



Tay Road Bridge

## **TAY ROAD BRIDGE JOINT BOARD**

# **Policy Document for the Effective Control of Legionella within Premises**

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## **1. Policy Statement**

THE TAY ROAD BRIDGE JOINT BOARD recognises that it has a duty of care to employees, residents, visitors and the general public that may be affected by the operation and maintenance of all premises by the managed/owned organisation.

To ensure that the highest reasonably practical standards are maintained throughout the organisation all directives issued by the Health & Safety Executive, Department of Health and The British Standards Institution relating to the prevention and control of legionella will be adopted where relevant.

THE TAY ROAD BRIDGE JOINT BOARD will therefore ensure that sufficient resource is made available to ensure that water storage and distribution systems are operated and maintained in accordance with current legislation and guidance.

THE TAY ROAD BRIDGE JOINT BOARD shall take all reasonably practicable steps to ensure the risk of legionella proliferation and contamination is minimised. However, should a situation arise where legionella bacteria is detected within systems and the potential for an outbreak exists, this document contains clear and concise information relating to the remedial steps that should be undertaken.

## **2. Introduction**

Water services, in particular hot & cold water systems, evaporative cooling towers, humidifiers and showers are sensitive areas requiring close scrutiny with regard to maintenance methods and procedures. It is therefore essential that the measures detailed reflect current knowledge and best practice within the industry. It is important to note that THE TAY ROAD BRIDGE JOINT BOARD do not have any evaporative cooling towers.

Legionella is a naturally occurring bacteria and is common within environmental water sources such as rivers, lakes and reservoirs usually in low numbers.

Legionella bacteria can survive under a wide variety of environmental conditions but growth is most prolific between temperatures of 20 and 45°C. Due to the fact the bacteria is common within the environment it is almost certain that at some time they will enter the majority of manufactured systems such as cooling towers and distribution systems. In order to reduce the possibility of creating conditions in which the risk of exposure to legionella bacteria is increased, it is important to control the risk by introducing measures which:

- do not allow proliferation of the organisms in the water system
- reduce, so far as is reasonably practical, exposure to water droplets and aerosol

### 3. Legionnaires Disease

Legionnaires' disease is a potentially fatal form of pneumonia which can affect anybody, but which principally affects those who are susceptible because of age, illness, immunosuppression, smoking etc. Illness is caused by the bacterium *Legionella pneumophila* and related bacteria. Legionella bacteria can also cause less serious illnesses which are not fatal. The collective term used to cover the group of diseases caused by the legionella bacteria is legionellosis.

The disease is normally contracted by inhaling Legionella bacteria, either in tiny droplets of water in the form of aerosols or in droplet nuclei which are particles left after the water has evaporated and are contaminated with Legionella, deep into the lungs. Incubation period is between 2 – 10 days and not everyone who is exposed will develop symptoms of the disease.

The disease is usually diagnosed by a combination of tests. The organism may be cultured from the patients sputum, bronchial washings or lung tissue. Alternatively, tests are used to measure the presence of anti bodies in the blood and, increasingly, tests are available to measure specific antigens in the patients urine.

#### **4. Management Responsibilities**

The Tay Road Bridge has a duty under the Health and Safety at Work Act 1974 as both an employer provider of premises used by non employees and landlord regarding health & safety in connection with its undertaking.

In particular it should ensure that an appropriate regime for the proper design, installation and maintenance of water supply system on its premises. The management also recognises its responsibility to implement in full the codes of practice as defined in the Health and Safety Executive's Publication "The Control of Legionellosis bacteria in water systems (Approved code of practice & guidance) (L8).

To comply with these regulations the management has made an systematic assessment of risks to health and safety for their employees and others rising from activities.

These include the following:

- I. identify and assess sources of risk
- II. prepare a scheme for preventing or controlling the risk
- III. implement and manage precautions
- IV. implement a safe system of working
- V. keep records of the precautions implemented and will do so for each of the premises under our control

The Bridge manager of THE TAY ROAD BRIDGE JOINT BOARD has nominated in writing a Legionella team for advising on and monitoring Legionella policy for Legionnaires' disease.

