

### ***REVISIONS TO DS63 WATER RETICULATION DESIGN STANDARD***

All projects with a start-up meeting from 01 January 2025 will be required to comply with new disinfection requirements. This new process is outlined below.

## **Disinfection of Water Reticulation**

### ***Disinfection Summary***

A summary of the sequential steps in the disinfection process is as follows:

- a) Introduce disinfection water containing 4.0-6.0 mg/L free chlorine into the entire network, including all service connections;
- b) Sample to show disinfection water has been fully distributed throughout the new pipe network;
- c) Retain disinfection water in pipes for a minimum of 24 hours;
- d) Sample to verify there has not been excessive free chlorine consumption at the end of the disinfection period;
- e) Finalise any pressure testing requirements that are being conducted simultaneously with the disinfection process; and
- f) Flush mains and sample to show that that free chlorine residual is back within normal potable water requirements.

The safety risks of the entire disinfection process shall be evaluated and mitigated including, but not limited to, ensuring that all chemicals and pressurised chemical dosing lines are handled and operated safely, such as being contained within a robust transparent enclosure which creates a barrier to mitigate the risk of someone being sprayed with chemicals from, for example, a rupture or hose disconnection.

Refer to the following sections for more detail on the requirements for the disinfection process.

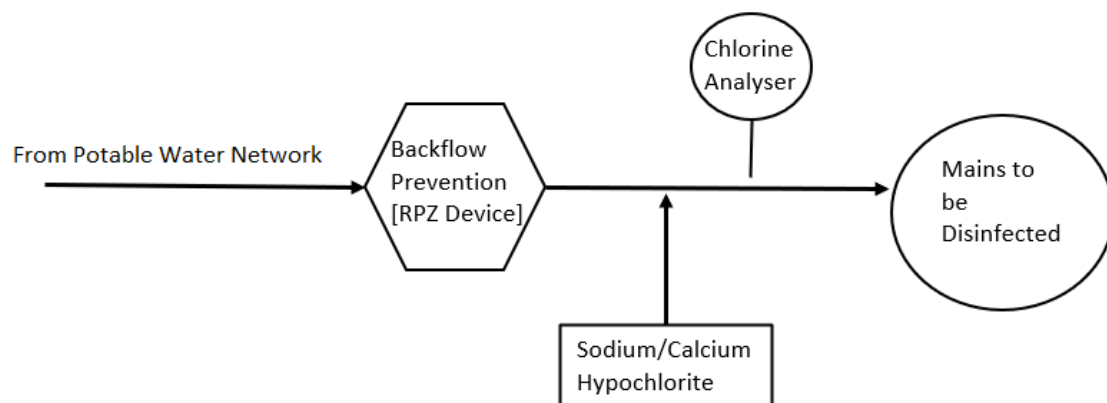
### ***Disinfection Requirements***

The date of disinfection must be after the subdivision earthworks are completed and as close as reasonably practical to FTI in order to mitigate the risk of damage of the pipe and introduction of contaminants from breakages.

The following disinfection requirements must also be met:

- a) All reticulation infrastructure shall be successfully disinfected including all service connections;
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- b) Reticulation shall be disinfected using disinfection water, comprised of either calcium or sodium hypochlorite added to potable water to produce clean water with a free chlorine concentration of between 4mg/L and 6mg/L;
- c) Disinfection water shall be pre-mixed before it enters the reticulation system to yield the appropriate free chlorine concentration. This can be via dosing of disinfectant solution into a spool-piece, where it is mixed prior to entering the reticulation. Disinfection water must be thoroughly mixed before entering the reticulation pipework and shall not be mixed “in-situ” within the reticulation pipework. The use of an intermediate batching tank to make up chlorination solution is only permitted where it is demonstrated to Water Corporation to be cleaned, disinfected, uncontaminated and suitable for containing potable water. The chlorine concentration of the disinfection water at time of introduction into the main must be monitored and recorded;



