

DOMESTIC WATER RECORDS

LEGIONELLA LOG BOOK

RESPONSIBLE SITE STAFF

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LOG BOOK INDEX

1. Written scheme and Responsibilities
2. List of sample points and sentinel outlets
3. Weekly flushing register
4. Monthly temperature logs (taps, tanks & calorifiers)
5. Fault report forms
6. Quarterly shower cleaning
7. Beacon service sheets, bacteria reports & water sampling guidelines
8. Miscellaneous works
9. Beacon cleaning & disinfection records
10. Annual storage tank inspection report & Annual calorifier inspection report

WRITTEN SCHEME GUIDANCE

	Checks	Cold Water Standard	Hot Water Standard
Weekly	Little Used Outlets	Flush underused outlets for 3 minutes or until a steady temperature is achieved representative of the system being flushed	
Monthly	Sentinel taps*	Water temperature to be below 20° C within 2 minutes of flushing	Water temperature to be above 50° C within 1 minute of flushing
	Hot Water Storage Calorifier (if applicable)	Hot Water Flow and storage temp to achieve 60°C Hot Water Return to achieve at least 50°C at calorifier and principle hot water return loops (55°C for healthcare premises)	
	Hot Water Plate Heat Exchanger (if applicable)	Hot Water Flow to be set to achieve at least 50°C at the HW return and principle hot water return loops (55°C for healthcare premises)	
	Hot Water Heater (over 15L volume)	Monthly temperature check to verify storage temperature is at least 60°C	
Quarterly	Showers	Remove heads / hoses, clean & descale (or more frequently if necessary)	
Annually	Calorifiers	Purge to drain from base; inspect and clean where possible.	
	CWS tanks	Inspect; clean and disinfect as necessary	
	TMVs	Service and clean strainers	

* Sentinel taps are nominated outlets that are deemed to give representative temperature readings; typically, the nearest and furthest from source

All results should be recorded. Where readings are out of spec remedial action should be taken to rectify and the action taken documented.



OPERATING PROCEDURES

CONTROL OF LEGIONELLA

AREAS OF RESPONSIBILITY

Task	Responsibility
Hot water tap test	Beacon / Client
Cold water tap test	Beacon / Client
Calorifier test	Beacon / Client / Other
Calorifier blowdown / inspection	Beacon / Client
Tank temperature test	Beacon / Client
Clean & descale of showers / spray taps	Beacon / Client
Microbiological water samples	Beacon / Client
Inspection of tank(s)	Beacon / Client
Clean & disinfection of tank(s)	Beacon / Client
Disinfection of system(s)	Beacon / Client
Flush unused outlets	Beacon / Client
Maintenance of Records	Beacon / Client
Maintenance & archiving of records	This responsibility rests with the Client.

All tests in compliance with L8 / HSG274 Legionella Code of Practice



SECTION 1

CHAIN OF COMMAND

(To be completed by site)

Duty Holder – Person to whom the statutory duty for legionella control falls.

Name	
Position	
Telephone	

Responsible Person - Site contact with overall responsibility for the implementation of legionella preventative measures as appointed by the Duty Holder.

Name	
Position	
Telephone	

Deputy Responsible Person - Alternative Contact with Responsibility

Name	
Position	
Telephone	

Person(s) carrying out routine checks / flushing

Name	
Address	
Telephone	

Water Treatment Service Provider contact

Name	
Address	
Telephone	

Ensure Responsible site staff have suitable legionella awareness training and competence to perform their roles as required.

SECTION 1

**SAMPLE LOCATIONS
FOR WATER MONITORING**



SHOWER LOCATION

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SENTINEL TAPS

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COLD WATER TANKS

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HOT WATER
CALORIFIERS /
HEATERS

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SECTION 2

**SAMPLE LOCATIONS
FOR WATER MONITORING**



SHOWER LOCATION

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SENTINEL TAPS

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COLD WATER TANKS

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HOT WATER
CALORIFIERS /
HEATERS

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SECTION 2

**WEEKLY FLUSHING
REGISTER**



DATE	LOCATION	OK (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 3

WEEKLY FLUSHING REGISTER



DATE	LOCATION	OK (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

**WEEKLY FLUSHING
REGISTER**



DATE	LOCATION	OK (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 3

WEEKLY FLUSHING REGISTER



DATE	LOCATION	OK (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

**WEEKLY FLUSHING
REGISTER**



DATE	LOCATION	OK (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

**MONTHLY TEMPERATURE MONITORING
(TAPS)**



DATE	LOCATION	MAX HOT WATER TEMPERATURE WITHIN 1 MIN FLUSH (Control : 50°C or above)	MIN COLD WATER TEMPERATURE WITHIN 2 MIN FLUSH (Control : 20°C or below)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 4

