



## **Kyogle Council**

# **Background Data used for Calculating DSP Charges for Water Supply, Sewerage and Stormwater**

**Draft 1.0 - Exhibition**

**October 2010**



**0400 210 778**  
*mike@mconsult.com.au*

Level 1 | 101 Fitzmaurice St  
PO Box 2295 Wagga Wagga NSW 2650

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## **1. Introduction**

This document tabulates the data used to calculate charges in *Development Servicing Plan 1: Kyogle and villages water supply and sewerage services*, version 1.0.

The document is structured by asset type. For each of the asset types, the tables list the chargeable assets and summaries of assets by catchment. These, with the current loading and growth forecasts, form the basis of the capital charge calculations following.

## **2. Methodology for calculating water supply and sewerage capital charges**

The NSW Independent Pricing and Regulatory Tribunal (IPART) released a series of determinations in the mid-1990s supporting the use of a “net present value” approach to the calculation of developer charges. This approach supported the calculation based on existing and future asset valuations, reduced by the portion of the capital costs which are funded through annual charges. These determinations applied to Sydney Water, Gosford and Wyong Councils, and Hunter Water.

The then Department of Land and Water Conservation used this work to develop guidelines for local government water utilities to calculate developer charges. While adopting the same philosophy, a number of changes were made to reflect the varying capability of local water utilities to undertake the work required.

### **2.1.1 Purpose of Report**

This report describes the method used to calculate capital costs per ET, and shows how the method conforms to the guidelines issues by the Department of Water and Energy. The report seeks to demonstrate that the method deployed is consistent with the intent of the IPART determinations and DWE guidelines.

### **2.1.2 Disclaimer**

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## **2.2 Description of method**

### **2.2.1 Philosophy**

The method used seeks to meet the intent of the IPART determinations during the 1990s and the DLWC guidelines of 2002.

In particular, the method supports the following philosophical approach:

- As development benefits from the provision of downstream infrastructure, the beneficiaries should contribute the full cost (but not more) of the development.
- Charges need to reflect the holding costs of providing asset capacity earlier than required to meet future growth.
- A good system of developer charges provides the appropriate pricing signals to developers on the cost of development. A good system should encourage orderly and economic development which will not only lead to lowest possible cost of development<sup>1</sup>, but also

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<sup>1</sup> The ‘lowest cost of development’ includes the cost to the community if the full cost of development is not borne

should assist in keeping future operating and asset renewal costs low through that orderly and economic development.

### **2.2.2 Method**

The calculation method is based on the “spreadsheet” approach described in section 2.6.2 of the DLWC guidelines. The method uses a series of spreadsheets to collate major and trunk assets into zones or catchments, and calculates for each of the zones the capital cost per ET for assets within the zone or catchment.

### **2.3 Valuation**

Existing assets have been valued by Kyogle Council as part of their financial statements for the year ending 30 June 2008. This valuation is made in accordance with fair value principles, which includes the valuation of assets according to the modern engineering equivalent asset.

### **2.4 Process**

The process is best described using a worked example, provided in **Section 2.6**.

The method involves two network “builds” using a logical ‘tree’ of the water supply or sewerage system. The first build accumulates equivalent tenement and present value equivalent tenement values from the dead-ends of the network to the inlet (for water supply) or outlet (for sewerage). During this build the infrastructure costs per present value equivalent tenement are also calculated. The second build operates in reverse, accumulating calculated infrastructure costs per ET from the inlet/outlet to the upstream dead-ends.

#### **2.4.1 Benefits of the model approach**

There were a number of benefits in utilising this approach to calculate the capital costs per ET:

1. Council’s existing asset valuation already contained much of the data required for the Developer Servicing Plan, including the capacity on pipe assets. This minimised the time required to prepare the servicing strategies that support the DSP.
2. The model provides Council with knowledge of capital costs per ET on a zone/catchment basis across its entire network, which enables Council to better manage unforeseen development such as redevelopment or infill development.

### **2.5 Compliance with requirements of Guidelines**

The following table outlines how the key requirements of the DLWC *Guidelines* have been handled:

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by developers. If developer charges in a particular area are too low, the difference needs to be made up through higher annual charges to customers.

**Table 1: Compliance with DLWC Guideline requirements**

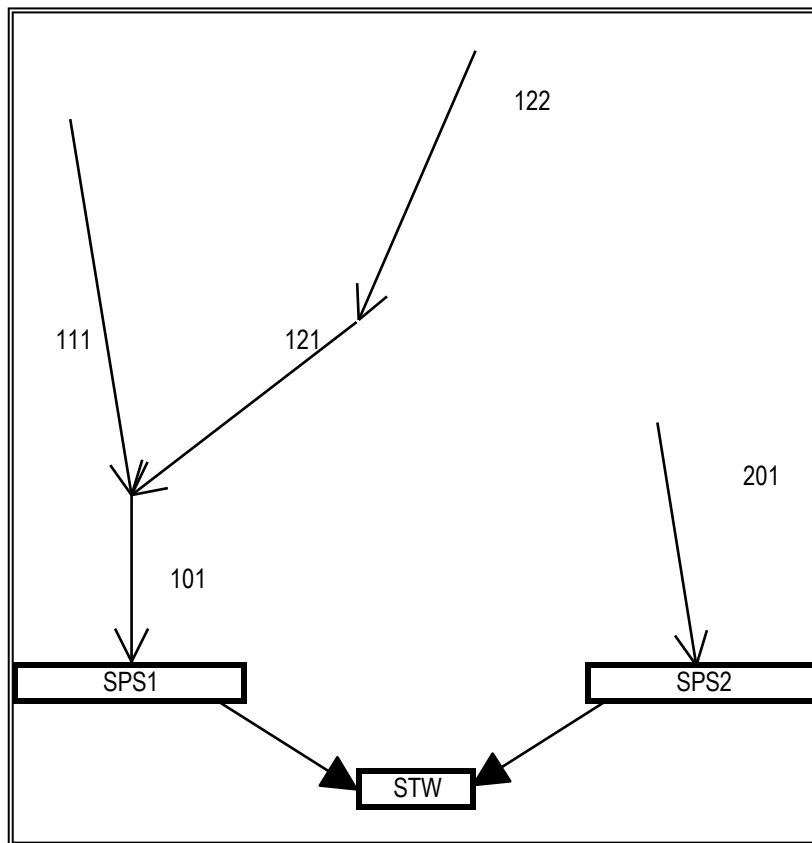
Issue	Handling in model
Pre-1970 <i>minor</i> assets Reticulation assets Developer provided assets	These assets were excluded from calculations.
Pre-1970 <i>major</i> assets 1970-1996 assets	Future development utilising these assets has been discounted by 3% per annum from a base of January 1996.
Post-1995 assets	Future development utilising these assets has been discounted by 7% per annum from a base of 2008.
Sharing of assets	As the model calculates the capital cost per ET on an asset-by-asset basis sharing is effectively handled within the model.
Temporarily used assets	The model has been constructed to meet 2038 loads. Where temporary assets have been deployed, it is assumed that the permanent arrangement has been implemented by 2038.
Assets not fully taken up as of 2038	Future assets have only been sized to meet forecast load to 2038 within the model. In practice certain major assets and assets planned to be constructed in later years will consider loads beyond 2038.
Staged construction, upgrades of existing assets	Upgrades of existing assets have been separately costed to correctly reflect discounting rules.
Renewals	Existing renewals have been considered by adjusting the commissioning date of the asset to the date of renewal. Future renewals are not considered as required by the Guidelines.
Out-of-sequence development	Guideline conditions apply. However it should be noted that in cases where assets provision is synchronised with the development, calculated charges will be reasonable as the discounting for the present value of the load and the present value capital cost of the works 'cancels out'.
DSP service areas	DSP service areas have been defined by: 1. Assigning one service area to each water or sewage treatment works area. 2. Where development areas with each catchment had a developed capacity of greater than 500 equivalent tenements ('lots'), these areas have been excised from the service areas defined in stage 1 and assigned to a separate service area.
Calculation of capital charge in service area	The capital charge for the service area is calculated as the weighted mean capital cost per equivalent tenement for forecast growth in the zone, based on the present value of that growth, discounted at a rate of 7% pa.
Agglomeration of service areas	Service areas were agglomerated where their capital charges were within 30%, as per the guidelines.

