



REQUEST FOR QUOTATION (RFQ)

RFQ - 1241715

Water Main Replacement

Marsden Street

Molong NSW

PREPARED BY:

Cabonne Council

April 2021

1. General Information

1.1 Introduction

As part of its ongoing asset management of the water infrastructure, Council is replacing a section of old watermain. Council is seeking a fixed price quotation for the works in accordance with this Request for Quotation and the attached specification.

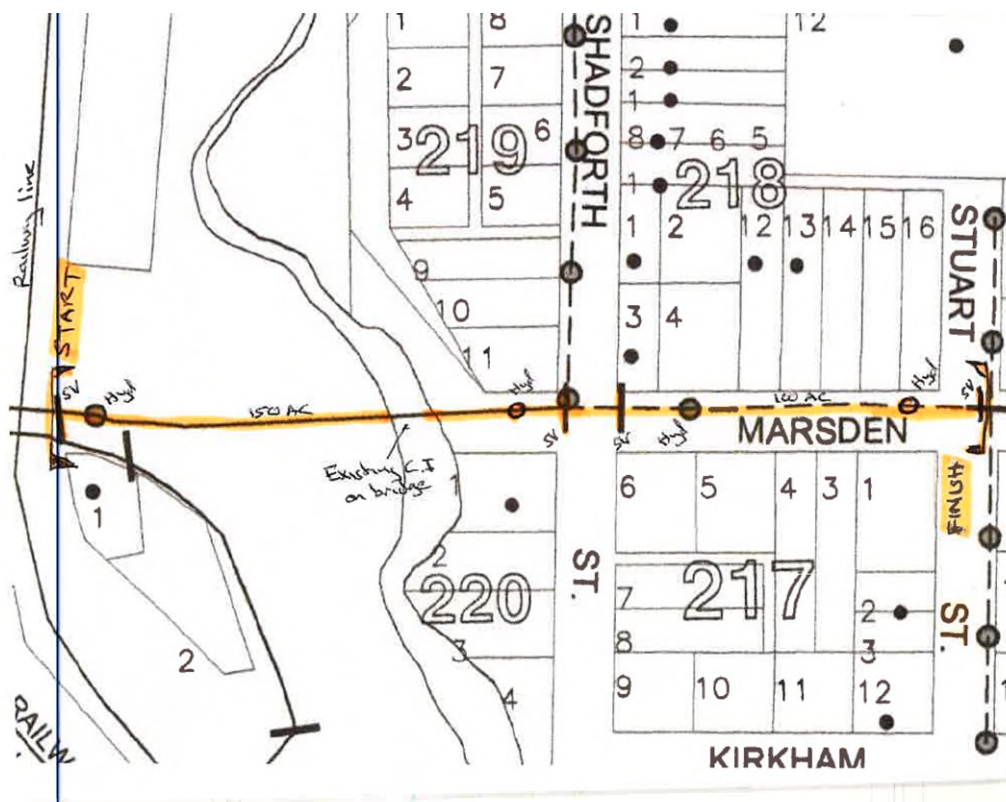
1.2 Background

Cabonne Council maintains approximately 90km of water reticulation mains with an age of up to 90 years for some of the network. Council has commenced a targeted replacement schedule for some of the network in poor condition. Marsden Street Main is an old AC Main that has recently had several breaks.

2. Purpose

The purpose of the RFQ is to briefly describes the requirements of engagement of a suitable contractor to undertake the mains replacement work.

3. Site Location & Description



4. Project Scope of Work

The project will involve the replacement of the existing 150mm and 100mm AC Watermain in Marsden St, Molong.

Commencing at the stop valve 14m on the eastern side of the Railway Footbridge extending to the existing Ductile Main across the bridge over Molong Creek. This main on the bridge is not to be replaced. The replacement then begins on the Eastern side of the bridge through to the existing Stuart Street Main.

Location – Marsden St – Molong from Stop valve 14m East of Railway Footbridge to Stuart Street

- *Length – 414m*
 - *Diameter*
 - *Existing*
 - *150mm dia. AC – 261m*
 - *100mm dia. AC – 187m*
 - *To Be installed:*
 - *DN 160 PE – 448m*
 - *Valves*
 - *Existing – 3*
 - *To Be installed - 4*
 - *Hydrants*
 - *Existing – 2*
 - *To Be installed – 4*
 - *Private Property Connections*
 - *Existing 20mm to be replaced – 5 (2 with road crossings)*
 - *Existing 100mm to new industrial shed (connect to existing 150mm T) – 1*
- Connections to existing mains*
- *Ductile main at pedestrian footbridge - 1*
 - *Existing ductile main at Molong Creek road bridge – 2*
 - *100mm dia. AC in Shadforth St*
 - *100mm dia. Main in Stuart St (from 100mm cast iron X)*

5. GENERAL CONDITIONS

5.1 Project Information

This quotation is for the water mains replacement In Marsden St, Molong NSW.

This is a Lump Sum Quotation.

5.2 Contractor's Responsibility

It shall be the responsibility of the contractor to ascertain all information relating to the services, the works and site conditions that may affect the progress or method of performing all services and works as specified within the scope of this contract and to prepare for every contingency that may arise. It is further understood that provision for these contingencies have been accounted for, implicitly or explicitly within the Bill of Quantities or Schedule of Rates submitted.

5.3 Contractor's Representative

The Contractor shall nominate an officially designate a Representative, who will always be responsible for day-to-day liaison with the Council's authorised representative during which any activities relating to the Works are taking place.

The Contractor's representative is required to be proactively in contact with the Council for communication, taking the relevant permissions, timely updating on the progress of the project according to the Project Programme Schedule. If required by the Superintendent, the representative is required to be present for the meeting at site and/or office for technical discussion and official meetings on the project progress and other relevant matters time to time at such other places at or in which any activities relating to the execution of the Works under the Contract are taking place. All administrative and traveling cost is required to be part of the quotation.

6. TENDER SUBMISSION INFORMATION

6.1 Council's Contact Person

Enquiries regarding this tender may be directed to:

Name: Charles Knight

Position: Project Manager

Phone: 02 6390 7150

Email: charles.knight@cabonne.nsw.gov.au

6.2 Supporting Information

Documentary evidence shall be provided to prove they have the necessary competence, resources, industrial relations, quality and safety management and financial capacity to carry out the Works.

In addition to the tender submission documents/forms included in the tender documents.

- a) Copy of Certificate of Currency for Public Liability Insurance. \$20,000,000 (min)
- b) Copy of Employer's Liability Insurance under Workers Compensation Act
- c) Copy of Comprehensive Motor vehicle Insurance for all vehicles to be used in the works
- d) Copy of Work, Health & Safety (WHS) Plan
- e) Copy of Safe Work Method Statement (SWMS)

6.3 Quotation Validity Period

Quotes will be valid for a period of **60 days** from the quotation closing date.

6.4 Cost of quoting

All costs associated with preparation and submission of the quotation shall be borne by the quotation provider.

7. LODGEMENT REQUIREMENT

Tenders shall be submitted on the '**Quotation Form**' provided by the Council in **Electronic format** only.

www.tenderlink.com/cabonne

The deadline for submission of quotation is:

Date and Time: 12noon Wednesday 19th May 2021

8. TENDER SUBMISSION FORMS

8.1 Tender Forms and Declarations

Lump Sum Tender Form

Bill of Quantities Form

LUMP SUM FORM

The Tenderer must complete and submit with tender.
All Submitted information will be treated as confidential

The Tenderer shall complete all or part of the following information in accordance with their Tender Submission. Amounts specified for these Lump Sum amount shall equal the extended totals from the relevant Bill of Quantities

All amounts shall be exclusive of GST.

Item	Description	Lump Sum Amount (Excluding GST)
1	Water Main Replacement Marsden St	

Name of Authorised Person _____

Organisation: _____

ABN / ACN _____

Signature of Tenderer: _____ Date: _____

Email Address: _____ Phone Number: _____

BILL OF QUANTITIES

1. The quantities shown are estimated quantities only and are not to be taken as correct quantities of work to be carried out and will not form the part of the contract. This will be used to facilitate the progress payment to the Consultant.
2. **All prices and rates shall be exclusive of GST.**

ITEM	DESCRIPTION	UNIT	QTY	RATE	\$ AMOUNT
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	<u>Mains Replacement – Marsden St - Molong</u>				
1.0	<u>Pipeline</u> (including excavation and backfilling)				
1.1	DN160 PE 100 PN 16 Polyethylene Pipe	m	448		
2.0	<u>Fittings</u>				
2.1	Stop Valves	item	4		
2.2	Hydrants	item	4		
2.3	Connections to existing mains	item			
3	<u>Service Connection – 20mm hdpe</u>				
3.1	<u>Connections – with Road Crossings</u>	item	2		
3.2	<u>Connections – no road Crossings</u>	item	3		
4	<u>Traffic Control management</u>	Item	1		
5	<u>Environmental management (Including disposal of surplus pipes and fittings)</u>	Item	1		
B. Sub-Total (Excluding. GST)					\$
GST – 10%					\$
TOTAL LUMP SUM CONTRACT \$ AMOUNT (INCLUDING GST)					\$

**WATER MAIN REPLACEMENT
MARSDEN STREET - MOLONG**
TECHNICAL SPECIFICATIONS

CABONNE COUNCIL

APRIL 2021

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1.0 SCOPE

The works under this specification consist of the replacement of 447 metres of existing water supply main including replacement of valves, hydrants and property connections.

The contractor will be responsible for traffic management and liaising with residents affected by the works.

