



ENVIRONMENTAL TECHNICAL SERVICES (UK) LTD

# LEGIONELLA

## RISK ASSESSMENT



### Castle Building

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DATE : 10.03.22

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# **RISK ASSESSMENT**

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## 1.0 EXECUTIVE SUMMARY

This document is intended to identify the risk of developing legionnaire's disease from the building water system. Risk assessments are required by the Health and Safety Executive prior to undertaking remedial action to reduce any risks identified.

The Health and Safety commission issued an Approved Code of Practice for "The Prevention of Control of Legionellosis (including legionnaires' disease)" which came into effect on 15th January 1992, requiring a risk assessment to be taken. Guidance notes were issued by the Health and Safety Executive in the form of L8 and HS(G)274 this risk assessment is structured around the requirements of these two documents.

Details of the requirements can be found in section 3 of this document.

Legionellosis is the term used for infections caused by legionella pneumophila and other bacteria from the family Legionellaceae. Legionnaires' disease is a pneumonia that principally effects those who are susceptible due to age, illness, immunosuppression, smoking etc. and may be fatal. Legionella can also cause less serious illnesses, which are not fatal, or permanently debilitating but which can affect all people.

Infection is attributed to inhaling legionella, either those water droplets which are small enough to penetrate deeply into the lung, or in droplet nuclei (the particles left when water has evaporated). Legionella 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 and transmitting water droplets, people in the vicinity may be at risk.

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

- a. System infection
- b. Legionella proliferation enhanced by system conditions
- c. Aerosol formation
- d. 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 legionella thrive.

Our examination of the water systems have demonstrated that a **High** risk is present.

Whilst each of the systems requires some attention to arrive at full compliance the management effort and budget should be directed at the high risk systems first to make them safe. Full details of the required actions are enclosed.

## 2.0 SUMMARY OF RESPONSIBILITIES

| ITEM | WORKS   | ORGANISATION |
|------|---|--------------|
| 1    | Carryout Legionella Risk Assessment & Training of Site Staff  | Contractor   |
| 2    | Set up Site Log Books, Carry out Full Audit & Asset Register  | Contractor   |
| 3    | Identify Remedial Works & Potential Breaks in Procedures  | Contractor   |
| 4    | Inspect Systems & Areas in Breach of Bylaws and Legislation   | Contractor   |
| 5    | Set up & show clear Procedures and Responsibilities   | Contractor   |
| 6    | Implement Remedial Works and Procedures   | Client       |
| 7    | Update drawings and Log books if any modifications or Alteration works are carried out with water systems | Client       |
| 8    | Inform Contractor of any Alteration or Modification works   | Client       |
| 9    | Immediately inform Contractor of any change in contact staff Or Procedures                                | Client       |

### Declaration

I have checked this section of the document and have accepted the findings. I am aware of both the clients and the contractors responsibilities' are am willing to be bound by them.

Signed.....Date.....For and Behalf of Client

Signed.....Date.....For and Behalf of Contractor

### 3.0 MANAGEMENT AUTHORITIES

|  | NAME                     | ADDRESS  | TEL NO.             |
|--|--------------------------|--|---------------------|
| <b>Responsible Estates Engineer</b>  | <i>Trevor Clay</i>       | <i>Estates Dept<br/>Concord College<br/>Acton Burnell<br/>Shrewsbury</i> | <i>01694 731183</i> |
| <b>Site Responsible Person</b>   | <i>Sarah Darral</i>      | <i>As Above</i>  | <i>As Above</i>     |
| <b>Water Supply Company</b>  | <i>Sever Trent Water</i> | <i>Oxley Moor Road<br/>Wolverhampton</i>                                 | <i>0345 7500500</i> |
| <b>Mechanical &amp; Electrical contractor if appropriate</b>   | <i>In House</i>          | <i>Concord College<br/>Estates Dept</i>                                  | <i>01694 731183</i> |
| <b>Water Hygiene Company Contact</b>   | <i>Andy Wilkie</i>       | <i>Environmental<br/>Technical Services<br/>(UK) LTD</i>                 | <i>01667 459594</i> |
| <b>Nearest Medical Assistance</b>  | <i>Medical Centre</i>    | <i>Concord College</i>   | <i>01694 731631</i> |
| Any of the above not available at the time inspection represent a gap in management procedures which could lead to a risk of infection through miscommunication. |                          |  |                     |