## 2.6 Worked example

The following is a worked example to demonstrate how the model is calculating capital costs per ET. The example is based on calculations for capital charges to be levied in 2007.



Consider the following theoretical system:



In this system there is one sewage treatment works, two sewage pumping stations and rising mains (considered together) and five gravity trunk mains. The existing system was originally constructed in 1965 and currently consists of the sewage treatment works, SPS1 and trunk mains 101, 111 and 121. Development will trigger construction of trunk main 122 in 2008, SPS2 (including the rising main) in 2009 and main 201 in 2010. SPS1 and the STW have been classed as major assets, which means that they are included in the capital cost calculations. Main 101 was constructed prior to 1970 but is not classed as a major asset, so therefore has been excluded from the capital cost calculations.

## 2.6.1 Loads

The current and future system loads in this theoretical network are shown in **Table 2**:

**Table 2: Worked example: input system loads**

Asset	Construction	Current Conditions		2036 Conditions	
		Direct Connections <sup>2</sup>	Total load	Asset	Construction
STW	1965	0	550	0	750
SPS1	1968	0	350	0	650
101	1968	200	350	200	650
111	1975	150	150	150	150
121	1998	200	200	200	300
122	2008	0	0	100	100
SPS2	2009	0	0	0	100
201	2010	0	0	100	100

## 2.6.2 Present value of loads

Future loads in the system need to be converted to two present value results:

- “Present” value as of January 1996, discounted at 3% per annum. This value is used to calculate capital costs per ET for assets constructed prior to 1996.
- Present value as of January 2007, discounted at 7% per annum. This value is used to calculate capital costs per ET for assets constructed after 1995.

Assuming that the direct connections to each asset occur on the year of construction, this yields the present value of connections in Error! Reference source not found..

**Table 3: Worked example: present value of system loads**

Asset	Construction	2036 Direct Connections	PV(ET) at 3% (1996 base)	PV(ET) at 7% (2007 base)
STW	1965	0	0	0
SPS1	1968	0	0	0
101	1968	200	200	200
111	1975	150	150	150
121	1998	200	189	200
122	2008	100	70	94
SPS2	2009	0	0	0
201	2010	100	66	82

## 2.6.3 Infrastructure cost per ET

The capital cost per ET for a given piece of infrastructure is given by:

<sup>2</sup> Direct connections are customers that are directly connected to the asset. It does not include customers located upstream of the asset.

$$\text{Capital Cost per ET} = \frac{\text{PV(Capital Cost)}}{\text{PV(ET served)}}$$

Consider SPS1.

The ET served by SPS1 is the total upstream ET, discounted to the present value rule applicable to that piece of infrastructure. So for example the PV(ET served) for SPS1 is:

$$\begin{aligned} \text{PV(ET served SPS1)} = & \text{PV(Connections to SPS1)} + \\ & \text{PV(Connections to 101)} + \\ & \text{PV(Connections to 111)} + \\ & \text{PV(Connections to 121)} + \\ & \text{PV(Connections to 122)} \end{aligned}$$

As SPS1 was commissioned in 1968 and is classed as a major asset, the applicable discount rate is 3% per annum from January 1996. This means that the result of the equation is:

$$\text{PV(ET served SPS1)} = 0 + 200 + 150 + 189 + 70 = 609$$

Say the valuation of SPS1 was \$300,000. As an existing asset the present value of the asset is equal to the valuation. This leads to the capital cost per ET being:

$$\text{Capital Cost per ET} = \frac{\$300,000}{609} = \$492.47$$

Adopting the same approach for the rest of the infrastructure leads to the capital costs per ET for individual pieces of infrastructure, as shown in Error! Reference source not found..

**Table 4: Worked example: capital cost per ET for network elements**

Asset	Construction	Valuation	Discount		PV (ET served)	Infrastructure cost per ET
			Rate	PV (Capital Cost)		
STW	1965	\$2,000,000	3%	\$2,000,000	675	\$2,961.15
SPS1	1968	\$300,000	3%	\$300,000	609	\$492.47
101	1968	\$0	3%	\$0	539	\$0.00
111	1975	\$20,000	3%	\$20,000	150	\$133.33
121	1998	\$20,000	7%	\$20,000	294	\$68.05
122	2008	\$30,000	7%	\$28,170	94	\$300.06
SPS2	2009	\$200,000	7%	\$175,481	82	\$2,140.00
201	2010	\$16,000	7%	\$13,120	82	\$160.00

### **2.6.4 Capital cost per ET for new connections**

Now consider the growth that is forecast to connect at main 122. Development in this area benefits from mains 122, 121, 101, SPS1 and the sewage treatment works. The capital cost per ET then becomes the sum of the infrastructure cost per ET for these assets.

