



Assets Delivery Group  
Infrastructure Design Branch

# **DESIGN STANDARD DS 63-01**

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## **Water Reticulation Standard - Supplement – Dual Water Supply Systems**

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VERSION 2  
REVISION 1

OCTOBER 2016

## FOREWORD

This document is the second issue of the Water Corporations Dual Water Supply Systems Supplement. The original document this Western Australian Water Corporation standard was based on was the Water Services Association of Australia (WSAA) ‘Dual Water Supply Systems’ First Edition Version 1.2. This second issue of the standard has been reformatted to meet Water Corporations standard formatting requirements.

This supplement document sets out the Water Corporation’s requirements for the design and construction of Dual Water Supply System’s reticulation mains and services.

This supplement is seen as a supporting document to the parent Water Corporation’s Water Reticulation Standard and therefore must be read in conjunction with Design Standard DS 63 (Water Reticulation).

This Dual Water Supply Systems Standard has been prepared to ensure that the Water Corporation’s staff, consultants and contractors are informed as to the Water Corporation’s design standards and recommended practices. Design standards are intended to promote uniformity so as to simplify design and drafting practice and have as their ultimate objective the provision of safe and functional plant at minimum whole of life cost.

Your participation and assistance in ongoing review and improvement of the Dual Water Supply Systems Supplement is invited. Comments and suggestions should be forwarded to Chris Woolford, Infrastructure Design Branch on 9420 2303 or [chris.woolford@watercorporation.com.au](mailto:chris.woolford@watercorporation.com.au).

We draw you attention to the fact that this document is very much in its infancy and as such will be required to be updated on a regular basis. Revisions and additions to the Dual Water Supply Systems supplement will be made on ‘as needs’ basis. All such amendments will be forwarded to copyholders as these revisions or additions arise

### Manager, Infrastructure Design Branch

*This document is prepared without the assumption of a duty of care by the Water Corporation. The document is not intended to be nor should it be relied on as a substitute for professional engineering design expertise or any other professional advice.*

*It is the responsibility of the user to ensure they are using the current version of this document.*

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## PREFACE

This Supplement should be read and applied in conjunction with the Water Supply Code of Australia WSA 03 and any supplementary requirements. Additional and/or different requirements for Dual Water Supply Systems have been included in this Water Corporation Supplement and take precedence over the Water Services Association of Australia, Water Supply Code.

The term “non-drinking water” has been adopted in preference to “recycled water” to acknowledge that not all water used for drinking water substitution has been recycled and to align with the Plumbing Code of Australia, 2004 and AS/NZS 3500.0 Plumbing and drainage Part 0: Glossary of terms and AS/NZS 3500.1 Plumbing and drainage Part 1: Water services.

Non-drinking water is not intended for human consumption, food preparation, utensil washing and oral hygiene and any other uses designated by the Health Regulator e.g. ablution.

There are no International Standards that apply to the colour identification of buried pipes, conduits and ducts. Blue has become the default internationally adopted colour for drinking water mains, although in above ground pipework International Standard ISO/R 508 (AS 1345) assigns blue for “air, vacuum, ventilation and pneumatic conveyor” pipework, conduits and ducts. In this Supplement it has been accepted that blue pipe does not require marking to designate “drinking water” since “blue” is the industry standard default colour for drinking water supply and, as such, it is only necessary to mark non-drinking water supply pipes. International Standard ISO/R 508 assigns “violet” for acids and alkalis for above ground pipes, conduits and ducts and AS 1345 more specifically requires “Lilac P23” to AS 2700.

The adoption of the colour “purple” for non-drinking water pipes follows the requirement of the NSW Guidelines for Urban and Residential Use of Reclaimed Water, 1<sup>st</sup> Edition, May 1993 published by the NSW Recycled Water Coordination Committee, which, in turn, had adopted the purple colour protocol of the State of California, USA as prescribed by Title 22, Chapter 4, of the California Code of Regulations.

Requirements for the drinking water part of a dual water supply system should be in accordance with the Water Supply Code of Australia WSA 03 and Water Corporations supplementary requirements.