## 4.0 MANAGEMENT SYSTEMS - DOCUMENTATION

| DOC. NO.   | DESCRIPTION  | SECTION       |
|--|--|---------------|
| CC22   | Procedures & Responsibilities                            | 2.0           |
| CC22   | System Drawings  | 7.0           |
| CC22   | Monitoring Procedures                                    | Appendix C    |
| CC22   | Cleaning Procedures                                      | Specification |
| CC22   | Disinfection Procedures                                  | Specification |
| CC22   | Operating and Maintenance Procedures                     | Appendix B    |
| CC22   | Training Records   | Appendix B    |
| CC22   | Log Books - Hot & Cold Water Systems                     | 4.0           |
| CC22   | Procedures for specifying and purchasing water treatment | Appendix D    |
| Any of the above not available at time of inspection represents a non-compliance with the Approved Code of Practice. |  |               |

## 5.0 SCOPE OF RISK ASSESSMENT

| <b>NUMBER OF FLOORS</b> |        |        |     |     |     |     |     |      |      |
|-------------------------|--------|--------|-----|-----|-----|-----|-----|------|------|
| Floor Number            | B/ment | Ground | 1st | 2nd | 3rd | 4th | 5th | Loft | Roof |
| CWS Storage Tank(s)     |        | No     | No  |     |     |     |     |      |      |
| Feed/Expans. Tanks      |        | No     | No  |     |     |     |     |      |      |
| HWS Cylinders           |        | No     | Yes |     |     |     |     |      |      |
| Sinks                   |        | Yes    | Yes |     |     |     |     |      |      |
| Drinking Fountains      |        | Yes    | No  |     |     |     |     |      |      |
| Baths                   |        | No     | No  |     |     |     |     |      |      |
| Wash Hand Basins        |        | Yes    | Yes |     |     |     |     |      |      |
| Water Closets           |        | Yes    | Yes |     |     |     |     |      |      |
| P.O.U. Heaters          |        | No     | No  |     |     |     |     |      |      |
| Showers                 |        | Yes    | No  |     |     |     |     |      |      |
| Urinals                 |        | No     | No  |     |     |     |     |      |      |
| Foot Wash               |        | No     | No  |     |     |     |     |      |      |
| Fire Hose               |        | No     | No  |     |     |     |     |      |      |
| Dead Legs               |        | No     | No  |     |     |     |     |      |      |
| Spa Baths               |        | No     | No  |     |     |     |     |      |      |
| Little Used Outlets     |        | No     | No  |     |     |     |     |      |      |
| Tea boiler              |        | No     | No  |     |     |     |     |      |      |
| Emergency Showers       |        | No     | No  |     |     |     |     |      |      |
| Water Softener          |        | No     | No  |     |     |     |     |      |      |
| Combination Unit        |        | Yes    | No  |     |     |     |     |      |      |
| Megaflow Unit           |        | No     | No  |     |     |     |     |      |      |
| Bib Taps                |        | No     | No  |     |     |     |     |      |      |
| TMVs                    |        | Yes    | Yes |     |     |     |     |      |      |

**General Description of Water Services.**

The cold water is fed from the mains and the hot water is fed from a calorifier in the cleaners cupboard on the first floor.

