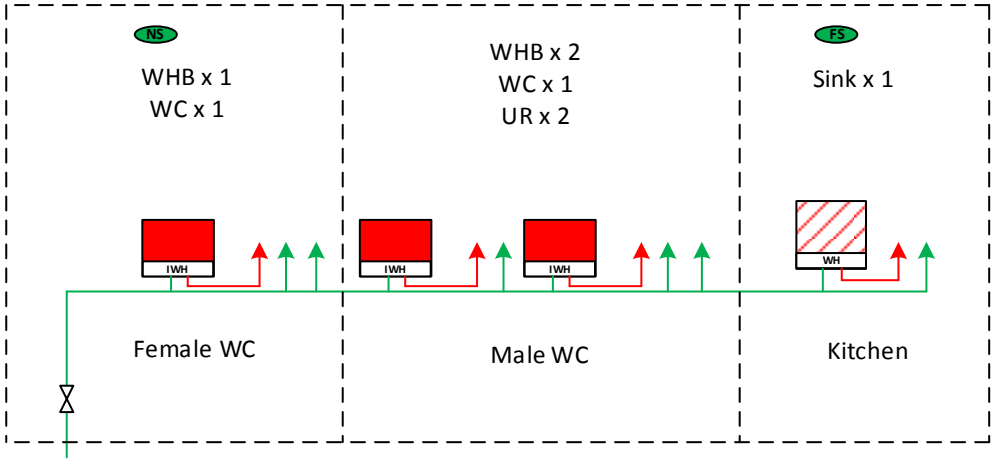
NB: Due to the complexity of the pipe work at this site it is not possible to ensure the total accuracy of these line drawings. They may require revision.



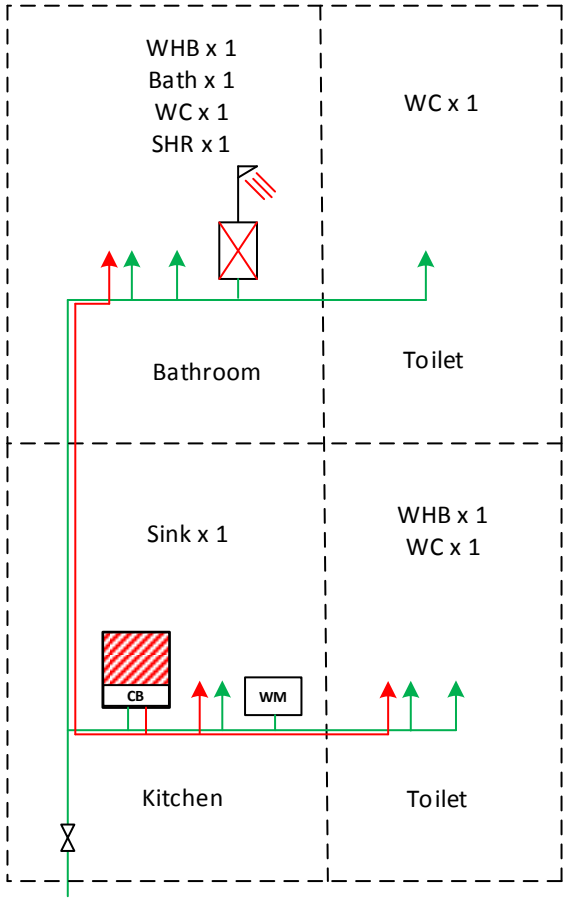
Garages



ATC building



Caretakers house
(no access, information taken from the previous assessment)



