

## INTRODUCTION

This supplement outlines Coliban Water's specific requirements in relation to the design, construction and acceptance testing of water supply works.

The information in this document is to be read in conjunction with the *Water Supply Code of Australia* (WSA 03-2011-3.1, Melbourne Retail Water Agencies Edition, version 2.0), further referred to as "The Code".

Where this supplement conflicts with The Code, this supplement shall take precedence.

This supplement is applicable to:

- All new works undertaken by Coliban Water appointed contractors (Capital Investment Projects) and Developer Installed Works.
- Operation and Maintenance works on existing assets including asset replacement works.

This supplement provides a mixture of mandatory requirements and informative statements presented in the same way as The Code; that is, *the informative text is italicised* to enable clear differentiation from mandatory requirements.

This supplement commences on 1 September 2016.

Please refer to separate Transition Arrangements for Developer Installed Works issued with a letter of conditions and Capital Investment Projects in the design phase or construction phases prior to the commencement date.

## PREFACE

### **Concept Plan. Page 7**

Add the following:

Refer to the definition of Concept Plan in this supplement.

## Melbourne Retail Water Agency (MRWA) Standards and Specifications. Page 11

Delete

- Water Quality Compliance Specification;
- Survey Manual; and
- Water metering and Servicing Guidelines.

*Note that Coliban Water has adopted the MRWA Backfill Specification.*

## PART 0: GLOSSARY OF TERMS, ABBREVIATIONS AND REFERENCES

### I GLOSSARY OF TERMS.

Add the following:

<b>Term</b>	<b>Definition</b>
The Code	Water Supply Code of Australia (WSA 03-2011-3.1, Melbourne Retail Water Agencies Edition, version 2.0)
Capital Investment Project	Design and construction of water infrastructure managed directly by Coliban Water
Developer Installed Works	Design and construction of water infrastructure managed by a developer.
Case Manager	Coliban Water appointed person assisting developers with the design and construction of works.
Preliminary Design Plans	The first design plans submitted by a land developer's consultant showing proposed pipe layout and pipe sizes.
Superintendent	Add the following sentence:  The consultant is considered the Superintendent for Developer Installed Works.
Products catalogues	Coliban Water's <a href="#">Preferred Equipment Manufacturers List</a> available on Coliban Water's web site and WSA Product specifications for Product and Materials.

## Other changes

Term	Definition
Split service	Add Coliban Water does not permit split services.
Concept Plan	Replace The Code definition with:  A package of information provided to the designer by Coliban Water to enable the appropriate planning / design of the water system.  For Developer Installed Works a Concept Plan includes Coliban Water's Letter of Conditions and details of existing water mains to connect to; the designer must obtain these before commencing detailed design.
Trafficable area	Replace the definition with:  Means the entire road reserve and any area where vehicular traffic is likely.

## PART 1: PLANNING AND DESIGN.

### 1.2.3 Concept plan format

Delete

(a) Satisfy requirements of relevant OH&S, environmental and security Legislation / Act and/or regulations;

Delete:

(A) Heritage and archaeological aspects.

Add:

The designer is responsible for compliance with relevant OH&S, Environmental legislation / Act and or Regulations and considering heritage and archaeological aspects.

## 1.2.5 Detailed Design.

### 1.2.5.2 Requirements to be addressed.

Add

The designer shall obtain a Concept Plan from Coliban Water before commencing design.

Coliban Water does not require pre-laid property services from the water main to the property however developers may install these in Township and General Residential Zone subdivisions where there is a low risk of the residential owner wishing to relocate the connection point.

Coliban Water will not permit pre-laid property services from a water main to the property in subdivisions within Low Density Residential Zones and Rural Living Zones due to risk of the residential owner wishing to relocate the connection point.

## 2.5.3 Operating Pressures

Replace table 2.3 with the following:

### SERVICE PRESSURE LIMITS FOR DRINKING WATER SINGLE SUPPLY

Pressure	application	
	Domestic	Industrial / commercial
Maximum allowable service pressure <sup>3</sup>	80 m head	80 m head
Desirable Maximum Service pressure <sup>2</sup>	50 m head	50 m head
Minimum Allowable service pressure <sup>1</sup>	20 m head	20 m head
Desirable Minimum Service pressure	20 m head	20 m head

Note 1. The designer must confirm, with Coliban Water, the minimum allowable and minimum desirable pressures applicable to small town systems supplied from elevated storage tanks which may be lower in height than these limits.