## 6.0 CWS TANK SURVEY REPORT

| <b>TANK ASSET NO</b>   | <i><b>T.1</b></i> | <i><b>T.2</b></i> | <i><b>T.3</b></i> | <i><b>T.4</b></i> |
|--|-------------------|-------------------|-------------------|-------------------|
| Location   |                   |                   |                   |                   |
| Access to Tanks  |                   |                   |                   |                   |
| What does Tank Supply  |                   |                   |                   |                   |
| Tank Type  |                   |                   |                   |                   |
| Tank Size  |                   |                   |                   |                   |
| Capacity   |                   |                   |                   |                   |
| Source of Supply   |                   |                   |                   |                   |
| Screened Lid Vent Fitted Y/N                                     |                   |                   |                   |                   |
| Condition of Lid/Dimensions                                      |                   |                   |                   |                   |
| Condition of Insulation  |                   |                   |                   |                   |
| Size of Overflow   |                   |                   |                   |                   |
| Overflow Screen Y/N  |                   |                   |                   |                   |
| Internal Condition of Tank                                       |                   |                   |                   |                   |
| Size of Inlet  |                   |                   |                   |                   |
| Size of Outlet No. 1   |                   |                   |                   |                   |
| Size of Outlet No. 2   |                   |                   |                   |                   |
| Tank Labelled Y/N  |                   |                   |                   |                   |
| Relation of Inlet to Outlet                                      |                   |                   |                   |                   |
| Is Pipe work Insulated   |                   |                   |                   |                   |
| Drain Size   |                   |                   |                   |                   |
| Tank Temperature   |                   |                   |                   |                   |
| Ambient Temperature  |                   |                   |                   |                   |
| Evidence of Stagnation Y/N                                       |                   |                   |                   |                   |
| Sludge Accumulation (L/M/S)                                      |                   |                   |                   |                   |
| Is Corrosion Evident (L/M/S)                                     |                   |                   |                   |                   |
| Evidence of Biofilm  |                   |                   |                   |                   |
| Remedial Work Required Y/N                                       |                   |                   |                   |                   |
| <b>COMMENTS</b><br><br>There are no water tanks on the premises. |                   |                   |                   |                   |



## **7.0 SCHEMATIC LAYOUT OF SYSTEMS**

See C.A.D. Drawings

## 8.0 HWS CALORIFIER SURVEY REPORT

| Calorifier Asset No                      | C. 1            | C.2 | C.3 | C. 4 | C.5 |
|--|-----------------|-----|-----|------|-----|
| Location                                 | <i>Cupbrd</i>   |     |     |      |     |
| What does Calorifier Feed                | <i>HWS</i>      |     |     |      |     |
| Construction (Copper/Galvanised)         | <i>Copper</i>   |     |     |      |     |
| Horizontal/Vertical                      | <i>Vertical</i> |     |     |      |     |
| Source of Supply (Mains/Tank)            | <i>Mains</i>    |     |     |      |     |
| Storage (Yes/No)                         | <i>Yes</i>      |     |     |      |     |
| Inspection Cover                         | <i>No</i>       |     |     |      |     |
| Temperature                              | <i>57.4</i>     |     |     |      |     |
| Return Temperature                       | <i>52.5</i>     |     |     |      |     |
| Calorifier Set Point Temperature         | <i>60.0</i>     |     |     |      |     |
| Base Temperature                         | <i>52.0</i>     |     |     |      |     |
| Condition of Insulation                  | <i>Good</i>     |     |     |      |     |
| Physical Dimensions<br>(Height/Diameter) | <i>1.8x0.7</i>  |     |     |      |     |
| Inspection Hatch (Yes/No)                | <i>No</i>       |     |     |      |     |
| Can Unit be Isolated?                    | <i>Yes</i>      |     |     |      |     |
| Secondary Return (Yes/No)                | <i>Yes</i>      |     |     |      |     |
| Return Pump (Single/Duplex)              | <i>Single</i>   |     |     |      |     |
| Anti-Stratification Pump (Yes/No)        | <i>No</i>       |     |     |      |     |
| Total base flushing possible<br>(Yes/No) | <i>No</i>       |     |     |      |     |
| Position of Drain Off Cock               | <i>Pipe</i>     |     |     |      |     |
| Diameter Drain-off Cock                  | <i>15mm</i>     |     |     |      |     |
| Pressure Gauge (Yes/No)                  | <i>N/A</i>      |     |     |      |     |
| Temperature Gauge (Yes/No)               | <i>Yes</i>      |     |     |      |     |

### COMMENTS

The calorifier is in very good condition.

## 9.0 SAMPLES / RESULTS

| SAMPLE NO. | SAMPLE POINT       | RESULTS         |
|------------|--------------------|-----------------|
| 01         | Gents Staff Toilet | ND              |
| 02         | Studio 1           | ND              |
| 03         | Studio 3           | ND              |
| 04         | Studio 4           | ND              |
| 05         | Disabled Toilet    | 10 <sup>2</sup> |
| 06         | Ladies Toilet      | ND              |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |
|            |                    |                 |

### COMMENTS/RECOMMENDATIONS

The above results are satisfactory.