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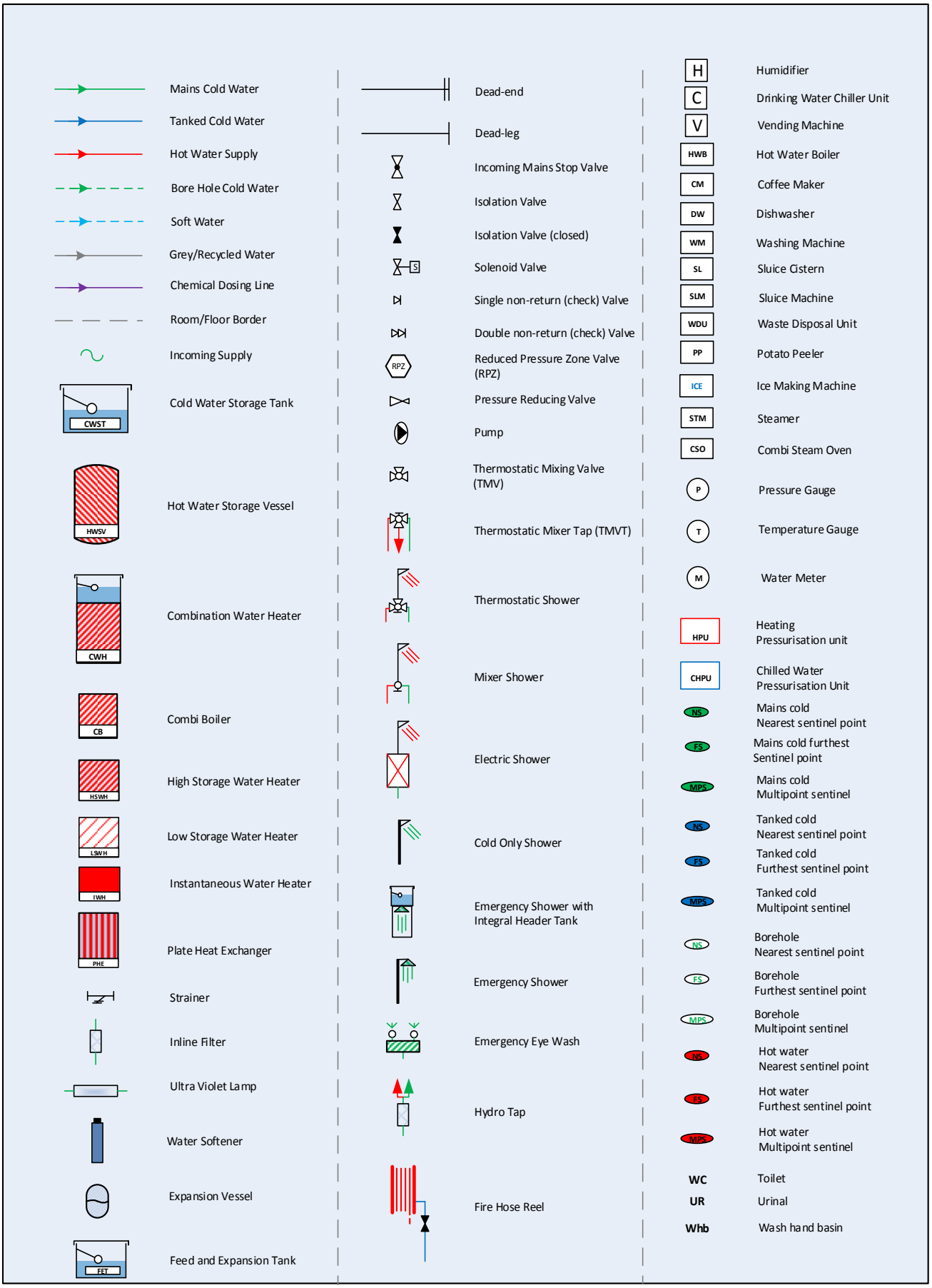
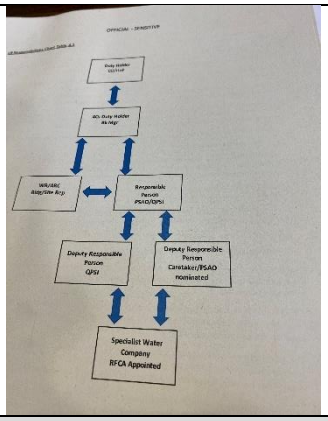


9. OTHER PHOTOGRAPHS

	
Pressurisation unit and quick fill	**Management chart within site logbook**

10. ASSET REGISTER SUMMARY

Asset:	Asset Number of:
Outlets	36
Sentinel outlets	8
Infrequently used outlets	Guided by site
Cold Water Storage Tanks	3
Hot Water Storage Vessel	2
Plate Heat Exchangers	0
Combi Boilers	1
Point of Use Water Heaters - >15 Litres	0
Point of Use Water Heaters - <15 Litres	2
Instantaneous Water Heaters	4
Combination Water Heaters (Fortic style)	0
Combination Water Heaters with Storage (FBM style)	1
Water Softeners	0
Showers	8
Rinse Hoses	0
Spray Outlets	0
TMVs	0
TMTs	0
Strainers	0
Flexible Hoses	15
Expansion Vessels	1
Pumps	2
RPZ Valve	0