Within this document text in ‘*italics*’ is informative, while text in ‘normal case’ is normative or mandatory.

**REVISION STATUS**

The revision status of this standard is shown section by section below:

<b>REVISION STATUS</b>						
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<b>2</b>	<b>1/0</b>	<b>1.08.07</b>	<b>All</b>	<b>Draft Version</b>	<b>MM</b>	<b>JD</b>
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<b>3</b>	<b>2/0</b>	<b>18.04.08</b>	<b>All</b>	<b>Reformatted</b>	<b>CW</b>	<b>PF</b>

<b>4</b>	<b>1/0</b>	<b>1.08.07</b>	<b>All</b>	<b>Draft Version</b>	<b>MM</b>	<b>JD</b>
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<b>4</b>	<b>2/1</b>	<b>26.10.16</b>	<b>15-18</b>	<b>Drawing list added</b>	<b>CW</b>	<b>JD</b>

# DESIGN STANDARD DS 63-01

## Water Reticulation Standard - Supplement – Dual Water Supply Systems

### CONTENTS

<i>Section</i>		<i>Page</i>
<b>1</b>	<b>INTRODUCTION.....</b>	<b>7</b>
<b>1.1</b>	<b>Purpose .....</b>	<b>7</b>
<b>1.2</b>	<b>Intended Audience .....</b>	<b>7</b>
<b>1.3</b>	<b>Scope.....</b>	<b>7</b>
<b>1.4</b>	<b>Application .....</b>	<b>7</b>
<b>1.5</b>	<b>Glossary of Terms.....</b>	<b>7</b>
<b>2</b>	<b>PLANNING AND DESIGN .....</b>	<b>9</b>
<b>2.1</b>	<b>Differentiation Principles.....</b>	<b>9</b>
<b>2.2</b>	<b>Water Supply Mains – Drinking Water .....</b>	<b>9</b>
<b>2.3</b>	<b>Water Supply Mains – Non-Drinking Water .....</b>	<b>9</b>
<b>2.4</b>	<b>Property Services – Drinking Water.....</b>	<b>10</b>
<b>2.5</b>	<b>Property Services – Non-Drinking Water .....</b>	<b>10</b>
<b>2.6</b>	<b>Marker Tapes .....</b>	<b>10</b>
<b>3</b>	<b>DESIGN GUIDELINES .....</b>	<b>11</b>
<b>3.1</b>	<b>Demands.....</b>	<b>11</b>
<b>3.2</b>	<b>System Configurations .....</b>	<b>11</b>
<b>3.3</b>	<b>Cross Connection Between the Drinking and Non-Drinking Water Supply Systems.....</b>	<b>11</b>
3.3.1	General.....	11
3.3.2	Temporary Cross Connections.....	11
<b>3.4</b>	<b>Sizing of Mains .....</b>	<b>12</b>
3.4.1	General.....	12
3.4.2	Fire Flows .....	12

<b>3.5</b>	<b>Allowance Service Pressures.....</b>	<b>12</b>
<b>3.6</b>	<b>Location of Mains .....</b>	<b>12</b>
<b>3.7</b>	<b>Main Depths .....</b>	<b>12</b>
<b>3.8</b>	<b>Crossings.....</b>	<b>13</b>
<b>3.9</b>	<b>Property Services .....</b>	<b>13</b>
<b>3.10</b>	<b>Clearances.....</b>	<b>13</b>
<b>3.11</b>	<b>Hydrants .....</b>	<b>13</b>
<b>3.12</b>	<b>Cul-de-Sacs and Dead End Non-Drinking Water Mains .....</b>	<b>13</b>
<b>3.13</b>	<b>Flushing Points.....</b>	<b>13</b>
<b>3.14</b>	<b>Scour Valves .....</b>	<b>13</b>
<b>3.15</b>	<b>Thrust and Anchor Blocks.....</b>	<b>13</b>
<b>3.16</b>	<b>Surface Fittings .....</b>	<b>14</b>
<b>4</b>	<b>DRAWINGS .....</b>	<b>15</b>

# 1 INTRODUCTION

## 1.1 Purpose

The Water Reticulation Design Standard sets out the guidelines and technical standards that are complementary to the requirements in the WSAA Water Supply Code WSA03-2011 for the design and construction of water reticulation assets for the Water Corporation. In the event of conflict between the ‘Code’ and the ‘Standard’, the ‘Standard’ shall take precedence.