Note  
 ND      None Detected  
 10<sup>1</sup>-10<sup>2</sup> Satisfactory  
 10<sup>3</sup>-10<sup>4</sup> Re-Sample Advised  
 10<sup>5</sup>-10<sup>6</sup> Unsatisfactory

## 10.0 TEMPERATURE REPORT

| DATE     | SAMPLE POINT        | TEMPERATURE °C |      |
|----------|---------------------|----------------|------|
|          |                     | HOT            | COLD |
| 10.03.22 | Gents Staff Toilet* | 39.1           | 10.9 |
|          | Ladies Staff Toilet | 38.9           | 11.8 |
|          | Studio 1*           | 40.2           | 11.6 |
|          | Studio 2            | 41.1           | 10.7 |
|          | Studio 3*           | ***48.2***     | 10.9 |
|          | Studio 4*           | 39.8           | 13.0 |
|          | Disabled Toilet*    | 35.5           | 12.1 |
|          | Gents Toilet        | 37.9           | 11.4 |
|          | Ladies Toilet*      | 40.0           | 11.1 |
|          | Cleaners Cupboard   | 57.2           | 12.2 |
|          |                     |                | 12.0 |
|          |                     |                | 11.5 |
|          |                     |                |      |
|          |                     |                |      |
|          |                     |                |      |
|          |                     |                |      |
|          |                     |                |      |
|          |                     |                |      |

### INTERPRETATION

Cold Water                      <20°C Acceptable  
 Hot Water                        >50°C Acceptable  
 Temperatures                  >20°C or <50°C Unacceptable

CWDS taken after 2 minutes running

HWS taken after 1 minute running

\*            Sample Point

NTO        Not turned on

### COMMENTS/RECOMMENDATIONS

The above water temperatures are satisfactory. However studio 3 TMV requires attention.

## 11.0 PHOTOGRAPHIC RECORDS



**Water Fountain**



**Calorifier**

## 12.0 ASSET REGISTER

| LOCATION            | OUTLET       | ASSET NO. | FED FROM |
|---------------------|--------------|-----------|----------|
| <b>Ground Floor</b> |              |           |          |
| Staff Gents Toilet  | WC 1         | 001       | Mains    |
| Staff Gents Toilet  | WC 2         | 002       | Mains    |
| Staff Gents Toilet  | WB 1         | 003       | Mains    |
| Staff Gents Toilet  | WB 2         | 004       | Mains    |
| Staff Gents Toilet  | WB 3         | 005       | Mains    |
| Staff Gents Toilet  | Shower       | 006       | Mains    |
| Staff Gents Toilet  | Sensor Tap 1 | 007       | Mains    |
| Staff Gents Toilet  | Sensor Tap 2 | 008       | Mains    |
| Staff Gents Toilet  | Sensor Tap 3 | 009       | Mains    |
| Staff Ladies Toilet | WC 1         | 010       | Mains    |
| Staff Ladies Toilet | WC 2         | 011       | Mains    |
| Staff Ladies Toilet | WB 1         | 012       | Mains    |
| Staff Ladies Toilet | WB 2         | 013       | Mains    |
| Staff Ladies Toilet | WB 3         | 014       | Mains    |
| Staff Ladies Toilet | Shower       | 015       | Mains    |
| Staff Ladies Toilet | Sensor Tap 1 | 016       | Mains    |
| Staff Ladies Toilet | Sensor Tap 2 | 017       | Mains    |
| Staff Ladies Toilet | Sensor Tap 3 | 018       | Mains    |
| Studio 1            | Sink         | 019       | Mains    |
| Studio 1            | TMV          | 020       | Mains    |
| Studio 2            | Sink         | 021       | Mains    |
| Studio 2            | TMV          | 022       | Mains    |
| Studio 3            | Sink         | 023       | Mains    |
| Studio 3            | TMV          | 024       | Mains    |
| Disabled Toilet     | WC           | 025       | Mains    |
| Disabled Toilet     | WB           | 026       | Mains    |
| Disabled Toilet     | TMV          | 027       | Mains    |
| Gents Toilet        | WC 1         | 028       | Mains    |
| Gents Toilet        | WC 2         | 029       | Mains    |
| Gents Toilet        | WB           | 030       | Mains    |
| Gents Toilet        | Sensor Tap   | 031       | Mains    |

## 12.0 ASSET REGISTER

[illegible]