A Nominated Person as required by L8, possessing the appropriate knowledge and training, has been nominated in writing by THE TAY ROAD BRIDGE JOINT BOARD to devise and manage the necessary procedures for the prevention of Legionnaires' disease. The Nominated Person has sufficient authority to ensure that measures are carried out effectively.

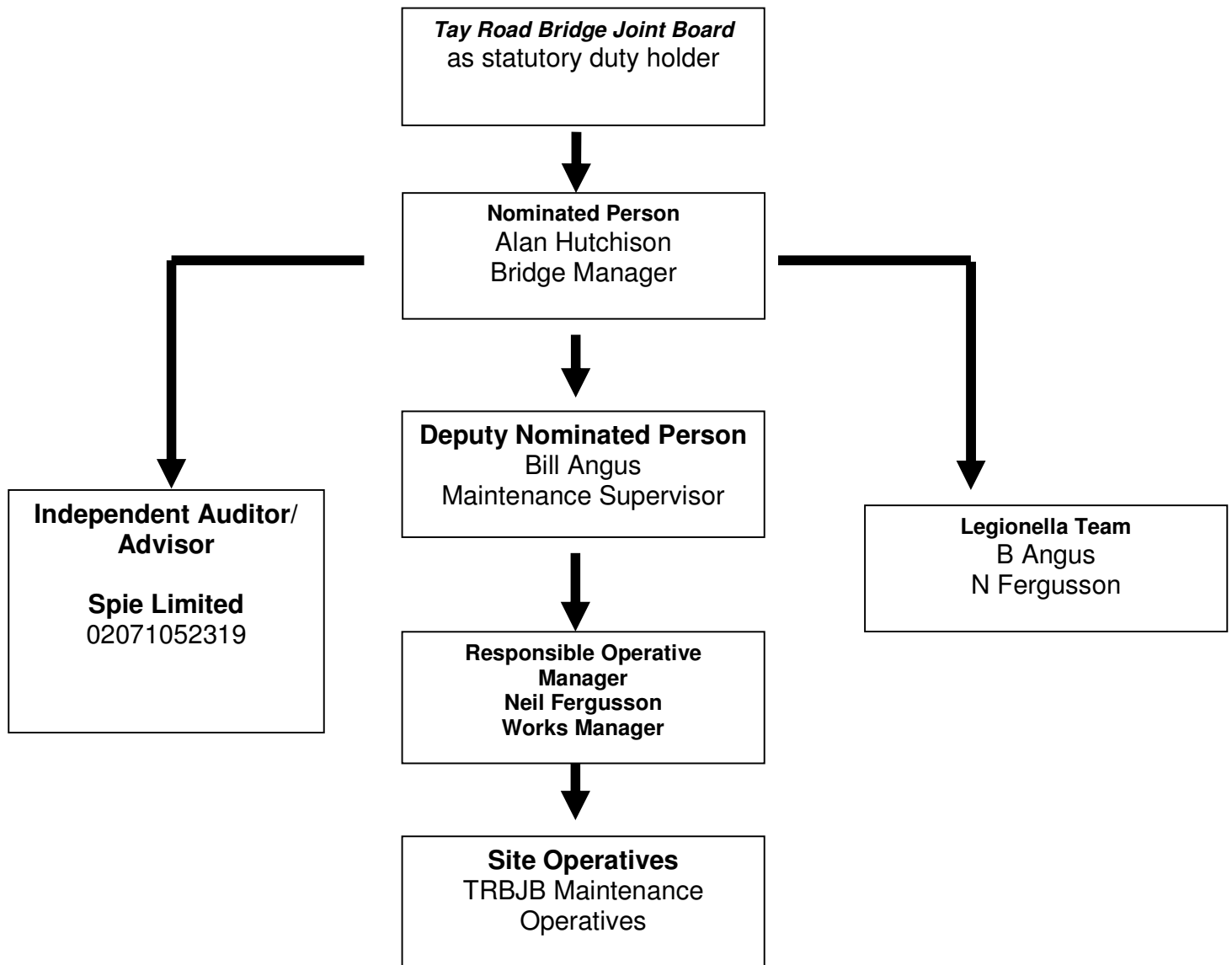
The Nominated Person also has a deputy, appointed in writing by THE TAY ROAD BRIDGE JOINT BOARD.