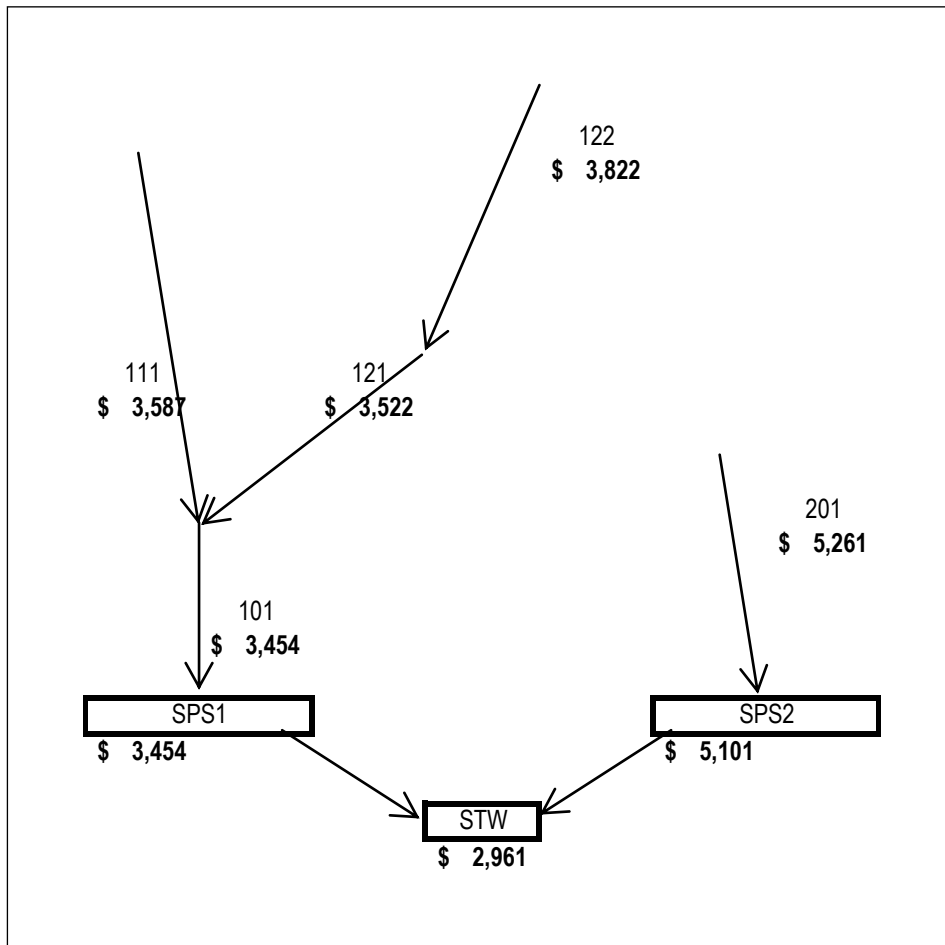
$$\begin{aligned}
 \text{Capital cost per ET}_{\text{Main 122}} &= IC_{122} + IC_{121} + IC_{101} + IC_{\text{SPS1}} + IC_{\text{STW}} \\
 &= \$300.06 + \$68.05 + \$0 + \$492.47 + \$2,961.15 \\
 &= \$3,821.73
 \end{aligned}$$

Error! Reference source not found. summarises capital cost calculations for this theoretical etwork:

**Table 5: Worked example: summary of capital cost per ET for network locations**

Location	Cost contributor								Total cost
	STW	SPS1	101	111	121	122	SPS2	201	
STW	\$2,961	-	-	-	-	-	-	-	\$2,961
SPS1	\$2,961	\$492	-	-	-	-	-	-	\$3,454
101	\$2,961	\$492	-	-	-	-	-	-	\$3,454
111	\$2,961	\$492	-	\$133	-	-	-	-	\$3,587
121	\$2,961	\$492	-	-	\$68	-	-	-	\$3,522
122	\$2,961	\$492	-	-	\$68	\$300	-	-	\$3,822
SPS2	\$2,961	-	-	-	-	-	\$2,140	-	\$5,101
201	\$2,961	-	-	-	-	-	\$2,140	\$160	\$5,261

This is the capital cost per ET value required in the Developer Servicing Plan. This value is reduced by the Reduction Amount to derive the Developer Charge. The capital costs for connections to each part of the theoretical network are as shown below:



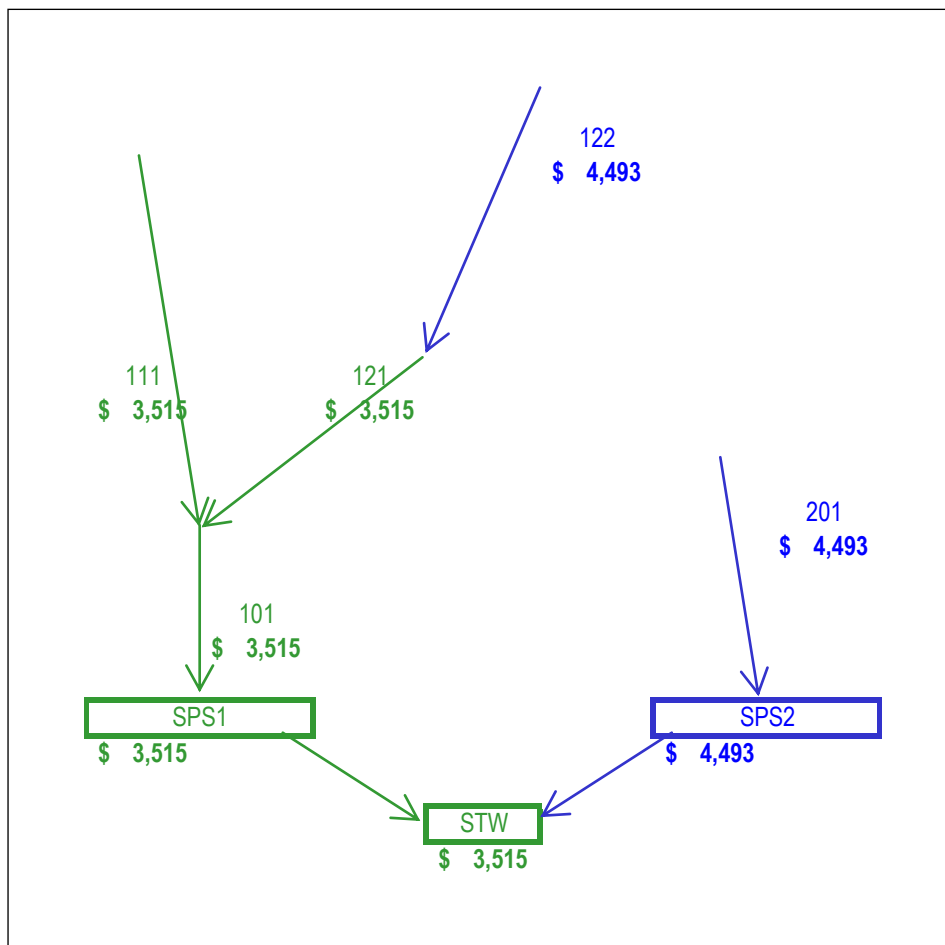
### 2.6.5 Agglomeration

Under the DLWC *Guidelines*, service areas with like prices need to be agglomerated. **Table 6** shows the grouping and agglomeration process.