## 13.0 WATER SYSTEM SURVEY REPORT

| <i>Description</i>   | <i>Location</i> | <i>Material</i> | <i>Compliance<br/>Yes/No</i> | <i>Risk<br/>High/Med/Low</i> |
|----------------------|-----------------|-----------------|------------------------------|------------------------------|
| DDWS Pipework        | All Areas       | Foam            | Yes                          | Low                          |
| Hot Water Pipework   | All Areas       | Foam            | Yes                          | Low                          |
| Pipe Insulation      | Good            | Foam            | Yes                          | Low                          |
| Fire Hose Reels      | No              | N/A             | N/A                          | N/A                          |
| Sanitary Units       | No              | N/A             | N/A                          | N/A                          |
| Little Used Outlets  | No              | N/A             | N/A                          | N/A                          |
| Redundant Pipework   | No              | N/A             | N/A                          | N/A                          |
| Double Check Valve   | Plant Room      | Brass           | Yes                          | Low                          |
| Tonne Dish Air Break | No              | N/A             | N/A                          | N/A                          |
| Spa Bath             | No              | N/A             | N/A                          | N/A                          |
| Vending Machines     | No              | N/A             | N/A                          | N/A                          |
| POU Water Heaters    | No              | N/A             | N/A                          | N/A                          |
| Combination Units    | No              | N/A             | N/A                          | N/A                          |
| Showers              | Yes             | Brass           | Yes                          | Med                          |
| Irrigation Wands     | No              | N/A             | N/A                          | N/A                          |
| Spray Humidifier     | No              | N/A             | N/A                          | N/A                          |
| Glass Trap           | No              | N/A             | N/A                          | N/A                          |
| Fume Cupboard        | No              | N/A             | N/A                          | N/A                          |
| Drip Trays           | No              | N/A             | N/A                          | N/A                          |
| TMV's                | Yes             | Brass           | Yes                          | Low                          |
| Mixing Taps          | Yes             | Brass           | Yes                          | Low                          |
| Bib Taps             | No              | N/A             | N/A                          | N/A                          |
| Record Keeping       | Office          | N/A             | No                           | Low                          |

### Comments:

The above findings comply with current guidelines. Although the studio 3 TMV requires attention.



## **14.0 REMEDIAL WORKS & COSTINGS**

1. Carry out service of studio 3 TMV.

## APPENDIX 15

### LEGISLATION AND CODES OF PRACTICE

The following are identified as the key Codes of Practice and Legislation applying to water systems and water quality.

|  |   |   |
|--|---|---|
| <b>L8 HS(G)274</b>   | : | The control of legionellosis, including legionnaires' disease.  |
| <b>HSC</b>   | : | The prevention and control of Legionellosis. (including legionnaires disease) Approved Code of Practice. (Nov 2000)               |
| <b>SI 1992 No, 2225</b>                                    | : | The notification of cooling towers and evaporative condensers regulation 1992.  |
| <b>SI 1988 No. 1657</b>                                    | : | The control of substances hazardous to health regulations.  |
| <b>The Health and Safety at Work Act 1974.</b>             | : | (N.B. the above are empowered by this act)  |
| <b>BACS. Code of Practice</b>                              | : | The control of Legionella by the safe and effective operation of cooling systems. (British Association of chemical specialities). |
| <b>T.M.13</b>  | : | Minimising the risk of Legionnaire's Disease - 1987. (Chartered Institute of Building Service Engineers).                         |
| <b>BS6700</b>  | : | Design, Installation, Testing and Maintenance of Services supplying water for domestic use within buildings and their curtilages. |
| <b>BS1710</b>  | : | Pipework identification.  |
| <b>WRC approvals</b>                                       | : | Filtering and Registration Scheme and Installation Practices.   |
| <b>Water Supply Byelaws</b>                                | : |   |
| <b>The Control of Legionellae in Health Care Premises.</b> | : | A Code of Practice. (DHSS)  |

## APPENDIX 16

### APPROVED CODE OF PRACTICE FOR THE PREVENTION OR CONTROL OF LEGIONELLOSIS

#### SUMMARY

Any water system operating with temperatures of greater than 20°C 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.