11. Water Treatment & Hygiene Experience and Training Details

All personnel undertaking water treatment and hygiene works must only be carrying out their duties if they are suitably qualified, trained and competent to do so. Details of the assessor for this risk assessment are recorded below:

Persons name:	Jon Barton
Job description:	Legionella Risk Assessor/consultant
Company:	Aquastat
Experience:	Working in the industry since 2011
Qualifications:	BSRIA pre-commissioning flushing course (March 2013)
	Risk Assessments of Water Systems (WMS October 2014)
	Level 2 Diploma in Plumbing Studies (City & Guilds 2013-2014)
	Practical Legionella Risk Assessment (advanced) (WMS June 2015)
	Risk Assessing Cooling systems (WMS May 2017)
	Chlorine Dioxide training course – January 2019
	Legionella and the Law (WMS online course, April 2022)
	Legionella Causes and Impacts of Infection (WMS online course, April 2022)
	Evaporative Cooling Water Chemistry Foundation (WMS April 2022)

Certification for all the above are held at Aquastat offices.

12. Legislation and Codes of Practice

References

1 *Health and Safety at Work etc Act 1974 (c.37)* The Stationery Office 1974 ISBN 978 0 10 543774 1

2 *Control of substances hazardous to health (COSHH). The Control of Substances Hazardous to Health Regulations 2002 (as amended). Approved Code of Practice and guidance* L5 (Sixth edition) HSE Books 2013 ISBN 978 0 7176 6582 2 www.hse.gov.uk/pubns/books/l5.htm

3 *The Management of Health and Safety at Work Regulations 1999* SI 3242/1999 The Stationery Office

4 *Reporting accidents and incidents at work: A brief guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)* Leaflet INDG453(rev1) HSE Books 2013 www.hse.gov.uk/pubns/indg453.htm

5 *The Notification of Cooling Towers and Evaporative Condensers Regulations 1992* SI 1992/2225 The Stationery Office

6 *Consulting employees on health and safety: A brief guide to the law* Leaflet INDG232(rev2) HSE Books 2013 www.hse.gov.uk/pubns/indg232.htm

7 *Legionnaires' disease: A guide for duty holders* Leaflet INDG458 HSE Books 2012 www.hse.gov.uk/pubns/indg458.htm

8 *Managing for health and safety* HSG65 (Third edition) HSE Books 2013 ISBN 978 0 7176 6456 6 www.hse.gov.uk/pubns/books/hsg65.htm

9 *The control of legionella: A recommended Code of Conduct for service providers* The Legionella Control Association 2013 www.legionellacontrol.org.uk

10 *Water fittings and materials directory* Water Regulations Advisory Scheme www.wras.co.uk/Directory

11 *Water Supply (Water Fitting) Regulations 1999* SI 1148/1999 The Stationery Office

Further reading

BS 8580-1 2019 *Water quality. Risk assessments for Legionella control. Code of practice* British Standards Institution

BS 8558:2015 *Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages* British Standards Institution

BS EN 806 (Parts 1-5) *Specifications for installations inside buildings conveying water for human consumption* British Standards Institution

Water systems: Health Technical Memorandum 04-01: Safe water in healthcare premises.

Code of Practice: *Cooling water treatment* Water Management Society 2007 www.wmsoc.org.uk

Getting specialist help with health and safety Leaflet INDG420(rev1) HSE Books 2011 www.hse.gov.uk/pubns/indg420.htm

Minimising the risk of Legionnaires' disease TM13 The Chartered Institution of Building Services Engineers 2013

Doc: AWRA1 -Appendice A

SUMMARY OF THE APPROVED CODE OF PRACTICE L8 (revised) and HSG274 Parts 1, 2 and 3 FOR THE PREVENTION OR CONTROL OF LEGIONELLOSIS

Any water system operating with temperatures of greater than 20C and which may release a spray or aerosol presents a reasonably foreseeable risk of Legionellosis. Experience shows that the following are the key systems, which required attention.