Definitions of responsibilities are as follows:

<b>Category</b>	<b>Definition</b>
Duty Holder	The organisation on whom the statutory duty falls THE TAY ROAD BRIDGE JOINT BOARD
Legionella Team (refer p7)	The team appointed to advise and monitor the infection control policy of Legionella
Nominated Person	The person appointed to take managerial responsibility and to supervise implementation of the policy for Legionella control
Deputy Nominated Person,	The person appointed as deputy to the Nominated Person
Site Operatives	The persons responsible for carrying out the tasks detailed in this policy and the precautionary measures detailed in individual site log books
Appointed Independent Auditor	The persons appointed to Audit operation of the log book, carry out tests and inspections, provide an overview of the system operation and measurements to support the precautionary measures
Responsible Operative Manager	The persons responsible for the implementation of the organisation's operational / maintenance issues in accordance with the policy

See Flow Chart – Page 7.

#### 4.1 Management Lines of Communication





## **Training**

Those who are appointed to carry out the control measures and strategies for the Control of Legionella will be suitably informed, instructed and trained and their suitability assessed. Their training will be to a standard that ensures that tasks are carried out in a safe, technically competent manner.

Regular refresher training is to be given and all records of training activities will be maintained. Although training is an essential element of competence, it will not be the only factor. Other elements such as experience, knowledge and personal qualities will be required to undertake the activities safely and in line with legislation.

All appointed specialists will be Code of Conduct Approved and produce evidence of competence for their employees working on the organisation's sites.

## **5. The Principles of the Risk Assessment**

A detailed assessment has been undertaken at all THE TAY ROAD BRIDGE JOINT BOARD sites where a significant risk exists, these include:-

- Office and Workshop facilities
- Any establishment where volumes of water are stored and the potential for droplet formation exists.

All risk assessments have been undertaken by persons who are competent, experienced and have been correctly trained to carry out these duties.

A full copy of the completed risk assessment will be held by THE TAY ROAD BRIDGE JOINT BOARD and will be accessible at all times.

The risk assessment should be reviewed at intervals not exceeding two years or if significant modifications are undertaken with regard to the system design or utilisation of the premises.

A site log book will also be produced and kept at the site it has been produced specifically for. The log book shall contain all information regarding the Risk assessment, maintenance, tests and any remedial works carried out on the water system at the site.

## **6.1 Legionella Risk Assessment**

A detailed inspection has been undertaken at each site, by a specialist contractor in accordance with (L8) commencing at the point of supply and following through to each outlet, including any hot or cold water storage, heaters and exchangers present.

All information gathered during the inspection has been formulated in a standard manner and stored and updated within the agreed log book document to ensure compliance with section 32 of the Approved Code of Practice produced by the Health and Safety Executive.

Legionella and TVC samples will be taken at representative points in order that the quality of water held within the system may be ascertained. All samples taken will be analysed within a UKAS accredited laboratory.

All remedial works carried out on a sites' water systems following either a risk assessment report, a maintenance report or carried out by an other contractor should be recorded and a report filed in the site log book for reference. The schematic drawings in the log book should also be modified to show the works carried out if of sufficient magnitude to effect the hot and cold water system layout.

**7. Maintenance (The following should be read in conjunction with Appendix 'A' – 'E' Pages 15 to 20, which gives more detail if work is to be undertaken)**

On completion of the Risk Assessment, a maintenance plan will be formulated by the Legionella Team with the following undertaken as a minimum to comply with the policy. It will be the responsibility of the Nominated Person to ensure that the maintenance plan is actioned and that all works carried out are recorded in each site specific log book. The upkeep of the site logs is the ultimate responsibility of the Nominated Person.

