GOULBURN VALLEY WATER SUPPLEMENT TO WSAA WATER RETICULATION CODE OF AUSTRALIA WSA 03-2002-2.3 MRWA EDITION

Preamble

This supplement describes GVW's requirements for water reticulation works additional to those in the WSAA Water Reticulation Code of Australia WSA-03-2002-2.3 MRWA Edition, and this supplementary document must be read in conjunction with the Code.

Innovation

The Code and this supporting documentation essentially provides "deemed-to comply" solutions for the creation of GVW reticulation water assets.

Alternative solutions, practices, equipment and methodologies will continue to evolve and offer opportunities to improve the creation of these assets. GVW encourages employment of any innovation that offers enhanced productivity and serviceability.

GVW input should be sought if an innovative opportunity is being considered.

Part 0: Glossary of Terms and Abbreviations

I. GLOSSARY OF TERMS

Add	**Authority**	Goulburn Valley Region Water Authority
	Water Agency	to also include Goulburn Valley Region Water Authority
	'agreement conditions'	means any conditions and requirements specified in the "Developer Construct Agreement", the "Final Feasibility Report" and any "Approved Drawings".

II. ABBREVIATIONS

Add	**GVW**	Goulburn Valley Region Water Authority
	CWW	City West Water

Part 1: Planning and Design

1. GENERAL

1.2 PLANNING AND DESIGN OBJECTIVES

1.2.3 Design requirements

Any GVW special requirements to be satisfied in the design process shall be defined in the 'agreement conditions'.

1.5 DESIGN RESPONSIBILITIES

1.5.2 Water Agency

Unless otherwise agreed, GVW shall provide a Concept Plan and a determination of the existing infrastructure to service the development proposal in the 'agreement conditions'.

1.6 CONSULTATION WITH OTHER PARTIES

Any GVW responsibilities for consultation shall be defined in the 'agreement conditions'.

2. SYSTEM PLANNING

2.2 DEMANDS

2.2.2 Assessment of demand

The actual demand value(s) used in the design must be authorised by GVW.

2.2.3 Peak demands

Where applicable, GVW shall specify a model for predicting peak demands in the 'agreement conditions'.

2.3 SYSTEM CONFIGURATION

If necessary, GVW shall issue a service plan or indicative layout plan with functional design requirements for the project in the 'agreement conditions'.

2.4 SYSTEM HYDRAULICS

2.4.2 Network analysis

Where a network analysis of the system is required, the calibrated mathematical model of the system to be used must be authorised by GVW prior to use.

2.4.3 Operating pressures

2.4.3.2 *Maximum allowable service pressure*

GVW's absolute and desirable maximum service pressures are as specified in Table 2.2. If the calculated service pressure is greater than 800kPa, special design consideration is necessary. In such cases, specific direction must be obtained from GVW. This may include the selection of higher rated pressure fittings, the installation of pressure reducing valves or the use of different pipe/fitting material.

2.4.3.3 *Minimum allowable service pressure*

The desirable minimum service and static pressures specified in Table 2.2 are not applicable.

GVW's desirable minimum service pressure is 200kPa but, where this may not be achievable, a sufficient pressure shall be maintained in the reticulation system to

provide a minimum flow rate of 20 litres per minute to all customers measured at the stop tap at the front boundary of the property, as specified in GVW's customer charter.

2.4.4 Pressure variation analysis

GVW shall specify if surge analysis is required in the 'agreement conditions'.

If required, GVW shall specify the limit for the restriction of diurnal pressure variations in the 'agreement conditions'.

2.9 SYSTEM REVIEW

GVW's disinfection residual requirements shall be defined in the 'agreement conditions'.

GVW's minimum and maximum flow velocity requirements shall be as specified in section 3.2.5.4 below.

3. HYDRAULIC DESIGN

3.2 SIZING OF MAINS

3.2.2 Minimum pipe sizes

GVW accepts pipe sizes <DN225 in CBD zones.

For polyethylene systems, the minimum pipe size shall be DN63, the maximum length shall be 100 metres and the maximum number of services shall be 10.

