matamata piako district council





Standard Technical Specifications
Part 6: Water Supply

Section A: Miscellaneous

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council.

2.0 Application

This part applies to steel, ductile, PVC and MDPE pipes.

3.0 Street openings

For any work located in a designated road reserve, a corridor access permit will be required.

All excavations in road reserves shall comply with the requirements of the MPDC Standard Technical Specifications for Roading.

All work within the road reserve shall comply with the National Code of Practice for Utilities' Access to the Transport Corridors".

4.0 Depth of water mains

All principal mains and rider mains shall have the following minimum cover. Greater depths may be required by the specific design of the system:

Under grass berms and footpaths:
- Principal mains 750 mm
- Rider mains 500 mm

Under carriageways:
- Principal mains 900 mm
- Rider mains 600 mm

The sections of main adjacent to a carriageway crossing shall be gradually deepened, to allow the required cover under the carriageway without the provision of vertical bends. Similar provision shall be made to ensure the necessary cover over valve and hydrant spindles.

Service connection pipes shall have a minimum cover of 350 mm.

5.0 Backfill, compaction and reinstatement

Refer Clause 5.4 of Section C of this Specification.

Compaction test results (or substituted scala penetrometer tests) shall be submitted to Council for approval by appending test results to the QA form Checklist 6.2.

6.0 Testing

Before joints are covered, but after anchor blocks are completed, each section of the reticulation, together with all specials and fittings connected thereto shall be tested in the presence of the Engineer or Council representative.

For Cast Iron, Concrete Lined Spiral Steel, MPVC and OPVC pipes the following shall apply:

The test shall be carried out, and all necessary apparatus supplied, by the developer.

Apply a test pressure of 1400 kPa measured at the lowest point of the section under test, or 1.5 times the working pressure at any point in the system, whichever is the greater.

Maintain test pressure for a period of 15 min.

Check for obvious leaks and during the period of the test, the leakage shall not exceed one litre per ten millimetres of pipe diameter per kilometre length of pipeline per hour.

Before arranging connection to the existing reticulation, the Engineer or Council's representative may require a similar test after completion of backfilling and any other adjoining works which may affect the water reticulation.

For HDPE and MDPE > 63 OD, the following shall apply:

The test shall be carried out, and all necessary apparatus supplied, by the developer.

Ensure that all air is vented from the pipe to be tested

Apply a test pressure of 1100 kPa, or 1.5 times the rated pressure whichever is lower;

Maintain pressure for 30 minutes by additional pumping if required;
Check for obvious leaks;

After 30 minutes reduce pressure rapidly by bleeding water from the system to a nominal pressure of 200 kPa;

Close control valve to isolate the installation;

Record pressure readings at convenient intervals for 50 minutes;
If the pressure does not rise, or falls after an initial rise, a leak must be suspected.

The pressure shall be maintained for a period of 60 minutes without makeup pressure and during the period of the test, the test section should show no evidence of leaks and is allowed a max of 10% loss in pressure due to expansion of the pipe.

Before arranging connection to the existing reticulation, the Engineer or Council's representative may require a similar test after completion of backfilling and any other adjoining works which may affect the water reticulation.

7.0 Water mains to be kept charged

After any water main has been laid, tested and disinfected, it shall be kept continually charged with water, and under pressure. If the permanent connection to the existing reticulation is delayed, a temporary small diameter connection shall be made from the existing reticulation. The pressure must be maintained while other underground services are being laid in the vicinity of the main.

8.0 Connection to existing water reticulation

The physical connection to the existing water reticulation can only be carried out once the pressure and bacteriological test results have been submitted to, and approved by Council. The connection procedure shall be carried out in accordance with Section F of this Specification.

Connections to existing watermain are to be carried out by council approved personnel only, unless otherwise agreed.

.

9.0 Abandoned watermain

In the event that a watermain is decommissioned, all removable valves, hydrants, fittings and surface boxes shall be recovered by the Contractor. The items shall be recycled, either by delivery to Council for reuse or by delivery to a scrap metal merchant.

The Contractor shall provide Council with an opportunity to inspect the removed items and direct which recycling option is to be taken. The Contractor shall deliver the items for recycling as directed by Council. In preparing as-built plans for the project the Contractor shall include detail as to:

a) which valves and hydrants were removed, and
b) which sections of watermain were decommissioned.

Section B : Installation of steel pipelines

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council.

2.0 Scope

This specification covers the laying of concrete lined spiral steel (CLSS) pipes for use within the Matamata Piako District Council Water Reticulation network and is to be read in conjunction with the following documents:

Drawings pertaining to the main to be laid (including service drawings)
Manufacturers instructions for the handling, storage and laying of the pipe being used.

3.0 Materials

Acceptable materials are listed in Section J of this Specification.

4.0 Handling and storage

Procedures for the handling and storage of pipes (and pipe fittings) shall be as recommended by the pipe manufacturer.