- d) Makeup water must be potable water supplied from connection to a potable main. Use of bore/raw water is not permitted.
- e) A suitable backflow prevention device (e.g. RPZD) must be installed at the connection to the potable water connection point to mitigate the risk of contamination of the potable water system.
- f) Disinfection water must be introduced through the entire system, including all service connections;
- g) Once disinfection water has been introduced through the network, the disinfection water must be sampled to demonstrate the required free chlorine concentration of between 4 mg/L and 6 mg/L has been achieved. Sampling must thus be done on:
- I. at least 1 in every 5 service connections to the main;
  - II. a minimum of 2 service connections for works that involved <10 service connections; and
  - III. at every end of the main.

- h) Sample locations must be evenly spaced as much as practical to obtain a representative analysis of the system.
  - i) The reticulation must hold the disinfection water for a period of at least of 24 hours after the main has been filled;
  - j) Following the disinfection period outlined in part i), the water used for disinfection must be sampled to ensure that there is sufficient residual chlorine left in the water to indicate that the pipes are not contaminated. Accordingly, water must be sampled at the end of each main and shown to have a free chlorine residual of at least 1.0mg/L. Sampling must occur as soon as practical after the minimum 24 hour disinfection period.
  - k) If any sample of disinfection water does not return an acceptable chlorine residual as outlined in parts (b), (g) and (j), then this must be documented and the disinfection procedure must start again from the beginning. Should a second disinfection attempt fail, acceptance of the proposed corrective action/s must be sought from Water Corporation
  - l) Following successful disinfection of the mains, all pipes - including all service connections - must be flushed as soon as practical using potable water so as to prevent disinfection water being left in the system longer than necessary.
  - m) After flushing, it must be demonstrated that the remaining water in the main is potable and does not contain elevated levels of free chlorine (i.e. free chlorine concentration must be between 1.5mg/L and the chlorine residual concentration in the adjoining potable system). This must be done at the same locations as those outlined in part (g);
  - n) Should a sample of flushing water exceed the allowable chlorine residual, then that line must undergo further flushing until the free chlorine is within the allowable range. The occurrence of the failed sample shall be documented. Unlike sample results of the disinfection water, a failed sample of flushing water does not require the disinfection process to be restarted from the beginning;
  - o) Disposal of super-chlorinated water must be done in accordance with environmental regulations;
  - p) Free chlorine analysis can be done using a suitable calibrated digital colorimeter. Methods alternative to digital colourimetry for analysing for free chlorine require prior Water Corporation approval before they can be used. Methods such as test strips or visual comparison against colour charts are not considered suitable methods due to among other things, their subjectivity in interpretation results.
  - q) A test record sheet must be completed and maintained to demonstrate compliance with the disinfection requirements. The test record sheet must at a minimum contain:
    - I. Concentration of free chlorine in disinfection water prior to start
    - II. Time and date disinfection water was first introduced into the main
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- III. Time and date the main was first filled with disinfection water
- IV. Post-disinfection sampling time and date
- V. Flushing start time and date
- VI. Plan of reticulation network showing the location of each sampled location following parameters at all sample locations:
  - i. Free chlorine concentration:
    - 1. immediately after introduction
    - 2. immediately after disinfection period
    - 3. after flushing
- VII. Maximum free chlorine concentration measured in entire system
- VIII. Minimum free chlorine recorded after disinfection in entire system
- IX. Details of instrument used to read free chlorine and date of last calibration
- X. Maximum detectable free chlorine concentration the equipment can detect
- XI. Whether the disinfection process has passed or failed

### Link-in Disinfection

It is not possible to disinfect the short section of link-in pipework that connects the new reticulation to existing network using conventional disinfection methods as it is directly connected to the existing network. In this case, the internal surfaces the link-in pipework and fittings shall be fully sprayed, brushed, mopped or swabbed with a sodium hypochlorite solution containing free chlorine residual of 200 mg/L immediately prior to installation.

This Update Bulletin is a summary only of major changes to DS63 and is not a substitute for the Standard. The reader shall refer to DS63 for a full account of changes made.

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