



# **Central Tablelands Water**

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## **Water Main Installation By Private Contractors**

## DOCUMENT CONTROL

Document Title		Water Main Installation by Private Contractors			
Policy Number		CTW-PR013			
Responsible Officer		Director Operations and Technical Services			
Reviewed by					
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Previous Versions	Date	Description of Amendments	Author	Review /Sign Off	Minute No: (if relevant)
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## Specifications

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A contractor must supply the following to Central Tablelands Water before consideration of approval:

- Preliminary drawings showing pipework, fittings, alignment and measurement
- Compliance certificates for all materials to be used
- Drawings showing Telstra, Natural Gas, Sewage and Stormwater lines
- Proposed installers details and licences held

Once approval has been granted, the contractor must supply to Central Tablelands Water the following:

- Written evidence of approvals from the relevant Local Government Authority and payment of all fees.
- Written evidence of approvals from the Roads & Maritime Services (RMS) (if applicable) and payment of all fees.
- Written evidence from the State Rail Authority (if applicable) and payment of all fees.
- Documentary evidence of Public Liability Insurance with a cover of \$20 million.
- Documentary evidence of Workers' Compensation Insurance cover.
- Evidence that all other statutory requirements have been complied with.
- An inspection fee of \$1,500 per 1,000 metres, or part thereof. (subject to revision each year)
- A defect liability security deposit of \$6,000 per 1,000 metres, or part thereof, (fully refundable after the defect liability period has expired and all defects, if any, have been rectified).
- Central Tablelands Water fee to cut-in to the existing infrastructure. P.O.A.\*\*

\*\* This cost will vary depending on size, location, material etc.

## Principal

Central Tablelands Water

Contact: Mr. Noel Wellham  
Central Tablelands Water  
30 Church Street, BLAYNEY NSW 2799  
Tel: (02) 6391 7200

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## 1.0 Safety

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## **1.1 General**

Attention is drawn to the Work Health and Safety Act 2012 that requires that all employers and employees ensure the health, safety and welfare of persons in the workplace.

The Contractor, shall at all times, exercise all necessary and reasonable precautions appropriate to be the nature of work and the conditions under which the Contract is to be performed for the safety of all persons on the site, or in the vicinity.

Notwithstanding the general requirements of this clause, it shall be a requirement of the Contract that all supervisors, employees and visitors wear safety helmets and safety vests and any other PPE appropriate to the work

It shall be the requirement of the Contractor to provide equipment, training, personnel and documentation necessary to satisfy the above requirements.

Safe Working Plans shall be prepared by the Contractor in accordance with Clause 12.3

## **1.2 Australian Standard Marks**

When any manufactured product, required by the Specification to comply with an Australian Standard is offered as complying with that Standard by virtue of being marked "Approved to Australian Standards" under a licensing scheme of the Standards Association of Australia, then the Principal, before accepting the product, may require some or all of the tests set out in the Australian Standards to be done and passed and may require inspection of manufacture by a representative of the Principal.

## **1.3 Compliance with Standards and Codes**

Where the Contract requires the Contractor to comply with any Standard or Code, unless otherwise specified, the Standard or Code shall be that which is current at the closing date for Tenders.

## **1.4 Contractor's Facilities**

### **1.4.1 Sanitary Facilities**

The Contractor shall provide suitable and sufficient toilet facilities for the work force engaged, including all Sub-Contractors, and shall keep these facilities in a clean and sanitary condition at all times.

Toilet facilities shall be approved portable facilities and shall conform to all requirements and regulations of local controlling Authorities and meet requirements of the relevant Unions.

### **1.4.2 Drainage**

The contractor shall be responsible for the proper drainage of the works that may be required during onsite work, and shall provide sufficient materials, labour, pumps and other equipment to keep the works dry and protected. Additionally, the Contractor shall ensure that any runoff from the site does not adversely impact on any land in proximity to the works.

### **1.4.3 Water Supply**

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Water supply for the Works (except for water for testing referred to in Clause 1.8.1) may be obtained from a designated extraction point nominated by the Principal. The Contractor shall provide all necessary facilities to extract water from that point.

The water consumed by the Contractor shall be metered by him, and records supplied to the Principal. The Principal will not charge for water consumed unless there is wastage.

## **1.5 Quality Assurance**

### **1.5.1 General**

The Contractor shall comply with all requirements of the Specification and Model for Quality Assurance in Design, Development, Production, Installation and Servicing.