2.0 WORKS REQUIRED

2.1 PROJECT DETAILS

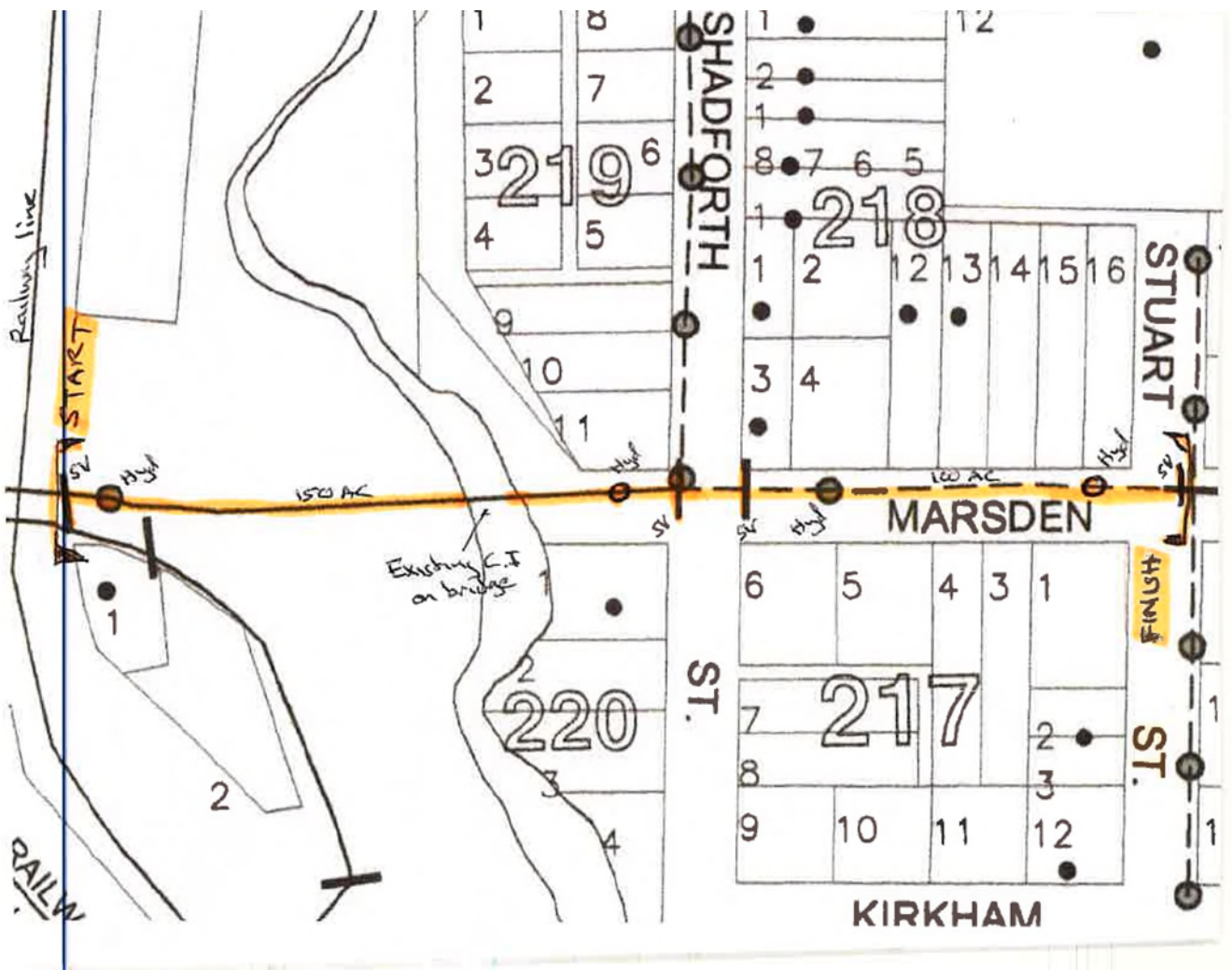
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 - Existing 100mm to new industrial shed (connect to existing 150mm T) - 1
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 - Ductile main at pedestrian footbridge - 1

- o Existing ductile main at Molong Creek road bridge – 2
 - o 100mm dia. AC in Shadforth St
 - o 100mm dia. Main in Stuart St (from 100mm cast iron X)
- Disposal of surplus earth, pipes and fittings
-

Map



2.2 CONTRACT WORKS

The work under this Contract includes, but is not limited to:

- Replacement of approximately 448m of existing AC water main including all excavation and backfilling
- Installation of new valves to improve network operations four (4) in total
- Installation of 4 hydrant points
- Replacement of service connection including road crossings (5 of)
- Connection to existing industrial shed (existing 150mm T)
- Connections to existing mains

All work under this Contract is to be carried out on the basis of a Lump Sum tender.

The Lump Sum tender submitted by the Contractor shall include the supply and installation of all valves, bends, fixtures and fittings required for the construction of the new water pipelines. There will be no variations approved to the Lump Sum for any valves, bends, fixtures and fittings not allowed for by the Contractor in its tendered Lump Sum.

The Lump Sum tender submitted by the Contractor is to include all allowances for the construction of the pipelines in any rock that is encountered during the excavation of the trench for the pipelines.

The works under this contract shall be compliant with the Specification, Water Services Association of Australia WSA 03-2011 Water Supply Code of Australia, Council's Standards and Policies and the functionality required of such a scheme. The construction works shall include the remediation of disturbed ground, third party assets and road crossings and shall be in compliance with all necessary planning, environmental and safety regulations and any other applicable laws.

The Contractor shall supply all labour, materials, supervision, management and documentation systems, transport and installation at site, fittings & fasteners, plant/equipment/tools, testing and commissioning necessary to complete the works, and pay all statutory fees and charges required. The handover deliverable will be a fully tested, commissioned, performance compliant and operational raw water transfer system with Work as Executed documentation together with operating manuals and asset management information as necessary.

2.3 STANDARDS AND SPECIFICATIONS

Standards and Specifications that apply for this Contract include, but are not limited to the following:

- This Specification;
- Water Services Association of Australia WSA 03-2011 Water Supply Code of Australia Version 3.1;
- AS/NZS 4129 - Fittings for polyethylene (PE) pipes for pressure applications
- AS/NZS 4130 - Polyethylene (PE) pipes for pressure applications
- AS/NZS 2033 – Installation of polyethylene pipe systems
- AS/NZS 2280 - Ductile iron pipes and fittings;
- AS/NZS 2566.2 – Buried flexible pipelines – Installation;
- AS 1214 – Hot-dip galvanised coatings on threaded fasteners;
- AS 1289 - Methods of testing soils for engineering purposes;
- AS 2129 - Flanges for pipes, valves and fittings;

- AS 4744.1-2000 Steel shoring and trench lining – Design;
- AS/NZS 3500.1 Plumbing and Drainage – Water Services
- AS 3600 – Concrete structures;
- AUS-SPEC 1151- Road Openings and Restoration Specification; and
- Other Standards and Codes referred to throughout this Specification.

3.0 SPECIFICATIONS

3.1 GENERAL SPECIFICATION

3.1.1 GENERAL

Nothing in this Specification shall preclude all works being done in a sound, efficient and workmanlike manner and in accordance with sound engineering practice and principles.

All works are to be completed in accordance with the Specifications, Water Services Association of Australia WSA 03-2011 Water Supply Code of Australia and with the engineering purpose and intent of the Specifications and Standards.

3.1.2 EXAMINATION OF SITE, DOCUMENTS AND CONDITIONS

The Contractor shall be deemed to have examined carefully the site of the Works, the Request for Tender including the Specification, and any other information made available for the purpose of tendering, before submitting its Lump Sum tender.

No claims will be entertained which indicate that the Contractor had not made such an examination.

The Contractor shall be deemed to have satisfied themselves as far as practicable of the physical conditions upon and below the surface of the site, the climatic conditions in the locality of the site, the nature of the work and the materials necessary for the execution of the Works, the means of access to the site, the availability of labour and accommodation of all risks, contingencies and other circumstances which could have an effect on the Contract.

The final restoration requirements will be considered with the existing state of the site in mind. A full record of existing defects shall be made by the Contractor before the commencement of work, and such record signed by the Contractor and the Principal.

3.1.3 WARRANTY OF INDEPENDENT INQUIRIES REGARDING THE SITE AND NO RELIANCE

The Contractor acknowledges that it has not relied on any representations of the Principal, its consultants, agents or other Contractors as to the nature of the site or the accuracy of any information regarding the site as provided in the Invitation to Tender.

The Contractor warrants that it has made independent inquiries regarding the site and its surrounds, including inspection of the site and examination of information regarding the nature of the site.

3.1.4 MATERIALS AND WORKS

The Contractor warrants that:

- a) it has and shall continue to have sufficient skill and experience in order to carry out and complete the Works in accordance with the Contract;

- b) it has and shall continue to have suitable personnel who are qualified and experienced in carrying out and completing the Works;
- c) it shall exercise due skill and care that would be expected of a professional Contractor experienced in carrying out work similar to the Works; and
- d) all materials supplied shall be of merchantable quality and fit for the purpose stated in the Contract or if no purpose is stated, fit for the purpose that materials of a similar kind are normally acquired or supplied.

3.1.5 WARRANTY

The Contractor shall obtain warranties for all materials supplied and shall ensure that the Principal will have the benefit of the warranties. The Contractor shall ensure that the Principal will have the benefit of any warranties specified in the Contract that are obtained by the sub-contractors of the Contractor.

3.1.6 FEES, NOTICES AND REGULATIONS

The Contractor shall give all notices concerning the Works as may be required by the relevant Authorities. They shall comply with all statutory regulations, provisions of the law, and local by-laws etc. Fees payable to various Authorities shall be paid by the Contractor. Any damage to various authorities' property shall be made good at the Contractor's expense. Any damage caused to roads during construction shall be made good at the Contractor's expense.

3.1.7 MINOR PARTS NECESSARY BUT NOT MENTIONED

If the Contract does not contain particulars of minor parts, the intention to include which is nevertheless clearly to be inferred, and which are obviously necessary for the proper completion of the Works, such parts shall be supplied and executed by the Contractor without extra charge.

3.1.8 SUB-CONTRACTORS

The Contractor shall not engage any sub-contractor without the prior approval of the Principal.

Sub-contract work shall be bound by the provisions of the Conditions of Contract and the Specification and shall be to the entire satisfaction of the Principal. Declarations with respect of wages paid may be required to be submitted with each claim for progress payments in accordance with the General Conditions of Contract. Each declaration shall contain a statement to the effect that no work performed under the Contract has been assigned or sublet without the written consent of the Principal.

Sub-contracting shall not relieve the Contractor from any liability or obligation under the Contract.

3.1.9 MEASUREMENT OF WORKS

The Contractor shall provide all labour, materials and other assistance that the Principal or their Representative may require at any time to make progress measurements, to check setting out or to inspect any part of the works which for that purpose must be left clear and free from any obstruction or impediment.