**Table 6: Agglomeration of Charges**

Location	Capital cost	NPV Growth @ 7%	Select highest cost location	Highest cost less 30%	Calculate weighted average cost
201	\$5,261	82			
SPS2	\$5,101	0	\$5,261	\$3,683	\$4,493
122	\$3,822	94			
111	\$3,587	150			
121	\$3,522	200			
101	\$3,454	200	\$3,587	\$2,511	\$3,515
SPS1	\$3,454	0			
STW	\$2,961	0			

The result of this agglomeration process is two charges across the network- a lower charge on the older and more central elements, with higher charges on the more remote or expensive to service parts of the network.



## **2.7 Indexation**

Indexation attempts to compensate for the changing value of money between revisions of the development servicing plans. The Brisbane CPI (Consumer Price Index All Groups for Brisbane<sup>3</sup>) has been selected as prices in the Kyogle Council area are more significantly affected by this capital city than Sydney as it is considerably closer (190km v 740km by road).

**The values provided in the DSP have already been indexed to March 2010 values. The asset valuations reported in the following sections are based on the original July 2008 values. Consequently the results need to be multiplied by 1.033 to match the figures reported in the DSP and the summary tables.**

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<sup>3</sup> Australian Bureau of Statistics Publication 6401.0, Table 1, series ID A2325816R

### 3. Water supply

#### 3.1 Zone identifiers

The identifiers below are used in the tables following to assign assets to service zones.

System	Zone ID	Zone Name
Kyogle	10	Kyogle water common
	20	South Kyogle
	25	Kyogle
	30	Golf Course/New Park
	40	Geneva
Woodenbong-Muli-Muli	100	Woodenbong Reservoir
	101	Woodenbong
	102	Muli Muli
	199	Urbenville and upstream
Bonalbo	201	Bonalbo

#### 3.2 Chargeable assets

##### 3.2.1 Water mains

Asset_ID	Asset_Type	Diameter (mm)	Length	Zone ID	Commissioned	Replacement Cost	Discount Rate	NPV
K_WM_188.1-401	Watermain	150	317	20	1988	\$44,017	3%	\$44,017
K_SM-84-181	Watermain	250	1439	10	1958	\$237,470	3%	\$237,470
20050606155112	Watermain	200	193	25	1980	\$24,167	3%	\$24,167
K_WM_112-301	Watermain	100	612	30	1980	\$56,306	3%	\$56,306
K_WM_109-110	Watermain	150	491	30	2003	\$68,217	7%	\$68,217
K_WM_110-112	Watermain	100	79	30	2003	\$7,275	7%	\$7,275
WM_KN43.2-KN44.1	Watermain	150	214	40	2000	\$29,802	7%	\$29,802
WM_KN43.1-KN43.2	Watermain	150	30	40	2000	\$4,130	7%	\$4,130
20070718144614	Watermain	150	302	40	2006	\$42,029	7%	\$42,029

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Asset_ID	Asset_Type	Diameter (mm)	Length	Zone ID	Commissioned	Replacement Cost	Discount Rate	NPV
20070718144833	Watermain	150	119	40	2007	\$16,559	7%	\$16,559
20070718145713	Watermain	150	163	40	2007	\$22,648	7%	\$22,648
20040824133620	Watermain	100	5	201	1980	\$430	3%	\$430

**3.2.2 Water facilities**

Asset_ID	GIS_ID	Asset_Type	Capacity	Zone ID	Commissioned	Replacement Cost	Discount Rate	NPV
20050913115137	W_Res	RESERVOIR Electrical Electrical Control Panel	0	100	2004	\$13,200	7%	\$13,200
20050913115140	B_Res	RESERVOIR Electrical Electrical Control Panel	0	201	2004	\$19,800	7%	\$19,800
20050913115141	B_Dam	DAM Civil Dam Construction Earthworks	45ML	201	1968	\$198,000	3%	\$198,000
20050913115142	B_Dam	DAM Civil Buildings & Civils, Pipes/Valving	0	201	1968	\$198,000	3%	\$198,000
20050913115143	B_Dam	DAM Land Land	0	201	1900	\$45,408	3%	\$45,408
20050913115144	B_Dam	DAM Civil Roadworks	0	201	1968	\$92,400	3%	\$92,400
20050913115152	B_CF	WTP Mechanical Liquid Dosing Equipment	0	201	1980	\$7,920	3%	\$7,920
20050913115154	W_CF	WTP Mechanical Liquid Dosing Equipment	0	100	1980	\$7,920	3%	\$7,920
20050913115155	W_CF	WTP Civil Buildings & Civils, Pipes/Valving	0	100	1980	\$13,200	3%	\$13,200
20050913115101	K_RWPS	WPS Mechanical Non-Submersible Pump and Motor	68L/sec	10	2004	\$46,200	7%	\$46,200
20050913115102	K_RWPS	WPS Mechanical Non-Submersible Pump and Motor	68L/sec	10	1976	\$46,200	3%	\$46,200
20050913115103	K_RWPS	WPS Electrical Electrical Control Panel	0	10	2003	\$33,000	7%	\$33,000
20050913115104	K_RWPS	WPS Civil Buildings & Civils, Pipes/Valving	0	10	1955	\$105,600	3%	\$105,600
20050913115105	K_RWPS	WPS Civil Buildings & Civils, Pipes/Valving	0	10	2003	\$33,000	7%	\$33,000
20050913115106	K_RWPS	BORE Civil Groundwater Bore Sleeve and Screen	0	10	2004	\$26,400	7%	\$26,400
20050913115107	K_RWPS	BORE Mechanical Submersible Pump and Motor	3L/sec	10	2004	\$6,600	7%	\$6,600
20050913115108	K_RWPS	BORE Land Land	0	10	1900	\$5,940	3%	\$5,940
20050913115109	K_Wier	WEIR Civil Weir Structural Component	0	10	1955	\$158,400	3%	\$158,400
20050913115110	K_Wier	WEIR Civil Weir Structural Component	0	10	2002	\$79,200	7%	\$79,200
20050913115111	K_WTPlant	WTP Civil Buildings & Civils, Pipes/Valving	0	10	2005	\$66,000	7%	\$66,000
20050913115112	K_WTPlant	WTP Mechanical Liquid Dosing Equipment	0	10	2005	\$39,600	7%	\$39,600
20050913115113	K_WTPlant	WTP Electrical Electrical Control Panel	0	10	2005	\$59,400	7%	\$59,400



