

PART 6: WATER SUPPLY

- 6.1 Scope – No change**
- 6.2 General requirements – No change**
- 6.2.1 Objectives – No change**
- 6.2.2 Referenced documents and relevant guidelines – No change**
- 6.3 Design – No change**
- 6.3.1 Design life – No change**
- 6.3.2 Design tolerance – No change**
- 6.3.3 Impact of consequential damage – No change**
- 6.3.4 Future system expansion – No change**
- 6.3.5 Electrical earthing of water services – No change**
- 6.3.6 Design responsibilities – No change**
- 6.3.6.1 Territorial authority – No change**
- 6.3.6.2 The designer – No change**
- 6.3.7 Pipe selection – No change**
- 6.3.7.1 Sizing of mains – No change**
- 6.3.7.2 Pipe class – No change**
- 6.3.7.2.1 Design pressure (head) - maximum – No change**
- 6.3.7.2.2 Minimum pipe class – No change**
- 6.3.7.2.3 Nominated pipe class – No change**
- 6.3.7.2.4 Pumped mains – No change**
- 6.3.7.3 Pipe material – No change**
- 6.3.8 Fire flow – No change**
- 6.3.8.1 Fire protection services – No change**
- 6.3.8.2 Allowable operating pressures (heads) – No change**
- 6.3.9 Hydraulic design – No change**
- 6.3.9.1 General – No change**

6.3.9.2 Network analysis

Add the following paragraph:

Within the area of Wanganui the developer will provide key design information to allow the Wanganui network model to be analysed, if necessary, at the developers expense.

6.3.9.3 Peak flows

Add the following sentence to the end of the clause:

Cross check the results from 6.3.9.3 with 6.11.4 (as modified).

6.3.9.4 Head losses – No change**6.3.9.4.1 Hydraulic roughness values – No change****Table 6.1 Hydraulic roughness values – No change****6.3.9.5 Pressure zones – No change****6.3.9.6 Design (head) requirements – No change****Figure 6.1 Conceptual hydraulic operation of a gravity main – No change****6.3.9.6.1 Design pressure – No change****6.3.9.6.2 Operating pressure/working pressure – No change****6.3.9.6.3 Service pressure – No change****6.3.9.7 Flow velocities – No change****6.3.9.8 Surge analysis – No change****6.3.9.8.1 Maximum allowable operating pressure – trunk mains – No change****6.3.9.8.2 Minimum allowable operating pressure – No change**

6.3.9.9 System test pressure

Replace paragraph with the following new paragraph:

The system test pressure is the pressure of hydrostatic testing (static), applied to test the integrity of a pipeline system. The system test pressure generally exceeds the actual design pressure of the system. The excess pressure is accommodated by the inherent design safety factor.

6.3.9.10 Temperature rerating of plastic pipes – No change**6.3.10 Layout of water mains – No change****6.3.10.1 General – No change****6.3.10.2 Mains layout – No change****6.3.10.3 Water mains in easements – No change****6.3.10.4 Types of system configuration – No change****6.3.10.5 Water mains near trees – No change****6.3.10.6 Shared trenching – No change****6.3.10.7(g) Rider mains and duplicate mains**

Delete clause.

6.3.10.8 Contaminated sites – No change**6.3.10.9 Crossings – No change****6.3.10.10 Crossings of creeks or drainage reserves – No change****6.3.10.11 Location marking of valves and hydrants – No change****6.3.11 Structural design – No change****6.3.11.1 General – No change****6.3.11.2 Structural consideration – No change****6.3.11.2.1 Internal forces – No change****6.3.11.2.2 External forces – No change****6.3.11.3 Geotechnical investigations – No change****6.3.11.4 Pipe selection for special conditions – No change****6.3.11.5 Above-ground water mains – No change****6.3.11.6 Trenchless technology – No change****6.3.11.7 Embedment – No change****6.3.11.7.1 Pipe cover**

Add the following paragraph:

Pipe laying depths:

- 900mm min cover for service mains
- 750mm min cover for rider mains
- 900mm min cover for road crossings

6.3.11.7.2 Trench width

Replace clause with the following:

Pipe trench width design considerations shall be based on the minimum side clearances detailed in Appendix A Drawing CM-WDC-012.

6.3.11.8 Pipeline restraint – No change**6.3.11.8.1 Thrust blocks – No change****6.3.11.8.2 Anchor blocks – No change****6.3.11.8.3 Restrained joint water mains – No change****6.3.11.9 Bulkheads – No change****6.3.12 Reservoirs and pumping stations – No change****6.3.13 Obstructions and clearances – No change****6.3.13.1 Underground services – No change****6.3.13.2 Clearance from underground services – No change****Table 6.2 Clearances between water mains and underground services – No change**

6.3.13.3 Clearance from structures – No change**Table 6.3 Minimum clearance from structures – No change****6.3.13.4 Clearance from high voltage transmission facilities – No change****6.3.13.5 Deviation of mains around structures – No change****6.3.14 Water quality – No change****6.3.14.1 Materials – No change****6.3.14.2 Prevention of back siphonage – No change****6.3.14.3 Water age – No change****6.4 Valves – No change****6.4.1 General**

Replace the last paragraph with the following new paragraph:

Typical valve installation and chamber details are shown in the standard drawings in Appendix A.