3.1.10 NORMAL WORKING HOURS

Normal working hours shall be 7.00am to 6.00pm Monday to Friday, excepting Public Holidays and 7.00am to 1.00pm on Saturday. Permission to work outside these hours must be obtained in writing from the Principal.

3.1.11 NOTICE TO COMMENCE WORK

The Contractor shall give at least seven (7) days' notice in writing to the Principal before commencing work. For works requiring construction in Roads and Maritime Services property, prior to entering RMS property, adequate notice must be given to the Divisional Engineer (or an approved representative), at RMS. The Contractor shall be responsible for notifying the Department of Industrial Relations under Section 6 and 6A of the Act, at the commencement of the Contract.

3.1.12 TESTING OF WORK AND MATERIALS

Except for tests required by the Contract to be carried out by the Contractor at the site of the Works or at the premises of the Contractor or sub-contractor, testing shall be carried out by a testing authority approved by the Principal.

Subject to provisions hereinafter provided, the costs of tests which are carried out by the Principal or by the approved testing authority shall be borne by the Contractor. All materials and work shall be subject to testing by the Principal.

The Principal and the Contractor shall have the right to be present at or to have a representative present at all tests, at the taking of samples and specimens and at the preparation of the material for testing. Each shall give the other reasonable notice of tests, the taking of samples and specimens and the preparation of material for testing.

The Principal may reject the results of tests carried out without reasonable notice to them and may direct that such tests shall be repeated at the Contractor's cost.

The Contractor shall provide free of charge all facilities to the approval of the Principal for tests required by the Contract which are to be carried out at the Site or at the premises of the Contractors or a Sub-contractor whether carried out by the Contractor or the Principal or a nominated testing authority. These facilities shall include such labour, material, electricity, fuel, water, compressed air, stores and equipment as may be necessary for the prompt efficient carrying out of tests. The provisions of this clause shall also apply to the taking, preparation, packing and handling at the site of samples and specimens which are to be tested elsewhere.

The Principal or the Contractor may require that a test be repeated. If the results of the repeat test support the results of the original test, the cost of the repeat test shall be borne by the party who requested it, except as otherwise provided above.

If the results of the repeat test do not support the results of the original test, the cost of the repeat test and of any further tests, shall be borne by the party who bore the cost of the original test.

Where payment to the Contractor is dependent on the passing of a test to be carried out by the Principal or the nominated testing authority, such tests shall be made promptly. If, without fault on the part of the Contractor, testing is delayed, the Contractor may request by notice in writing that the test be carried out. If the test be not carried out within seven (7) days of receipt of such notice plus the time which would in the opinion of the Principal be required to make the test the Contractor shall at the expiration of that time be entitled to receive payment as if the test had been passed, but such payment shall not adversely affect any rights of the Principal under the Contract if the work subsequently fails under the test.

Where payment to the Contractor is dependent on the passing of a test to be carried out by the Contractor in the Superintendent's presence, the Contractor may in writing notify the Superintendent that he proposes to commence the test not earlier than seven (7) days after the giving of such notice nor later than one (1) month after giving of such notice.

If, without fault on the part of the Contractor, such test is not carried out within such period of one (1) month plus the time which would in the opinion of the Principal be required to make the test with a maximum of two (2) months in all, the Contractor shall be entitled to receive payment as if the test had been successfully passed but such payment shall not adversely affect any rights of the Principal under the Contract if the work subsequently fails under the test.

3.1.13 SAFETY LAW

The Contractor acknowledges and warrants that it is a 'person conducting a business or undertaking' (PCBU) as defined in the Safety Law.

The Contractor shall:

- (a) comply with the obligations of a PCBU under the Safety Law;
- (b) comply with the Principal's safety policies, procedures and requirements;
- (c) ensure that all its employees and sub-contractors engaged in the performance of the Works comply with the provisions of the Safety Law and the Principal's safety policies, procedures and requirements; and
- (d) comply with the Superintendent's reasonable directions regarding compliance with the Safety Law and the Principal's safety policies, procedures and requirements.

A. Compliance with Safety Law Obligations

Upon request by the Superintendent, the Contractor shall demonstrate that the Contractor has carried out, and shall continue to carry out, its obligations under the Safety Law, including providing evidence of measures taken to achieve compliance.

The Contractor shall immediately notify the Superintendent in writing of any **WHS Incident**, being any incident, event or circumstance that:

- (a) constitutes a breach of the Safety Law;
- (b) is required to be reported under the Safety Law; or
- (c) otherwise presents an actual or potential risk to life or a material risk to health and safety.

Where the Contractor notifies the Superintendent of a WHS Incident, the Contractor shall:

- (a) provide the following information to the Superintendent in writing:
 - i. particulars of the WHS Incident; and
 - ii. the action that the Contractor proposes to take to remove or overcome the effects of the WHS Incident; and
- (b) promptly remedy the breach or remove the effects of the WHS Incident.

If during the performance of the Contract, the Principal informs the Contractor that it is the opinion of the Superintendent that the Contractor is:

- (a) not conducting the Works in accordance with the Safety Law or the Principal's safety policies, procedures and requirements; or
- (b) conducting the Works in a manner which may endanger the health and safety of any person on the site, or in the vicinity of the site,

the Contractor shall promptly remedy the breach or other problem identified by the Principal. Where rectification of a non-conformance is required, the Superintendent may instruct the Contractor to suspend all or part of the Works until it can be safely resumed, and the Contractor shall comply with such an instruction at no cost to the Principal.

Failure by the Contractor to comply with any of the provisions of these Clauses shall entitle the Principal to take the following action:

- (a) the Principal may suspend payments due to the Contractor, notwithstanding any other provision of the Contract, until the 7th day after the required corrective actions have been carried out by the Contractor; and
- (b) where the Contractor continues its failure to comply with the requirements of these Clauses (whichever is applicable), the Principal may immediately terminate the Contract by giving the Contractor notice in writing.

The Contractor shall bear all costs and losses incurred in respect of:

- (a) compliance with the Safety Law and the Principal's safety policies, procedures and requirements; and
- (b) the Contractor's breach of the Contract including but not limited to any reasonable costs or expenses arising out of suspension of the Works.

3.1.14 PERSONS AFFECTED BY DRUGS OR ALCOHOL

The Contractor shall ensure that personnel engaged in carrying out and completing the Works are not under the influence of alcohol or drugs when about to carry out the Works or whilst on duty.

If any of the persons carrying out and completing the Works are affected by alcohol or drugs, the Superintendent may direct the Contractor to have any employee, sub-contractor, agent or visitor of the Contractor who is under the influence of alcohol or drugs:

- (a) prevented from carrying out and completing any of the Works; and
- (b) removed from the site.

The Contractor bears all costs and losses incurred or sustained by it in the circumstances described in this Clause.

3.1.15 PUBLIC SAFETY

The Contractor is to ensure that the Works conducted shall not endanger the health or safety of the public.

The Principal shall be entitled to review and audit:

- (a) compliance by the Contractor with the Safety Law;
- (b) the Contractor's safety systems to protect other personnel; and
- (c) any procedures or work practices adopted by the Contractor which have safety implications.

Pursuant to this Clause, the Principal shall be given access to any site, property, premises, plant or equipment of the Contractor utilised in relation to the Works performed under the Contract and shall be given access to any records and documentation, including those of any sub-contractor which is relevant to the review and audit functions.

The Principal shall be entitled to speak to any officer, employee or agent of the Contractor concerned in relation to the Works for the purpose of carrying out the functions described in this Clause.

If the Principal determines that the Contractor shall make some provision or implement some measure in order to comply with any aspect of public safety or the Safety Law, the Principal may direct the Contractor to make that provision or take that measure and the Contractor shall do so as soon as is reasonably practicable and at its own expense.

The Contractor shall maintain a proper and adequate public safety incident or other circumstance reporting, recording and investigation system and shall comply with any reasonable direction given by the Principal resulting in the establishment and maintenance of such a system and any matter relating to the carrying out of an investigation into an incident.

The Contractor shall separately and forthwith notify the Principal of any safety incident or other circumstance which requires notification to any external authority or which might reasonably result in an investigation by any external authority. Such notification shall include full particulars of the incidence or circumstance.

The Principal shall be entitled to carry out its own investigation into any public safety incident or circumstance of which it becomes aware and the Contractor shall cooperate in such investigation and provide the Superintendent with access to all persons and other matters, which may facilitate that investigation.

3.1.16 NOISE

The Contractor shall ensure that the level of construction noise is controlled to suitable levels so as not to cause undue disruption to areas surrounding the site. The Contractor shall also undertake the Works in a manner that limits noise to an acceptable level, which shall not cause injury or discomfort to the Contractor's staff, or other personnel and staff in the area.

Should a noise complaint be received, the Contractor shall consult, negotiate and take all reasonable measures to remove or silence the source, and resolve with the Superintendent any concerns, conflicts or complaints about work noise levels.

Where the matter cannot be resolved to the satisfaction of the Superintendent, the matter shall be referred to the Principal for resolution. The Contractor shall abide by any instruction issued by the Superintendent and take all necessary action at no additional cost to the Principal. Any such instruction shall not be a basis for any claims (including for extensions of time) under the Contract.

3.1.17 DILAPIDATION RECORD

A photographic and written record of the condition of the existing buildings, structures, roads or other relevant facilities adjoining the site (dilapidation record) shall be supplied by the Contractor to the Principal and shall be used as a means of assessing the responsibility for any damage and/or making good arising out of the performance of the Works.

A copy of the dilapidation record shall be supplied to the Principal prior to the commencement of the Works. A second dilapidation record is to be supplied at the completion of the Works with the photographs taken from the same angle or view as the pre-construction photographs.

3.1.18 DAMAGE TO SURROUNDING STRUCTURES AND AREAS

Any damage caused to any buildings or structures adjoining the site, or surrounding grounds or public infrastructure, by the Contractor or its sub-contractors during the execution of the Works, shall be reinstated to the satisfaction of the Principal and at no cost to the Principal.

All reinstatement shall be completed to the same or better standard, which existed prior to the Works being commenced, using matching materials and colours.