Guidelines for all administrative, commercial, and procedural matters for subdivision services work are covered in the Corporation’s Developers Manual which can be accessed at web site: <https://www.watercorporation.com.au/-/media/files/builders-and-developers/subdividing/developers-manual.pdf>.

## 1.2 Intended Audience

The Standard has been prepared to assist Corporation personnel, consulting engineers and water industry contractors, engaged in any or all aspects of planning, design and construction of Corporation’s water reticulation assets.

## 1.3 Scope

This Supplement covers the design and construction of dual water supply systems for servicing new developments. The Supplement addresses the provision of a non-drinking water supply and its impacts on (drinking) water supply design and construction.

## 1.4 Application

This Supplement should be applied in conjunction with the Water Supply Code of Australia and / or Water Corporation requirements.

## 1.5 Glossary of Terms

The purpose of this glossary is to assist in interpreting terminology used in the various parts of the Dual Water Supply Systems Supplement.

The terms and definitions are adopted from Water Corporation documentation and are generally additional to those in the Water Supply Code.

**Blue** – A colour defined in accordance with RAL<sup>1</sup> DESIGN colour numbers as being no darker than 200 80 25 or 210 80 25 and no lighter than 200 90 10 or 210 90 10 respectively.

### NOTES:

- 1 RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V. (RAL German Institute for Quality Assurance and Certification)  
Siegburger Strasse 39  
D-53757 Sankt Augustin  
Telephone: +49 (0) 2241/1605-30  
Telefax: +49 (0) 2241/1605-16  
<http://www.ral.de/farben/en/farbvorlagen/index.html?content1.shtml>
- 2 No equivalent colours can be defined in accordance with AS 2700 (NZS 7702)

**Direct tapping** – A procedure consisting of drilling and tapping the pipe wall followed by insertion of a tapping valve/main tap.

**Drinking water** – Water that is suitable for human consumption, food preparation, utensil washing and oral hygiene. For the purposes of this Supplement, drinking water is cold water at a temperature <math><40^{\circ}\text{C}</math>.

NOTE: Adopted from AS/NZS 4020.

**Dual water supply system** – A system of water supply consisting of dual separate mains (pipelines from separate sources) and designed to concurrently provide two separate water supplies to the consumer. One main conveys drinking (potable) water, the other conveys appropriately treated non-drinking water.

**Lilac** – See *purple*

**Non-drinking water** – Any water other than drinking water including wastewater, stormwater, bore water, ground water, lake or river water, which has been treated to meet a Standard (as defined by the Regulator), and which is satisfactory for its intended use(s). For the purposes of this Supplement, non-drinking water is cold water at a temperature of <math><40^{\circ}\text{C}</math>.

**Potable water** – See *drinking water*.

**Purple** – A colour defined in accordance with RAL<sup>1</sup> DESIGN colour numbers as being no darker than 330 40 40 or 310 50 30 and no lighter than 310 70 15, respectively.

NOTES:

- 1 RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V. (RAL German Institute for Quality Assurance and Certification)  
Siegburger Strasse 39  
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Telephone: +49 (0) 2241/1605-30  
Telefax: +49 (0) 2241/1605-16  
<http://www.ral.de/farben/en/farbvorlagen/index.html?content1.shtml>
- 2 Equivalent to a colour defined in accordance with AS 2700 (NZS 7702) as being no darker than P24 Jacaranda or P12 Purple and no lighter than P23 Lilac.

**Reclaimed water** – See *recycled water* and *non-drinking water*.

**Recycled water** – Water that has been reclaimed from wastewater and treated to a standard (as defined by the Regulator) for reuse. See *non-drinking water*.