### **1.5.2 Quality System**

The Contractor shall document and maintain a quality system which conforms with the requirements of Clause 10 – Quality Assurance – Water Supply Code of Australia – Part 3 Construction (WSA 03-2002 V2.2) or Australian Standard AS/NZS ISO 9001 – Quality Systems, and provide access to the Principal when required.

### **1.5.3 Quality Manual**

The Contractor shall conform to policies stated in the Company Quality Manual.

### **1.5.4 Quality Plan**

Within three weeks of the Date of Acceptance and prior to the start of work on site (whichever is earlier), the Contractor shall submit to the Superintendent for review three copies of a Quality Plan specific to the Contract. The Plan shall conform to the requirements of AS/NZS ISO9004.1 – Clause 5.3.3.

### **1.5.5 Inspection and Test Plans**

The Contractor shall submit Inspection and Test Plans to the Superintendent for verification before commencing work on activities covered by the plans. The plans shall incorporate the Principal's Hold, Witness and Verification points shown below.

<b>Activity</b>	<b>Hold/Witness/ Verification</b>
Excavation and pipe laying	W
Embedment and trench fill	W
Disinfection	H
Pressure test, Compaction test and Disinfection test	Contractor to verify test result
Restoration	W

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### **1.5.6 Traceability**

Unless directed otherwise, the Contractor shall maintain records clearly identifying the materials, equipment, the corresponding tests results, design drawings used for construction of the works, and the place and time of delivery to store or to site.

Each piece of equipment or material shall be assigned a distinct identification that will be consistently used or referred to in the quality records.

### **1.5.7 Quality Records**

Quality records shall be stored and maintained such that they are readily retrievable in facilities that provide a suitable environment to minimise deterioration or damage, and to prevent loss. Quality records shall be available for evaluation by the Principal during the period of Contract and shall include all pertinent subcontractor or secondary Consultant records.

Quality Records shall be maintained by the Contractor for a minimum period of two years from the Date of Practical Completion.

The Contractor shall maintain records in two categories:

Tests Records – which shall comply of all working sheets associated with testing in accordance with the Inspection and Test Plan(s);

Project Quality Records – which shall include, but not limited to technical reviews, minutes of meeting between the Principal and Contractor, and where necessary the Subcontractor or Secondary Consultants, and other relevant documentation.

The Contractor shall submit to the Principal quality reports as evidence that the work has complied with the specific quality requirement. These reports shall include summaries of inspection and tests results, and shall be submitted within 24 hours if test results are unsatisfactory, and seven days if tests results are satisfactory.

### **1.5.8 Materials and Components**

Products certification: If products must conform to product certification schemes submit evidence of conformance.

Product Data: For proprietary equipment, submit the manufacturer's product data including:

- Technical specifications and drawings;
- Type test reports;
- Performance and rating tables; and
- Recommendations for installation and maintenance.

Proposed products schedules: If major products are not specified as proprietary items, submit a schedule of those proposed for use within 3 weeks of site possession.

### **1.5.9 Inspection**

The Principal shall be given access in conjunction with or through the Contractor of all laboratories and other facilities used for quality control tests to verify that specified requirements are being met.

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The Contractor shall make suitable arrangements to notify the Principal when a HOLD, WITNESS or VERIFICATION POINT will be reached so that the Principal can review and/or witness if required any work process or tests being undertaken by the Contractor.

The Principal shall have the right to carry out a HOLD, WITNESS or VERIFICATION POINTS inspections or test to verify that the Contractor is implementing and maintaining the Quality System in accordance with the Contract Documents.

Minimum notice for inspections to be made: 4 hours for on-site supervisors, otherwise 2 working days.

## **1.6 Execution**

### **1.6.1 Setting Out Work**

The Contractor shall provide all labour, materials, and other assistance that the Principal may require at any time to check the setting out of the work under the Contract or to make progress measurements.

### **1.6.2 Working Hours**

Work hours on site will normally be restricted to 7.00 am to 5.00 pm, Monday to Friday, and Saturday 8.00 am to 1.00 pm. These times can only be varied with the prior approval of the Principal. If variation to these scheduled hours of work is needed the approval of the Principal shall be obtained, and such approval may contain conditions.

### **1.6.3 Materials and Components**

#### **Consistency**

For the whole quantity of each material or product, the Contractor shall use the same manufacturer or source and provide consistent type size, quality and appearance.

#### **Manufacturers' or suppliers' recommendations**

Select, if no selection is given, and transport, deliver, store, handle, protect, finish, adjust, prepare for use, and provide manufactured items in accordance with the current written recommendations and instructions of the manufacture or supplier.