Where the Contractor fails to satisfactorily reinstate the damage, the Principal shall arrange for the reinstatement to be carried out and deduct all associated costs from monies owed to the Contractor.

3.1.19 PUBLICITY

The Contractor shall not furnish any information, make any statements or issue any documents or printed material about the Works for publication in any media without the prior written approval of the Principal, and is to refer any enquiries concerning the Works to the Principal.

3.1.20 INADEQUATE CONTRACTOR PERFORMANCE

Where the Principal requires the Contractor to improve the standards of performance, this shall be done without delay and at no additional cost to the Principal. Failure of the Contractor to comply with the Principal's direction may result in the Principal rectifying the Works at the Contractor's cost.

3.1.21 CLEANING UP

Throughout the period of the Contract, including the defects liability period, and at its own expense, the Contractor is to:

- (a) keep the Site Compounds clean and tidy as works proceeds;
- (b) keep the site clean and tidy as work proceeds;
- (c) regularly remove from the site all rubbish and surplus equipment and materials arising from the Works; and
- (d) obey any instruction from the Principal to maintain the condition of the site as required by this Clause.

On completion of the Works or termination of the Contract, and at its own expense, the Contractor is to:

- (a) clean and reinstate the Site Compounds used during the Works, to a standard, which existed prior to the Works commencing;
- (b) clean and reinstate the areas used during the Works, to a standard, which existed prior to the Works commencing;

- (c) remove from the site all rubbish and surplus equipment and materials arising from provision of the Works; and
- (d) ensure that no rubbish, contamination, or excess equipment or materials remain on the site, or any other public place.

The Contractor shall be liable for the cost of cleaning up any equipment, facility or land that becomes polluted or contaminated as a result of the Works.

3.1.22 MATERIALS STORAGE AND WASTE DISPOSAL

Materials storage and work can only be undertaken in areas agreed to and approved by the Principal, and where adequate barricades, screens and notices have been provided to remove any danger to the public.

Waste material shall be promptly removed from the site to an authorised tip site or disposed of by another legal method. A waste bin may be located on the site during the Works subject to approval by the Principal of the proposed location.

Stockpiling of materials shall only be permitted in those quantities and at those locations approved by the Principal. In general, surplus excavated or demolition material shall be promptly removed from the site to an approved disposal location or other approved project. Stockpiling of imported materials is not to be accumulated more than a day in advance of the Works with appropriate environmental protection installed.

All works including plant and materials associated with the Contract shall be contained within the boundaries of the site. The Contractor is not to store plant or materials on adjoining public land unless approved by the Principal.

3.1.23 COMMUNITY AND STAKEHOLDER RELATIONS MANAGEMENT

Contractor Contact Persons

Provide the names and contact details, including mobile telephone numbers, of at least two persons who will be available to respond at all times to issues which require action by the Contractor.

Supply a 24 hour phone line for emergencies, issues or concerns for anyone to call regarding the project.

Community Relation Standards and Procedures

The Contractor is to liaise with all landowners at nearby affected properties and businesses.

The Contractor will ensure that all employees and subcontractors:

- present a professional image at all times,
- are polite, professional and courteous,
- understand that, as far as the customers and the community are concerned, they are the 'face' of the Principal whilst working on this Contract,
- avoid complex technical data or jargon when responding to questions from customers and the community,
- have a genuine interest in working with customers, the community and other stakeholders to minimise the impacts of construction activities,
- comply with approved working hours and working days.

Any enquiries or complaints from any stakeholder on site shall be referred to the Superintendent.

3.2 CONSTRUCTION SPECIFICATION - GENERAL

3.2.1 GENERAL

Nothing in this Specification shall preclude all works being done in a sound, efficient and workmanlike manner and in accordance with sound engineering practice and principles.

All works are to be completed in accordance with the Specifications, Water Services Association of Australia WSA 03-2011 Water Supply Code of Australia and with the engineering purpose and intent of the Specifications and Standards.

3.2.2 SITE ACCESS

The Contractor shall be responsible for the proper maintenance of all access points used throughout the duration of the Contract and the reinstatement upon completion of the Works.

The Contractor shall ensure that safe access is maintained for the Principal's personnel and representatives and other Contractors onto the work sites.

Adequate signage and fencing at work sites shall be provided by the Contractor to advise the public of the Works and to prevent pedestrian access whilst construction work is being undertaken.

The Contractor shall so organise its work that at all times there is adequate and safe access for traffic to properties adjacent to and for traffic along all streets and roads.

Written permission from the Principal shall be obtained by the Contractor for any occasion where pedestrian or vehicular traffic access to any premises is to be blocked for more than 15 minutes.

Following approval from the Principal, the Contractor shall be responsible for providing written notice to the property owner, tenant or business proprietor at least 24 hours prior to the interruption of access. The notice should advise the reason for the interruption of access, whether it shall affect pedestrian or vehicular access and the expected duration of the interruption.

Should unexpected interference occur or be required for emergency reasons, the Contractor shall immediately communicate this to the affected property owner/s, tenant/s or business proprietor/s, and do everything reasonably possible to reinstate access as soon as possible.

The Contractor shall provide facilities for the use of public and private traffic in the manner of temporary bridging etc., as directed by the Principal.

3.2.3 WORKING AREAS

The Principal will not be responsible for the safe-keeping of any of the Contractor's plant, equipment tools, materials or other property. The Contractor may provide, at his own cost, any security fencing they consider necessary around their office, workshops or storage areas, subject to the Principal's approval.

All compound and stockpile areas shall be approved by the Principal prior to establishment. A digital visual record of the pre-existing condition of all compound and stockpile areas shall be undertaken.

Upon completion of the Works all compound and stockpile areas shall be restored to the same or better condition that what was present prior to the Works commencing. The Contractor's plant, plant labour and materials shall be allowed on the site only to the extent necessary for the construction of the Works.

3.2.4 SITE FACILITIES

The Contractor shall be wholly responsible for the provision of offices and sheds for the use of their workforce. Offices and sheds required by the Contractor shall only be erected, and equipment stored or parked in areas approved by the Principal's Representative.

The Contractor shall be responsible for provision of temporary services (e.g. temporary water, power, telephone etc.) if required. The Contractor shall arrange for a telephone on site and shall remain for the period of the Contract. The Contractor shall provide a 24 hr phone contact.

The Contractor shall provide temporary sanitary accommodation for the workforce, arrange and pay for the necessary waste removal service, clean and disinfect the area regularly and remove the same on completion of the work. Site amenities shall comply with the requirements of NSW Health and Safety Regulations 2017, SafeWork NSW – Facilities at Work and the NSW Government's Code of Practice for Construction Work.

The Contractor shall provide, equip and maintain an adequate First Aid Treatment Centre on-site and shall have a qualified First Aid officer available at all times.

3.2.5 CONSTRUCTION SIGNAGE

Ensure that signs are clearly visible outside the site work areas and on which the name and contact telephone numbers (including an afterhours emergency telephone number) of the Principal Contractor are stated, are placed on each construction site.

Sign(s) shall have minimum overall dimensions of 450mm x 600mm and be manufactured from 0.8 mm thick 'Colourbond' steel sheeting. Sign(s) shall be gloss white on the front face and 'Colourbond' green or similar on the reverse face.

3.2.6 VISUAL RECORD

The Contractor shall prepare a detailed photographic record of all areas that will be affected by construction work including stockpile areas, storage areas and access tracks. Detail shall include, but not be limited to, driveways, structures, roads, pavements, reserves, kerb and gutter, fences, drains and pits. Special attention must be given to all existing improvements adjacent to, and which may be affected by, the work under the Contract.

Provide a record of notable details and existing damage or faults relating to improvements in the vicinity of the works.

This record may be used in the resolution of disputes between third parties and the Contractor and/or the Principal and accordingly must be comprehensive in its coverage of the areas affected by construction activities.

The record shall be complete, comprehensive and shall be submitted to the Principals Representative prior to commencing work on the site. The visual record shall be continually updated on site to record any additional unforeseen areas affected by construction activity.

The visual record shall be in the form of photographs, this shall be either printed records or digital records.

Regardless of photographs being digital or printed the photographs shall be grouped in logical packages or albums representing each section of the work. Each package shall be indexed such that particular properties and/or chainages can be examined.

Each package shall carry notation indicating:

- Name of existing facility and its location;
- Detailed description of photo location relative to the work area; and
- Comments on any existing damage or faults, particularly where the damage or faults are not obviously visible in the photographs.

3.2.7 SETTING OUT

The Principal shall supply the concept information necessary to enable the Contractor to set out the works.

The Contractor shall at his own expense set out the works correctly in accordance with the Contract and shall provide all instruments and materials necessary for that purpose.

The Contractor shall be responsible for ensuring that the work is carried out accurately to the levels and alignments proposed by the Principal's concept design.

If at any time during the progress of the work under the Contract, any error is discovered in the position, level, dimension or alignment of any part thereof, the Contractor shall immediately notify the Principal and shall, unless otherwise directed, rectify the error at the Contractor's expense.

3.2.8 SURVEY PEGS

The Contractor is required to take every precaution not to disturb existing survey pegs not directly connected with this Contract. These pegs may be block boundary pegs, road, stormwater, or water main survey pegs or any other pegs placed by or on behalf of the Principal.

Where in the opinion of the Contractor, the position of a peg, relative to the construction work makes it impossible to avoid its disturbance, he shall bring it to the attention of the Principal prior to its disturbance. Where the Principal agrees that disturbance of a peg is necessary, he shall provide written permission so to do. Where the Principal does not agree that disturbance of a peg is necessary, the Contractor shall not disturb that peg for any reason.

Should any survey mark be disturbed or obliterated, the Contractor shall immediately notify the Principal and shall, unless the Principal otherwise determines, rectify such disturbance or obliteration to the satisfaction of the Principal. Unless the disturbance or obliteration has been caused by the Principal, his employees or agents, the cost of rectification shall be borne by the Contractor.

3.2.9 PUBLIC SAFETY AND TRAFFIC CONTROL

The Contractor shall prepare a Traffic Control Plan (TCP) by an accredited traffic controller and submit the TCP to the Principal for approval prior to the commencement of the construction of the works. All activities for controlling vehicular traffic and pedestrians shall be in accordance with AS 1742.3.