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Asset_ID	GIS_ID	Asset_Type	Capacity	Zone ID	Commissioned	Replacement Cost	Discount Rate	NPV
20050913115114	K_WTPlant	WTP Civil Buildings & Civils, Pipes/Valving	1.5MI/d	10	1933	\$1,716,000	3%	\$1,716,000
20050913115117	K_WTPlant	WTP Electrical Electrical Control Panel	0	10	1933	\$19,800	3%	\$19,800
20050913115118	K_WTPlant	WTP Electrical Electrical Control Panel	0	10	1955	\$33,000	3%	\$33,000
20050913115119	K_WTPlant	WTP Land Land	0	10	1900	\$53,460	3%	\$53,460
20050913115120	K_WTPlant	WTP Land Land	0	10	1900	\$52,800	3%	\$52,800
20050913115121	K_WTPlant	WTP House Buildings & Civils, Pipes/Valving	0	10	1950	\$198,000	3%	\$198,000
20050913115122	K_WTPlant	WTP Civil Buildings & Civils, Pipes/Valving	1.5MI/d	10	1955	\$1,188,000	3%	\$1,188,000
20050913115123	K_WTPlant	WTP Civil Buildings & Civils, Pipes/Valving	0	10	1990	\$92,400	3%	\$92,400
20050913115124	K_WTPlant	WTP Mechanical Liquid Dosing Equipment	0	10	1976	\$52,800	3%	\$52,800
20050913115125	K_WTPlant	WTP Civil Buildings & Civils, Pipes/Valving	0	10	2004	\$13,200	7%	\$13,200
20050913115126	K_GenRes	RESERVOIR Civil Buildings & Civils, Pipes/Valving	1.1ML	40	1970	\$462,000	3%	\$462,000
20050913115127	K_GenRes	RESERVOIR Civil Roof and Access Equipment	0	40	1970	\$132,000	3%	\$132,000
20050913115128	K_GenRes	RESERVOIR Electrical Electrical Control Panel	0	40	2004	\$19,800	7%	\$19,800
20050913115130	K_MSRes	RESERVOIR Civil Roof and Access Equipment	0	25	1998	\$165,000	7%	\$165,000
20050913115131	K_MSRes	RESERVOIR Electrical Electrical Control Panel	0	25	2004	\$19,800	7%	\$19,800
20050913115133	K_HSRes	RESERVOIR Civil Roof and Access Equipment	0	25	2003	\$145,200	7%	\$145,200
20050913115134	K_HSRes	RESERVOIR Electrical Electrical Control Panel	0	25	2004	\$19,800	7%	\$19,800
09131151261	K_GenRes	RESERVOIR Land Land	0	40	1970	\$19,800	3%	\$19,800
09131151111	K_WTPlant	MISCELANEOUS Mechanical Minor Plant	0	10	2002	\$15,840	7%	\$15,840
091311511122	K_WTPlant	MISCELANEOUS Mechanical Minor Plant	0	10	2002	\$1,848	7%	\$1,848
091311511123	K_WTPlant	MISCELANEOUS Mechanical Minor Plant	0	10	1997	\$15,840	7%	\$15,840
091311511124	K_WTPlant	MISCELANEOUS Mechanical Minor Plant	0	10	2004	\$1,980	7%	\$1,980
091311511125	K_WTPlant	MISCELANEOUS Mechanical Tools and Equipment	0	10	2002	\$15,840	7%	\$15,840
091311511126	K_WTPlant	MISCELANEOUS Mechanical Tools and Equipment	0	10	2000	\$9,240	7%	\$9,240
		Urbenville Main Reservoir Roof		199	1967	\$68,028	3%	\$68,028
		Urbenville Main Reservoir Structure		199	1967	\$385,491	3%	\$385,491
		Urbenville Toolom Ck Weir		199	1967	\$15,960	3%	\$15,960

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Asset_ID	GIS_ID	Asset_Type	Capacity	Zone ID	Commissioned	Replacement Cost	Discount Rate	NPV
		Bonalbo Groundwater Bore		201	2008	\$59,400	7%	\$59,400
		Bonalbo Intake Pump Station		201	2009	\$59,400	7%	\$59,400
		Bonalbo Water Treatment Plant		201	2009	\$1,657,920	7%	\$1,657,920
		Kyogle WTP Upgrade		10	2011	\$1,452,000	7%	\$1,357,009
		Kyogle Off-stream storage dam		10	2010	\$3,143,882	7%	\$3,143,882
		Kyogle New service reservoir		25	2020	\$0	7%	\$0
		Urbenville-Woodenbong Water Treatment Plant & Raw Water Pump Station		199	2009	\$2,861,562	7%	\$2,861,562

### 3.3 Capital charge within zone

Zone ID	Asset NPV @ 3%	ET NPV @ 3%	Capital Cost per ET (3% comp)	Asset NPV @ 7%	ET NPV @ 7%	Capital Cost per ET (7% comp)	TOTAL capital cost per ET
10	\$3,959,870	2197.353	\$1,802.11	\$4,964,080	2094.239	\$2,370.35	<b>\$4,172.46</b>
20	\$44,017	391.133	\$112.54	\$0	363.4045	\$0.00	<b>\$112.54</b>
25	\$24,167	1805.429	\$13.39	\$349,800	1715.308	\$203.93	<b>\$217.31</b>
30	\$56,306	99.42797	\$566.30	\$75,493	92.53352	\$815.84	<b>\$1,382.14</b>
40	\$613,800	391.9234	\$1,566.12	\$134,968	378.9311	\$356.18	<b>\$1,922.30</b>
100	\$21,120	283.6852	\$74.45	\$13,200	276.1273	\$47.80	<b>\$122.25</b>
101	\$0	196.7622	\$0.00	\$0	189.2043	\$0.00	<b>\$0.00</b>
102	\$0	36.703	\$0.00	\$0	36.703	\$0.00	<b>\$0.00</b>
199	\$469,479	283.6852	\$1,654.93	\$2,861,562	276.1273	\$10,363.20	<b>\$12,018.13</b>
201	\$542,158	324.678	\$1,669.83	\$1,796,520	316.579	\$5,674.79	<b>\$7,344.62</b>

### 3.4 Capital charge by zone

Calculated charge for zone								
Zone	20	25	30	40	100	101	102	201
<b>TOTALS</b>	<b>\$4,502</b>	<b>\$4,390</b>	<b>\$5,772</b>	<b>\$6,095</b>	<b>\$12,140</b>	<b>\$12,140</b>	<b>\$12,140</b>	<b>\$7,345</b>
<b>Zone Contribution</b>								
10	\$4,172	\$4,172	\$4,172	\$4,172				
20	\$113							
25	\$217	\$217	\$217					
30			\$1,382					
40				\$1,922				
100					\$122	\$122	\$122	
101						\$0		
102							\$0	
201								\$7,345
199					\$12,018	\$12,018	\$12,018	