**Water sensitive urban design** – The integration of urban planning with the management, protection and conservation of the urban water cycle that ensures urban water management is sensitive to natural hydrological and ecological processes.

NOTE: Adopted from Intergovernmental Agreement on a National Water Initiative, 25 June 2004

**Water sensitive urban development** – A holistic approach to planning, design and construction of water supply, sewerage, rainwater and stormwater systems for urban communities. This approach underpins sustainable development by improved efficiency in water use through optimized storage, distribution, use, diversion, loss reduction, treatment and recycling.



## 2 PLANNING AND DESIGN

### 2.1 Differentiation Principles

*Regulators' guidelines for use of non-drinking water generally stipulate a range of measures that permit clear and easy differentiation between the drinking and non-drinking water supply systems, particularly in urban/commercial/industrial developments.*

The principal means of differentiation between mains conveying drinking water and non-drinking water shall be as follows:-

- (a) Pipes of different colours (Refer to Clauses 2.2 and 2.3)
- (b) Warnings printed on non-drinking water mains and/or sleeving (Refer to Clause 2.3)
- (c) Use of marker tapes (Refer to clause 2.6)
- (d) Marking of surface fittings (Refer to Clause 3.16)
- (e) Identification markers and marker posts

*Other additional differentiation measures may include*

- (i) Operating the systems with a service pressure differential (Refer to Clause 3.5)*
- (ii) Different pipe locations (Refer to Clause 3.6)*
- (iii) Maintaining a minimum pipe separation (Refer to Clauses 3.6, 3.7, 3.8 and 3.10, and relevant Clauses of WSA 03)*
- (iv) Use of different pipe materials for the drinking and non-drinking water mains.*

*The application of each measure should be based on risk assessment. Risk assessment should be undertaken in accordance with AS/NZS 4360. Identified risks can be treated by reducing the likelihood or reducing the consequence or both.*

### 2.2 Water Supply Mains – Drinking Water

Water supply mains conveying drinking water as part of a dual water supply system shall be constructed from pipes that are blue in colour and are in accordance with Table 3.1 DS63 – Water Corporation's Water Reticulation Design Standard (originally defined in SPS 115/116 Clause 2.3).

### 2.3 Water Supply Mains – Non-Drinking Water

Water supply mains conveying non-drinking water as part of a dual water supply system shall be constructed from pipes that are purple.

Purple pipe (as originally defined in SPS 115/116 Clause 2.3) shall be legibly and durably marked with one of the following wording options using distinctively coloured vertical block type lettering of a minimum size of at least 0.05 x DN mm and repeated at intervals such that the length of any unmarked pipe or sleeving does not exceed 1 m:

- (i) "NON-DRINKING WATER"; or
- (ii) "RECYCLED WATER – DO NOT DRINK"

Blue pipe, including blue striped or sheathed pipe, shall not be used for non-drinking water reticulation mains.

Buried appurtenances such as fittings, valves and hydrants that form part of the reticulation system are not required to be colour coded. Where a blue fitting is used for supply of non-drinking water

to a property e.g. tapping band or pre-tapped connector, the outlet connection of the fitting shall be marked or coated purple.

*Where colour differentiation of buried appurtenances such as hydrants, flushing points etc is also required for operational purposes, this may be achieved by application of a purple (or blue in the case of drinking water) coating to that part of the appurtenance visible from the surface when operating e.g. a spindle cap of a valve, a hydrant claw, as flushing point outlet etc.*

## 2.4 Property Services – Drinking Water

Property services conveying drinking water as part of a dual water supply system shall be installed using pipes that are in accordance with Design standard DS63.

## 2.5 Property Services – Non-Drinking Water

Property services conveying non-drinking water as part of a dual water supply system shall be installed using pipes that are coloured purple.