The Contractor shall provide and erect all necessary fences, barricades, warning signs and lights as may be necessary for the protection of the Works and the safety of the public and vehicles all to conform to Australian Standard AS 1742.3. Road notices, speed restriction signs, flagman etc., shall be provided and maintained to the satisfaction of the relevant Traffic Authority.

All signs used are to be in good condition and placed as per the approved TCP. A copy of the approved TCP must be on site at all times and daily checks should be made to confirm compliance with the TCP. Traffic control staff are to be appropriately qualified. Nominated traffic control staff and copies of relevant qualifications are to be submitted with the site specific TCP for approval.

Local area traffic movements shall not be disrupted in order to gain access to a site work area unless written approval has been given by the Principal. Vehicular and pedestrian access to properties shall be maintained unless written approval has been given by the Principal.

If the Contractor fails after notification in writing to carry out the requirements of this Clause, the Principal shall have the power to have the work carried out at the Contractor's expense. The cost thereof will be deducted from any moneys owing to the Contractor under this Contract.

3.2.10 TRAFFIC MANAGEMENT AND MONITORING PLAN

The Contractor shall prepare road dilapidation reports for existing roads likely to be affected by construction traffic before construction commences and after construction is complete.

The requirements of the Traffic Management and Monitoring Plan shall include:

- Compliance with the RMS Traffic Control at Worksites Manual and other local authority requirements.
- Road occupancy licence / road opening permits as required by relevant authority.
- Notification details for all Emergency Services (including Police, Fire and Ambulance) and local public transport companies of any completion or total disruption to traffic exceeding 15 minutes in duration.
- The dates for special public or community events, or other works, affecting the area(s) defined in this plan. No disruptions to traffic flows shall be permitted during, before or after special events.
- A separate plan for any proposed night work. Night work will require the use of flashing lights, night cones and night signs. Ensure that all personnel working at night wear clothing suitable for night visibility in accordance with Australian standards.
- Identification of all public roads to be used by construction traffic, in particular roads proposed to transport large quantities of construction materials. The timing and duration of road usage must be stated;
- Management methods to ensure construction traffic uses identified roads;
- Identification of all public roads that may be partially or completely closed during construction and the timing and duration of these closures. Consideration must be given to programming construction works to minimise road closures during peak hours and/or holiday periods;
- Impacts on existing traffic (including pedestrians, school zones, school buses, town CBD, vehicles, cyclists and disabled persons);
- Temporary traffic arrangements including property access;
- Access to Construction sites including entry and exit locations and measures to prevent vehicles queuing on public roads;
- A response plan for any Construction traffic incident; and
- Monitoring, review and amendment mechanisms.

3.2.11 EXISTING SERVICES

The Drawings issued for tender purposes may show some underground services affected by the work insofar as their existence and position have been able to be ascertained but the information is not guaranteed correct.

The Contractor **must** obtain the latest Dial Before You Dig information before any works are carried out on site.

The Contractor shall be responsible for, and bear all cost of, obtaining the latest information and where necessary carry out all sub-surface investigations on all underground services, affected by the reconstruction work from the relevant authorities and satisfy himself of their position on the ground ahead of the Works.

For the purpose of this clause, public utilities include gas, water, sewer, internet, telephone, cable television, NBN, optic fibre and electricity mains and services.

Where public utility plant is found to be at a level or position which prevents the proper carrying out of the Works, the Contractor shall carry out all negotiations with the authorities concerned to have the plant lowered or relocated and shall make all applications and obtain all permits required. All costs involved in carrying out negotiations with authorities or others concerned shall be borne by the Contractor.

The Contractor shall have no claim against the Principal for additional payment to cover any losses due to delays associated with the relocation.

The Contractor shall not arrange or allow the interruption of a service to any property without first obtaining approval from the Principal and providing adequate notice to the property owner or occupier.

The Contractor shall be responsible for giving suitable notice to affected properties for disruption to supply during any public utility relocation.

The Contractor is entirely responsible for any damage caused to existing services by his operations. The Contractor shall immediately carry out or arrange for any repairs and pay for the full cost of such repairs and any liquidated damages occasioned as a result of such damage.

The Contractor shall keep all plant and equipment the required distance from all overhead telephone and electricity cables.

The Contractor shall maintain access to fire hydrants, water main control valves and sewerage manholes at all times.

The Contractor shall verify and comply with the requirements of Cabonne Council prior to and whenever work is to be undertaken in a public roadway or road reserve.

3.2.12 TEMPORARY SUPPORT OF EXISTING SERVICES

All services crossing through the trench but not conflicting with the pipe shall be temporarily supported to the satisfaction of the Authority concerned. The Contractor shall ensure that the safe and regular functioning of existing services is not endangered by his operations and shall securely support all services against any movement which may disrupt or damage the services in any way.

3.2.13 PROTECTION AND MAKING GOOD

The Contractor shall protect all work and property against damage by accident, weather or other causes with any effective means as may be necessary and make good any such damage.

3.2.14 NOISE

All noise shall be kept to a minimum. All mechanical plant and equipment shall be silenced to the approval of the Principal.

3.2.15 DUST NUISANCE

The Contractor shall at all times ensure that dust, sand, etc. is prevented from blowing about and causing a nuisance, by brooming, covering or spraying as is necessary. If at any time the Principal issues a written or verbal instruction concerning a dust nuisance to adjoining properties, the Contractor shall immediately, and to the satisfaction of the Principal, take whatever action is necessary to control the dust on site.

3.2.16 PROTECTION OF THE ENVIRONMENT

All work shall be carried out in such a manner as to avoid nuisance and/or damage to the environment. The Contractor shall comply with the requirements of the conditions of approval imposed by the Local Government Authority, the Environment Protection Authority, the Clean Waters Act, the Clean Air Act and the Noise Control Act. No variation in costs or extensions of time will be considered due to these requirements.

The Contractor shall plan and carry out the Works to avoid erosion, contamination and sedimentation of the site and its surroundings.

Herbicides and other toxic chemicals shall not be used on the site without the prior written approval of the Principal.

No noise or smoke or other nuisance, which in the opinion of the Principal is unnecessary or excessive shall be permitted by the Contractor in the performance of the Works under this *Contract*. Should work outside customary working hours be approved, the Contractor shall not use, during such period, any plant, machinery or equipment which in the opinion of the Principal is causing or is likely to cause a nuisance to the public. No noisy works and/or works likely to disturb nearby residents shall be undertaken during the hours precluding such activity as specified by Council in accordance with the requirements for development consent and building approval made under Part 10 of the Local Government Act and the Noise Control Act.

The Contractor shall ensure that fugitive dust from disturbed areas is minimised by a method approved by the Principal.

3.2.17 INDIGENOUS HERITAGE

The Contractor must ensure all operators are instructed that in the event of any bone or stone artefacts, or discrete distributions of shell being unearthed during earthmoving, work would cease immediately in the area of the discovery, and the Principal's Representative notified immediately. NSW Aboriginal Land Council and officers of the DECCW shall also be informed of the discovery.

3.2.18 RESTORATION OF SURFACES

The Contractor shall be required to carry out the restoration of all disturbed surfaces and rehabilitation of all areas progressively as the Works are carried out. The Contractor must not leave restoration works until the end of laying the raw water pipeline.

Pavements, lawns and other improved areas shall be cleaned and left in the same order as they were at the commencement of the works. Lawns shall be restored with turf cut and set aside from the original surface and with turf imported from a source approved by the Principal.

All restored surfaces shall be maintained in the condition to which they are restored until the expiry of the Defects Liability Period notwithstanding that any deterioration of the restored surfaces, and the need for their maintenance may or may not be due to defects which become apparent or arise from events which occur during the Defects Liability Period. Pavements shall be maintained with crushed metal, gravel or other suitable material allowing for consolidation and shall then be restored to a condition equivalent to that of the original pavement.

Immediately after the backfilling of a trench excavated through a pavement has been completed, the pavement shall be temporarily restored. Where the trench crosses bitumen or concrete pavement, a pre-mixed asphaltic material shall be used for such temporary restoration. Temporary restoration shall be maintained by the Contractor until final restoration is carried out. Final restoration of the pavement shall be carried out to restore the pavement and its sub-base to no less than the original condition. Final restoration may include, if required by the Principal, the removal of temporary restoration.

Back fill shall be placed sufficiently high to compensate for expected settlement and further backfilling shall be carried out or the original backfill trimmed at the end of the Defects Liability Period in order that the surface of the completed trench may then conform with the adjacent surface. Surplus material shall be removed and disposed of two areas arranged by the Contractor.

In locations where, in the opinion of the Principal, surplus material left in the vicinity of the trench would not be objectionable, the surplus material may be dispersed by spreading neatly in the vicinity of the trench to the satisfaction of the Principal in such a way as to minimise future erosion of the backfill and adjacent ground surfaces. The Contractor shall maintain the backfill and adjacent ground until the expiry of the Defects Liability Period.

Where, within public or private property, the reasonable convenience of persons will require such, the Principal may order trenches to be levelled off at the time of backfilling. Any subsequent settlement shall be made good by the Contractor, as required by placing additional fill.

Where the Contractor tunnels under paving, kerb and gutter and other improved surfaces in lieu of trenching, backfilling shall be carried out as to restore full support to those surfaces, and payment shall be made for the restoration of the surfaces as though they had been removed and replaced, The Contractor shall remain responsible for the repair of the improved surfaces, if subsequently damaged due to subsidence of the backfill, until the end of the Defects Liability Period.

3.3 CONSTRUCTION SPECIFICATION

3.3.1 GENERAL

This Section of the Specification specifies and outlines the supply, laying, bedding, jointing and general installation of the pipelines.

Nothing in this Specification shall preclude all works being done in a sound, efficient and workmanlike manner and in accordance with sound engineering practice and principles.

All works are to be completed in accordance with the Specifications, Water Services Association of Australia WSA 03-2011 Water Supply Code of Australia and with the engineering purpose and intent of the Specifications and Standards.