### 3.5 Capital charge by system

Catchment	Catchment Name	Catchment Cost	NPV Growth (7%)	Weighted Cost
<b>Kyogle</b>				
20	South Kyogle	\$4,652	61.7	\$220,653
25	Kyogle	\$4,536	23.3	\$383,113
30	New Park	\$5,964	16.8	\$70,460
40	Geneva	\$6,297	62.6	\$130,471
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$4,894</b>
<b>Woodenbong-Muli-Muli</b>				
100		\$12,544	0.0	\$0.00
101	Woodenbong	\$12,544	10.0	\$125,670
102	Muli Muli	\$12,544	0.0	\$0
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$12,544</b>
<b>Bonalbo</b>				
201	Bonalbo	\$7,589	11.4	\$86,248
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$7,589</b>

## 4. Sewerage

### 4.1 Catchments

The identifiers below are used in the tables following to assign assets to catchments.

System	Zone ID	Zone Name
Kyogle	0	Sewage Treatment Plant
	1	Geneva South-east
	2	Kyogle Hospital
	3	Highfield nr Hale St & Craig Sr
	4	Works depot
	5	Highfield
	6	Kyogle North-East
	7	Campbell Rd
	8	Ettrick St
	9	River flats
	10	Recreation ground & Caravan park
	11	Wyndham St
	12	Irwin St
	13	South Kyogle
	14	Geneva
	15	Golf Course/New Park
	16	CBD West
Woodenbong-Muli-Muli	100	Woodenbong STW
	110	Woodenbong SPS1
	120	Woodenbong Gravity
	130	Muli Muli
Bonalbo	201	Bonalbo

## 4.2 Chargeable assets

### 4.2.1 Sewer mains

Asset_ID	Asset_Type	Diameter (mm)	Length	Catchment ID	Commissioned	Replacement Cost	Discount Rate	NPV
20040930102424ds	RISING MAIN	150	314	1	1992	\$60,282.41	3%	\$60,282
20040930102608us	RISING MAIN	150	101	1	1989	\$19,315.40	3%	\$19,315
20040603161320	GRAVITY MAIN < 3m DEEP	150	25	2	1980	\$6,101.09	3%	\$6,101
20040603161335	GRAVITY MAIN < 3m DEEP	375	93	2	1980	\$51,690.17	3%	\$51,690
K_GCA/1-MM19A/2	GRAVITY MAIN < 3m DEEP	150	47	10	1980	\$11,362.57	3%	\$11,363
K_GCA/2-GCA/1	GRAVITY MAIN < 3m DEEP	150	77	10	1980	\$18,426.28	3%	\$18,426
K_GCA/3-GCA/2	GRAVITY MAIN < 3m DEEP	150	76	10	1980	\$18,223.68	3%	\$18,224
K_GCA/4-GCA/3	GRAVITY MAIN < 3m DEEP	150	84	10	1980	\$20,126.31	3%	\$20,126
K_GCA/5-GCA/4	GRAVITY MAIN < 3m DEEP	150	80	10	1980	\$19,122.43	3%	\$19,122
K_GCA/6-GCA/5	GRAVITY MAIN < 3m DEEP	150	86	10	1980	\$20,520.99	3%	\$20,521
K_GCA/7-GCA/6	GRAVITY MAIN < 3m DEEP	150	93	10	1980	\$22,439.19	3%	\$22,439
K_PS5-GCA/7	RISING MAIN	150	221	15	1980	\$42,450.03	3%	\$42,450
K_RM1_PS1 TO K_STW	RISING MAIN	250	2151	16	1989	\$598,779.13	3%	\$598,779
0070725115622	GRAVITY MAIN < 3m DEEP	150	80	120	2007	\$19,188.74	7%	\$19,189
20070725115657	GRAVITY MAIN < 3m DEEP	150	99	120	2007	\$23,718.52	7%	\$23,719
20070725115722	GRAVITY MAIN < 3m DEEP	150	58	120	2007	\$13,859.16	7%	\$13,859
20070724152541	RISING MAIN	100	62	130	2007	\$13,030.85	7%	\$13,031
20070724153709	RISING MAIN	100	150	130	2007	\$31,375.17	7%	\$31,375
20070725094656	RISING MAIN	100	331	130	2007	\$69,201.86	7%	\$69,202
20070725094748	RISING MAIN	100	94	130	2007	\$19,663.64	7%	\$19,664
20070725094902	GRAVITY MAIN < 3m DEEP	100	9	130	2007	\$1,930.51	7%	\$1,931
20070725095957	RISING MAIN	100	56	130	2007	\$11,664.40	7%	\$11,664
20070725100140	RISING MAIN	100	80	130	2007	\$16,660.25	7%	\$16,660
20070725100353	GRAVITY MAIN < 3m DEEP	100	4	130	2007	\$774.23	7%	\$774
20070725100604	RISING MAIN	100	42	130	2007	\$8,848.78	7%	\$8,849
20070725100656	RISING MAIN	100	93	130	2007	\$19,428.68	7%	\$19,429