GVW requires an alternative arrangement in cul-de-sacs. The pipework is to be looped to eliminate the dead-end.

Drawing WAT-1121-M is replaced with Drawing WAT-1121-G-(a).

3.2.4 Fire flows

GVW's operating licence does not require the water supply system to be specifically designed for fire fighting capability.

3.2.5 Sizing by analysis

3.2.5.1 General

If larger water mains are required to service other development, GVW shall specify size of the larger water mains in the 'agreement conditions'.

3.2.5.2 Head losses

GVW's approval of the hydraulic design methodology to be used shall be sought before proceeding.

3.2.5.4 Flow velocities

The upper limiting velocity shall not exceed 6 m/s for homogeneous pipes and 3 m/s for cement lined pipes.

To maintain acceptable water quality levels, the lower limiting velocity under average daily flow conditions shall not be less than 0.2 m/s.

3.4 DESIGN PRESSURES

3.4.3 Minimum design pressure

The minimum design pressure shall be as prescribed in Clause 2.4.3.3 of this supplement.

3.7 PIPE AND FITTINGS PRESSURE CLASS

3.7.2 Minimum pressure class

Minimum pressure classes have been standardised as follows:

uPVC or mPVC	Class 12
oPVC pipe (500)	PN 20, Min stiffness of 10,000 Nm/m
DICL pipe	Class K9, PN20 and PN35
HDPE pipe (PE 80B)	Class 12.5

3.8 PIPE MATERIAL

Pipe materials have been standardised as follows:

Pipe Size Range	Pipe Material
<DN100	HDPE
DN100-DN300	uPVC, mPVC, oPVC of DICL (K9, PN20 and PN35) DICL (K9 or PN35 for beneath road pavements)
>DN300	DICL

4. GENERAL DESIGN

4.1 GENERAL REQUIREMENTS

4.1.1 Design tolerances

If required, GVW shall notify any change to the preferred coordinate system in the ‘agreement conditions’.

4.3 LOCATION OF WATER MAINS

4.3.1 General

No water mains are to be constructed in private property or common property without prior approval from the Authority. Any specific GVW requirements relating to the location of water mains shall be specified in the ‘agreement conditions’.

4.3.3 Water mains in easements

Any specific GVW requirements relating to the location of water mains in an easement shall be specified in the ‘agreement conditions’.

4.3.6 Contaminated sites

Where a contaminated site cannot be avoided, GVW’s written approval to proceed shall be obtained.

4.4 SHARED TRENCHING

Where shared trenching is proposed, a detailed design shall be submitted to GVW for approval, at which time GVW shall specify its identification marking requirements.

4.9 PROPERTY SERVICES

The use of twin water services will only be permitted in extreme circumstances and only after prior endorsement by GVW.

Dry tappings are the developers choice, however, once adopted for all lots in a stage of a residential development, dry tappings are to be installed on all subsequent stages in the development. The aim is to provide consistency in the type of tappings throughout a residential development.

4.10 OBSTRUCTIONS AND CLEARANCES

4.10.7 Deviation of mains around structures

GVW approves the use of socketed fittings to achieve vertical deflections, provided it can be demonstrated that the fittings can be satisfactorily anchored.

4.11 DISUSED OR REDUNDANT PIPELINES

GVW's permission shall be obtained for the use of any reclaimed or refurbished materials or fittings.

GVW's advice shall be obtained before the removal of any MSCL pipelines.

5. STRUCTURAL DESIGN

5.4 EXTERNAL FORCES

5.4.5 Pipe protection / Concrete encasement

GVW shall be consulted and its approval obtained for any concrete encasement and/or other alternative pipe protection proposals.

5.9 PIPE ANCHORAGE

5.9.2 Thrust blocks

GVW only permits the use of concrete thrust blocks. Timber restraint can be used for temporary restraint.

GVW shall be consulted and its approval obtained for the use of a design pressure, different to either the water main design or test pressure, in determining the unbalanced thrust.

GVW's approval shall be obtained for any thrust block protrusion beyond the space allocation for the water main.