Coliban Water may elect to provide a supply by agreement to new customers proposing to connect where the minimum service pressures at the meter will be less than 20 m.

Note 2 AS/NZS 3500.1 requires that the maximum static pressure at any outlet, other than fire service outlet, within a building does not exceed 500 kPa.

Note 3 Maximum pressures exceeding 800 kPa require Coliban Water approval.

### 3.1.2 Minimum pipe sizes.

Coliban Water’s Concept Plan will confirm whether a reduction in drinking water main diameter is permitted in dual water supply systems.

### 3.1.5 Fire Flows.

Delete the first paragraph and replace with:

Fire flows shall be connected to the drinking water system unless otherwise directed by the Water Agency. *Irrigation only non-drinking water systems may operate with less reliability and pressure and may not be suitable for fire flow connections.*

### 3.3 Pressure Class of System Components

Replace Table MRWA 3.6 with the following

**TABLE MRWA 3.6  
PN CLASS AND PRESSURE LIMITS**

PN Class	Acceptable Pipe system	Max operating pressure (m)	Max Design Pressure (m)	Max Test Pressure (kPa)
PN12.5	PE 80 only ≤ DN63 PE in court bowls	76	96	1200
PN 16 Refer Notes	Any approved pipe system other than PE in court bowls	108	128	1600

Note 1 These pressure limits apply to PVC pipe;

Note 2 PVC- O is not permitted in Coliban Water’s region regardless of PN Class.

Note 3 The designer should consult with Coliban Water on acceptable pressure limits for other materials.

## **4 PRODUCTS AND MATERIALS**

### **4.3 DUCTILE IRON PIPELINE SYSTEMS**

#### **4.3.2 Sizes and configurations.**

*Coliban Water has not mandated installation of property services from the main to the property.*

Delete subsections (a) and (b).

Add

Where pre-laid property services from a water main to the property are permitted Coliban Water requires connection to main using mechanical tapping bands.

The taping bands must be pressure tested before drilling into the pipe if installed on an empty pipe.

### **4.4 PVC PIPELINE SYSTEMS**

Add

PVC – O is not permitted in Coliban Water’s region.

The designer should ignore reference to PVC-O on Drawing MRWA – W- 103.

Delete subsections (a) and (b).

Add

Where pre-laid property services from a water main to the property are permitted Coliban Water requires connection to main using mechanical tapping bands.

The taping bands must be pressure tested before drilling into the pipe if installed on an empty pipe.

*Coliban Water has not mandated installation of property services from the main to the property.*

### **4.5 PE PIPELINE SYSTEMS**

*Note: Where pre-laid property services from a water main to the property are permitted Coliban Water prefers electrofusion tapping saddles in preference to mechanical tapping bands in accordance with The Code.*

## 5 GENERAL DESIGN

### 5.2.4 Reduced size mains.

Add

Reduced size water mains shall be greater than or equal to DN63 and be sized assuming the maximum multi-unit development potential of each lot, not the current subdivision layout.

## 5.4 LOCATION OF WATER MAINS

### 5.4.9 Crossings

#### 5.4.9.1 General

Add

Rubber ring jointed PVC pipe is permitted under road pavements provided that:

- a) Where practicable, use a continuous pipe under road carriageway;
- b) Where impracticable, limit jointing to a single joint beneath the road carriageway.; and
- c) PVC – O is not used.

#### 5.4.14 Water mains on curved alignments.

Replace the last paragraph with:

The use of pre tapped connectors are not permitted in Coliban Water's region.

## 5.11 PROPERTY SERVICES

### 5.11.2 Connections to Water mains.

Delete:

Pre-tapped connectors shall be used for all property services connecting new DI, PVC-M and PVC-O DN100 and DN150 mains.

Add

Please note that:

- Coliban Water does not require property services to be laid from the main to the meter during construction however these may be permitted in Township and General Residential Zone subdivisions where there is a low risk of the residential owner wishing to relocate the connection point.
- Where pre-laid property services from a water main to the property are provided they shall be installed in accordance with section 4 of this supplement

and Coliban Water's Service Assembly Arrangements 2009 provided in Annexure 1. Refer also to section 15.8 in this supplement.