**Checklist hot and cold water services**

Frequency	Check	Standard to meet		Notes
		Cold water	Hot water	
Monthly	Sentinel taps (nearest, furthest and intermediate points from the feed tank or calorifier)	The water temperature should be below 20 °C after running the water for up to two minutes.	The water temperature should be at least 50 °C within a minute of running the water.	This check makes sure that the supply and return temperatures on each loop are unchanged, i.e. the loop is functioning as required.
Monthly	If fitted, input to TMV's on a rotational basis.		The water supply to the TMV temperature should be at least 50 °C within a minute of running the water.	One way of measuring this is to use a surface temperature probe.
Monthly	Water leaving and returning to calorifier.		Outgoing water should be at least 60 °C, return at least 50 °C.	If fitted, the thermometer pocket at the top of the calorifier and on the return leg are useful points for accurate temperature measurement. If installed, these measurements could be carried out and logged by a building management system.
Quarterly	Dismantle, clean and descale shower heads.			
Quarterly	Cold Water Storage tanks	Carry out temperature checks		Check temperature at inlet valve and general cleanliness of tanks.
Six monthly	Incoming cold water inlet (at least once in the winter and once in the summer).	The water should preferably be 20 °C at all times		The most convenient place to measure is usually at the ball valve outlet to the cold water storage tank.
Annually	Water System To be carried out by independent Auditor/Adviser			Carry out full inspection of the water system and report on any changes or defects. Update schematics if necessary.
Annually	Cold water storage tanks			Visually inspect and carry out remedial work where necessary.
Annually	Representative number of taps on a rotational basis.	The water temperature should be 20 °C after running the water for two minutes.	The water temperature should be at least 50 °C within a minute of running the water.	This check makes sure that the whole system is reaching satisfactory temperatures for legionella control.
Annually	Calorifier flush and sample		Hot water sample also ensure correct temperatures are present.	Set up flexible hose to drain cock flush and sample.
2 Yearly	Risk Assessments	Review risk assessments every 2 years and update accordingly, incorporating areas of remedial/maintenance works required.		

## **8. Audit**

On an annual basis an audit of compliance for each site will be carried out. The annual site audit reports will be reviewed by the Control Team, the Nominated Person and the Specialist, remedial actions to be undertaken will be recorded in the meeting minutes.

Areas to be reviewed will be as follows, but not limited to:

1. Change of system or usage of site
2. Compliance with planned preventative maintenance programme
3. Outstanding remedial actions
4. Changes in legislation

Relevant documentation relating to the audit of each site shall be held centrally.

Any recommendations following the completion of annual audit should be held centrally and copied into the site specific log book.

## 9. Actions to be taken if Legionella is Detected

In the case of a positive test result for Legionella the following actions are to be taken.

1. Notification of the positive result to the Nominated Person, dependant upon the magnitude of the results the following actions should be taken:

Legionella Bacteria (cfu/litre)	Action Required
Less than 100	<ul style="list-style-type: none"><li>▪ System should be re-sampled to establish extent of colonisation</li><li>▪ Control measures and risk assessment should be reviewed to identify any remedial action required</li></ul>
More than 100 but less than 1000	<ul style="list-style-type: none"><li>▪ System should be re-sampled to establish extent of colonisation</li><li>▪ If serogroup 1 to 14 is identified the system should be treated immediately</li><li>▪ Control measures and risk assessment should be reviewed to identify any remedial action required</li></ul>
More than 1000	<ul style="list-style-type: none"><li>▪ The system should be treated immediately</li><li>▪ Control measures and risk assessment should be reviewed to identify any remedial action required</li></ul>

2. Undertake remedial actions as described in Appendix E Cleaning and Disinfection of Domestic Water Systems as a minimum

**A suitably qualified person or appointed specialist should carryout any remedial actions.**

3. On completion of the remedial action, water samples should be taken from the system to confirm the effectiveness of the procedure
4. A comprehensive record should be kept including test results and details of remedial works undertaken

## **10. Actions in the Event of a Legionella Outbreak**

An outbreak is defined by the Public Health Laboratory Service, (PHLS) as two or more confirmed cases of legionellosis occurring in the same locality within a six month period. Location is defined in terms of geographical proximity of cases and requires a degree of judgement.

It is the responsibility of the Proper Officer for the declaration of an outbreak. The Proper Officer is appointed by the local authority under public health legislation and is usually a Consultant in Communicable Disease Control (CCDC).

In the event of a suspected outbreak within THE TAY ROAD BRIDGE JOINT BOARD premises the following procedure should be followed by the Proper Officer:-

1. Notify the Nominated Person with overall managerial responsibility
2. Notify Health and Safety Enforcing Authority - HSE. It should be noted that only the Proper Officer can officially declare an outbreak.
3. Form an internal incident control team, including an individual with overall responsibility.
4. Shutdown area suspected of generating outbreak.
5. Undertake detailed investigation in conjunction with EHO and appointed specialist.