**MONTHLY TEMPERATURE MONITORING
(TAPS)**



DATE	LOCATION	MAX HOT WATER TEMPERATURE WITHIN 1 MIN FLUSH (Control : 50°C or above)	MIN COLD WATER TEMPERATURE WITHIN 2 MIN FLUSH (Control : 20°C or below)	FAULT NOTIFIED (If applicable)	SIGNATURE

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(TAPS)**



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(TAPS)**



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**MONTHLY TEMPERATURE MONITORING
(TAPS)**



DATE	LOCATION	MAX HOT WATER TEMPERATURE WITHIN 1 MIN FLUSH (Control : 50°C or above)	MIN COLD WATER TEMPERATURE WITHIN 2 MIN FLUSH (Control : 20°C or below)	FAULT NOTIFIED (If applicable)	SIGNATURE

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**MONTHLY TEMPERATURE MONITORING
(TAPS)**



DATE	LOCATION	MAX HOT WATER TEMPERATURE WITHIN 1 MIN FLUSH (Control : 50°C or above)	MIN COLD WATER TEMPERATURE WITHIN 2 MIN FLUSH (Control : 20°C or below)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 4

**MONTHLY TEMPERATURE MONITORING
(TAPS)**



DATE	LOCATION	MAX HOT WATER TEMPERATURE WITHIN 1 MIN FLUSH (Control : 50°C or above)	MIN COLD WATER TEMPERATURE WITHIN 2 MIN FLUSH (Control : 20°C or below)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 4

MONTHLY TEMPERATURE LOG

**HOT WATER CALORIFIERS
(OR WATER HEATERS OVER 15L)**



DATE	LOCATION / IDENTIFICATION	RECORD TEMPERATURE		FAULT NOTIFIED (If applicable)	SIGNATURE
		Flow / Storage <i>Control: >60°C</i>	Return <i>Control: >50°C</i>		

SECTION 4

MONTHLY TEMPERATURE LOG

HOT WATER CALORIFIERS
(OR WATER HEATERS OVER 15L)



DATE	LOCATION / IDENTIFICATION	RECORD TEMPERATURE		FAULT NOTIFIED (If applicable)	SIGNATURE
		Flow / Storage <i>Control: >60°C</i>	Return <i>Control: >50°C</i>		

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MONTHLY TEMPERATURE LOG

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		Flow / Storage <i>Control: >60°C</i>	Return <i>Control: >50°C</i>		

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MONTHLY TEMPERATURE LOG

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(OR WATER HEATERS OVER 15L)**



DATE	LOCATION / IDENTIFICATION	RECORD TEMPERATURE		FAULT NOTIFIED (If applicable)	SIGNATURE
		Flow / Storage <i>Control: >60°C</i>	Return <i>Control: >50°C</i>		

SECTION 4

**QUARTERLY CLEAN & DESCALE OF
SHOWER HEADS & HOSES**



DATE	LOCATION	CLEAN & DESCALE COMPLETED (Y/N)	SHOWER CONDITION SATISFACTORY (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

QUARTERLY CLEAN & DESCALE OF SHOWER HEADS & HOSES



DATE	LOCATION	CLEAN & DESCALE COMPLETED (Y/N)	SHOWER CONDITION SATISFACTORY (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 6

**QUARTERLY CLEAN & DESCALE OF
SHOWER HEADS & HOSES**



DATE	LOCATION	CLEAN & DESCALE COMPLETED (Y/N)	SHOWER CONDITION SATISFACTORY (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE

SECTION 6

**QUARTERLY CLEAN & DESCALE OF
SHOWER HEADS & HOSES**



DATE	LOCATION	CLEAN & DESCALE COMPLETED (Y/N)	SHOWER CONDITION SATISFACTORY (Y/N)	FAULT NOTIFIED (If applicable)	SIGNATURE



GUIDANCE NOTES

UNDERSTANDING TOTAL BACTERIA AND LEGIONELLA REPORTS

Sample reports are issued without a covering letter but all reports will indicate whether the results are satisfactory or whether remedial action is required. It is important to note the 'status boxes' at the top of the letter. If the '*satisfactory*' box is ticked then there is no further action required.

If some or all of the results are high then the '*remedial action required*' box will be ticked.

The attached notes give a general explanation of the various potential results and the appropriate level of response. Unfortunately, it is not often a simple 'pass or fail' scenario.