### **5.11.3 Services, outlets and meters.**

This section is to be read as an informative guideline for individual landowners to follow when connecting the property to drinking and non-drinking water supply systems. Coliban Water does not require dry tapings.

Delete reference to MRWA Water Metering and Service Guidelines and refer to Annexure 1 of this supplement.

## **6 SYSTEM PRESSURE MANAGEMENT**

### **6.2 IN-LINE PRESSURE BOOSTER PUMPING STATIONS**

#### **6.2.2.6 Maintainability**

Add

(f) Electrical and SCADA systems shall be in accordance with Coliban Water's requirements.

#### **6.2.5.8 Booster pipework and manifold design**

Add

(d) A flow meter monitored by SCADA

### **6.2.9 Control and telemetry system**

#### **6.2.9.1 General**

The electrical design shall be incorporate the requirements in Coliban Water's Standard STS 0002 Electrical Requirements Specification.



## 7 STRUCTURAL DESIGN

### 7.4 EXTERNAL FORCES

#### 7.4.2 Pipe cover

Add the following:

Coliban Water's minimum pipe cover requirements are specified in Table B.

**Table B**

Location	Nominal Pipe Diameter		
	≤ 100	150	225-750
Minor Road	900mm	900mm	900mm
Major Road	1200mm	1200mm	1200mm
Nature Strip	600mm	600mm	750mm

Coliban Water's cover requirements provide:

- Adequate cover over tapping under pressure fittings installed on mechanical tapping bands; and
- Compliance with Vic Roads and local council normal requirements.

## 8 APPURTENANCES

### 8.2 STOP VALVES

The following take precedence over the standard drawing MRWA –W-105 and section 8.2.2.2 Gate valves.

Rotation of Valves.

- All key operated (buried) valves shall be anti-clockwise closing:
- All valves in pits, buildings or above ground shall be clockwise closing with the direction of closing indicated on the valve.

#### 8.2.2.2 Gate Valves

Delete the first sentence and refer to the rotation of valves in section 8.2 of this supplement.

#### 8.2.3 Stop valves for transfer/distribution mains (>DN 300)

##### TABLE MRWA 8.5

Adopt CWW preferences unless otherwise advised by Coliban Water.

### MRWA 8.2.3.1 Bypass of stop valve

Replace paragraph 2 with the following:

A bypass shall be provide around all valves on mains greater than or equal to DN 400 and around greater than or equal to DN300 valves on mains where pipework will experience a maximum operating pressure greater than 108 metres head.

*By passes are required in high pressure areas to equalise forces on the valve gate that would otherwise restrict its movement. Coliban Water has expressed the threshold for requiring a by-pass in terms of pressure not pipe class.*

### MRWA 8.2.4.1 Stop valves spacing ( $\leq$ DN 300)

Coliban Water adopts YYW criteria, that is:

The number of property service connections in a 'shut-off' area shall be no more than 25 for a DN 150 or smaller water main.

### 8.8.6 Hydrant outlet connections

Delete:

“Standard claw type hydrants shall be used.”

And replace with:

Standard claw – spring type hydrants suitable for the attachment of a hydrant Standpipe shall be used. Ball type hydrants are not permitted. Where a threaded hose - coupling connection is permitted or requested by Coliban Water, it shall conform to the Country Fire Authority specification.

The seven type of fire hose couplings, together with the location where they are used in Australia, are listed in Appendix A of AS2419.2.

### 8.8.7 Hydrant size

Delete:

“All hydrants shall be DN100 Hydrants in size.”

Replace with

The preferred hydrant size is DN100 however Coliban Water will accept DN80 hydrants off an 80 mm tapping under pressure on existing water mains.

### **8.8.8 Hydrant spacing**

Replace Table MRWA 8.6 Fire Hydrant Spacing Requirements with:

Hydrants are required at a spacing no greater than:

- At termination points of the system on 100mm or greater pipes.
- Every 200 metres in residential areas.
- Every 500 metres in rural areas.
- Every 120 metres in industrial/commercial areas. (including CBD)

## **9 DESIGN REVIEW AND DRAWINGS**

### **9.1 DESIGN REVIEW**

Add to subsection (d)

Minimum velocity shall be 0.6 metres per second or as agreed by Coliban Water.