Notwithstanding the above, the following shall apply:

No hooks, wire slings or chains shall be used to lift the pipes.
Pipes larger than 450mm in diameter shall no be stacked more than 2 pipes high.
Defects in the lining or coating shall be repaired to the satisfaction of Council

5.0 Pipelaying

5.1 Trench Excavation

Trench widths in the region of the pipe invert to just above the top of the pipe shall be kept to a minimum consistent with good practice and safety to workers.

5.2 Bedding

Water main pipes shall be bedded on suitably fine, evenly-graded granular material, either natural or imported, of a minimum depth of 100mm.

5.3 Laying Of Pipes and Fittings

Pipes shall be laid in accordance with the approved pipe manufacturers specifications.

Pipes and fittings shall be free of defects (internally & externally) and dirt on the inside, prior to lowering them into the excavation. Pipes shall be set true to line and level and care taken to ensure that joints are kept free from dirt.

Pipes shall be laid with product labelling uppermost in the trench.

At anytime when the Contractor is not actually working on the pipeline, open pipe ends shall be blanked off in a manner which prevents the ingress of animals and deleterious material.

5.4 Backfill and Reinstatement

Backfill material in the vicinity of the pipeline, haunch support, mid-section support and pipe cover, shall be of the same material as approved for the pipe bedding material in Section 5.2. This material shall be compacted optimum density in layers not exceeding 100mm depth. This material shall provide pipe cover to a depth of at least 100mm.

Trenches shall be backfilled and reinstated in accordance with the requirements of the Standard Technical Specifications for Roads

6.0 Jointing

6.1 Welded Joints

All welding shall comply with the requirements of BS 4515-1:2009 Specifications for Welding of Steel Pipelines on Land and Offshore

All welding shall be carried out by fully certificated welders.

Where access to the inside of the joint is feasible, then both this and the external joint shall be fully welded with 6mm fillet welds using standard welding bands.

Once completed, all welds shall be hydrostatically tested to 100m for 30 mins with no drop in test pressure, or visible leakage. Completed welds shall be signed off on a suitable weld test sheet.

6.2 Rubber Ring Joints (where applicable)

The joint shall be made in accordance with the manufacturer's recommendation and inspected internally (where feasible). All joints should be inspected externally to ensure that the rubber ring is in the correct position and is located at an even distance from the socket end of the pipe.

6.3 Corrosion Protection

On welded joints, the internal welds (where possible) shall be brushed clean, and a cement mortar, or other approved material, applied to the joint to the same thickness as the pipe lining.

The exterior of the pipe shall be completely protected by the manufacturer’s applied coating or a heat shrink sleeve (Raychem WPC or similar) to provide corrosion resistance.

Section C: Installation of PVC pipes

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council. .

2.0 Scope

This specification covers laying of and repairs to the following pipes:

- mPVC service connections of varying diameters

- 100mm up to 300mm mPVC Principal and Trunk Mains for use within the Matamata Piako District Council water reticulation and is to be read in conjunction with the following documents:

Drawings pertaining to the main to be laid (including service drawings)

Schedule of fittings required

Manufacturer's instructions for the handling, storage and laying of the pipe being used.

AS/NZS 2566.2:2002 Buried Flexible Pipelines – Installation

AS/NZS 2032:2006 : Installation of PVC pipe systems

3.0 Materials

Acceptable materials are listed in Section J of this Specification.

4.0 Pipelaying - Installation of PVC pipes

To be carried out in accordance with AS/NZS 2032, AS/NZS 2566 and the requirements of this Specification.

Pipes shall be laid with product labelling uppermost in the trench.

5.0 Thrusting of pipes

The term thrusting means boring a hole (by directional drilling or similar) and then carefully inserting the PVC pipe through the hole by hand. Rubber ring joints are not well suited for thrusting however the method is approved for short lengths of pipe laying such as to pass under a concreted entranceway.

Overly large bore holes do not adequately support PVC pipes so the bore hole must be a neat fit to the outside diameter of the pipe (the pipe should be inserted with the spigot-end leading into the bore hole). Soil must be cleaned from within the pipe and jointing faces prior to making the joint.

RRJ PVC pipes cannot be jacked, i.e. pushed through the earth with no bore.

6.0 Ducting PVC pipes

Where a PVC pipe is to be threaded through a duct, Series 2 Solvent Cement Welded Pipes are to be used.

Section D: Installation of MDPE pipes

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council. .

2.0 Scope

This specification covers laying of and repairs to the following pipes:

- PE80B (MDPE) service connections of various diameters
- DN63 (63mm OD) MDPE ridermains

and is to be read in conjunction with the following documents:

Drawings pertaining to the main to be laid (including service drawings)
Schedule of fittings required
Manufacturers instructions for the handling, storage and laying of the pipe being used
AS/NZS 2566.2:2002 Buried Flexible pipelines - Installation

3.0 Materials

Acceptable materials are listed in Section J of this Specification.

4.0 Installation of MDPE pipes

To be done in accordance with AS/NZS 2566.2:2002 and the requirements of this Specification this Specification.

4.1 Ducting of ridermains

Should Council elect to thread a ridermain through an abandoned pipeline, then the following shall apply:

Suitable excavations shall be made along the length of the main to allow threading of the new pipe without distorting or stressing it.