NOTE : Legionella counts are per litre, whereas Total Viable Counts are per Millilitre; the Legionella test is therefore one thousand times more sensitive.

DOMESTIC SERVICES

LEGIONELLA IN SHOWERS AND DOMESTIC DOWN SERVICES

If legionella are detected up to a level of 1,000 cfu/l the system should be thermally disinfected and shower heads should be removed and disinfected. Showers should be labelled as '*out of action*' until the results of a retest are known. It is also advisable to review and audit the routine control measures.

If legionella is detected at 1,000 cfu/l or above the infected systems may be taken out of service, subject to discussion with the scheme manager. They will remain out of order until they have been cleaned, disinfected and retested. It is also essential to survey the system to try to identify the possible source of the infection. All remedial works will be completed at the discretion of the scheme manager.

The level of response will be affected by the overall level & number of positive results detected in a batch of sample(s); ie. a low legionella count in all the samples may be as serious as a high count in only one sample.

TOTAL VIABLE COUNTS IN DRINKING AND DOMESTIC WATER

Total viable counts refer to an overall count of all the bacteria present in the water sample. This is a count of both harmful and harmless organisms.

The recommended levels for drinking water are very precise. The water sample is split and incubated at two different temperatures; the limits are as follows:

1 day @ 37°C	less than 10 cfu/ml
3 days @ 22°C	less than 100 cfu/ml

Ideally, the water in the domestic down services also conforms to the above limits. However, in view of the fact that domestic down service water (basin taps, showers, etc) are not intended for drinking there is more leeway on the interpretation of the results; guidance as per Appendix 1.

OTHER PATHOGENS

The following organisms should always be absent from drinking and domestic water.

Pseudomonas spp. / aeruginosa
Faecal Enterococci / Streptococci
Coliforms
E. Coli

If these organisms are detected the system should be cleaned and disinfected as soon as possible and the source of the infection investigated.

APPENDIX 1: DOMESTIC AND DRINKING WATER SERVICES

TOTAL VIABLE COUNTS: RECOMMENDED LEVELS (22°C COUNTS)

DOMESTIC SERVICES (incl Showers)	<1 → 100 2 day count	<1 → 1,000 cfu/ml 3 day count	<u>Acceptable</u>	100 or above 2 day count	1,000 or above 3 day count	<u>Remedial action required</u>
DRINKING WATER	<1 → 10 2 day count	<1 → 100 cfu/ml 3 day count	<u>Acceptable</u>	10 or above 2 day count	100 or above 3 day count	<u>Remedial action required</u>

* cfu = colony forming unit
or the number of viable (live and able to multiply) bacteria in the sample

KEY TO TVC RESULTS

DRINKING WATER	TVC up to 100 cfu/ml @ 22°C, 3 days up to 10 cfu/ml @ 37°C, 2 days	Acceptable.
	TVC 100 - 500 cfu/ml @ 22°C, 3 days 10 - 50 cfu/ml @ 37°C, 2 days	Slightly high but not excessive. Verify that water temperatures are correct.
	TVC 500 - 2000 cfu/ml @ 22°C, 3 days 50 - 200 cfu/ml @ 37°C, 2 days	TVC too high; flush the outlet thoroughly and clean if inspection shows it to be dirty. Verify that water temperatures are correct.
	TVC 2000 cfu/ml and above @ 22°C, 3 days 200 cfu/ml and above @ 37°C, 2 days	TVC excessive; clean and disinfect the outlet as soon as possible. A system disinfection may also be required. Verify that water temperatures are correct.
HOT WATER (BASIN)	TVC up to 1000 cfu/ml @ 22°C, 3 days 100 cfu/ml @ 37°C, 2 days	Acceptable.
COLD WATER (BASIN)	TVC 1000 - 5000 cfu/ml @ 22°C, 3 days 100 - 500 cfu/ml @ 37°C, 2 days	Slightly high; we would recommend flushing the outlets and checking for any debris in spray plates or shower heads. Verify that water temperatures are correct.
MIXED SUPPLY (BASIN)		
MIXED SUPPLY (SHOWER)	TVC 5000 cfu/ml and above @ 22°C, 3 days 500 cfu/ml and above @ 37°C, 2 days	TVC excessive; definitely clean and disinfect outlets and/or shower heads and flush thoroughly. Verify that water temperatures are correct.
HOT WATER STORAGE		
COLD WATER STORAGE		

These levels are very much for guidance and should be viewed in context.