### **9.2 DESIGN DRAWINGS**

#### **9.2.2 Composition of Design Drawings**

Add

Coliban Water requires all design drawings to be submitted in accordance with the template drawings MRWA-W-101, MRWA –W-102A and MRWA -102B.

The location of pre laid services shall be dimensioned from the left hand side of the property looking into the property.

#### **9.2.4 Contents of Design Drawings**

Add the following to subclauses (m) and (n).

...were pre-laid property services from a water main to the property are permitted by Coliban Water.

## 9.4 RECORDING OF WORK AS CONSTRUCTED INFORMATION

*The MRWA Survey Manual is not adopted by Coliban Water.*

Replace section 9.4 with 9.4.1 and 9.4.2 below.

### 9.4.1 General

All as constructed record plans are to be provided to Coliban Water in hard copy and digital format. The field record sheets used by the Contractor are not required by Coliban Water.

All design drawings submitted to Coliban Water shall, after completion of construction, be amended by a competent CAD draughtsperson to accurately show as-built condition and spatial location of the Works, in relation to surrounding infrastructure and property boundaries. This requirement also applies to all works by subcontractors.

The as constructed drawings must show the following data for all pre-laid services:

- The location of the service measured from the left hand side boundary looking into the property;
- The length of service into the property;
- The property service pipe diameter, class and material;
- The type of connection to the water main.

The pipe class and material installed must be shown on as constructed drawings including for PVC pipe, whether it is PVC-M or uPVC.

Location and alignment of private extensions and for sewers, common drains connected to, or adjacent to, the Works, must be included in the as-built drawing.

Upon completion of all amendments and approval by Coliban Water, one (1) hardcopy of each drawing clearly marked "Work-as-Constructed drawing", together with one (1) copy of the digital drawings shall be delivered to Coliban Water prior to the issue of the Certificate of Practical Completion. Both hardcopy and digital drawings must be prepared in accordance with requirements detailed in 9.4.1.

The Certificate of Practical Completion will not be issued until these Work-as-Constructed drawings are submitted and accepted.

### 9.4.2 Geographic Information System data exchange formats

Coliban Water is currently using ESRI's ArcGIS platform as its corporate Geographic Information System (GIS). To ensure compatibility of datasets for import, all position and height data are to conform to the following requirements.



### 9.4.2.3 Spatial Data Attribution.

Attributed data can be linked to the spatial data via a unique identifier for each spatial element and then to a delimited text file containing the relevant attribute information.

### 9.4.2.4 Supply of Digital files

Digital data can be supplied to Coliban Water either on a CD/DVD or by e-mail, stipulating the project name in the subject.

## PART 2 CONSTRUCTION.

### 10 GENERAL

*The MRWA Code does not include Personnel Qualifications and Quality Assurance requirements as Water Agency supplier accreditation requirements (for contractors) take precedence. Sub sections 10.3 and 10.4 are added as Coliban Water has not implemented a Supplier Accreditation System.*

#### Add subsection:

### 10.3 Quality assurance.

For Developer Installed Works where the subdivision comprises of more than five lots, the following applies:

The Contractor shall establish and implement a management system to achieve compliance with the contract and to document such compliance. The Management System will include OH&S, environment and quality. Accepted management systems or components thereof are:

- Civil Contractors Federation (CCF) Integrated Management System;
- AS 9001: Quality Management Systems;
- AS 14001: Environmental Management Systems;
- AS 4801: Occupational Health and Safety Management Systems;
- SafetyMap;
- Subby Pack OHS Contractor Management Tool
- Other equivalent systems.

**Add subsection:**

**10.4 Project Management Plan**

For Developer Installed Works of more than five lots, a Project Management Plan must be submitted to the Case Manager.

**11.2 Order of Construction, testing and commissioning.**

Add

Coliban Water's preferred process.

- (i) Install all works in accordance with the Design drawings and the Specification and collect Work as constructed information as work proceeds.
- (ii) Clean all mains in accordance with Section 4.3 of Appendix I Disinfection of Water mains - Water Quality Compliance specification.
- (iii) Conduct acceptance testing
- (iv) Disinfect water mains in accordance with Appendix I Disinfection of Water mains - Water Quality Compliance specification.
- (v) Connect the main (s).
- (vi) Charge and commission the new water main (s); and
- (vii) Provide as constructed information in accordance with section 9.4 of this Supplement.