Purple pipe shall be legibly and durably marked with one of the following wording options using distinctively coloured vertical block type lettering of a minimum size of at least 0.05 x DN mm and repeated at intervals such that the length of any unmarked pipe or sleeving does not exceed 1 m:

- (a) “NON-DRINKING WATER”; or
- (b) “RECYCLED WATER – DO NOT DRINK”

Buried components that form part of the property service may be required to be colour coded for maintenance purposes, in which case, one of the following two options shall be adopted:

- (i) Buried components shall be coated purple in accordance with product Standards; or
- (ii) Buried components shall be sleeved with purple sleeving.

In the case of option (ii), blue components shall not be used.

Non-drinking water meters and meter boxes shall be coloured purple.

## 2.6 Marker Tapes

Marker tapes (detectable and non-detectable) for drinking water mains and property services shall be coloured blue and shall include the words: “DRINKING WATER” in the written marking along the marker tape in distinctively coloured vertical block type lettering of a minimum size of at least 25 mm, and repeated at intervals such that the length of any unmarked section of the tape does not exceed 1 m.

Marker tapes (detectable and non-detectable) for non-drinking water mains and property services shall be coloured purple and shall include the words: “RECYCLED WATER – DO NOT DRINK” in the written marking in distinctively coloured vertical block type lettering of a minimum size of at least 25 mm, and repeated at intervals such that the length of any unmarked section of tape does not exceed 1 m.

Where PE property services are not laid at 90+ degrees (i.e. outside the range 85 to 95 degrees) to the water main, detectable marker tapes shall be laid immediately above the property service.

*Copper property services can be readily detected and do not require detectable marker tape.*

## 3 DESIGN GUIDELINES

### 3.1 Demands

Demands for design purposes shall be determined for each system, based on the ultimate predicted usage of drinking water and non-drinking water for the end uses nominated in the Concept Plan. Where rainwater tanks are to be integrated with the dual water supply system, the following factors shall be taken into account in substitution of collected rainwater for drinking water and/or non-drinking water:

- (a) reliability of rainwater collection, storage and supply;
- (b) usable volume of the rainwater tank;
- (c) top-up of rainwater tanks, which may be supplied from either the drinking water or non-drinking water supply systems; and
- (d) rainwater end uses.

The water demands for each system and their associated peaking factors shall be applied in accordance with Clause 2.2 of WSA 03 taking into account the different usage pattern for dual versus single water supply systems. An allowance shall be made for the additional potential demand when a dual water system is used.

*Experience on what this allowance should be is limited; however, a default allowance of 10 – 15% of the total demand for both systems is recommended until more usage data becomes available. Peaking factors for non-drinking water in warmer or dryer parts of Australia may exceed existing peaking factors.*

### 3.2 System Configurations

The network layout of both drinking water and non-drinking water reticulation systems shall be subject to approval by the Water Corporation.

*If available, a guide to system configurations of dual water reticulation networks to complement the information and requirements of the Water Supply Design Standard will be provided by the Water Corporation.*

### 3.3 Cross Connection Between the Drinking and Non-Drinking Water Supply Systems

#### 3.3.1 General

There shall be no permanent cross connections between the drinking water and non-drinking water systems within the network downstream of storages. Where the non-drinking water supply needs to be supplemented by water from the drinking water supply, this shall be provided through an air-gap at the inlet to the non-drinking water storage.

#### 3.3.2 Temporary Cross Connections

Temporary cross connection between the drinking water system and the non-drinking water system shall be permitted when the non-drinking water system is supplying drinking water.

Temporary cross connections shall be provided at locations and in accordance with WSAA Standard Drawing WAT-1824 and the specific project requirements as detailed by the Water Corporation.

*It is responsibility of the Water Corporation to ensure the management of temporary cross-connections and their removal when non-drinking water becomes available. The designer and/or*

*contractor shall advise the Water Corporation, in writing, of each and every cross connection installed within the system to ensure these facilities are known of and monitored.*

### **3.4 Sizing of Mains**

#### **3.4.1 General**

Sizing of water mains for drinking water and non-drinking water shall be determined in two steps.