3.3.2 DISUSED / REDUNDANT WATER MAINS

Take any action regarding disused watermains as specified, typically:

- Remove any "Tee" fitting from any existing main to be disused
- Plug and/or seal all openings on disused mains against water infiltration
- Seal existing flanges with bolted and gasketed blank flanges
- Seal cut pipe ends with caps, Gibault caps or similar
- Plug open pipes as required with suitable concrete or premix
- In the case of asbestos cement (AC) pipes, comply with the following requirements
 - Disused AC Pipes in private property are to be removed
 - Where practicable leave existing AC piping in situ
- Any asbestos that must be removed shall be done in accordance with The Model Code of Practice: How to safely remove asbestos.

3.3.3 SUPPLY OF PIPES AND FITTINGS

The Contractor shall allow in the Lump Sum tender for all costs involved in the supply and transporting of all pipes and/or fittings to the site including safe storage and protection from damage from whatever source.

Polyethylene

PE pipe to comply with WSA PS – 207 and AS4130.

PE pipe fittings to comply with WSA PS 208 AS4129.

PE pipe to be installed in accordance with WSA 01 and AS2033.

Jointing of PE Pipe to be in accordance with WSA 01.

Materials in contact with drinking water shall comply with AS/NZS 4020.

All products shall be marked in accordance with the certification body's requirements.

3.3.4 HANDLING OF PIPES AND FITTINGS

The methods used for handling, laying and stacking pipes, fittings, valves and other materials shall be such as to avoid damage to the pipes, pipe coating and lining, and to other material, and shall comply with any recommendations made by the manufacturer. Cranes, skids or other approved devices shall be provided and used to ensure that pipes are not dropped or bumped during loading, cartage, unloading or when being placed in the trench. Pipes shall not be lifted or suspended from hooks, lifting dogs, or other devices placed at their ends. The Contractor shall be responsible for replacing or repairing any pipes or fittings damaged by handling.

Rubber gaskets shall be stored in a cool, dry place out of sunlight.

3.3.5 MANUFACTURERS ADVICE

Work using manufactured items shall be according to the manufacturer's recommendations, standards and requirements unless otherwise specified within the Contract or agreed with the Principal. If any doubt arises, the highest quality Specification or that producing the best life-cycle costs will be implemented.

3.3.6 CLEARING

Vegetation shall not be removed or cleared to an extent no greater than that specified in the relevant Review of Environmental Factors.

The removal of trees shall not proceed without written approval of the Principal. Any steps that can prevent damage to trees and indeed the natural environment shall be identified and undertaken on site.

All rubbish and surplus material shall be disposed of within 24 hours of clearing.

Topsoil shall be stockpiled separately from other excavated material and used at a later stage to make good the surface after backfilling.

3.3.7 TRENCH EXCAVATION

The general width of the water main trench will be the appropriate width shown on the following table:

<u>Nominal Diameter (mm)</u>	<u>Width of Trench (mm)</u>
100	400
150	450
200	450
225	450
250	500
300	550
375	650
400	650
450	700
500	750
525	750
600	850

The depth of trench shall be the nominal diameter of the pipe plus 100mm, plus the appropriate minimum cover as described in the Specification below.

No other allowance shall be made for surface irregularities that involve intermittent increases in the depth of excavation beyond the minima.

The minimum cover for buried pipes and fittings shall be:

- (a) 800 mm for pipes laid in carriageways and in road shoulders; and
- (b) 600 mm elsewhere, unless otherwise approved by the Principal and unless special protection is provided for the pipe to the satisfaction of the Principal.

Trench excavation shall be deemed to include the cost of dewatering and the cost of the supply, installation and removal or any timbering or other supports that may be necessary.

3.3.8 TRENCHING IN ROAD PAVEMENT

The methodology for trenching in sealed roads shall employ a saw cut, or equivalent approved methodology, to cut through the bituminous surface so as to provide a neat, straight and definitive edge of trench.

All reinstatement of roads (and road shoulders in the road formation), shall comply with Cabonne Council's requirements and is to be completed within 48 hours of backfilling.

3.3.9 PREPARATION OF PIPE BEDDING

Pipes shall be bedded as detailed on the approved construction drawings and in accordance with the requirements and standards of Council. Bedding material shall be compacted granular material having a low permeability and high stability when saturated, free of organic materials and materials coarser than 15 mm. Bedding material shall be placed to a depth of one third the pipe diameter after laying and thoroughly tamped and compacted under and around the pipe.

The Contractor shall take care in the bedding of pipes to ensure solid and uniform support for each pipe over the whole length of the barrel. Shallow holes shall be excavated beneath joints to enable jointing and inspection of the joints to be properly carried out and to ensure that each pipe is supported on the barrel and not on the joint. Pipes laid in trench shall not be permanently or temporarily supported on blocks.

When rock or other hard materials occur in the bottom of the trench, or where specified or directed by the Principal a layer of approved fill at least 100 mm thick (measured after compaction) shall be placed under the bottom of the pipes, fittings and valves, and the depth of the trench shall be correspondingly increased to accommodate such layer.

Bedding shall be placed to a depth of one third the pipe diameter and compacted.

Unless otherwise specified or directed by the Principal, the provisions above shall apply where a pipe trench is excavated in highly expansive soil, such as black soil, together with the additional requirement that sand or other approved non-cohesive material, borrowed if necessary, shall be placed under and around and within 100 mm of the pipes and fittings.

Where fill is placed under the bottom of a pipe, it shall be thoroughly compacted to the satisfaction of the Principal.

Where the bottom of an excavation is soft or considered to provide an unacceptable foundation a stable foundation by a method approved by the Principal's Representative or by one of the following methods:

- (a) Place geotextile fabric across the full excavation width and extending up the sides to minimum level of 600mm above the base of the excavation;

- (b) Extra depth excavation; and
- (c) Ram ballast into the soft ground until an approved firm foundation is obtained at the design depth. Use ballast comprising clean hard rock of 150 mm nominal size having no less than 85% retained by a 150 mm sieve and no less than 95% retained by a 100 mm sieve, Remove and dispose of any excess material.

Notice must be given to the Principals Representative prior to commencing any foundation stabilisation work.

Payment for foundation stabilisation works is only due where the works have been approved in writing by the Principal prior to commencing work.

3.3.10 LAYING AND JOINTING PIPES AND FITTINGS

Except where otherwise specified, laying and jointing of pipes, fittings and valves shall be carried out in accordance with the manufacturer's instructions.

Before being laid in the trenches all pipes, fittings and valves shall be cleaned and examined and, if required by the Principal, the Contractor shall suspend each or any one in a sling to enable the Principal to sound and examine them.

The Contractor shall take care to ensure that the correct class or wall thickness is always used, particularly where pipes, fittings or valves of various classes or wall thicknesses are used on the same work.

Whenever possible laying of pipe shall commence at the downstream end. Pipes shall be laid with their sockets at the upstream end and their barrels firmly and evenly embedded on the bedding material. Holes in the bedding to accommodate the pipe sockets or couplings shall be constructed immediately prior to pipe laying to allow even bearing along the full length of the pipe barrel.

The Contractor shall provide and use approved drag scrapers or "detectors" to ensure that the interior of the pipeline is clean and free from obstructions. Timber or other approved plugs shall be provided and used to prevent any material from entering sections of the pipeline which are left uncompleted overnight.

The Contractor shall take all precautions necessary to prevent floating of pipes in flooded trenches.

The Contractor shall use all sound cut pipes delivered to them and shall cut pipes as needed or directed to suit closing lengths, to remove damaged parts, or to remove sockets if necessary when jointing to a socketed fitting.

Pipes shall be laid to the grades and alignments shown on the approved construction drawings, except where deviations have been directed or approved by the Principal in order to eliminate bends, to avoid cutting pipes, or for any other reason.

In the case of pipelines with flexible joints, gradual changes in grade or alignment shall be formed by deflecting at joints after they have been made. The manufacturer's recommendations in respect of maximum deflection for each joint shall be complied with provided that no joint shall be angled to such an extent as to impair its effectiveness and tightness.

Individual pipes will be inspected after bedding and unless otherwise specified, a tolerance of $\pm 1.0\%$ of the design grade for that pipe will be allowed provided that over no more than three (3) consecutive pipe lengths the pipeline does not depart from the design grade.

Unless otherwise directed or approved by the Principal, pipes shall be laid on continuously rising grades from scour valve to air valve, notwithstanding any minor irregularities in the ground surface. This provision is not applicable to pipes in a reticulation system.

Valves, flexibly jointed bends, tees and other points in the water reticulation system where there are unbalanced forces shall be adequately restrained to withstand the forces resulting from the internal

pressure when the pipeline is under test and operation by the installation of concrete thrust blocks as may be approved by the Principal provided that, notwithstanding any such approval, the Contractor shall be responsible for any failure of the pipeline that may be due to inadequate restraint.

Steeply inclined pipelines with flexible joints shall be secured by approved transverse anchors. Unless otherwise specified or directed by the Principal, where the pipe joints are not designed to withstand longitudinal forces, the transverse anchors shall be spaced in accordance with Council's requirements.

Unless otherwise directed by the Principal the location of pipelines relative to other services shall be as shown on the construction drawings. Hydrants shall not be installed in areas which are likely to be often used for parking vehicles, particularly in commercial streets. Where the pipeline in such an area is located in the carriageway just off the kerb, the hydrants shall be installed in the footpath, unless otherwise directed by the Principal.

The Contractor shall design and construct all the necessary supports, fastenings and/or encasement required for creek crossings, crossings on bridges and culverts, road crossings, railway crossings, etc., in accordance with the construction drawings and shall make all necessary arrangements with the Roads and Maritime Service, State Rail Authority, John Holland or any other authority controlling the site of such crossings, and pay any fees associated therewith.

Unless otherwise shown on the approved construction drawings, all valves and hydrants shall be installed at a depth such that a clear space of not less than 80 mm nor more than 150mm is provided between the top of the valve spindle or hydrant and the underside of the surface box lid. In order to comply with this requirement hydrant units shall not be installed where the cover over the pipe exceeds 450 mm but hydrant tees with hydrant risers and spring hydrants shall be used. Each valve shall be installed with its axis vertical.

Connections to existing pipes carrying water shall be made at such times as will cause the least interference with the supply. The Contractor shall obtain permission from the Principal who will make arrangements with the Council or other Authority concerned for the timing of the work.