6.4.2 Valve types – No change**6.4.2.1 Gate valves – No change****6.4.2.2 Butterfly valves – No change****6.4.2.3 Stop valves for reticulation mains – No change****6.4.2.3.1 Stop valves – location and arrangements – No change****6.4.2.3.1.1 General – No change****6.4.2.3.1.2 Branch mains**

Replace paragraph 1 with the following new paragraph:

Stop valves shall be located on branch mains adjacent to the through water main. The type of joint to be used (Soc-Soc, FI-Soc or FI-FI) shall be based on the required security of the water mains. For supply mains or reticulation mains <DN250, a tee with a flanged branch and flanged valve shall be used (see Appendix A Drawings WS-WDC-001 and WS-WDC-002).

6.4.2.3.1.3 Pressure zone dividing valves – No change**6.4.2.3.1.4 Secure service connections – No change****Figure 6.2 Branch valve adjacent to main – No change****Figure 6.3 Valve and hydrant combinations for pressure zone dividing valves – No change****Figure 6.4 Secure connection – No change****6.4.2.4 Pressure reducing valves (PRV) – No change****6.4.2.5 Air valves (AV) – No change****6.4.2.5.1 Installation design criteria**

Replace paragraph 5 with the following:

The normal size of the large orifice of air valves shall be DN50 for installation on mains.

6.4.2.5.2 Air valves location – No change**6.4.2.6 Scours and pump-out branches – No change****6.4.2.6.1 Scour sizes – No change****Table 6.4 Minimum scour size – No change****6.4.2.6.2 Scour locations – No change**

6.4.2.6.3 Flushing points

Replace paragraph with the following new paragraph:

Flushing points should be installed at dead ends on any main or ridermain.
(see Appendix A drawing WS-WDC-002). Flushing point can be a fire hydrant.

6.4.3 Add the following new clause**Toby**

Tobies to be positioned outside the vehicle crossing, in order to facilitate maintenance.

6.5 Hydrants – No change**6.5.1 General – No change****6.5.2 Hydrants for fire fighting – No change****6.5.3 Hydrant installation – No change****6.5.4 Hydrants for reticulation system operational requirements – No change****6.5.5 Hydrants at ends of mains – No change****6.6 Connections – No change****6.6.1 Connection of new mains to existing mains – No change****6.6.2 Property service connections**

Add the following clause:

See Appendix H for property connection sizes.

Add the following clause:

High risk connection

Specify RPZ Backflow Preventer at road reserve boundary in accordance with Council's Standard detail. See drawing WS-WDC-010 in Appendix A.

6.7 Termination points – No change**Figure 6.5 Elimination of termination points – No change****Figure 6.6 Looped and link principal mains – No change****6.7.1 Permanent ends of water mains – No change****6.7.2 Temporary ends of water mains – No change****6.8 Bends and tees – No change****6.9 System review – No change****6.10 Construction of pipelines**

Add the following new paragraph before 6.10.1:

Construction shall be in accordance with WDC's specifications.

6.10.1 Excavation – No change**6.10.2 Bedding – No change****6.10.3 Backfilling and reinstatement – No change****6.10.3.1 Carriageways – No change****6.10.3.2 Berms**

Replace paragraph with the following new paragraph:

Pipe trenches under grass berms and footpaths shall be backfilled in accordance with the requirements of Appendix A Drawing CM-WDC-001.

6.10.3.3 Detector tape

Delete clause:

Detector tape not used by WDC.

6.10.3.4 Tracer wire

Add the following new paragraph:

Tracer wire to be used for all pipes installations.

6.10.4 Pressure testing of water mains

Replace paragraph with the following new paragraph:

Before a new water main is connected to the existing reticulation, a successful pressure test shall be completed. The test shall be carried out as specified in Appendix B, in the presence of the authorised officer.

6.10.5 Discharge of testing water from pipelines – No change**6.10.6 Disinfection of water mains – No change****6.10.7 Discharge of water containing chlorine from pipelines – No change****6.11 Means of compliance with this Standard – No change****6.11.1 Standard pipe sizes – No change****6.11.2 Minimum pipe sizes – No change****6.11.3 Allowable operating pressures (heads) – No change****Table 6.5 Operating pressure limits – No change****6.11.4(a) Minimum flows**

Replace clause (a) with the following new clause:

(a) 15L/min for normal residential sites;

6.11.5 Minimum water demand

Add the following at the end of the clause:

Refer 6.3.9.3.

6.11.6 Sizing of mains – No change**Table 6.6 Empirical guide for principal main sizing**

Add the following Note to the table:

Note: The "Rural Residential" column does not apply to Wanganui.

Table 6.7 Empirical guide for sizing rider mains – No change**6.11.7 Reticulation layout – No change****6.11.8 Stop valve spacing criteria – No change****Table 6.8 Stop valve spacing criteria – No change****6.12 Add the following new clause****Rural Settlements**

All rural scheme users are advised to have 24 hours on site storage. These settlements generally do not have fire fighting capability. They are on restricted supply (Flow rate to property is controlled, based on land area and land use). Backflows are installed at each connection. Scheme rules vary from one scheme to another.

It should be noted in some rural settlements the servicing of subdivisions may be limited by the available supply from the water source and reticulation.

6.13 Add the following new clause

Storage

Where storage is required for domestic purposes, a days storage based on 500 litres/head/day shall be provided.

For industry it is recommended that a days water usage be provided as storage.

6.14 Add the following new clause

Pump stations

Requires specific approval with regard to design, operation, maintenance, safety and compatibility.

Pumps shall be Variable Speed Drive controlled.

Each pump station shall have a standby pump in addition to the duty pump/s.

Pumps, control and telemetry system shall be compatible with other pump stations operated by WDC.