**11.4 CUSTOMER FOCUS**

**11.4.1 General**

Add

Coliban Water's "Requirements for customer service" are outlined in the Urban Customer Charter and Rural Customer Charter. These documents can be found on the Coliban Water website at [www.coliban.com.au](http://www.coliban.com.au) and indexed at [customer charters](#).

**13.13 TRENCHLESS EXCAVATION.**

Add

Trenchless construction may have been specified to avoid native vegetation and or engaged species habitat. Any proposal to change the design to open trenching must be accompanied by evidence of statutory approvals obtained to remove native vegetation and habitat and evidence of native vegetation and habit offsets purchase.

## **15 PIPE LAYING, JOINTING AND CONNECTING**

### **15.5 UNDER PRESSURE CUT-IN CONNECTION TO PRESSURE PIPES <sup>3</sup>DN 80**

#### **15.5.7 Recording and reporting.**

Replace paragraph two with:

With the exception of asbestos cement pipe, give the removed coupon to the Superintendent (for passing on to the Asset management team in Coliban Water) regardless of condition of the pipe. Asbestos cement coupons shall be disposed of in accordance with the relevant regulations.

*Coliban Water does not want to receive asbestos cement coupons for Occupational Health and Safety reasons.*

### **15.8 TAPPING OF MAINS, PROPERTY SERVICES AND WATER METERS**

Replace this section with:

Coliban Water does not require property services to be laid from the main to the meter during construction however these may be permitted in high density subdivisions where there is a low risk of the owner wishing to relocate the connection point.

Were pre-laid property services from a water main to the property are permitted the connection shall be in accordance with section 4 of this supplement.

Connectors and property services are normally installed by the property owner after completion of the works. Applications for a connection are managed by Coliban Water's registered Quick Connect agents. A register of these agents can be found on the Coliban Water website.

Plumbers shall tap the mains, install property services and water meters in accordance with Coliban Water's standards.

## **15 PIPELAYING, JOINTING AND CONNECTING.**

### **15.2 MAKER TAPES**

#### **MRWA 15.12.4 Property services**

Most property service pipes are installed by the property owners' plumbers however this section applies where property services are installed as part of the water main works.

### **15.15 BORED PIPES UNDER ROADS, DRIVEWAYS AND ELSEWHERE**



*Note that Coliban Water accepts rubber ring jointed pipe including PVC pipe in accordance with this clause provided that where practicable, use a continuous pipe under road carriageway. Where impracticable, limit jointing to a single joint beneath the road carriageway.*

Delete

a) no more than 2 joints will be contained within the borehole;

## 15.17 BRIDGE CROSSINGS

Replace reference to drawing MRWA-W-209 with MRWA-W-211.

*The Code refers to the incorrect drawing number.*

## 15.21 WELDING OF PE PIPELINES.

Add the following to subsections MRWA 15.21.2 Butt welding, MRWA 15.21.3 Electrofusion welding and MRWA 15.21.4 Extrusion welding:

Coliban Water does not accept alternative qualifications.

## 16.1 General

Add

For bedding and backfill material specifications, refer to WSAA Product Specifications for Product and Materials.

*Coliban Water's Preferred Equipment manufacturers list R10E Technical Specification does not address bedding and backfill materials.*

## 19 ACCEPTANCE TESTING

### 19.3 COMPACTION TESTING

#### 19.3.2.5 Retesting

Replace the words "reconsider the methodology"

With "reconsider the methodology of compaction".

### 19.4 HYDROSTATIC PRESSURE TESTING.

#### 19.4.3 Property Services

This subsection applies to:

- any pre-laid property services approved by Coliban Water to be installed in conjunction with the new water main; and
- any property services renewed as part of water main renewal works.

## 19.7 WATER QUALITY TESTING

*Coliban Water has not adopted the MRWA Water Quality Compliance specification and has more specific water quality requirements to Appendix I – Disinfection of Water Mains and Water Quality Compliance Specification.*

Delete:

“Refer to the MRWA Water Quality Compliance specification”

and replace with:

“Refer to the replacement to Section 19.7.3 herein.”