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Asset_ID	Asset_Type	Diameter (mm)	Length	Catchment ID	Commissioned	Replacement Cost	Discount Rate	NPV
20070725105127	RISING MAIN	100	154	130	2007	\$32,206.87	7%	\$32,207
20070725105226	CONCRETE ENCASED	100	10	130	2007	\$2,143.19	7%	\$2,143
20070725105248	RISING MAIN	100	33	130	2007	\$6,965.30	7%	\$6,965
20070725105547	RISING MAIN	100	647	130	2007	\$135,279.79	7%	\$135,280
20070725105708	RISING MAIN	100	64	130	2007	\$13,436.25	7%	\$13,436
20070725110029	RISING MAIN	100	33	130	2007	\$6,929.67	7%	\$6,930
20070725110133	RISING MAIN	100	54	130	2007	\$11,292.39	7%	\$11,292
20070725110338	RISING MAIN	100	87	130	2007	\$18,136.53	7%	\$18,137
20070725110450	RISING MAIN	100	119	130	2007	\$24,951.50	7%	\$24,951
20070725110557	GRAVITY MAIN < 3m DEEP	100	3	130	2007	\$608.26	7%	\$608
20070725110646	RISING MAIN	100	114	130	2007	\$23,856.49	7%	\$23,856
20070725110748	RISING MAIN	100	119	130	2007	\$24,802.26	7%	\$24,802
20070725110853	GRAVITY MAIN < 3m DEEP	100	0	130	2007	\$0.00	7%	\$0
20070725110937	RISING MAIN	100	97	130	2007	\$20,218.64	7%	\$20,219
20070725111114	RISING MAIN	100	87	130	2007	\$18,122.59	7%	\$18,123
20070725111153	RISING MAIN	100	25	130	2007	\$5,150.48	7%	\$5,150
20070725111403	RISING MAIN	100	146	130	2007	\$30,595.24	7%	\$30,595
20070725111515	RISING MAIN	100	81	130	2007	\$17,017.57	7%	\$17,018
20070725111716	RISING MAIN	100	244	130	2007	\$50,920.18	7%	\$50,920
20070725111823	RISING MAIN	100	165	130	2007	\$34,575.81	7%	\$34,576
20070725111924	RISING MAIN	100	123	130	2007	\$25,748.41	7%	\$25,748
20070725112953	RISING MAIN	100	451	130	2007	\$94,239.73	7%	\$94,240
20070725130458	GRAVITY MAIN < 3m DEEP	100	0	130	2007	\$38.84	7%	\$39
20070725130849	GRAVITY MAIN < 3m DEEP	100	1	130	2007	\$236.03	7%	\$236
20070725131029	GRAVITY MAIN < 3m DEEP	100	1	130	2007	\$311.47	7%	\$311
20070725131156	GRAVITY MAIN < 3m DEEP	100	0	130	2007	\$31.08	7%	\$31
20070725131307	GRAVITY MAIN < 3m DEEP	100	2	130	2007	\$416.80	7%	\$417
20070725133703	RISING MAIN	100	23	130	2007	\$4,863.13	7%	\$4,863
20070725134115	GRAVITY MAIN < 3m DEEP	100	2	130	2007	\$401.66	7%	\$402

Asset_ID	Asset_Type	Diameter (mm)	Length	Catchment ID	Commissioned	Replacement Cost	Discount Rate	NPV
20070725134234	GRAVITY MAIN < 3m DEEP	100	2	130	2007	\$373.74	7%	\$374

#### 4.2.2 Assessment of Trunk Main MM1

The purpose of this analysis is to determine what upgrades are required to sewer trunk mains to accommodate this loading, as well as loading from other development in the area. These upgrades are to be incorporated within Kyogle Council's Development Servicing Plan for Water Supply, Sewerage and Stormwater.

#### Approach

This analysis is based on the following:

1. The analysis covers trunk main MM1 from maintenance hole MM1/36 through to SPS1 Kyogle.
2. The loading analysis is based on the method used in Appendix B of the WSAA Sewerage Code of Australia version 2.3. The factors adopted are based on a loading analysis completed for Kyogle Council by Newton Denny Chappelle and provided by Graham Kennett on 14 April 2010.
3. The loading of the trunk main at key junctions was assessed using the loading and growth model used to create the development servicing plan. This growth model has a planning horizon of 2038, and therefore does not consider any growth beyond that year.

#### Results

1. The analysis confirms Newtown Denny Chappelle's conclusion that the trunk main can support up to 40ET of additional loading without upgrade. Once development in the north-west of Kyogle exceeds this threshold, the line from MM1/29 to MM1/24 needs to be upsized from 150mmø to 225mmø. Based on the growth model forecast, this will occur before 2015.
2. The main from MM1/24 to MM1/19 has sufficient capacity to accommodate forecast growth to 2038.
3. The main from MM1/19 to MM1/14 exceeds its design capacity before 2035. Note that this segment includes an aqueduct crossing. This section would need to be upsized from 225mmø to 300mmø.
4. The main from MM1/14 to MM1/9A has sufficient capacity to accommodate forecast growth to 2038.
5. The main from MM1/9A through to SPS1 Kyogle exceeds its design capacity before 2035. This section would need to be upsized from 300mmø to 375mmø. This main segment also services growth in New Park.



**Costing**

Gravity sewers

For gravity sewers, capacity can be addressed through a combination of upsizing existing mains (replacing the smaller main with a larger one) or diverting some loads elsewhere through catchment reconfiguration. This memo is based on the assumption that upsizing is both feasible and cost-effective. In most situations catchment reconfiguration is more costly than a simple upsizing project.

Development servicing plans are based on the valuation of the assets required to service development. The plans need to consider the contribution of existing load as well as the impact of development on the asset base. However, where new development triggers the need for upsized or duplicated assets, the costing can assume that the new development preferentially utilises the newer asset.

The DSP will attribute costs to new development as follows:

- The value of the existing main will be apportioned to existing load and future development, with growth attributed on a net present value basis.
- In addition the upsizing cost will be attributed by applying the marginal difference in unit rate vales between the existing and upsized main. This difference will be reduced to present values and will be apportioned to the present value of new development only.

**Table 7: Mains Upsizing Costs to Attribute in DSP**

Segment	Length	Current ø	Depth class	2008 CRC	Future ø	Year Reqd	2008 CRC	Value to apply
MM1/29-MM1/24	263	150	<3m	\$74,921	225	2015	\$100,500	\$25,579
MM1/19-MM1/14	219	225	<3m	\$83,686	300	2030	\$112,131	\$28,445
MM1/9A-SPS1	677	300	>4.5m	\$452,832	375	2030	\$569,226	\$116,394
<b>Totals</b>	<b>1159</b>			<b>\$611,439</b>			<b>\$781,857</b>	<b>\$170,418</b>