3.3.11 Tapping of Mains and Property Services

In all instances where tapping is employed:

- (a) tap with the main dry before completing embedment and placement of trench fill and hydrostatic pressure testing;
- (b) tap curved mains, where curving of pipe is permitted (e.g. PE) at the crown of the pipe;
- (c) maintain a minimum spacing of 500 mm between tapplings, and from a tapping and the end of a pipe; and
- (d) remove all swarf before making the connection.
In addition to (a), (b), (c) and (d), for PE mains:
 - i. where electrofusion tapping saddles are used allow the assembly to cool naturally in accordance with the manufacturer's instructions before tapping;
 - ii. where under pressure tapping is performed, use tapping equipment that employs a plug cutter that can retain the PE pipe wall plug within the cutter; and
 - iii. where dry tapping is performed, use a plug cutter.

Tapping at the side of a straight pipe section of main is permitted.

Lay all property services crossing road carriageways within a duct. Install duct location markers as required.

3.3.12 PIPELINE IDENTIFICATION MARKING TAPE

For all metallic pipework installations, lay non-detectable marking tape conforming to WSA PS - 319 'Marking Tape, Non-Detectable' on top of the pipe embedment material before trench filling.

For all non-metallic pipework installations, lay detectable marking tape conforming to WSA PS - 318 'Marking Tape, Detectable' on top of the pipe embedment material before trench filling.

3.3.13 CORROSION PROTECTION OF STEEL BOLTS AND NUTS

All steel bolts and nuts used for installation below ground of flanges, bolted gland joints, Gibault joints, tapping bands, etc., shall be thoroughly coated, after the nuts have been tightened, with tar applied hot, or with at least one coat of plasticised coal-tar compound applied cold, such as "Ternamel T.E.50" or approved equivalent, or with some other corrosion protecting material which is acceptable to the Principal. Bolts and nuts shall be dry, clean and free from rust immediately before application of the coating. Stainless steel bolts and nuts need not be coated.

If supplied by the Contractor, steel bolts and nuts shall be hot dip galvanised or shall have received an approved anti-corrosive treatment. Alternatively, stainless steel bolts and nuts may be used.

3.3.14 THRUST AND ANCHOR BLOCKS

Thrust restraints shall be installed at all valves, flexibly jointed bends, tees, enlargers and reducers or any other point where unbalanced forces resulting from internal pressures will occur.

The Contractor shall provide permanent concrete thrust blocks such that the thrust blocks bear against undisturbed material normal to the direction of thrust resulting from the internal pressures over a bearing area not less than that indicated by WAT-1205 and WAT-1207 and as directed by the Principal.

The Contractor shall provide permanent concrete anchor blocks of a volume not less than that directed by the Principal.

The concrete shall be 20MPa to AS 3600 at a slump of 80 mm +/- 15 mm (at the point of discharge) unless noted otherwise on the approved Construction drawings.

The Contractor must notify the Principal prior to the placement of concrete. This constitutes a hold point.

Concrete must not be placed before written approval is given by the Principal.

The Contractor must keep a log of all thrust blocks. Records kept in this log shall include:

- Date of concrete placement;
- Location of thrust block with reference to chainage;
- Volume of concrete mass;
- Details of specified surface bearing area; and
- Surveyed data point for inclusion into WAE drawings.

Concrete thrust and anchor blocks shall be cured for a minimum of seven (7) days before subjecting to any thrust load.

3.3.15 FLANGED JOINTS

Bolting shall be selected to in accordance with AS 4087 Appendix C for drilling compatible with Table C or D with holes drilled off centre.

Flanged joints shall be assembled in accordance with AS 4087 Appendix D and shall meet the following requirements:

- Fit 3 mm thick insertion rubber gaskets to all flanged joints except where 'O' rings are fitted;
- Use washers under all nuts. In addition, use washers under bolt heads for connection to items with protective coatings;
- Where dissimilar metals would otherwise be in contact, supply and install high strength phenolic insulating washers and sleeves to all connections; and
- Coat all nuts and bolts, except Grade 316 stainless steel, on all flanged joints with Denso 300 Primer and 400 Mastic/440 Cord, then wrap the entire joint in Denso 600 Tape (double thickness) and over wrap with Denso 931. Over wrap (minimum 55% overlap), all in accordance with the Manufacturer's recommendations.

Apply "Loctite" nickel anti seize thread lubricant or equivalent to all stainless steel fasteners prior to fitting nuts.

3.3.16 VALVES

All valves shall be suitable for the function intended and shall be in accordance with the following requirements, noting that all stop (isolation) valves shall be closed in a clockwise direction:

- Air Valves shall consist of a small orifice and a large orifice with an automatic anti shock mechanism to release air in a controlled manner in case of water hammer. The air valve should be installed with an isolation valve with an extended vertical spindle.
- Scour Valves shall consist of an invert scour tee, stop valve and a spring hydrant valve to allow the collection of material scoured from the pipelines to be collected into a tanker truck (or similar) for disposal. The spring hydrant valve shall be housed in a concrete pit installed in accordance with Section 3.3.15.
- Couplings and thrust dismantling joints where specified shall be suitable for pressure class PN16.

The Contractor must submit details of all valve arrangements for Isolation Valves, Air Valves, Scour Valves and general couplings to Cabonne Council for its approval prior to the construction of any works to ensure compliance with Council's standards for fixtures, fittings and valving arrangements and be compatible with its design and installation standards.

3.3.17 VALVE CHAMBERS

The Contractor shall construct around each valve and hydrant a chamber of the type and to the details specified or shown on the approved Drawings and be in accordance with Council's requirements.

Unless otherwise specified, each valve chamber shall be covered by a cast iron or high density plastic surface box cast into the concrete surround as shown on the construction drawings.

The surface of each concrete surround shall be smooth and the top of each surface box and concrete surround, when placed over the valve chamber, shall be flush with the surrounding ground unless otherwise directed by the Principal.

Where the type of valve chamber specified, or directed or approved by the Principal, is such that the body, or part of the body, of the valve is to be backfilled before the valve chamber is constructed, the Contractor shall apply at least one coat of corrosion preventing material to the valve body after the valve has been installed but before backfilling.

The coating material shall be acceptable to the Principal and shall be compatible with the coating material which has been applied to the valve prior to delivery. Acceptable alternative to the field coating is wrapping the valve using an approved tape consisting of synthetic fibre open weave cloth impregnated with saturated hydro-carbons, such as "Denso" tape, applied in accordance with the manufacturer's instructions.

3.3.18 BACKFILLING IN TRENCH

Backfilling of the pipe trench shall be carried out as soon as practicable after the pipes, fittings and valves have been laid, jointed, inspected and approved, and before carrying out the field pressure testing, except that some or all of the joints may be left uncovered until the testing is satisfactorily completed.

No sections of the pipe trenches are to be left open at the end of the day.

Backfilling about pipes and structures shall be carried out immediately after bedding and jointing have been approved by the Principal.

Trench excavations shall be left slightly mounded to prevent water lying in or running along the line of the trench.

Backfilling and compacting of pipes and structures shall be carried out evenly on opposite sides such that no differential lateral pressure is exerted.

Materials used for backfilling shall be placed generally as follows, but locations may be varied by the Principal by notification in writing.

In Public Roadways

All excavated material shall be removed from the site and disposed of at an approved location. The trench shall be backfilled with imported granular fill material to within 200 mm or such other distance as the Principal may direct, of the pre-existing surface. The trench will be restored as specified to match the surface seal of the roadway and is to be completed within 48 hours of backfilling.

Road Shoulders

- (a) Where backfilling of a trench located within 3m of the road shoulder, the backfill with imported granular fill material should be trench rolled in layers no more than 300mm to avoid settlement in the trench such that road safety is not compromised.

Elsewhere

- (a) The trench shall be backfilled with imported granular material to a depth not less than 150mm above the pipe, as specified in Pipe Bedding.
- (b) The remainder of the trench shall be backfilled with ordinary excavated fill material.
- (c) Backfilling in areas of rock and/or boulder shall be with approved imported material to a depth of 300 mm above the top of the pipe. The remainder of the trench shall be backfilled with selected excavated fill material. Surplus excavated material shall be moved from site and disposed of at an approved location.

3.3.19 PROVISION FOR TRENCH SETTLEMENT

The Contractor shall make good any settlement of the trench under driveways or roads. Unless deemed otherwise by the Principal any trench backfill settlement greater than 5mm in roadways shall be deemed as unacceptable.

Unless deemed otherwise by the Principal any trench backfill settlement greater than 25mm in un-trafficable areas shall be deemed as unacceptable.

The Contractor shall make good any settlement of a trench during the Defects Liability Period by placing additional approved fill such that the finished surface level conforms to the adjacent surface.

For trenches through areas other than pavements, turf areas, grassed areas or other improved surfaces, backfill shall be placed sufficiently high to compensate for expected settlement unless it would create a hazard or inconvenience to the public. At the end of the Defects Liability Period, the Contractor shall trim back such excess material to conform to the adjacent surface and dispose of the surplus.

3.3.20 PIPELINE CROSSINGS OF ROADS, GAS AND ELECTRICITY EASEMENTS

The design and construction of pipelines crossing a State Highway, Main Road, other Council controlled roads, high pressure gas mains and high voltage electrical easements shall be carried out in accordance with the requirements and standards of the Roads and Maritime Services (RMS), Cabonne Council, APA, Jemena and Essential Energy.

The installation of the main beneath roadways shall be carried out in accordance with the requirements detailed on the Water Supply Code of Australia Drawing WAT-1212 Buried Crossings – Major Roadways.

3.3.21 ON SITE STOCKPILES

Only sufficient materials shall be stored on site to allow timely and efficient progress of the work. Stockpiles of excavated or imported material shall be at locations approved by the Principal and where they cause no interference to the public, drainage routes or vehicular or pedestrian traffic. Clear lines of sight for drivers must not be obstructed.

Materials shall not be stacked or stored against structures, fences, trees or other property improvements. The Contractor shall ensure a clear path at least 1000 mm wide between the edge of any excavation and the inner toe of any stockpile or spoil banks is provided. Erosion and sediment control measures around all stockpiles shall be in accordance with this Specification.

3.3.22 MARKING PLATES

Opposite each stop valve, scour valve, air valve or hydrant, the Contractor shall fix a marking plate in a manner and position as approved by the Principal.