5.9.4 Restrained elastomeric seal joint water mains

GVW's approval shall be obtained for the use of restrained jointed ductile iron pipelines.

6. APPURTENANCES

6.2 STOP VALVES

6.2.3 Stop valves for reticulation mains

Stop valve spacing shall be in accordance with Table 6.1 with the nominal maximum number of property service connections for water main sizes $\leq$DN150 being 25.

GVW's approval shall be obtained for the valving of a single water service to a multi-unit development.

6.2.5 Stop Valves-locations and arrangement

6.2.5.1 *General*

GVW allows the use of flanged or socketed valves and fittings.

6.7 SWABBING POINTS

GVW requires appropriate swab launch and exit facilities for mains $\geq$300mm. These facilities shall incorporate a chlorination assembly that will enable effective disinfection of the main prior to use.

6.8 HYDRANTS

6.8.3 Hydrant types

GVW allows the use of spring hydrants, only.

6.8.7 Hydrant spacing

As a guide, it is recommended that hydrants be spaced to ensure that the whole of every property is within 120 metres of a hydrant measured along the line of a hose run out from the hydrant, where practicable.

The consultant is responsible for obtaining the agreement of the council and fire authority for the location of the fire hydrants and the consultant may need to negotiate any additional fire hydrant requirement.

7. DESIGN REVIEW AND DRAWINGS

7.2 DESIGN DRAWINGS

7.2.2 Composition of Design Drawings

GVW requires long sections for all mains $\geq$DN200.

7.2.4 Contents of Design Drawings

The panel section of every drawing sheet is to include provision for a GVW signature endorsing approval of the drawing.

Part 2: Products and Materials

8 PRODUCTS AND MATERIALS OVERVIEW

8.3 RESPONSIBILITIES

8.3.1 Water Agency

Unless otherwise specifically agreed, only products endorsed in the MRWA approved products list shall be used.

The MRWA approved products list is still under production, so in the meantime, use the draft CWW list.

Tables 8.1 and 8.2

GVW requires that the cement mortar lining of DICL and MSCL pipes has an approved seal coating applied to prevent the elevation of pH of the conveyed water.

8.3 PRODUCT STANDARDS AND SPECIFICATIONS

GVW shall be consulted and its approval obtained in relation to the:

- Specification of alternative product compliance requirements;
- Authorisation of new products;
- Nomination of alternative purchase specifications;
- Specification of the quality assurance option;
- Authorisation of innovative or non-standard products;
- Determination of the need for second-part verifications.

Part 3: Construction

9 GENERAL

GVW has no supplementary requirements in this section.

10 QUALITY

10.1 QUALITY ASSURANCE

GVW shall specify any quality assurance requirements that vary from those incorporated in the Code in the 'agreement conditions'.

10.1.8 Quality records

GVW shall have access to the records for evaluation.

10.1.9 Inspection

GVW shall have access to all laboratories and other facilities used for quality control testing to verify that specified requirements are being met.

11 GENERAL CONSTRUCTION

11.5 PROTECTION OF PEOPLE, PROPERTY AND ENVIRONMENT

11.5.5 Private and public properties

GVW shall be consulted in the resolution of disputes associated with access or entry rights to the Works.

11.5.6 Protection of the environment and heritage areas

GVW requires that the disposal of contaminated material shall meet the requirements of the relevant Regulators.

GVW shall be consulted in determining the method of controlling water pollution.

12 PRODUCTS AND MATERIALS

12.6 SUPPLY OF WATER TO THE WORKS

The use of hydrants is a high risk activity in respect to the protection of water quality. It is also a possible means of deliberate contamination of water supplies by terrorists.

The use of hydrants under the control of Goulburn Valley Water is prohibited unless special written permission has been granted by Goulburn Valley Water.

GVW shall be consulted in respect of its requirements in the event of water restrictions applying.

13 EXCAVATION

13.5 BLASTING

GVW's authorisation shall be obtained for any proposed blasting activities.

14 BEDDING FOR PIPES

14.3 PLACEMENT OF BEDDING

GVW shall be consulted in any alteration of the bedding design to suit actual ground conditions.