### 19.7.2 Test Procedure

Replace item (b) with:

- b) Sampling of new and existing water mains can only be undertaken by contractors approved by Coliban Water. The person taking the sample needs to provide evidence of relevant competencies. Any samples submitted by a non-registered person will not be accepted. A list of approved contractors is available on the website.

### 19.7.3 Satisfactory Water Quality Test

Replace section 19.7.3 with:

A section of water main is accepted when the results fall within the water quality parameter limits specified in Appendix I – Disinfection of Water Mains and Water Quality Compliance Specification.

The water quality parameter test results in the test section of water main can be no worse than the test results measured by testing an influent sample of existing mains water, provided that the influent sample was collected at the same time as water sample from the test section of water main was collected.

## WAS 03-2011-3.1 Appendix I Disinfection of Water Mains Water Quality Compliance specification.

Replace the  
**Drinking Water Quality Parameter Sample Tolerance Limits**  
with:

Parameter	Units See notes 3 to 9	Sample set A Existing main Default limits	Sample set B New main Default limits	ADWG <sup>1</sup> Recommended limits
<b>PHYSICAL PARAMETERS</b>				
pH		As measured > 6.5 and < 9.2	Within ADWG limits & "A" ± 0.5 (Note 2)	> 6.5 and <8.5 (Note 2)
Apparent colour	PCU	As measured and within ADWG limits ≤ 15	Within ADWG limits & <("A" + 5)	≤ 15
Turbidity	NTU	As measured and within ADWG limits ≤ 5	Within ADWG limits & <("A" + 0.5)	≤ 5
EC	µS/cm	As measured and within ADWG limits ≤ 950	Within ADWG limits & <("A" + 50)	≤ 950
<b>CHEMICAL PARAMETERS</b>				
Free chlorine residual health	mg/L	As measured and with ADWG limits < 5 and > 1	Within ADWG limits & "A" ± 0.2	< 5
Free chlorine residual aesthetic	mg/L	As measured and with ADWG limits < 0.6	Within ADWG limits & "A" ± 0.2	< 0.6
Total chlorine residual	mg/L	As measured and with ADWG limits < 5	Within ADWG limits & "A" ± 0.2	< 5
<b>MICROBIOLOGICAL PARAMETERS</b>				
E.coli	orgs/10 0ml	As measured and within ADWG limits < 1	Within ADWG limits	<1
Total coliforms	cfu/100 ml	As measured < 25	Same as "A"	Recommended limit <1 (Note 10)
Heterotropic plate count	cfu/ml	As measured < 500	Same as "A"	Recommended limit <100 (Note 10)

## 20 DISINFECTION

New water mains can only be chlorinated and samples can only be taken by contractors with adequate competencies. Coliban Water publishes a list of approved disinfection contractors on its website.

### 20.1 APPLICATION

Replace subsection 20.1 with:

Disinfect all the following drinking water mains by adding a disinfectant to the water drawn from the water distribution system as follows:

- (a) New water mains before they are placed in service, even if the new main will not be providing water to properties immediately after being placed in service.
- (b) Existing water mains that are taken out of service during construction.
- (c) Renewed, including relined, water mains.

Disinfect in accordance with WSA 03-2011-3.1 Appendix I – [Disinfection of Water Mains and Water Quality Compliance Specification](#).

Where it is not practicable to disinfect pipes, fittings and appurtenances used to connect an existing water main to a new water main, clean each connecting item and spray or swab with a 1% solution of sodium or calcium hypochlorite immediately before installation. During the disinfection process:

- (i) Operate all valves, hydrants, water meter ball valves (where fitted) and other fittings to ensure complete disinfection.
- (ii) Take measures to protect the environment.

Accept a disinfected water main that complies with replacement Clause 19.7.3 herein when subjected to a bacteriological test in accordance with Clause 19.7.2. When using, handling and storing disinfecting agents comply with the applicable occupational health and safety legislation, regulations and requirements.

### 20.2 Flushing of Disinfection Water

Add

Water used in the disinfection process contains high levels of chlorine and cannot be disposed of in stormwater drains. Disinfection water can be disposed of through the sewer system. Where no sewer is available, the contractor needs to take measures to reduce chlorine levels before releasing the water into the environment.

## Appendix 1.

Coliban Water's [Water Service Assembly Arrangements 2009](#)