Where, in the opinion of the Principal, a valve or hydrant is at too great a distance from any existing wall, fence or post to which the notice plate could be conveniently fixed, the Contractor shall provide and set firmly in the ground a wooden or concrete post and shall fix the relevant marking plate with four galvanised screws or clout nails at the top of the post, facing the valve or hydrant. The distance to the valve or hydrant in metres, to an accuracy of 0.1 m, shall be permanently die-stamped on the marking plate with numbers 10 mm high.

The post referred to in the paragraph shall conform to the following requirements:

- (a) The post shall be 90 mm x 90 mm hardwood, dressed and well-seasoned or reinforced concrete to the stated dimensions.

- (b) When installed, the post shall project 1,000 mm above the ground, provided that where tall grass or crops are likely to obscure the post and where directed by the Principal, its height above the ground shall be increased to 1,500 mm.
- (c) Where soft ground is encountered, the post shall be installed into the ground to a minimum depth of:
 - (i) 600 mm for posts projecting 1,000 mm above the ground; and
 - (ii) 900 mm for posts projecting 1,500 mm above the ground.

Where rock or hard ground is encountered, the post shall be potted to a minimum depth of 300 mm in rock and 500 mm in hard ground where the post cannot be driven in, irrespective of the height of the post above the ground surface.

- (d) Before a post is installed, it shall receive 2 coats of tar applied hot, or 2 coats of tar paint, on all surfaces from the bottom of the post to a point which would be approximately 200 mm above the ground when the post is installed. The remainder of the post shall receive 1 coat of wood primer and 2 coats of white enamel for exterior use. All these materials shall be supplied by the Contractor and shall be subject to approval by the Principal.

Marking plates shall be fixed as soon as practicable after each valve or hydrant is installed. However, marking plates for hydrants shall be temporarily covered using masking tape or other approved cover which shall be removed by the Contractor on satisfactory completion of the pressure testing of the pipeline.

3.3.23 PRESSURE TESTING OF PIPELINES

All pipelines shall be pressure tested in accordance with this Clause in order to detect and repair excess leakage and defects in the pipeline including joints, thrust and anchor blocks.

Pipelines shall be tested in sections approved by the Principal as soon as practicable after each section has been laid, jointed and backfilled, provided that:

- (a) if so specified or if the Contractor so desires, some or all of the pipe joints shall be left uncovered until the whole of the section has been successfully pressure tested to the satisfaction of the Principal; and
- (b) the pressure testing shall not be commenced earlier than seven days after the last concrete thrust or anchor block in the section has been cast.

For the purpose of this Clause a section shall be defined as a length of pipeline which can be effectively isolated for testing, e.g., by means of main stop valves.

During pressure testing all field joints which have not been backfilled shall be clean, dry and accessible for inspection.

During the pressure testing of a pipeline each stop valve shall sustain at least once the full test pressure on one side of the valve with no pressure on the other side for at least 15 minutes.

Before testing a pipeline section, it should be cleaned to the satisfaction of the Principal and filled slowly with water, taking care that all air is expelled. Purging of air from reticulation shall be promoted by opening hydrants. In order to achieve conditions as stable as possible for testing by allowing for absorption, movement of the pipeline and escape of entrapped air, the section shall be kept full of water for a period of not less than 24 hours prior to the commencement of the pressure testing.

The hydrostatic test pressure which shall be applied to each section of the pipeline shall be such that at each point of the section the test pressure head shall be equal to 1.25 times the pipe class.

The hydrostatic test pressure shall be maintained as long as required by the Principal, while they examine the whole of the section, and in any case not less than 15 minutes. For the purpose of determining the actual leakage losses, the quantity of water added in order to maintain the pressure during the period of testing shall be carefully measured and recorded.

The pressure testing of a section shall be considered to be satisfactory if:

- (a) there is no failure of any thrust block, anchor block, pipe, fitting, valve, joint or any other pipeline component;
- (b) there is no visible leakage; and
- (c) the measured leakage rate does not exceed the permissible leakage rate as determined by the following formula:

where:

Q_1	=	$0.14 \times D \times L \times H / 1000$
Q_1	=	permissible leakage rate (litres per hour)
D	=	nominal diameter of pipe (mm)
L	=	length of section tested (km)
H	=	average test head (m)

Any failure, defect, visible leakage and/or excessive leakage rate, which is detected during the pressure testing of the pipeline or during the Defects Liability period, including any failure of thrust blocks or anchor blocks constructed to the Contractor's design, notwithstanding any approval that might have been given to such design, shall be made good by the Contractor at his expense, provided that:

- (a) where a pipe, fitting, valve or other material has been supplied in the first instance by the Principal and the failure is due to the pipe, etc., being faulty when the Contractor has taken delivery, the Principal shall supply to the Contractor sound material as required for replacing the material which failed and the Contractor will be paid for its installation at an agreed rate for the work required;

and/or

- (b) where a thrust block or an anchor block fails, and such thrust block or anchor block has been constructed in accordance with a design prepared by the Principal, and the failure is not, in the opinion of the Principal, the fault of the Contractor, the cost of strengthening or re-construction of such thrust block or anchor block shall be borne by the Principal.

The Contractor shall provide all material, labour and equipment required for the pressure testing, including approved pumps and pressure gauges. Water for testing will be supplied free of charge to the Contractor through the pipeline when it is in operation. Should, however, the various works not be sufficiently completed to enable the supply to be thus provided when the pipeline is ready for testing, the time for testing shall be postponed until such is the case. Alternatively, the Contractor may adopt other measures for supplying the water but shall have no right to claim for any expenses that may be incurred thereby.

All expenses in connection with testing shall be included in the Lump Sum tender for laying and jointing pipes. The Contractor shall have no claim for compensation or damages in respect of any postponement of the testing, as hereinbefore provided, or in respect of the retention of the final payment until the completion of the tests.

3.3.24 PERFORMANCE TESTING AND COMMISSIONING

Prior to commissioning, the Contractor shall submit to the Principal a detailed testing and commissioning plan for approval.

Following a satisfactory hydrostatic pressure test disinfect all the following drinking by adding a disinfectant to the water drawn from the water distribution system as follows:

Disinfect and flushing of the new mains will be undertaken in accordance with in accordance with Appendix I – Disinfection of Water Mains and Water Quality Compliance Specification. WSA 03-2011-3.1.

3.3.25 WORK AS EXECUTED DRAWINGS

All Drawings forming part of this Contract (Drawings provided by the Principal or Drawings produced by the Contractor), after the completion of the construction of the Works, shall be amended by the Contractor to show in detail the Work-as-Executed (WAE) condition. Amendments necessary to depict Work-as-Executed details shall be carefully and accurately prepared.

Draft digital WAE Drawings in PDF format shall be submitted within two (2) weeks of the completion of the Works. Final WAE Drawings shall be submitted within two (2) weeks after receiving feedback on the draft plans from the Principal.

Final Work-as-Executed Drawings shall be submitted in PDF, AutoCAD (*.dwg) and *.dxf formats.

Drawings are to be clearly drawn to scale and shall specifically relate to the constructed Works. Drawings of a generalised nature applicable to a number of models or equipment types are not acceptable.

Drawings are to be prepared and submitted with border and title block layouts.

3.4 SURVEILLANCE, WITNESS AND HOLD POINTS

Contractor's inspection and test plans (ITPs) for the works are to include, but not be limited to, the following surveillance, witness and hold points. ITP's to be submitted for approval to the Superintendent as part of Quality Plan. The Superintendent may identify the need for other surveillance, witness and hold points following receipt of the Contractor's Inspection and Test Plans.

3.4.1 PIPELINE CONSTRUCTION

The following Surveillance, Witness and Hold Points shall apply for the construction of the raw water pipeline:

- Pipe, Valve and Fittings supply deliveries
 - Inspection and checks against delivery dockets to confirm material compliance (Hold Point)
- Critical spares
 - Prior to excavation to enable repairs to adjacent services as work progresses (Witness Point)
- Fencing of work areas (Surveillance)
- WHS and Environmental management control
 - Prior to excavation (Hold Point)
- Excavation of Trenches including trench floor / trench support (Surveillance)
- Excavation of trenches including stripping / removal of topsoil layer (surveillance)
- Excavation of deep trenches that require shoring or benching (witness point)

- Excavation in root zones (Surveillance)
- Dewatering in Trenches (Surveillance)
- Foundation
 - Prior to bedding material being laid (Witness Point)
- Bedding material
 - Provision of material test records (Hold Point)
- Pipe Embedment
 - Visual Inspection during installation (Surveillance)
 - Sand Placement & Compaction / Aggregate Placement (Witness Point)
- Pipeline installation (Surveillance)
- Service Crossings including checking cover and clearance (Surveillance)
- Trenching across water courses (Hold Point)
- Marker Tape (Surveillance)
- Surface fittings and marker posts (Witness Point)
- Trench stops (where applicable) (Witness Point)
- Thrust restraint
 - Inspection of block prior to concrete pour to ensure bearing against undisturbed material (Hold Point)
 - Concrete curing prior to loading (Witness Point)
- Trench fill
 - Visual Inspection to ensure trench fill is backfilled in same profile (Surveillance)
 - Provision of compaction testing records (Witness Point)
- Work in roadways (Hold Point)
- Trenchless Works (Hold Point)
- Valving installations (Witness Point)
- Cut-ins and connection to existing assets (Hold Point)
- Pipe internal lining repairs (Witness Point)
- Pipe external coating repairs (Witness Point)
- Acceptance Testing (Hold Point)
- Hydrostatic testing of pipelines (Hold Point)
- Pre-commissioning / Commissioning (Hold Point)
- Water Quality Testing (Hold Point)
- Disinfection (Hold Point)
- Connection to existing pipelines (Hold Point)
- Restoration / landscaping
 - Inspection of completed restoration of disturbed surfaces – (Hold point).

3.4.2 DEFINITIONS

Surveillance: Points are subject to periodic inspected by the Superintendent.

Witness Point: Each step in process to be witnessed by Superintendent during works.

Hold Point: Works not to proceed past step until Superintendent has inspected the works and provided direction to proceed.

Give the Superintendent three (3) working days' notice prior to the above hold and witness points.