At each service connection, a section of the existing main shall be removed to allow the service connection to be made. The open ends of the existing main shall be blocked with concrete on completion. The MPDE ridermain shall be wrapped with a protective membrane and all necessary measure taken to ensure the pipe is not damaged by sharp edges, stones, etc

Suitable temporary ridermains shall be installed to supply local residents with water should the need arise.

4.2 Anchor Blocks

Anchor blocks are not required under normal circumstances.

Section E: Valve and fire hydrant installation

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council.

2.0 Scope

This specification covers the maintenance of valves and fire hydrants as well as the installation of valve and fire hydrant boxes within the Matamata Piako District Council water reticulation system.

3.0 Materials

Acceptable materials are listed in Section J of this Specification.

Materials to be used include Councils proprietary cast iron or aluminium and concrete components, as detailed on Drawing No's TS607, TS609 and TS611 to TS618 inclusive.

Only cast iron boxes shall be used in carriageways.

4.0 Maintenance

Wherever possible, routine maintenance shall be carried out on the valve or hydrant at the time of rebuilding the surrounding box. Such work shall be approved by Council prior to commencement of the work.

Any defects or damage to the fitting shall be reported to Council immediately so that the necessary remedial action can be carried out while the Contractor is on site (wherever possible).

Maintenance that cannot be carried out immediately shall be referred to Council.

5.0 Installation of valves

Preferably valves should be installed outside of the sealed carriageway in the grass berm.

Valves shall be installed in the pipeline at the minimum cover depth of the pipeline.

Location	Principal Watermains	Ridermains
Grass berms and footpaths	750mm depth to top of pipe	500mm
Under carriageways	900mm	600mm

Preferably valves shall be installed next to other fittings such as tees or bends. Where the valve is fitted to the branch of a tee it shall be flanged unless this results in the valve being in the carriageway, in which case spigot ended valves connected to adjoining pipes with gibaults is the acceptable alternative. Spigot ended valves shall be secured to anchor blocks conservatively sized to resist any unequal hydraulic thrust forces arising from closing and opening the valve.

6.0 Installation of fire hydrants

The preferred location for hydrants is in the road berm rather than the carriageway.

Generally they should be installed in the centre of property to avoid driveways.

Hydrant risers shall be used, or the watermain laid deeper, where necessary to ensure the top of the spindle is between 50 & 200mm below the fire hydrant lid.

7.0 Installation of valve and hydrant boxes

7.1 Berm areas (includes installations in the road berm)

Berm areas shall be in accordance with Drawing No's TS623 and TS624 and Clause 5.4: Section B of this Specification. At least one, but no more than 3, cast iron packers shall be used in any one installation.

Backfill and reinstatement shall be in accordance with the Standard Technical Specification for Roading

7.2 Carriageway areas

Carriageway areas shall include all streets and shall be in accordance with Drawing No's TS623 and TS624 and with the following:

No more than 3 cast iron packers shall be used in any one installation

The base shall be well compacted and properly levelled prior to installation of the concrete surrounds

The edge of the excavation shall be saw cut to provide a neat, clean edge for reinstatement

Backfill and reinstatement shall be in accordance with Standard Technical Specification for Roading except that backfill shall be as per Drawing No. TS623 and TS624.

7.3 The valve or hydrant box is to be installed parallel to the main.

7.4 The box and surrounds shall be installed so that no traffic load on the surface box can be reflected onto the pipe or fittings.

7.5 Fire hydrant lids shall be painted golden yellow in accordance with NZTA M/7

8.0 Tolerances

The top surface of the cast iron valve or fire hydrant box shall be neither raised nor depressed from the surrounding ground or seal, and the following tolerances shall be adhered to:

i) Normal Traffic Areas
   (a) Grass Berm: + 5mm - 5mm

(b) Footpath or seal: + 10mm - 0mm

ii) Heavy Traffic Areas + 10mm - 0mm

The tolerances shall be measured from the surface of the surrounding seal across the box and work may be rejected if the tolerances are not met.

9.0 Valve and Hydrant Markers

All Fire Hydrants shall be marked according to SNZ PAS 4509:2008 Appendix L which basically requires:

- The lid of the fire hydrant box painted yellow
- A yellow painted triangle on or near the centre line of the road
- A yellow painted circle encircling the hydrant if its location can be obscured by parked vehicles.

Fire Hydrants installed in all areas shall be indicated with blue raised reflective pavement markers in addition to the markings indicated above. (Refer to SNZ PAS 4509:2008 Appendix L)

Section F: Installation of service connections

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council.

2.0 Scope

This specification covers the installation of all service and fire main connections for use within the Council water reticulation network and is to be read in conjunction with the following documents:

Installations and drawings pertaining to the work to be done (including service drawings)

Manufacturer's instructions for the handling, storage and laying of the pipe being used

Matamata Piako District Council Consolidated Bylaw 2008

3.0 Connections to customers

3.1 General

Connections shall be made under pressure wherever possible.