If products must comply with the product certification schemes, the Contractor must provide them in accordance with the certification requirements.

### **1.6.4 Access to Affected Properties**

Construction and laying of the water main will prevent vehicle access to businesses and residences along the route from time to time. The Contractor shall plan his work so that vehicle access to any particular property is affected for no more than one day. If extended delay is expected, the Contractor must provide alternative vehicle access. In addition, the Contractor must maintain pedestrian access to businesses and residences at all times.

### **1.6.5 Restoration of all works**

The Contractor shall restore and/or reinstate all works for existing services, surfaces, driveways, footpaths and kerb and gutters to their pre-existing condition or better.

Maintain all restored surfaces and improvements in a satisfactory condition until the end of the defects liability period.

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### **1.6.6 Tidiness and Cleaning Up**

The Contractor shall keep the site of the works clean and tidy at all times and pay continuous attention to the removal of litter, waste materials, garbage and refuse.

Under no circumstances will the Contractor dispose of any material or goods, construction debris, rubbish or like material on or around the site. All such materials shall be removed from the site regularly and disposed of by the Contractor at its own expense. Clean, excavated material shall, where suitable, be used in required backfilling or shall be placed in stockpiles approved by the Principal.

Prior to practical completion, the Contractor shall remove from the site and all access areas used by it for the purpose of the Contract, all temporary works, plant, buildings, rubbish, unused material, construction facilities and other material and equipment belonging to it and its Sub-Contractors or used under its direction and leave the site and such other areas clean and tidy to the satisfaction of the Principal.

## **1.7 Environmental Management**

### **1.7.1 Environmental Management Plan**

The Contractor shall prepare and submit to the Principal for review, within 14 days of the Letter of Acceptance, and Environmental Management Plan (EMP) to cover all site construction works.

The EMP shall be the Contractor's plan of management to ensure that all works undertaken by the Contractor (including all Subcontractors) shall have minimal impact on the environment and meet all relevant Australian Standards, State Government Legislation and Local Government regulations.

The EMP shall:

- be a practical and achievable plan;
- detail each environmental issue and impact which is to be addressed
- include all control measures which the Contractor will undertake and any issues which the Contractor will address during the construction process (including any required pre or post construction activity);
- detail who is responsible for ensuring the control measures are undertaken, the verification of such and a reporting process;
- provide a trigger for undertaking an action and, where possible, timing of each action;
- detail procedures for the monitoring of the EMP by the Contractor;
- detail a system for registration and action of environmental complaints.

The Contractor shall be solely responsible for the full and complete implementation of the EMP. The Contractor shall pay all penalties, costs and expenses which may be incurred in respect of offences committed or alleged to be committed under the provision of the Environmental Protection Legislation.

The EMP Shall fully comply with the Act and shall include at least the following issues.

- Hours of work
  - Construction Noise
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- Dust
- Access
- Storage of Fuel and other hazardous goods
- Fuelling and maintenance of vehicles and equipment
- Rubbish, waste and site clean up
- Surface water runoff
- Sedimentation and erosion control
- Contaminated Water
- Flora and Fauna
- Prevention of Land Contamination
- Cultural Heritage
- Disposal of waste (fuel, oil, chemicals, paints and sewerage)

### **1.7.2 Incident Management Plan**

The Contractor shall prepare and submit to the Principal for review, within 14 days of the Letter of Acceptance, and Incident Management Plan (IMP) to cover all site construction works.

The IMP must include emergency procedures and contingency plans for dealing with the occurrence of incidents during the implantation of the proposed activity. The IMP must include a clear statement of accountabilities, identify all risks, and address prevention of incidents, the declaration and early notification of incidents, and the response to and recovery from incidents. The IMP must include the telephone number and 24 hour contact procedures for the persons responsible for management of incidents. These persons must be nominated by the Contractor. Any charges regarding these contact persons must be advised immediately by the Contractor.

### **1.7.3 Safe Work Plan**

The Contractor shall prepare and submit to the Principal for review, within 14 days of the Letter of Acceptance, a Safe Work Plan (SWP) to cover all site construction works.

The SWP will detail how all OH&S issues will be managed for the duration of the works and must be based on hazard identification and risk assessment. The SWP will cover all hazards associated with the site and construction methods, including but not limited to:

- Access and egress;
  - Dust;
  - Excavation;
  - Manual handling;
  - Noise and vibration;
  - UV radiation;
  - Traffic management; and
  - Underground services
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## **1.8 Testing and Commissioning**

### **1.8.1 Water for Testing**

Water for testing purpose shall be provided free of charge by the Principal provided there is no wastage in the opinion of the Principal.