WATER SAMPLING PROCEDURE

Work Instruction

1. Subject

Bacteriological sampling

2. Scope

The collection of samples for further laboratory analysis

3. Management Directive

Procedure to be performed in accordance with this document

4. Method

- 4.1 Sample bottles are supplied by the testing laboratory and are obtained via the office.
- 4.2 When samples have been collected they are to be processed as soon as possible, and if necessary kept in a refrigerator until ready for dispatch.
- 4.3 (Where possible Legionella samples should not be refrigerated as degradation is liable to occur)
- 4.4 Do not keep cold and hot samples in close proximity to each other after sampling
- 4.5 Ensure that each sample is identified with the information provided by the Office when checking in the sample
- 4.6 Avoid handling the bottle by the cap or neck prior to sampling

Sampling from Taps (Hot & Cold)

- 4.7 Open the tap and run at moderate flow for 2 minutes; fill the bottle directly from the flow

Sampling from Tanks

- 4.8 If sample taps available follow step 4.7. If no tap available sample tank from point furthest from ball valve. Immerse bottle (cap on) as far as possible collect sample and recap still underwater.

Sampling from Softeners

- 4.9 Sample from the bib tap or the first available outlet by opening fully to fill the sample bottle.

** Further advice is available in BS7592:2008

5.0 Responsibilities

- 5.1 The person carrying out sampling is responsible for the correct procedure

SECTION 7

MISCELLANEOUS WORK SHEET

DATE	WORK CARRIED OUT	COMPANY	SIGNATURE

MISCELLANEOUS WORK SHEET

DATE	WORK CARRIED OUT	COMPANY	SIGNATURE

MISCELLANEOUS WORK SHEET

DATE	WORK CARRIED OUT	COMPANY	SIGNATURE

SECTION 8

MISCELLANEOUS WORK SHEET

DATE	WORK CARRIED OUT	COMPANY	SIGNATURE



RISK ASSESSMENT

DISINFECTION AND CLEANOUT OF WATER STORAGE TANKS

1. IDENTIFICATION OF HAZARDS

- a. Lifting injury
- b. Injury from falling
- c. Injury from chemical spillage
- d. Hazard caused by unnecessary production of aerosol
- e. Injury from faulty equipment
- f. Inadequate ventilation

2. SUSCEPTIBLE PERSONS

- a. The Service Provider personnel, risk category 1a, 1b, 1c, 1d, 1e, 1f
- b. Site personnel, risk category 1c, 1d

3. RISK EVALUATION

CATEGORY 2a

All personnel are suitably trained to complete cleaning and disinfection works in accordance with the Health & Safety at Work Act (1974).

They will also follow relevant legislative guidelines and internal quality procedures to ensure safe working.

Appropriate PPE will be worn as required. All equipment to be PAT tested (as applicable) and adequately maintained.

The level of risk for items 1a, 1b, 1c, 1d, 1e and 1f may be considered as medium.

CATEGORY 2b

Suitable precautions will be taken to minimise aerosol product (item 1d)

Also, site personnel are not permitted within the working area.

The overall level of risk may be considered as low.

4. SAFE SYSTEM OF WORK

It is mandatory that personnel conduct all works in accordance with the aforementioned statements:

- All PPE to be worn
- All ladders/scaffold to be secure
- All chemicals to be handled correctly
- All heavy items to be lifted correctly
- Aerosol production to be minimised
- All equipment maintenance schedules to be up to date

PROCEDURE

1. Subject **Sterilisation of Water Storage Tanks by spraying with Chlorine Dioxide or Chlorine solution**

- 1 Warning notices are to be displayed on all relevant control valves.
- 2 Ensure that all site staff are aware of the procedure is to start.
- 3 Isolate the Tank.
- 4 Drain and visually inspect.
- 5 Ensure there is satisfactory access and ventilation.
Use protective equipment and breathing apparatus as appropriate.
- 6 Prepare a 20ppm solution of Chlorine Dioxide or 50ppm of Chlorine.
- 7 Sluice the Tank down with fresh water and remove any debris.
- 8 Spray the internal surface of the tank with 20ppm Chlorine Dioxide or 50ppm Chlorine.
Repeat every 15 minutes for 2 hours.
- 9 Neutralise with CN65
- 10 All warning notices are then to be removed.
- 11 A Sterilisation Method Statement Worksheet must be completed, signed by the client's representative and filed in the Log Book. The blue copy is to be returned to Head Office for issue of the Certificate.

PROCEDURE

1. Subject **Sterilisation of Mains & Tank Fed Down Services**

Warning notices are to be displayed at every outlet on the system and on all relevant control valves.