Domestic supplies will not be metered unless specified by Council, but are required to have backflow protection as per required under NZ Building Code – Clause G12 “Water Supplies”.

3.2 Point of Supply to Consumer

(a) Services shall be located at the centre of each front allotment or close to one side boundary of the accessways to rear allotments. See Drawing TS622.

(b) The service connection shall have a manifold with integrated, dual check back flow under a manifold box located in the road reserve, within 300mm from the boundary and be extend 300 mm inside the boundary.

Installation of the extension should be timed to avoid damage by other service trenches. See Drawing TS627. Where this is not practical, the toby may be located within 300mm inside the boundary. In this case, and where a kerb exists, a ‘V’ is to be chiselled into the top of the kerb directly opposite the toby valve, to indicate the valve location.

(c) A permanent notch or mark shall be inscribed on the concrete kerb (where applicable) to indicate the position of the toby box.

(d) Should back-flow prevention be necessary, refer to the ‘MPDC Consolidated Bylaw 2008’

(e) Service connection pipes shall have minimum cover of 350mm.

(f) Service isolation valves (manifold assembly) shall be installed in the service pipeline as indicated in drawing TS627.

3.3 Services up accessways lots or right of ways

(a) Urban Areas

One connection approved manifold including dual check valve, and standard meter box per lot to be provided.

Service pipes crossing the access to lots shall be minimum 25mm O.D. and shall be placed in 50mm I.D. ducts.

(b) Rural and Rural Residential Areas

One connection, approved manifold including dual check valve, gate valve, meter and standard meter box per lot to be provided.

A rider main shall be provided if the ROW is greater than 40m length and services 2 or more lots. Rider main pipe works shall be 63mm OD MDPE.

Service pipes crossing the access shall be 25mm OD MDPE and shall be placed in 50mm internal diameter ducts. The supply shall be designed in the grass berm and clear of the invert of any swale drains.

3.4 Diameter of service connections

All service pipes, ferrules and gate valves shall be 20mm internal diameter unless otherwise specified

3.5 Tapping Bands, Ferrules and Service Pipes

Service connections to principal mains shall be by means of a tapping band and a ferrule. Service connections to rider mains shall be by means of a tee-joint or Tapping Saddle. Ferrules are to be left fully opened and gate valves fully closed.

All service pipes shall be laid at right angles to the street. Refer Drawing TS627.

Tapping bands shall be in accordance with the requirements of this Specification.

3.6 Construction

Tapping bands and ferrules on the water main shall be fitted when the mains are first laid.

In Industrial and Commercial Subdivisions, it is normal to omit tapping bands and service connections until the specific requirements of the consumer are known. Refer to the ‘Matamata Piako District Council Consolidated Bylaw 2008’ for matters relating to the customer’s point of supply including, backflow protection, flow meters and connections for fire protection systems.

The service shall not be extended to the boundary until after any other reticulation between the water main and the boundary has been laid. Service connections shall normally be laid at right angles to the frontage.

3.7 Service Connection Materials - Refer to Section J of this Specification.

3.8 Toby Boxes

Polyethylene meter box shall be used for all water connections as per Drawing No's WS 01 and WS 03.

4.0 Connections to industrial/commercial users

Refer to the 'Matamata Piako District Council Consolidated Bylaw 2008' for matters relating to the customer's point of supply including, backflow protection, flow meters and connections for fire protection systems.

5.0 Firemain connections

Refer to the 'Matamata Piako District Council Consolidated Bylaw 2008' for matters relating to the customer's point of supply including, backflow protection, flow meters and connections for fire protection systems."

6.0 Meter installation

Refer to the 'Matamata Piako District Council Consolidated Bylaw 2008' for matters relating to the customer's point of supply including, backflow protection, flow meters and connections for fire protection systems.

Meters shall be installed on most supplies to Industrial and Commercial premises as well as on domestic connections where specified. The following drawings shall refer as necessary:

TS630: Standard meter installation: 25mm up to 80mm diameter
TS631: Standard meter and double non-return valve backflow preventer
TS632: Standard meter pit: 100mm and 150mm diameters

Care shall be taken during installation of the meter to ensure that no foreign matter enters the pipes or meter. All meters shall be checked by the Contractor after installation to ensure that the meter is recording the flow passing through it.

Section G: Shutdown procedures

1.0 Introduction

All watermain pipe laying and associated fitting installation shall only be carried out by a qualified water Service Person holding the qualification of National Certificate in Water Reticulation or a reticulation service person who has been approved by Council.

2.0 Scope

The following procedures for Unscheduled and Scheduled Shutdowns are compiled in accordance with the Consolidated Bylaws:

Clause 3.5.4 of the water section of the 'Matamata Piako District Council Consolidated Bylaw 2008' reads as follows:

Scheduled Maintenance and Repair
Wherever practical the Council will make every reasonable attempt to notify the customer of a scheduled maintenance shutdown of the supply before the work commences.

Where immediate action is required and this is not practical, the Council may shutdown or reconnect the supply without notice

Continuity of supply to customers shall have a very high priority.

Shutdowns of mains shall be minimised wherever possible by isolating at the ferrule during changeover of services/stop taps.