STEP 1 - Firstly, size the water mains for drinking water and non-drinking water based upon estimated ultimate water demands for each system as determined in Clause 3.1 of DS63-01 without imposing the requirements for fire fighting (Refer to Clause 3.2.4 of WSA 03 and Clause 3.4.2 of DS63-01).

STEP 2 - Secondly, size the mains identified in step 1 in accordance with Clause 3.5.

Irrespective of the sizes determined in steps 1 and 2 above, the following limitations shall apply:

- (a) The minimum pipe size shall be DN 40 or equivalent; and
- (b) For non-drinking water with turbidity  $>2$  NTU, the minimum velocity shall be at least 0.8 m/s at least once per day when modeled on the peak day demand for the ultimate development (Refer to Clause 2.2.3 of WSA 03).

#### **3.4.2 Fire Flows**

Fire hydrants are to be installed on drinking water mains and are to be located as per Design Standard DS63.

### **3.5 Allowance Service Pressures**

Where specified by the Water Corporation, the non-drinking water supply system shall be designed with a lower available static head or steady state pumping pressure than the drinking water supply system provided the minimum service pressures of each system comply with Clause 2.4 of WSA 03.

*A typical differential static design head or steady state pumping pressure is 10 m.*

### **3.6 Location of Mains**

The location of drinking water and non-drinking water mains shall be nominated by the Water Corporation from one or more of the following options:

- (a) in separate trenches in the footway allocation on opposite sides of the road reserve;
- (b) in separate trenches in the road carriageway;
- (c) in separate trenches in the same footway allocation.

Where insufficient space is available in the footway allocation to accommodate both mains, each main shall be located separately on either side of the road carriageway in the respective footway allocation (Refer to WSAA Standard Drawing WAT-1102)

### **3.7 Main Depths**

Mains shall be laid to a common obvert depth to facilitate property service connections (offtakes), except where mains are to be offset for crossings, installation of thrust blocks etc (Refer to WSAA Standard Drawings WAT-1810).

### **3.8 Crossings**

Where practicable, the non-drinking water main shall be laid under the drinking water main wherever they cross.

### **3.9 Property Services**

Property services for drinking water and non-drinking water shall be positioned to suit the type of planned development.

### **3.10 Clearances**

Clearances between services non-drinking water mains and other services shall be not less than the minimum clearances specified Clause 4.10 of WSA 03 for drinking water mains.

### **3.11 Hydrants**

Hydrants for fire fighting and/or operational purposes shall be installed on the drinking water main in accordance with Design Standard DS63.

### **3.12 Cul-de-Sacs and Dead End Non-Drinking Water Mains**

Dead end non-drinking water mains shall be avoided in the non-drinking water main layout design by the use of looped mains, link mains or reduced diameter mains. (Refer to WSAA Standard Drawing WAT-1801).

### **3.13 Flushing Points**

Non-drinking water reticulation mains shall be provided with flushing points at the permanent dead ends of all mains and at maximum intervals of 150 m or an interval nominated by the Water Corporation. (Refer to WSAA Standard Drawings WAT-1822 and WAT-1823).

NOTE: Non-drinking water may be high in nutrients. The environmental regulator should be consulted to determine whether discharge of non-drinking water to the receiving water/environment is permissible. If it is not permissible, flushing to a tanker for disposal or to a collection structure for transfer to a tanker and disposal or to the sewer should be investigated to provide the most appropriate solution.

### **3.14 Scour Valves**

Scour valves are not normally required in non-drinking water mains within the residential area.

However for long non-drinking water mains located in undulating terrain, or where installation of flushing points are not practical, scouring assemblies may be required.

Where required, scouring assembly shall include a DN100 flanged sluice valve. These scour assemblies shall be designed and installed to Water Corporation's requirements.

### **3.15 Thrust and Anchor Blocks**

Where non-restrained joint pipeline systems are used, pipeline anchorage shall be provided in accordance with DS63 and DS63 Standard Design Drawings, along with WSA 03 and WSAA Standard Drawing WAT-1811. Separate thrust/anchor blocks shall be provided except where common thrust/anchor blocks are required due to site constraints, in which case the thrust/anchor block shall be designed for all design force combinations. Elastomeric seal joints shall not be encased by concrete.