- **Systems incorporating cooling towers or evaporative condenser.**
- **Hot water services**
- **Humidifiers and air washers.**
- **Spa baths and pools.**
- **Hot and cold water services in premises where the occupants are particularly susceptible.**

For premises covered by the Health and Safety at Work Act 1974, the HSC's Approved Code of Practice requires the following:

- **A risk assessment undertaken by a competent person to identify the risk of Legionellosis and any necessary and reasonably practicable precautionary measures required.**

- **A management plan identifying steps to be taken to minimise the risk. The plan should also identify the responsible persons, the lines of communication and the training and competence requirements for employees and sub-contractors.**

- **Implementation of the plan including training.**

- **Record keeping to track remedial activities and to monitor performance.**

- **The owner should ensure that the management system performance is audited and subject to management review to keep it relevant.**

The following list provides an indication of the requirement of the ACOP, which is enforced by the Health and Safety Executive or the Environmental Health Department of the local authority, depending on your premises type. Failure to comply is not in itself an offence, but failure to comply may be taken by a court as proof that the person has contravened the legal requirements.

* **Risk Assessments**
* **Management plan and procedure development**
* **Training of personnel**
* **Remedial action such as**
  - cleaning and disinfection
  - Tank refurbishment
  - Regular water treatment (chemical/plant)
* **Provision of log books**
* **Regular monitoring and system maintenance including sampling analysis, chemical cleaning and disinfection.**

Doc: AWRA2 -Appendice B

THE CONTROL OF LEGIONELLOSIS L8 SUMMARY FOR HOT & COLD-WATER SERVICES

L8 (Revised) and HSG274 Parts 1, 2 and 3 applies to all premises covered by the Health and Safety at Work Act 1974, where foreseeable risk of Legionellosis is present i.e. most commercial premises with a hot and cold water system

The prime focus of this document is to avoid conditions that permit Legionellae to proliferate and to avoid the creation of sprays or aerosols or where this is impracticable to minimise the release of droplets.

The conditions that promote legionellae proliferation are:

- **Temperatures in the range of 20 - 45 C**
- **Presence of sediment, sludge, scale or organic matter which act as nutrients.**
- **Some unapproved water fittings may harbour legionella and act as a nutrient.**
- **High microbial levels may act as nutrients and as a host for legionellae.**
- **Biofilms and slimes may harbour and protect Legionellae from biocides. These are often caused by stagnant or low flow conditions.**

The main areas of concern for hot and cold water services are shown in Table (1) along with some possible precautionary measures. A risk assessment should be carried out on each site and a management plan developed to minimise the risk. The management plan and its execution should be completely documented as detailed in Table (2).

TABLE 1 - TYPICAL RISKS IN HOT AND COLD WATER SERVICES

ITEM	POSSIBLE PROBLEM	OPTIONS & PRECAUTIONARY MEASURES
Storage Tank	Stagnation Temperature>20C Sludge and Scale build up Corrosion deposits build up Ingress of nutrients	Location of inlet and outlet Ensure tanks not too large or numerous Insulation, or low level chlorination Clean and disinfect on regular basis Refurbishment/Butyl lining Tight fitting covers and insect mesh on overflow
Softeners & Filters	Deposit builds up Microbiological build up Fitting harbouring legionella	Backwash regularly Disinfect 6 monthly or as monitoring requires Use approved fittings only
Calorifiers	Stratification (temp<60C) Intermittent use Scale builds up	Pumped circulation or regular thermal Disinfection Thermal disinfection Pre-treat water or descale as required
Dead legs (e.g., taps, showers and other appliances)	Fittings harbouring legionella Stagnation	Use approved fittings only Chlorination and flush through Thermal disinfection and flush through Keep pipe runs short
All pipework and systems	Sludge, Scale, Debris build up	Clean and disinfect on a regular basis Regular microbiological monitoring (e.g. Dip-slide 4 - 6 per annum Legionella sampling annually

RECORDS FOR HOT AND COLD-WATER SERVICE

A log book with the following contents is recommended: -

- **Identification of those responsible and lines of communication.**
- **Description and plan of the system.**
- **Risk Assessment.**
- **Operation of the system.**
- **Procedures for inspection and checking of the system.**
- **Management plan of remedial activities and records of progress.**
- **Records of:**
  - **Water temperatures**
  - **Record of operation, maintenance and checking**
  - **Inspection record and subsequent action.**
  - **Cleaning and disinfection record**