To avoid unnecessary shutdowns, and unless specific dispensation is received from Council, an appropriately designed self-tapping ferrule must be used to make live connections to pressured watermains.

3.0 Unscheduled shutdowns

The following scheduled work can be completed without a notified shutdown. Work should be completed in less than half an hour. The Contractor shall notify the affected customer(s).

- change or replace a maximum of 2 stop taps
- changeover a maximum of 2 services
- repair of service where the ferrule is not easily available or not fitted (e.g. ridermain)

The Contractor shall immediately notify Council of the shutdown if the following emergency work is necessary. (This is so any special customers can be notified):

- repair of broken or burst main
- repair of broken tapping band

The Contractor shall notify Kaimai Consultants when the watermain is turned back on

4.0 Scheduled shutdowns

4.1 Application

4.1.1 Proposed Day

When selecting a day for the shutdown the Contractor shall ensure that the maximum number of shutdowns permitted in any one day or one week has not been exceeded:

Maximum shutdowns per day	=	3
Maximum shutdowns per week	=	10

In cases of emergency the Contractor shall consult with Kaimai Consultants who may allow the limit to be exceeded.

4.1.2 Shutdown diagram

The Contractor shall supply a copy of the logs and indicate valves to be shut and mains to be affected. Valves to be closed shall be circled and mains affected are marked with a zig-zag line. The shutdown area shall be indicated as clearly as possible in order to be interpreted as a fax transmission.

4.1.3 On site preparation and investigation

The Contractor shall flush fire hydrants at any high points prior to the shutdown.

The Contractor shall check that any valves to be used during the shutdown are accessible, operational and functional.

4.1.4 Fax or deliver request to Council

The Contractor shall complete the "Contractor to Complete" section of the Request Form and fax it or deliver it (along with the shutdown log diagram) to Kaimai Consultants. The Contractor shall ensure the Shutdown request is received by KC at least 1 day plus 6 working hours before the proposed time of the shutdown.

4.1.5 Confirmation from Council

WWS will contact the Contractor at least 24 hours plus 2 working hours before the time of the scheduled shutdown to confirm the shutdown details are acceptable, or discuss changes. Once shutdown details are agreed, the Contractor will arrange for delivery of shutdown cards to advise affected customers of the shutdown.

4.2 General Information

4.2.1 Shutdown Duration

The scheduled shutdown shall not exceed 2 hours duration except in exceptional circumstances. The Contractor shall endeavour to complete all work in the 2 hour period. In exceptional circumstances where it is thought more time will be required the Contractor shall apply for a longer duration when submitting the shutdown request.

4.2.2 Forward Planning

The Contractor shall minimise inconvenience to customers during the shutdown by such measures as:

- planning the shutdown to get the water back to as many customers as possible by staging the work

- prior excavations
- checking that pipe and fittings dimensions are compatible
- ensuring that staff, plant and materials are ready and available at the scheduled time of the shutdown
- planning shutdowns at the times that have been established as most acceptable to customers. These are:
  10 am - 12 pm
  1 pm - 3 pm
- providing temporary supply to certain customers as deemed necessary by Council.

4.3 Commencing a scheduled shutdown

4.3.1 Notify Council

As soon as the required valves are shut off the Contractor shall notify Council with full details.

4.3.2 Carry out the required work

The Contractor shall answer any straight forward queries from customers on site relating to the nature of the work. This may occur if a shutdown runs over time or if a customer has not received the shutdown notice.

If a customer requires more detailed information the Contractor shall refer them to Council.

4.3.3 Late shutdown completion

If it appears the shutdown will run overtime the Contractor shall notify Council with an explanation and revised finish time.

4.3.4 At completion of work

Council shall be notified of the number of valves turned back on. If the number of valves is different to those originally called in the Contractor shall provide an explanation.

Section H: Disinfection and flushing

1.0 General procedure

Generally, pipeline pressure testing and disinfection shall be witnessed by Council. The Contractor shall provide at least 1 day's advance notice for each of, pressure testing and disinfecting a pipeline.

It is a requirement for the Contractor's site-supervisor for pressure testing and disinfection watermains to hold the NZQA qualification "National Certificate in Water Reticulation" or a reticulation service person who has been approved by Council.

The process of commissioning a pipeline shall follow one of the general procedures outlined below.

- The pipeline is thoroughly flushed; pressure tested, disinfected using dissolved HTH powder, and then left in the 'in-service' and pressurised state.

- The pipeline is disinfected using chlorine tablets* glued to the inside of each pipe during construction, pressure tested, flushed and then left in the 'in-service' and pressurised state.

In the second of these options, if further work on the pipeline is required as a result of a failed pressure test then the disinfection step shall be repeated (using dissolved HTH powder).

* Other chlorine-based disinfection agents may be used as an alternative to tablets.

2.0 Disinfection

Disinfection chemicals should be applied to achieve a free chlorine concentration of between 3 mg/litre and 100 mg/litre (the pH should not be higher than pH 9 – concrete lined pipes can cause the pH to be raised to the point where chlorine becomes ineffective).