### **3.16 Surface Fittings**

Surface fittings for appurtenances on the drinking water network shall be marked as specified in WSA 03.

- (a) the words “NON-DRINKING WATER” or “RECYCLED WATER” cast into the cover the surface fitting; or
- (b) a purple surface fitting cover and/or surround; or
- (c) any combination of the above as nominated by the Water Corporation.

## 4 DRAWINGS

<i>“Non Drinking Water Drawing List”</i>					
	<b>MAIN TITLES</b>		Non Drinking Water - Reticulation		
			Standard and Example Drawings		
			as at October 2016		
<b>Drawing Series</b>	<b>Drawing Number</b>	<b>Current Rev</b>	<b>Title (Lines 3 and 4 ONLY, Lines 1 and 2 as above)</b>	<b>Comment on Change</b>	<b>Approved</b>
<b>1</b>	KN42-1-1	A	Typical Reticulation Layout Template, Detailed Design Drawing	Final	19/05/2011
<b>2</b>	KN42-2-1	A	Typical Reticulation Layout Template, As Constructed Drawing	Final	19/05/2011
<b>3</b>	KN42-3-1	A	Utilities Arrangement in a Typical Road, Laneway and Cul-De-Sac Road Reserve	Final	25/05/2011
<b>4</b>	KN42-4-1	A	Typical Mains Alignment, District Entry Roads	Final	19/05/2011
	KN42-4-2	A	Typical Mains Alignment, Road Avenue "A" without Median	Final	19/05/2011
	KN42-4-3	A	Typical Mains Alignment, Road Avenue "A" with Median	Final	19/05/2011
	KN42-4-4	A	Typical Mains Alignment, Road Avenue "B" with Dual Parallel Bay Parking	Final	19/05/2011
	KN42-4-5	A	Typical Mains Alignment, Road Avenue "A" Abutting Park Avenue/Living Stream	Final	19/05/2011
	KN42-4-6	A	Typical Mains Alignment, Access Roads - 4.1/4.1m & 5.0/4.1m Verge Variations	Final	19/05/2011
	KN42-4-7	A	Typical Mains Alignment, Access Roads - 5.5/4.1m & 5.0/5.0m Verge Variations	Final	19/05/2011
	KN42-4-8	A	Typical Mains Alignment, Park Avenues With Single Parallel Bay Parking	Final	19/05/2011
	KN42-4-9	A	Typical Mains Alignment, Park Avenues With Dual Parallel Bay Parking	Final	19/05/2011
	KN42-4-10	A	Typical Mains Alignment, Mews Properties Both Sides (Only One Side Serviced)	Final	19/05/2011

<b>Drawing Series</b>	<b>Drawing Number</b>	<b>Current Rev</b>	<b>Title (Lines 3 and 4 ONLY, Lines 1 and 2 as above)</b>	<b>Comment on Change</b>	<b>Approved</b>
	KN42-4-11	A	Typical Mains Alignment, Mews Adjacent to Park	Final	19/05/2011
	KN42-4-12	A	Typical Mains Alignment, Laneway Properties Either Side	Final	19/05/2011
	KN42-4-13	A	Typical Mains Alignment, Laneway Adjacent To Park	Final	19/05/2011
	KN42-4-14	A	Typical Mains Alignment, Cul-de-sac including Common Trenching	Final	19/05/2011
<b>5</b>	KN42-5-1	A	Typical Mains Alignment, Cul-de-sac Arrangement	Final	25/05/2011
<b>6</b>	KN42-6-1	A	Typical Cover, Bedding and Backfill Details	Final	19/05/2011
	KN42-6-2	A	Typical Mains Alignment, Two Reticulation Mains in Common Trench	Final	25/05/2011
<b>7</b>	KN42-7-1	B	Typical Lot Entry Arrangements, Index and Service Depths	Amended	5/09/2013
	KN42-7-2	A	Typical Lot Entry Arrangement – Consolidated Dual Shallow Sewer – Connection Off Inspection Opening (IO)	Final	18/09/2012
	KN42-7-3	A	Typical Lot Entry Arrangement - Consolidated Dual Deep Sewer – Connection To Inspection Shaft (IS)	Final	18/09/2012
	KN42-7-4	A	Typical Lot Entry Arrangement – Dual – No Water No Gas Shallow Sewer – Connection Off Inspection Opening (IO)	Final	18/09/2012
	KN42-7-5	A	Typical Lot Entry Arrangement – Dual – No Water No Gas Deep Sewer – Connection To Inspection Shaft (IS)	Final	18/09/2012
	KN42-7-6	A	Typical Lot Entry Arrangement Dual Entry With Power And Water Separated	Final	18/09/2012