## **Appendix 'A'**

### **Temperature monitoring**

The responsible person at each site shall be responsible for ensuring that temperatures are monitored in accordance with the maintenance regime.

Temperature monitoring will only be undertaken by staff that have been specifically trained to carry out such duties.

The equipment used to undertake temperature monitoring shall be specifically designed for that purpose and should be calibrated at periodic intervals in order to ensure its accuracy.

The temperature at outlets shall be measured by opening the fitment and placing the monitoring device in the stream of water. Any changes in temperature should be observed and after a specific period (see checklist) a record made of the temperature displayed. If the required standard (below 20°C for cold, above 50°C for hot) has not been attained when monitoring, monitoring shall continue until the standard is achieved and a written note made of the exact time required. The test should last for no more than 5 minutes, if the outlet fails to meet the required standard it shall be clearly identified on the sites report.

When the test has been completed the area shall be left in the condition it was found, in that all splashes around the area shall be removed. If any area requires cleaning as a result of splashes or spillage then that area shall be clearly identified as a 'slippery surface' until such time that the area has dried.

Temperatures within storage cisterns and tanks shall be monitored by inserting an appropriate measuring device into the water. Before the device is inserted into the water it shall be cleaned and sterilised by employing 1000mg/l chlorine solution. All results shall be recorded on the site report and in the site log book, with any non-compliance's clearly identified. Any insulation or lids, which have had to be removed in order to gain access, shall be replaced into the correct manner.

Temperatures from calorifier deliveries can often be observed from fixed gauges, these shall NOT be taken as the true temperature; these readings shall be verified with calibrated test equipment. Any insulation, which has to be removed in order to carry out these checks, should be replaced in the correct manner. Insulation suspected of containing asbestos shall be tested prior to any works. If insulation is to be removed it shall be carried out under controlled conditions and in accordance with "The Control of Asbestos at Work Regulations 2002, and THE TAY ROAD BRIDGE JOINT BOARD Policy.



## **Appendix 'B'**

### **Calorifier Flush and Sample**

The responsible person on each site shall be responsible for ensuring that calorifiers are flushed and sampled in accordance with the maintenance regime.

Flushing and sampling of calorifiers will only be undertaken by staff who have been specifically trained to carry out such duties.

Flexible hose will be connected and set up between the calorifier 'drain cock' and the nearest suitable drain.

The drain will then be run until the discharge is free of all debris.

The flow of water should then be stopped and the flexible hose removed.

The drain cock should then be 'flamed' before legionella and bacteriological samples are taken.

All samples taken should be clearly identified with the following information; location, date, time and the sampler's identity. These samples should then be transferred to a UKAS accredited laboratory for analysis.

Any spillage or splashes should be removed and the area left in the condition that it was found. If any area has to be mopped as a result of splashes or spillage then the area shall be clearly identified as a 'slippery surface' until such time that it has dried.

## **Appendix 'C'**

### **Removal, Cleaning and Sterilisation of Shower Heads**

The responsible person at each site shall be responsible for ensuring that all shower heads are cleaned and sterilised in accordance with the maintenance regime.

Removal, cleaning and sterilisation of showerheads shall only be undertaken by staff who have been specifically trained to carry out such duties.

Before any cleaning or sterilisation can be carried out authorised access must be obtained from the responsible person in charge. On obtaining this all showerheads that require cleaning and sterilisation shall be isolated and labelled 'chlorination in process do not use' as a safety precaution.

All showerheads shall be sterilised on site.

Where practicable the showerheads will be dismantled to aid the cleaning and sterilisation process involved.

A solution of approved de-scalent and water will be made up to the manufacturers recommended concentration and the shower heads will then be treated to remove any scale formation.

On completion of this process the showerheads will then be flushed thoroughly to remove any treated water from them.

All component parts shall be submerged in a solution contain not less than 1000 ppm free chlorine residual for a period of not less than ten minutes.

On completion of this process the showerheads will be thoroughly flushed to remove any chlorinated water from them. If the showerhead has been dismantled it shall be reassembled.

The chlorinated water will be dechlorinated using Sodium Bisulphite before discharging it to the drain.

The showerheads will be refitted and tested on site.