The disinfectant requires time to be effective. The required contact time is a function of concentration. The product of free chlorine concentration (mg/litre) and contact duration (minutes) shall be not less than 4320. e.g. a satisfactory treatment regime would involve a free chlorine concentration of 3 mg/litre with a contact duration of 1440 minutes.

At the end of the disinfection period the free chlorine concentration shall be not less than 3 mg/litre. If at the end of the disinfection period the free chlorine concentration is less than 3 mg/litre then the pipeline shall be thoroughly flushed and the disinfection process repeated.

If the disinfection process is being applied to a pipeline with customer connections each service pipeline shall closed at the toby prior to the disinfectant being administered.

The quantity of available chlorine varies for each chemical so it is not appropriate to apply 'rules of thumb' as to how much is needed to achieve a particular concentration.

Generally the calculation takes the form:

$$\text{Target chlorine concentration (grams/cubic metre)} = \frac{\text{Weight of available chlorine (grams)}}{\text{Volume of pipeline (cubic metres)}}$$

Where:

Weight of available chlorine = weight of chlorine chemical (grams) x % of available chlorine volume of the pipeline = length (m) x (diameter (m) 2 x 0.785 (cubic metres)

$$\text{and diameter (m)} = \frac{\text{Pipe diameter (mm)}}{1{,}000}$$

If chlorine tablets are used for disinfection these shall be glued to the inside of the pipe using a small amount of food grade glue or sealant such as 'Silaflex RTV clear'. The tablets take some time to dissolve so timing of the chlorine contact period shall not begin until such time as the available chlorine level reaches the intended concentration.

3.0 Disinfectant

Common forms of disinfectant are:

Sodium Hypochlorite (NaOCl) liquid sold in bulk is typically 13 to 15% available chlorine.

Chlorinated iso-cyanurate (swimming pool tablets) is available as Di-chlor and Tri-chlor forms. The cyanuric acid content slows the rate of chlorine dissipation to the atmosphere. The amount of available chlorine varies between 58% and 90%depending on product.

Calcium Hypochlorite (Ca(OCl)2) also know as HTH (High Test Hypochlorite) is a powder with typically 65 to 70% available chlorine by weight.

Warning: These chemicals are strong oxidants and can cause serious burns; they are explosive if allowed to come into contact with organic liquids such as petrol, diesel and oil. Using the chemicals should only be undertaken by personnel trained in this application of disinfecting water.

4.0 Removing the disinfectant

Sometime after the minimum contact period for disinfection, the super chlorinated water is to be flushed from the pipeline. Flushing should continue for at least 10 minutes beyond the initial removal of the super chlorinated water. Projects involving pipelines of 250 NB and larger should be flushed until such time as the residual chlorine level matches that of the normal water supply in the area (i.e. upstream of the new pipe).

Individual customer connections shall be flushed by opening each toby valve installed on the pipeline. In the case of a pipeline repair where it is not practical to flush water at the toby, an outside hose tap should be used as the flushing point for each service connection. If the super chlorinated water can not be discharged to a sewer, it shall be neutralised before discharge to the environment.

5.0 Bacteriological test

In commissioning new pipelines, HCC shall be given 24 hours notice as to when sampling for bacteriological tests is to be carried out.

Water in the pipeline shall be sampled between 12 hours and 2 days after post-chlorination flushing and the samples tested for the presence of E.Coli by Ministry of Health Approved laboratory with IANZ accreditation for this type of test. The number of samples shall be at least one for projects involving less than 100 metres of pipe, two for projects up to 200 metres length, etc.

A satisfactory result is zero E.Coli per 100 ml.

Note: There are high risks of test failure due to sample contamination so it is recommended that the testing laboratory is also involved in collecting the sample.

If E.Coli is detected the pipeline shall be swabbed, flushed, disinfected, flushed again and then the bacteriological tests repeated. The process shall be repeated until such time as a clear test is recorded.

Section I: Works completion and clearance

The minimum requirements for reporting data that is entered into the utilities asset management program BizeAsset is as following:

Service Plans for sewer, stormwater and water are to be on separate sheets; however for simple subdivision combining the services onto one plan is acceptable.

Existing services prior to development must be identified on the “as-built’ and clearly identified as “existing”.

Measured positions in both x and y directions of all manholes, catchpits, valves, tobies etc must be related to legal boundaries.

Co-ordinate Information:

All spatial information provided must be supplied in terms of:
NZGD2000 (New Zealand Geodetic Datum 2000)

Projection co-ordinates must be in terms of:
NZTM (New Zealand Transverse Mercator)

Invert and lid levels must be in terms of:
Moturiki Datum

Asset details to be completed on the GST/Asset Register form must include:

Material type and diameter for all pipes including service connections.

Diameters for all point features e.g. manholes, valves, hydrants, tobies etc.

All costs to be broken down into the groupings as set out on the form and not supplied as a lump sum for each utility.

“As built” information and costs for utility assets must be supplied and approved by Council before the 224 Certificate can be issued.