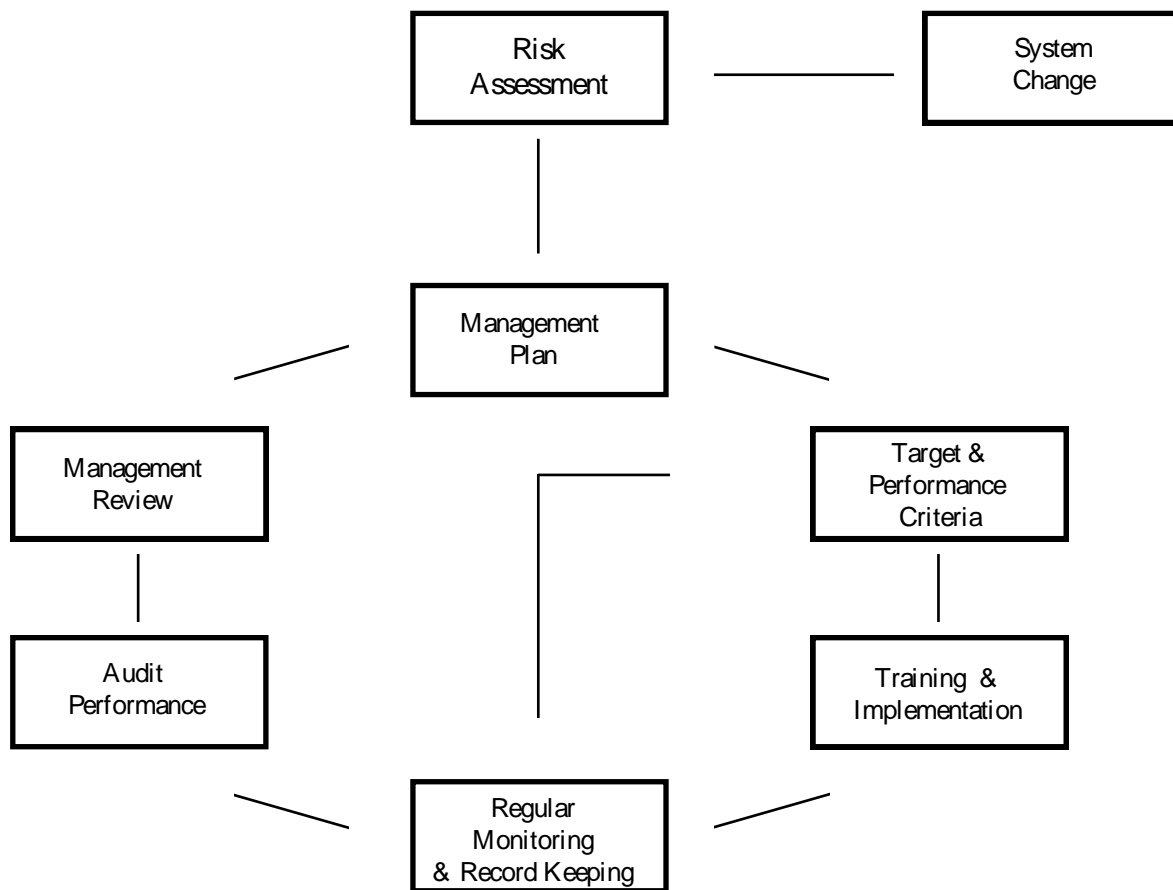
- \* Systems incorporating cooling towers or evaporative condenser.
- \* Hot water services >300 litres in capacity.
- \* Humidifiers and air washers.
- \* Spa baths and pools.
- \* Hot and cold water services in premises where the occupants are particularly susceptible.

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.

Figure 01 provides a graphical 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.

**Fig 01 – REQUIREMENTS OF THE APPROVED CODE OF PRACTICE**



For further details on how to implement the ACOP for your systems please contact Environmental Technical Services who can provide the following services:

- \* Risk Assessments
- \* Management plan and procedure development
- \* Training or 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.

## APPENDIX 17

### THE CONTROL OF LEGIONELLOSIS L8 SUMMARY FOR

#### HOT AND COLD WATER SERVICES

L8 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 water system of greater than 300 litres capacity.