15 PIPE LAYING AND JOINTING

15.1 INSTALLATION OF PIPES

15.1.1 General

GVW shall be consulted in respect of its requirements for the cleaning and disinfection of polluted items.

15.10 MARKING TAPES

Unless specifically required in a particular circumstance, the installation of detectable and/or non-detectable marking tapes is not necessary.

16 PIPE EMBEDMENT AND SUPPORT

16.3 COMPACTION OF EMBEDMENT

16.3.1 Methods

GVW's approval shall be obtained for the use of flooding compaction.

17 ILL

GVW's "trench-fill specification" shall be read in conjunction with this section and where any conflict occurs the "trench-fill specification" shall take precedence.

18 SWABBING

18.2 SWAB ENTRY POINTS

GVW shall be consulted in the determination of swab entry points.

19 ACCEPTANCE TESTING

19.3 COMPACTION TESTING

19.3.1 General

GVW's "**Trench-Fill Specification - Water**" shall be read in conjunction with this section and where any conflict occurs the "**Trench-Fill Specification - Water**" shall take precedence.

19.3 HYDROSTATIC PRESSURE TESTING

19.4.1 General

GVW's approval shall be obtained for progressive acceptance testing.

19.4 WATER QUALITY TESTING

19.5.1 General

GVW shall be consulted in respect of its Licence requirements for water quality and its requirements for water quality testing.

20 DISINFECTION

20.1 GENERAL

20.1.1 Procedure

The constructor shall provide advice of the proposed disinfection contractor(s) to GVW at pre-construction phase.

20.2 FLUSHING OF DISINFECTION WATER

GVW shall be consulted in respect of its requirements for the disposal of disinfected water.

21 TOLERANCES ON AS CONSTRUCTED WORK

GVW has no supplementary requirements in this section.

22 CONNECTIONS TO EXISTING WATER MAINS

22.2 UNDER PRESSURE CONNECTIONS

The Authority prefers for under pressure connections to be undertaken as it minimises the need for water main shutdowns. All under pressure connections are to be completed by the constructor.

22.3 INSERTED TEE CONNECTION

The constructor is to complete all inserted tee connections.

23 RESTORATION

GVW has no supplementary requirements in this section.

23 WORK AS CONSTRUCTED DETAILS

GVW has no supplementary requirements in this section.

Part 4: Standard Drawings

25 INTRODUCTION

GVW has no supplementary requirements in this section.

26 LISTING OF STANDARD DRAWINGS

Standard drawing WAT-1121-M is replaced with GVW drawing WAT-1121-G(a).

Standard drawing WAT-1300-V is replaced with GVW drawings WAT-1300-G(a) and WAT-1300-G(b).

27 COMMENTARY ON WAT-1100 SERIES - PIPELINE LAYOUT

27.7 WAT-1121-M - TYPICAL MAINS CONSTRUCTION-POLYETHYLENE WATER MAINS IN RESIDENTIAL CUL-DE-SAC

Standard drawing WAT-1121-M is replaced with GVW drawing WAT-1121-G(a).

28 COMMENTARY ON WAT-1200 SERIES - EMBEDMENT, TRENCH FILL AND RESTRAINTS

GVW has no supplementary requirements in this section.

29 COMMENTARY ON WAT-1300 SERIES - INSTALLATION PRACTICES / STRUCTURES

29.2 WAT-1300-V - VALVE AND HYDRANT IDENTIFICATION

Standard drawing WAT-1300-V is replaced with GVW drawings WAT-1300-G(a) and WAT-1300-G(b).

30 COMMENTARY ON WAT-1400 SERIES – FABRICATION DETAILS

GVW has no supplementary requirements in this section.

Additional Drawings

The following standard drawings have been included:

WAT 1121-G-(a) – Pressure Pipelines Indicator Post

WAT-1300-G-(a) – Standard Drawing – Pressure Pipelines – Indicator Post

WAT-1300-G-(b) – Standard Drawing – Pressure Pipelines – Indicator Post and Location Markers