Utility asset and co-ordinate details may be submitted electronically as an excel spreadsheet (as per the example below) along side a hard copy “as built” plan.

	A	B	C	D	E
1	Asset	Easting_X	Northing_Y	RL_Z	Depth
2	SSMH A	1844968.97	5801846.62	60.90	1.39
3	SWMH 1	1844938.94	5810872.30	61.20	1.47
4	Catchpit	1844975.53	5810860.30	61.00	

As-built plans for water supply shall include test results of all hydrants showing flows complying with the requirements of the current NZ Fire Service Code of Practice for Fire Fighting Water Supplies.

GST REQUIREMENTS
Asset Register / Schedule of Engineering Items

UTILITIES					
Sanitary Sewer	Units	Quantity	Type/Description	Rate	Cost (incl GST)
Mains	m				
Manholes	No				
Service Lines	m				
Connections	No				
Pump Station (complete)	No				
Rising Mains	m				
Other					
			SUB-TOTAL		
Water Supply	Units	Quantity	Type/Description	Rate	Cost (incl GST)
Mains	m				
Ridermains	m				
Service Lines	m				
Connections	No				
Fire Hydrants	No				
Sluice Valves	No				
Other					
			SUB-TOTAL		
Stormwater	Units	Quantity	Type/Description	Rate	Cost (incl GST)
Mains	m				
Manholes	m				
Service Lines	m				
Connections	No				
Catchpits/Sump*	No				
Inlet/Outlet Structures	No				
Culverts	m				
Other					
			SUB-TOTAL:		
ROADING					
Roading	Units	Quantity	Type/Description	Rate	Cost (incl GST)
Road formation (incl berms & topsoil)	m2				
Subbase	m2				
Basecourse	m2				
Surfacing	m				
Kerb & Channel	m2				
Footpaths (incl w/ways & c/ways)	m2				
Urban Vehicle Crossings	m2				
Rural Vehicle Crossings	No				
Rural Drainage		Lump			

(incl culverts, catchpits & leads)	sum		
Streetlighting	No		
Signage & Marking	Lump sum		
Other (ie bridges, culverts, walls, etc			
		SUB-TOTAL	
		TOTAL (A)	

Please continue details as necessary, on separate list, and INCLUDE:
(i) Fees paid to join to existing reticulation
(ii) Additional services installed by Council (water/drainage/roading)
(iii) Any contribution paid BY COUNCIL to install services (water/drainage/roading)

All “As-built” plans and associated data shall be sent to the following:

In the case of all consents –

Planning Administrator
Planning Department
Matamata – Piako District Council
P.O. Box 266
Te Aroha 3320

Electronic copies of plans shall be emailed to planning_admin@mpdc.govt.nz

Section J: Acceptable fittings and materials

1.0 Scope

This specification covers the list of materials acceptable for use within the Matamata Piako District Council water network, and covers materials (up to the boundary) which Council has, or will, assume responsibility for. Fittings not in accordance with this list will be rejected unless written approval from Council is obtained prior to installation. Rejected products and materials will be subject to removal at the Contractor or Subdivider's cost.

This list of Acceptable Fittings and Materials will be updated as required

All applications to the Acceptable Fittings and Materials list must be accompanied by the pro-forma Quality Checklists & the Application for Acceptance of Water or Drainage Product for Use in the Matamata Piako District Water Supply Area or Drainage District.

Requirements for acceptance of materials are as follows:

- Conforms to appropriate New Zealand, Australian or British standards with evidence of the licence number issued;
- Manufacturer operates to an acceptable quality assurance standard;
- Details of composition, dimensions, specific use and design life are supplied by the manufacturer;
- Details of acceptance by other New Zealand local authorities
- Details are supplied by the manufacturer on how the product should be installed;
- The product is acceptable to MPDC (taking into account such factors as compatibility with other approved products, ease of use, availability of supply, etc.)

Where there is no standard, the manufacturer will be required to supply copies of their quality assurance procedures and producer statements to support their performance and composition claims for the products concerned.

Completed applications and supporting information should be addressed to:

Planning Administrator
Planning Department
Matamata Piako District Council
P.O. Box 266
Te Aroha 3320

Council reserves the right to refuse any material or fitting from the Acceptable Fittings and Materials list for any reason and at any time. In such circumstances, Council will provide written notification, stating reasons why the material or fitting has been refused or removed from the Acceptable Fittings and Materials list.