The prime focus of L8 is to avoid conditions, which 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, which promote legionellae proliferation are:

- \* Temperature in the range of 20 - 45°C
- \* Presence of sediment, sludge 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. There 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**

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

**TABLE 2 - RECORDS FOR HOT AND COLD WATER SERVICE**

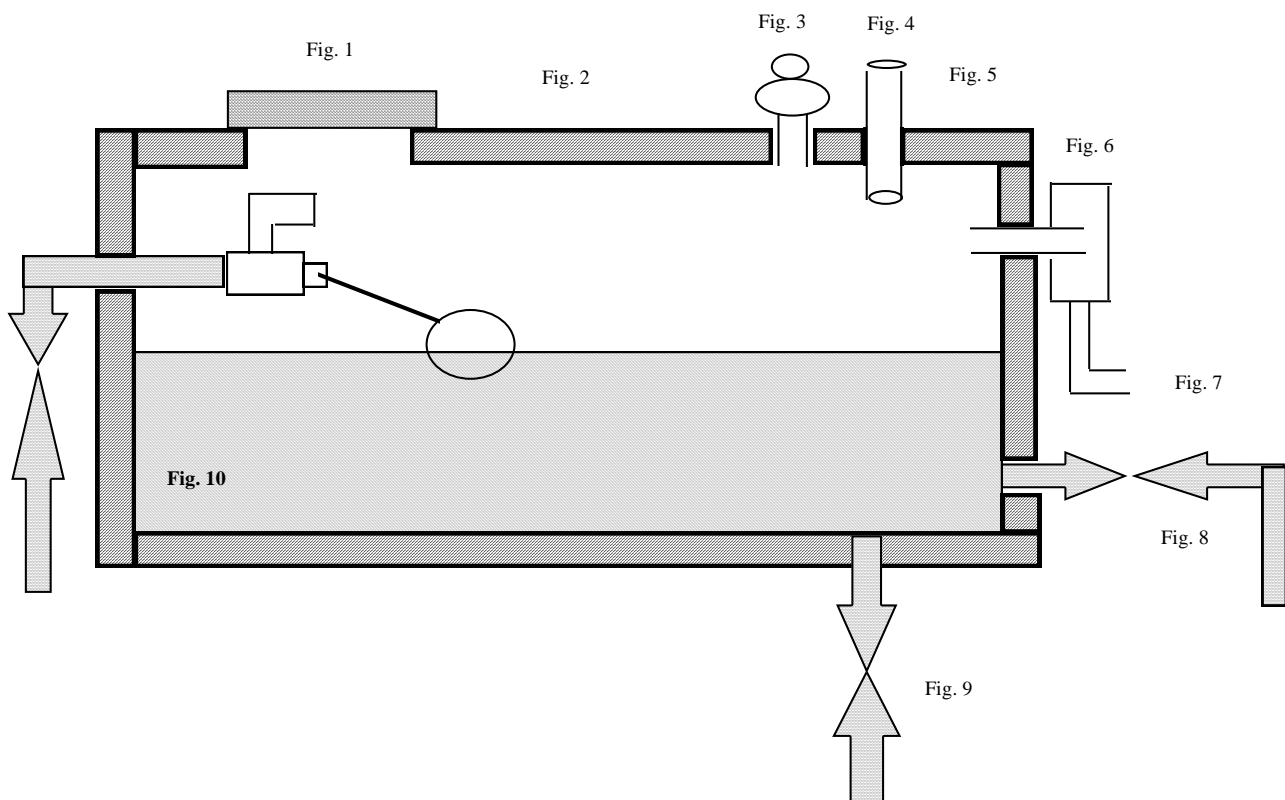
A logbook with the following contents is recommended.

- \* 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.

## APPENDIX 18

### CODES OF PRACTICE APPLYING TO

## COLD WATER STORAGE TANKS



### KEY TO GUIDES

- |    |                     |   |   |
|----|---------------------|---|---|
| 1. | Bye-Laws            | : | Water supply bylaws guide.  |
| 2. | BS6700:1987         | : | Design, installation, testing and maintenance of services supplying water for domestic use within Buildings and their curtiliges. |
| 3. | TM13:1991           | : | Minimising the risk of legionnaires` disease.   |
| 4. | L8<br>legionnaires` | : | The control of legionellosis including disease.   |