Drawing Series	Drawing Number	Current Rev	Title (Lines 3 and 4 ONLY, Lines 1 and 2 as above)	Comment on Change	Approved
	KN42-7-7	A	Typical Lot Entry Arrangement Dual Entry – No Sewer	Final	18/09/2012
	KN42-7-8	A	Typical Lot Entry Arrangement – Shallow Sewer Dual Entry With Power And Sewer Separated	Final	18/09/2012
	KN42-7-9	A	Typical Lot Entry Arrangement – Deep Sewer Dual Entry With Power And Sewer Separated	Final	18/09/2012
8	KN42-8-1	C	Typical Lot Entry Arrangement - Front Retaining Walls Less than 1.1m in Height - Single DN20 Service	Amended	12/05/2014
10	KN42-10-1	B	Typical Prelaid Single Services, (DN20 Short & Long), Incorporating DN25 PE Pipe	Amended	5/09/2013
	KN42-10-2	B	Typical Prelaid Dual Services, (DN20 Short & DN25 Long), Incorporating DN25 & DN32 PE Pipe	Amended	5/09/2013
	KN42-10-3	B	Typical Prelaid Single Services, (DN20 Short & Long), Connection Details for DN25 PE Pipe	Amended	5/09/2013
	KN42-10-4	B	Typical Prelaid Single Services, (DN20 Short & Long), Connection Details for DN32 PE Pipe	Amended	5/09/2013
	KN42-10-5	A	Typical Prelaid Services, Multiple (3 to 10 Services Connection) Manifolds Arrangement	Final	31/05/2011

<b>Drawing Series</b>	<b>Drawing Number</b>	<b>Current Rev</b>	<b>Title (Lines 3 and 4 ONLY, Lines 1 and 2 as above)</b>	<b>Comment on Change</b>	<b>Approved</b>
<b>12</b>	KN42-12-1	A	Typical Connection Arrangement, Intersection of Drinking and Non-Drinking Water Services	Final	31/05/2011
	KN42-12-2	A	Typical Connection Arrangement, Non-Drinking Offtakes	Final	31/05/2011
<b>13</b>	KN42-13-1	A	Typical Cross Connection, Temporary Above Ground Connection Including Meter	Final	30/05/2011
<b>14</b>	KN42-14-1	A	Typical Appurtenances, Isolation / Sluice Valves	Final	13/06/2011
	KN42-14-2	A	Typical Appurtenances, Flushing Point (DN 100 & DN 150) Arrangement	Final	31/05/2011
	KN42-14-5	A	Typical Appurtenances, Below Ground Air Valve (DN 100 and DN 150)	Final	30/05/2011
	KN42-14-6	A	Typical Appurtenances, Scour Valve Pit (DN 100 and DN 150 Scour Branch)	Final	30/05/2011
	KN42-14-7	A	Typical Appurtenances, DN 100 to DN 150 Scour Branch Point with Surface Connection	Final	5/12/2011
	KN42-14-8	B	Typical Appurtenances, Hydrant with Circular Lid	Amended	05/09/2013
<b>16</b>	KN42-16-1	A	Typical Marking Details, Kerb Markings	Final	25/05/2011

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