## **1.9 Completion**

### **1.9.1 Warranties**

The Contractor shall obtain warranties from suppliers and shall ensure that the Principal will have benefit of the warranties. The Contractor shall ensure that the Principal will have benefit of all warranties that are obtained by the subcontractors.

### **1.9.2 As Built Drawings**

The Contractor shall engage a registered surveyor to undertake a final survey to measure the correct position in plan (coordinates) and in section (level) of all key features of the work including but not limited to all new pipes, valves, hydrant points and other fittings, pipe bends and take offs, inlet and outlet structures, pits, profile of earth works, runs of pipe work, etc. The information produced by the final survey should be sufficient to accurately locate all works both above and below ground.

The as-built survey shall be used to produce the final work as executed drawings and supplied to the Principal within 28 days of practical completion.

### **1.9.3 Defect Liability Period**

The Defect Liability Period of twelve months commences on the day of practical completion.

During the Defect Liability Period, coordination meetings are not required but the Contractor must attend site within 7 days to attend to minor defects requested to do so by the Principal.

If the Principal determines a defect is dangerous, the Principal will rectify the defect at the cost of the Contractor.

## **2.0 Pipework**

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### **2.1 Scope**

Pipe work shall include, but not necessarily be limited to the following activities:

- supply of all pipework, valve fittings and all appurtenances;
  - trench excavation;
  - supply and compaction of embedment material;
  - laying of pipelines;
  - backfilling of trenches and compaction;
  - restoration of surfaces;
  - testing and commissioning of all pipelines
-

- provision of pipe supports anchorage and/or thrust blocks;

All material, equipment and workmanship shall comply with the Water Supply Code of Australia (WSA 03 – 2002 V2.2), or appropriate Australian Standards.

## 2.2 Existing Services Interfering with the Works

The Contractor shall take every precaution to locate, maintain and cause no damage to any existing service and shall be responsible for such location, maintenance and care.

Prior to commencement of excavation the Contractor shall advise the Principal of the nature and extent of the existing services and the measures to be taken to ensure their continued use.

If a relocation of any service is required the Contractor will bear the cost of such relocation.

All damages caused by the Contractor to existing services shall be rectified by the Contractor at no cost to the Principal.

The Contractor shall mark up on an appropriate work-as-executed drawing all existing and relocated services.

## 2.3 Pipework

### 2.3.1 PVC Pipes and Fittings

All PVC pipes shall conform to the requirements of Series 2 of one of the following Australian Standard for PVC pipes and fittings:

AS/NZS 1477 – 1999 PVC Pipes and Fittings;

AS/NZS 4441 – (Int):1996 OPVC; and

AS/NZS 4765 – (Int):2000 M-PVC.

Pipe joints shall be rubber ring jointed and shall conform to AS/NZS 1477:1999 or equivalent Australian Standards.

Fittings used with PVC pipes shall be ductile iron with thermal applied polymeric coating to AS/NZS 4158.

PVC pipes and fittings to WSA 03-2002 V2.2 and refer to the following:

INFORMATION TO BE SUPPLIED	PROJECT REQUIREMENTS
Application:	Potable Watermain
Series 1 (metric) or Series 2 (cast iron OD)	<i>Series 2</i>
Pipes - Nominal Size(s) - Class(es)	- Refer Drawings - PN 12
Fittings - Type (pressure, non pressure) - Nominal size(s)	- Pressure - Refer drawings

- Class(es) - Type(s) and jointing	- PN 12 - rubber ring
Acceptable Product Verification Report	Manufacturer to supply.
Certificate of Compliance	Manufacturer to supply.

### 2.3.2 DICL Pipes and Fittings

All DICL pipe shall be Class K9 complying with AZ/NZS 2280. DICL pipe shall be cement mortar lined to AS/NZS 2280. Pipe shall be externally coated with bituminous or synthetic resin coating to AS/NZS 2280.

Elastomeric joint seals shall comply with AZ 1646, EPDM.

Ductile iron pipe, joint seals and gaskets and jointing lubricant shall comply with AS/NZS 4020.