## APPENDIX 19

### SUMMARY OF KEY POINTS COVERED BY BS6700

|         | REFERENCE  | GUIDE   |
|---------|--|---|
| Fig 1.  | Securely fixed access cover  | Bye-Laws  |
| Fig 2.  | Rigid, close fitting and securely fixed cover  | Bye-Laws, BS6700:1987, TM13:1991, L8 HS(G)274   |
| Fig 3.  | Screened air-vent  | Bye-Laws, BS6700:1987                           |
| Fig 4.  | Sleeve for vent pipe   | Bye-Laws  |
| Fig 5.  | Insulation against heat and frost  | Bye-Laws, TM13:1991, L8 HS(G)274                |
| Fig 6.  | Overflow screen to prevent ingress by insects etc.   | Bye-Laws  |
| Fig 7.  | Warning Pipe   | Bye-Laws  |
| Fig 8.  | Outlet pipes should be as far away from the inlet as possible to encourage a uniform turnover of water.  | Bye-Laws, L8 HS(G)274                           |
| Fig 9.  | Maintenance drain valve at lowest point.   | L8 HS(G)274                                     |
| Fig 10. | WRC approved linings suitable for contact with drinking water.   | Bye-Laws, BS6700:1987                           |
|         | Cisterns greater than 5000 litre capacity shall be split into two sections to avoid interruption of supply during maintenance                              | BS6700:1987                                     |
|         | To restrict microbiological growth, it is important that stored potable water should be kept at as low a temperature as practical, ideally less than 20°C. | Bye-Laws, BS6700:1987<br>TM13:1991 L8 HS(G)274  |
|         | Materials of construction shall be those detailed in "The Water Filtering and Materials Directory".  | Bye-Laws, BS6700:1987<br>TM13:1991, L8 HS(G)274 |
|         | Every storage cistern shall be so placed and equipped that the interior can be inspected and cleaned.  | Bye-Laws, BS6700:1987, TM13:1991, L8 HS(G)274   |

## APPENDIX 20

### **RECOMMENDED WATER MANAGEMENT PROGRAMME**

#### **1. Mains Cold Water Service**

- |     |   |                  |
|-----|---|------------------|
| 1.1 | Test free residual chlorine concentration   | <b>Monthly</b>   |
| 1.2 | Obtain sample for independent laboratory analysis for total and faecal coliforms.     | <b>6-Monthly</b> |
| 1.3 | Service, maintain water softener and analyse hardness as CaCO <sub>3</sub> .          | <b>6-monthly</b> |
| 1.4 | Regeneration of water softener in order to backflush resin bed and retard stagnation. | <b>Weekly</b>    |

#### **2. Cold Water Tanks**

- |     |  |                  |
|-----|--|------------------|
| 2.1 | Monitor and record temperature at CWS tanks and selected CWDS outlets after 2 minutes running.   | <b>Monthly</b>   |
| 2.2 | Obtain samples for independent laboratory analysis for total and faecal coliforms from CWS tanks and selected CWDS outlets.            | <b>6-Monthly</b> |
| 2.3 | Inspect conditions in CWS tanks for presence of organic materials, vermin etc.   | <b>Annually</b>  |
| 2.4 | Chlorinate CWS tanks and CWDS outlets to the requirements of L8 (i.e. from at least one hour at 50ppm to at least two hours at 20ppm). | <b>Annually</b>  |

#### **3. Hot Water Services**

- |     |   |                  |
|-----|---|------------------|
| 3.1 | Monitor and record temperature at selected HWS outlets.   | <b>Monthly</b>   |
| 3.2 | Obtain samples for independent laboratory analysis for legionella pneumophila from HWS calorifiers and selected HWS outlets after 1 minute running. | <b>6-Monthly</b> |
| 3.3 | Chlorinate HWS outlets to the requirements of L8 (i.e.: from at least one hour at 50ppm to at least two hours at 20ppm).                            | <b>Annually</b>  |
| 3.4 | HWS calorifiers should be flushed to drain to remove build up of sludge scale in bottom of units.   | <b>6-Monthly</b> |
| 3.5 | Dismantle clean and disinfect shower heads and hoses.   | <b>Quarterly</b> |

#### **4. Heating System**

- 4.1 Analyse and monitor inhibitor concentration to ensure correct dosage and to retard the risk of sludge, corrosion etc.

**6-Monthly**

#### **5. Documentation**

An on-site logbook should be provided in accordance with the approved code of practice issued by the Health and Safety Commission with up to date details of the following:

- 5.1 A nominated person with clearly defined lines of communication and details of contractors.
- 5.2 The risk assessment, incorporating a simple description and plan of the system.
- 5.3 A written scheme of control and minimising risk.
- 5.4 A schedule of maintenance procedures.
- 5.5 Records of water temperatures, bacteriological counts, chlorination procedures, etc.