Any warning notices will be removed after the test has been carried out.

Alternative sterilisation methods utilising appropriate chemicals and procedures in accordance with in BS6700 may be used when carrying out a clean and sterilisation of a tank or system. Method statements and COSHH data sheets are to be provided to THE TAY ROAD BRIDGE JOINT BOARD for information and kept on file centrally.

## **Appendix 'D'**

### **Inspection and Sampling of Storage Tanks**

The responsible person at each site will be responsible for ensuring that storage tanks are inspected and sampled in accordance with the planned preventative maintenance regime.

Inspection and sampling of storage tanks shall only be undertaken by staff who have been specifically trained to carry out such duties.

Each storage tank should be visually inspected internally, a written record of this inspection shall be made. Photographic records can also be taken if it aids the process.

Legionella and TVC samples should be taken from the tank by utilising sterilised silicon tube and following BS7592 (sampling for legionella organisms in water and related materials).

All samples taken should be clearly identified with the following information; location, date, time and samplers identity. These samples should then be returned to a UKAS accredited laboratory for analysis.

The chlorine residual of water stored within the tank should be measured and recorded.

The temperature of water stored within the tank should be measured and recorded.

Any insulation, which is removed to gain access, should be replaced in the correct manner.

## **Appendix 'E'**

### **Cleaning and Sterilisation of Domestic Water Systems**

The responsible person at each site will be responsible for ensuring that all works are completed in accordance with the planned preventative maintenance programme and in the event of legionella bacteria being detected within the system.

Cleaning and sterilisation will only be undertaken by staff that have been specifically trained to carry out such duties.

Cleaning and sterilisation operations should follow unsatisfactory inspections or analysis.

This work can call for staff to work in areas defined as 'confined spaces', therefore requiring the use of atmospheric monitoring equipment, breathing apparatus and the necessary authorisation. All staff undertaking the cleaning and sterilisation of storage tanks will have received formal training in confined space working and be authorised to wear breathing apparatus.

Prior to cleaning the storage tank shall be isolated from the distribution system and drained. Any debris removed shall be packaged and removed in a safe manner. If pumps or vacuums are employed the discharge should be directed to a drain which is capable of handling the capacities involved.

When cleaning operations have been completed the tank surfaces should be immersed water containing a free chlorine residual of at least 50mg/l free chlorine residual.

The tank shall then stand for 1 hour before the free chlorine residual is checked again; if it has fallen below 30mg/l to procedure shall be repeated. If the free chlorine residual is 30mg/l or above the water within the tank should be neutralised before it is allowed to drain.

The tank will then be filled with fresh water (potable supply) and the free chlorine residual checked (ensure level is commensurate with potable supply). The tank may then be put back into service.

Legionella and TVC samples should then be taken from the tank by utilising sterilised silicon tube and following BS7592.

All samples taken should be clearly identified with the following information; location, date, time and the sampler's identity. These samples should then be returned to a UKAS accredited laboratory for analysis.

Any insulation or covers, which have been removed to facilitate this work, shall be replaced in the correct manner.

Where the sterilisation process is to be extended to the whole of the distribution system all site staff should be made aware that the water will not be fit for use until further notice. Each outlet shall be temporarily labeled in order to clearly identify that water should not be used. The chlorination should be applied to the tank/cistern and be drawn through the system, when 50mg/l free chlorine is detected at each outlet it shall then be allowed to stand for 1 hour before the free chlorine residual is measured again.

If the free chlorine is 30mg/l or above the water within the tank should be neutralized using sodium bisulphite. The neutralized water should be then drawn through the system to remove the chlorine. The tank should then be drained and filled with potable water and the free chlorine residual checked. The system may then be put back in service and warning notices removed. Samples should be taken from sentinel taps to ensure the sterilization process has been successful.

Any spillage or splash shall be removed and the area left in the condition that it was found. If any area is mopped as a result of splashes or spillage then that area shall be clearly identified as a 'slippery surface' until such a time that the area has dried.

Alternative sterilisation methods utilising appropriate chemicals and procedures in accordance with BS6700 may be used when carrying out a clean and sterilisation of a tank or system. Method statements and COSHH data sheets are to be provided to THE TAY ROAD BRIDGE JOINT BOARD for information and kept on file centrally.