DICL pipes and fittings to WSA 03-2002 V2.2 and refer to the following:

INFORMATION TO BE SUPPLIED	PROJECT REQUIREMENTS
Application:	Potable Watermain
Series 1 (metric) or Series 2 (cast iron OD)	<i>Series 2</i>
Pipes - Nominal Size(s) - Class(es)	- Refer Drawings - k 9
Fittings - Type (pressure, non pressure) - Nominal size(s) - Class(es) - Type(s) and jointing	- Pressure - Refer drawings - k 12 - Refer drawings
Acceptable Product Verification Report	Manufacturer to supply.
Certificate of Compliance	Manufacturer to supply.

### 2.4 Excavation

All trench excavation shall be carried out in accordance with Clause 13.0 – Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

### 2.5 Bedding for Pipes

Prepare trench floor and place bedding material in accordance with Clause 14.0 – Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

All bedding materials shall conform to Clause 3.3.1 of AS 2566.1 and be compacted to 95% standard compaction.

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Bedding may be omitted if trench base is of granular sand material.

## **2.6 Pipe Laying and Jointing**

### **2.6.1 Installation of Pipes**

Installation, cleaning, inspection and laying of pipelines shall be in accordance with Clause 15.1 – Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

For installation PVC pipes and fittings, refer to Standard Drawing WAT – 1102 (WSA 03-2002 V2.2).

### **2.6.2 Horizontal and Vertical Deflection of Pipes**

Deflections of pipeline where necessary shall be in accordance with Clause 15.2 – Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

### **2.6.3 Minimum cover of pipes**

All buried pipes shall be laid at minimum cover in accordance with drawing WAT 1201: Embedment and Trench Fill Typical Arrangement (Water Supply Code of Australia, WSA 03-2002 V2.2) except where local diversion is required to avoid existing services where the main will be laid at greater than minimum cover.

### **2.6.4 Alignment**

Alignment of pipes shall be between 1.2 metres and 1.8 metres from the property boundary.

### **2.6.5 Flotation Control**

Prevention of flotation of pipes shall be in accordance with Clause 15.4 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

### **2.6.6 Thrust and Anchor Blocks and Restrained Joints**

Construct thrust or anchor blocks, at valves, flexibly jointed bends, tees, reducers and enlargers where the fittings are indicated in the drawings.

The allowable bearing pressure capacity for vertical and horizontal thrust for different soil classification shall be in accordance with Drawing WAT – 1205 (Water Supply Code of Australia, WSA 03 – 2002 V2.2).

Thrust, anchor blocks and restrained joints of pipelines shall be in accordance with Clause 15.5 – Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2). All anchor blocks shall be designed for the maximum System Test Pressure of 120m.

### **2.6.7 Trench Stops**

Construct trench stops in accordance with Table 5.1 of Water Supply Code of Australia, WSA 03-2002 V2.2.

### **2.6.8 Bulkheads**

Construct concrete bulkheads adjacent to kerb and gutter shoulder of sealed roads in accordance with Clause 15.8 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

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## **2.6.9 Corrosion Protection of Ductile (Cast) Iron**

Sleeve buried ductile iron pipelines shall be protected in accordance with Clause 15.9 - Part 3: Construction (Water Reticulation Code of Australia, WSA 03-2002 V2.2).

## **2.6.9 Marking Tape**

Lay no-detectable marking tape in accordance with Clause 15.10 - Part 3: Construction (Water Reticulation Code of Australia, WSA 03-2002 V2.2).

## **2.6.10 Valves and Surface Fittings**

Install valves and surface fittings where shown in accordance with Clause 15.11 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2). Location of valves shown on drawings is diagrammatic. Confirm exact location with Superintendent on site prior to installation of valve.

## **2.6.11 Flanged Joints**

Connect flanged joints in accordance with Clause 15.17 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

## **2.6.12 Location Markers**

Install location marker plates and other markers for the location of hydrants, valves and other fittings at the locations as shown in the drawings and in accordance with Central Tablelands Water's requirements. This should be in accordance with Clause 15.16 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

Refer to drawing WAT-1300 (WSA 03-2002 V2.2).

## **2.6.13 Creek/ Culvert Crossings**

Construction of creek or culvert crossing shall be in accordance with drawing WAT-1211 (Water Supply Code of Australia, WSA 03-2002 V2.2).

## **2.7 Pipe Embedment and Support**

Pipe embedment materials shall conform to Clause 3.3.1 of AS 2566.1 and be compacted to 95% standard compaction in non-trafficable areas or 90% standard compaction in non-trafficable areas.