PRODUCT	MANUFACTURERS	DESCRIPTION
UPVC/OPVC	MARLEY	12 bar rating

	IPLEX PIPELINES	12 bar rating
	THOR PLASTICS	12 bar rating
MPVC	MARLEY	12 bar rating
	IPLEX PIPELINES	12 bar rating
MDPE	PUSHLIK	12 bar rating
	IPLEX PIPELINES	13 bar rating
STEEL	HUMES INDUSTRIES	Cement lined steel pipe
	HUMES INDUSTRIES	Speed steel pipe
E IRON	GILLIES FOUNDRY	Epoxy or Nylon coated
	HUMES CASTINGS	Epoxy or Nylon coated
	SURE CAST	Epoxy or Nylon coated
UPVC?OPVC	MARLEY	
	IPLEX PIPELINES	
MPVC	MARLEY	
	IPLEX PIPELINES	
MDPE	PUSHLOK	
BRASS	MICO WAKEFIELD	
	NZ STEEL & TUBE	
DUCTILE IRON		
	GILLIES FOUNDRY	Resilient seated Epoxy or Nylon coated
	JOHN VALVES	“ “ “
	HUMES CATINGS	“ “ “
PLASTIC	HYDRO-KONEKT	
BRASS/BRONZE	METHVEN	
BRASS/BRONZE	KITZ	
DUCTILE IRON	RELIANCE MANUFACTURING	Epoxy or Nylon Coated
	HUMES CASTINGS	Epoxy or Nylon Coated
	GILLIES FOUNDRY	Epoxy or Nylon Coated
BRONZE	MILNES	
CAST IRON	HUMES CASTINGS	
	GILLIES FOUNDRY	
DUCTILE IRON	GILLIES FOUNDRY	Epoxy or Nylon Coated
SUPER COUPLING	HUMES CASTINGS	Epoxy or Nylon Coated
MAXI-FIT	VIKING JOHNSTON	Epoxy or Nylon Coated
	VIKING JOHNSTON	
	ROCKWELL	Stainless band and bolts
	TALBOT	Code TB0019 (20mm)
20mm ID	KENT	MSM CLASS “C”
25mm to 50mm	KENT	PSM
80mm & over	KENT	HELIX
20mm ID	EBCO ACUFLO	ARTHUR D RILEY
20mm ID		ACUFLO
Series 007 M2	WATTS	Testable double check valve
CAST IRON	HUMES CASTINGS	
	GILLIES FOUNDRY	

	SURE CAST FOUNDRY	
POLYTHENE	DRAPER INDUSTRIES	Berm only
CAST IRON	HUMES CASTINGS	
	GILLIES FOUNDRY	
	SURE CAST FOUNDRY	
POLYTHENE	DRAPER INDUSTRIES	Berm only
POLYTHENE	DRAPER INDUSTRIES	DRA40/2 Reverse taper
POLYTHENE	CHEVRON INDUSTRIES	For repairs only
CAST IRON	GILLIES FOUNDRY	For repairs only

Checklist 6.1

WATER RETICULATION PIPE LAYING CHECKLIST

Location:

Name of qualified water service person:	To From	To From	To From	To From	To From
Pipe Laying Checks					
Pipe size, quality, approved materials checked.	☐	☐	☐	☐	☐
Set out checked (control points)	☐	☐	☐	☐	☐
Foundation support - penetrometer results available	☐	☐	☐	☐	☐
- if under cutting required, note chainage and CBR results.	☐	☐	☐	☐	☐
Alignment and cover.	☐	☐	☐	☐	☐
Bedding type and backfill material (CBR results available for road crossings and driveways).	☐	☐	☐	☐	☐
All service connections in place.	☐	☐	☐	☐	☐
Connections and Toby Box correctly located horizontally and vertically.	☐	☐	☐	☐	☐
Hydrants and valves positioned correctly.	☐	☐	☐	☐	☐
Thrust blocks installed.	☐	☐	☐	☐	☐
No debris in pipelines.	☐	☐	☐	☐	☐
As-built measurements taken.	☐	☐	☐	☐	☐
Pressure test witnessed and passed by Council representative.	☐	☐	☐	☐	☐
Bacto sample taken and passed by Council representative PRIOR to connection to the live Council main.	☐	☐	☐	☐	☐
Connection to live main by Council (unless specifically approved).	☐	☐	☐	☐	☐

Signature of Contractor _____ Date _____

Checklist 6.2

TRENCH BACKFILL COMPACTION TEST SUMMARY (attach individual test reports)

Location: _____

Plan No: _____

From: _____ to MH _____

Acceptance Criteria: _____

_____

Tests by: _____ (attached)

Analysis of Results

_____

_____

_____

_____

_____

☐ Trench backfill completed satisfactorily
☐ Trench backfill requires remedial work

_____
Signature of Engineer

_____
Date

Checklist 6.3

FINAL INSPECTION FOR WATER RETICULATION

Location:
Plan No:

Pre-Meeting Tasks

Developer to verify prior to meeting:	Developer Check	MPDC Rep Check
1) All lines flushed out	☐	☐
2) All backfilling complete and tidied up	☐	☐
3) Checklists 6.1 and 6.2 completed	☐	☐
4) Pressure test completed and witnessed	☐	☐
5) Bacto test completed and passed	☐	☐
6) Final as-built plans attached for a inspection arranged with Council	☐	☐
7) Connected to existing supply by Council	☐	☐
Site Meeting		
1) Valves and hydrants correctly marked	☐	☐
2) Toby boxes installed correctly	☐	☐
3) All valves checked on/off	☐	☐
All works satisfactory	☐	☐
Remedial work required	☐	☐

_____ _____

Signature of Developer Signature of MPDC Rep

_____ _____

Date Date