Ensure that all site staff are aware of the procedure is to start

The entire mains and drinking water system is to be sterilised by injecting sterilant into the pipe. Whilst Sterilant is being injected all service outlets are to be checked until a level of 20ppm Chlorine Dioxide, or 50ppm Chlorine, is reached. This operation is to be carried out without risk of contamination to the authority mains or where applicable to the existing system if new installation is involved.

The entire system shall be left fully charged for a period of 1 hour with a reserve of not less than 20ppm Chlorine Dioxide or 50ppm Chlorine. All cistern lids, tank covers etc. must be in position throughout this time. A test of the reserve should be carried out at the end of the time period to ensure 12ppm Chlorine Dioxide, or 30ppm Chlorine as a minimum reserve. If reserve is too low the procedure should be repeated. The entire system should then be flushed to remove all sanitiser.

Down Services

All storage tanks are to be inspected and any debris removed. All tanks, calorifiers and hot and cold distribution services (including pumped systems if applicable) are to be thoroughly flushed to remove any detritus. The tanks should then be refilled as required and Chlorine shall be added to achieve 50ppm, or Chlorine Dioxide at 20ppm, using the appropriate test kit.

All calorifiers and hot and cold down service outlets are to be run until a chlorine reserve of 50ppm, or Chlorine Dioxide to 20ppm, is achieved and maintained.

The entire system is to be left for 1 hour during which time the level of chlorine should be checked to ensure 30ppm minimum, or 12ppm Chlorine Dioxide.

Upon successful completion the entire system is to be flushed with fresh water until the sanitiser reserve at all outlets is equal to that of the incoming water.

All warning notices are then to be removed.

A Sterilisation Method Statement Worksheet must be completed, signed by the client's representative and filed in the Log Book. The blue copy is to be returned to Head Office for issue of the Certificate.

Water Tank Inspections Reports

Tank Designation	Date Inspected	Sediment Level	Biofilm	Corrosion Level	Temperature °C		Overflow Screens in place	Ball valves operating	Lagging Adequate	Signature
					Inlet	Tank				

Comments/Recommendations

Key:				
	Sediment	Biofilm	Corrosion	
0	<i>None</i>	<i>None</i>	<i>None</i>	
1	<i>Light sediment present</i>	<i>Light biofilm present</i>	<i>Light corrosion present</i>	
2	<i>Medium sediment.</i>	<i>Medium biofilm.</i>	<i>Medium corrosion.</i>	
3	<i>Heavy sediment</i>	<i>Heavy biofilm</i>	<i>Heavy corrosion</i>	

Water Tank Inspections Reports

Tank Designation	Date Inspected	Sediment Level	Biofilm	Corrosion Level	Temperature °C		Overflow Screens in place	Ball valves operating	Lagging Adequate	Signature
					Inlet	Tank				

Comments/Recommendations

Key:				
	Sediment	Biofilm	Corrosion	
0	<i>None</i>	<i>None</i>	<i>None</i>	
1	<i>Light sediment present</i>	<i>Light biofilm present</i>	<i>Light corrosion present</i>	
2	<i>Medium sediment.</i>	<i>Medium biofilm.</i>	<i>Medium corrosion.</i>	
3	<i>Heavy sediment</i>	<i>Heavy biofilm</i>	<i>Heavy corrosion</i>	

Calorifier Inspections Reports

Calorifier Designation	Date Inspected	Sediment Level	Scale Level	Corrosion Level	Blowdown valve operating & Condition and temp of Drain Water	Lagging Adequate	Signature

Key:				
	Sediment	Scale	Corrosion	
0	<i>None</i>	<i>None</i>	<i>None</i>	
1	<i>Light sediment present</i>	<i>Light scale present</i>	<i>Light corrosion present</i>	
2	<i>Medium sediment.</i>	<i>Medium scale.</i>	<i>Medium corrosion.</i>	
3	<i>Heavy sediment</i>	<i>Heavy scale</i>	<i>Heavy corrosion</i>	

Calorifier Inspections Reports

Calorifier Designation	Date Inspected	Sediment Level	Scale Level	Corrosion Level	Blowdown valve operating & Condition and temp of Drain Water	Lagging Adequate	Signature

Key:				
	Sediment	Scale	Corrosion	
0	<i>None</i>	<i>None</i>	<i>None</i>	
1	<i>Light sediment present</i>	<i>Light scale present</i>	<i>Light corrosion present</i>	
2	<i>Medium sediment.</i>	<i>Medium scale.</i>	<i>Medium corrosion.</i>	
3	<i>Heavy sediment</i>	<i>Heavy scale</i>	<i>Heavy corrosion</i>	