Placement, compaction and testing shall be in accordance with Clause 16.0 Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

## **2.8 Fill**

Trench fill shall be in accordance with Clause 17.1 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2) and to specification on Drawing WAT – 1201 of the Water Supply Code of Australia, WSA 03-2002 V2.2.

## **2.9 Acceptance Testing**

### **2.9.1 Compaction Testing**

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Compaction of embedment, trench and other fills shall be in accordance with Clause 19.3 - Part 3: Construction (Water Supply Code of Australia, WSA 03-2002 V2.2).

### **2.9.2 Pressure Testing**

The Design Pressure (DP) for the system is approximately 110m of head of water. The minimum and maximum System Test pressure (STP) are approximately 100m and 120m respectively. These estimates are based in accordance with Clause 19.4.2 - Part 3: Construction (Water Reticulation Code of Australia, WSA 03-2002 V2.2).

The hydraulic pressure tests shall be in accordance with Clause 19.4 – Part 3: Construction (Water Reticulation Code of Australia, WSA 03-2002 V2.2).

## **2.10 Valves**

### **Stop Valves**

Valves shall be Resilient Seated Sluice valves or equivalent in accordance with AS 2368.

Valves shall close anti-clockwise and shall be fitted with a cap for opening and closing by key operation.

Valves shall be manufactured under a product certification scheme and each valve marked in accordance with the certification body's requirement.

The surface fitting installation shall be in accordance with Drawing WAT-1303 & WAT-1304 (Water Supply Code of Australia WSA 03 – 2002 V2.2).

Stop valve installation shall be in accordance with Drawing WAT - 1301 (Water Supply Code of Australia WSA 03 – 2002 V2.2).

### **Air Valves**

A double air valve with an integral isolator shall be a Vent-O-Mat RBX Model or equivalent, as shown on the design drawing.

## **2.11 Hydrants**

All hydrants shall be spring type hydrants that are attached to the main using a flanged hydrant riser, unless stated otherwise.

Hydrant installation shall be in accordance with Drawing WAT – 1301 (Water Supply Code of Australia WSA 03 – 2002 V2.2).

Standard surface fitting installation for hydrants shall be in accordance with Drawing WAT– 1305 & WAT-1306 (Water Supply Code of Australia WSA 03 – 2002 V2.2).

## **2.11 Termination Points**

Central Tablelands Water has a policy to eliminate dead ends, and not to create new ones, to avoid poor water quality. Therefore all cul-de-sacs must be looped or linked to an existing main.

Where a dead end cannot be avoided, the main shall be extended to a point 2 metres beyond the last property served. A hydrant for flushing purposes shall be installed at the end of the water main and shall be suitably anchored.

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# Specification

## Water Main Installation in Residential/Industrial Areas

By Private Contractors

## Materials

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### Pipe:

- uPVC to A.S. 2977, PN 12
- uPVC to A.S. 1477 Series II, PN 12
- Ductile Iron K9 cement mortar lining to A.S. 1315
- Ductile Iron K12 cement mortar lining to A.S. 1315

### Sluice Valves:

- Socket, spigot or flanged
- Resilient sealing, positive drip tight closure to A.S. 2638
- Thermal bonded polymeric coating to A.S. 4158
- Operating pressure 1600 kPa

### Hydrants:

- Flow rate 28.5 l/s @ 500 kPa to A.S. 3952
- Thermal bonded polymeric coating to A.S. 4158
- Operating pressure 1400 kPa

### Bends:

- Socket, spigot or flanged, ductile iron
- Thermal bonded polymeric coating to A.S. 4158
- Size 150mm

### Tees:

- Socket, spigot or flanged, ductile iron
- Thermal bonded polymeric coating to A.S. 4158
- Size 150mm

### Hydrant Boxes:

- Cast iron with recycled plastic surrounds, colour white
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### **Hydrant Supports:**

- 300mm or 450mm recycled plastic

### **Stop Valve Boxes:**

- Cast iron with recycled plastic surrounds, colour white

### **Gibault Joints:**

- Cast iron flanges, stainless steel barrells to A.S. 1830
- Nylon coated
- Bolts stainless steel
- Seals natural rubber to A.S. 1646
- Sleeve length 150mm

### **Blank End Caps:**

- Ductile Iron
- Thermal bonded polymeric coating to AS 4158

### **Mains Marker Tape:**

- 100mm wide, green “water main below” detectable

### **Pipe Size:**

- Residential areas                      150mm (unless specified)
- Industrial areas                         Sized to meet flow requirements

## **ALL FLANGE FITTINGS TABLE ‘C’ A.S. 2129**

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