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**4.2.3 Sewer facilities**

Asset_ID	GIS_ID	Asset_Type	Capacity	Catchment	Commissioned	Replacement Cost	Discount Rate	NPV
	K_STW	Kyogle STP Upgrade		0	2009	\$2,567,400	7%	\$2,567,400
	K_PS1	Kyogle SPS1 Kyogle		6	2035	\$5,479	7%	\$1,010
	K_PS1	Kyogle SPS1 Kyogle		15	2035	\$795	7%	\$147
	K_PS2	Kyogle SPS2 Geneva		1	1990	-\$16,286	3%	-\$16,286
	K_PS3	Kyogle SPS3 Lower Highfields		13	2020	\$22,589	7%	\$11,483
	K_PS5	Kyogle SPS5 Golf Links		15	2035	\$0	7%	\$0
		Kyogle MM1/29 to MM1/24		6	2015	\$25,579	7%	\$18,237
		Kyogle MM1/19 to MM1/14		6	2030	\$28,445	7%	\$7,351
		Kyogle MM1/9A to SPS1		6	2030	\$101,639	7%	\$26,265
		Kyogle MM1/9A to SPS1		15	2030	\$14,755	7%	\$3,813
20050621100134	K_PS1	Kyogle PS1 Chauvel St		16	1957	\$222,394	3%	\$222,394
20050621100140	K_PS2	Kyogle PS2 Geneva		1	1965	\$171,864	3%	\$171,864
20050621100158	K_PS5	Kyogle PS5 Golf Links		15	1984	\$80,784	3%	\$80,784
20050621100180	K_STW	Kyogle STW		0	1957	\$158,400	3%	\$158,400
20050621100183	K_STW	Kyogle STW		0	1990	\$187,440	3%	\$187,440
20050621100186	K_STW	Kyogle STW		0	1957	\$52,800	3%	\$52,800
20050621100188	K_STW	Kyogle STW		0	1957	\$26,400	3%	\$26,400
20050621100189	K_STW	Kyogle STW		0	1957	\$105,600	3%	\$105,600
20050621100191	K_STW	Kyogle STW		0	1990	\$26,400	3%	\$26,400
20050621100192	K_STW	Kyogle STW		0	1957	\$105,600	3%	\$105,600
20050621100193	K_STW	Kyogle STW		0	1957	\$52,800	3%	\$52,800
20050621100194	K_STW	Kyogle STW		0	1957	\$79,200	3%	\$79,200
20050621100195	K_STW	Kyogle STW		0	1957	\$105,600	3%	\$105,600
20050621100196	K_STW	Kyogle STW		0	1957	\$11,880	3%	\$11,880
20050621100198	K_STW	Kyogle STW		0	1957	\$79,200	3%	\$79,200
20050621100199	K_STW	Kyogle STW		0	2001	\$30,360	7%	\$30,360
20050621100200	K_STW	Kyogle STW		0	2001	\$26,400	7%	\$26,400
20050621100201	K_STW	Kyogle STW		0	1990	\$52,800	3%	\$52,800

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Asset_ID	GIS_ID	Asset_Type	Capacity	Catchment	Commissioned	Replacement Cost	Discount Rate	NPV
20050621100204	K_STW	Kyogle STW		0	2003	\$13,200	7%	\$13,200
20050621100217	B_STW	Bonalbo STW		201	2004	\$2,640	7%	\$2,640
20050621100218	B_STW	Bonalbo STW		201	2002	\$46,200	7%	\$46,200
20050621100220	W_STW	Woodenbong STP		100	1968	\$198,000	3%	\$198,000
20050621100224	W_STW	Woodenbong STP		100	1968	\$46,200	3%	\$46,200
20050621100227	W_STW	Woodenbong STP		100	1968	\$39,600	3%	\$39,600
20050621100228	W_STW	Woodenbong STP		100	1968	\$13,200	3%	\$13,200
20050621100234	W_STW	Woodenbong STP		100	2002	\$59,400	7%	\$59,400
20070823172532	W_MULI-PS	Muli Muli PS		130	2007	\$57,619	7%	\$57,619
20070823175303	W_STW	Woodenbong STP	1300EP	100	2007	\$69,143	7%	\$69,143
20070824131616	W_STW	Woodenbong STP		100	2007	\$4,714	7%	\$4,714
20070824132210	W_STW	Woodenbong STP		100	2007	\$17,810	7%	\$17,810
20050621100185	K_STW	Kyogle STW		0	1957	\$145,200	3%	\$145,200
20050621100187	K_STW	Kyogle STW		0	1957	\$79,200	3%	\$79,200
20050621100190	K_STW	Kyogle STW		0	1990	\$26,400	3%	\$26,400
20050621100214	B_STW	Bonalbo STW		201	2002	\$198,000	7%	\$198,000
20050621100231	W_STW	Woodenbong STP		100	2002	\$264,000	7%	\$264,000
20050621100135	K_PS1	Kyogle PS1 Chauvel St		16	1990	\$74,131	3%	\$74,131
20050621100141	K_PS2	Kyogle PS2 Geneva		1	1990	\$57,288	3%	\$57,288
20050621100147	K_PS3	Kyogle PS3 Boorabee St		0	2003	\$40,392	7%	\$40,392
20050621100159	K_PS5	Kyogle PS5 Golf Links		15	2003	\$26,928	7%	\$26,928
20050621100171	B_PS	Bonalbo PS		201	2003	\$59,400	7%	\$59,400
20050621100177	W_PS	Woodenbong PS		110	2003	\$54,120	7%	\$54,120
20050621100179	K_STW	Kyogle STW		0	2003	\$79,200	7%	\$79,200
20050621100197	K_STW	Kyogle STW		0	2003	\$2,640	7%	\$2,640
20050621100211	B_STW	Bonalbo STW		201	2003	\$59,400	7%	\$59,400
20050621100212	B_STW	Bonalbo STW		201	2004	\$6,600	7%	\$6,600
20050621100225	W_STW	Woodenbong STP		100	2003	\$59,400	7%	\$59,400
20050621100226	W_STW	Woodenbong STP		100	2004	\$9,900	7%	\$9,900
20070823172452	W_MULI-PS	Muli Muli PS		130	2007	\$20,952	7%	\$20,952

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Asset_ID	GIS_ID	Asset_Type	Capacity	Catchment	Commissioned	Replacement Cost	Discount Rate	NPV
20050621100136	K_PS1	Kyogle PS1 Chauvel St	Per Hectare	16	1957	\$6,600	3%	\$6,600
20050621100142	K_PS2	Kyogle PS2 Geneva	Per Hectare	1	1965	\$27,720	3%	\$27,720
20050621100160	K_PS5	Kyogle PS5 Golf Links	Per Hectare	15	1984	\$0	3%	\$0
20050621100205	K_STW	Kyogle STW	Per Hectare	0	1957	\$67,056	3%	\$67,056
200506211001361	K_PS1	Kyogle PS1 Chauvel St	Per Hectare	16	1957	\$8,501	3%	\$8,501
20050621100132	K_PS1	Kyogle PS1 Chauvel St	54L/sec	16	1990	\$37,066	3%	\$37,066
20050621100133	K_PS1	Kyogle PS1 Chauvel St	54L/sec	16	1990	\$37,066	3%	\$37,066
20050621100138	K_PS2	Kyogle PS2 Geneva	26L/sec	1	1990	\$28,644	3%	\$28,644
20050621100139	K_PS2	Kyogle PS2 Geneva	26L/sec	1	1990	\$28,644	3%	\$28,644
20050621100144	K_PS3	Kyogle PS3 Boorabee St	9L/sec	0	1985	\$20,196	3%	\$20,196
20050621100145	K_PS3	Kyogle PS3 Boorabee St	9L/sec	0	1985	\$20,196	3%	\$20,196
20050621100156	K_PS5	Kyogle PS5 Golf Links	6L/sec	15	1984	\$13,464	3%	\$13,464
20050621100157	K_PS5	Kyogle PS5 Golf Links	6L/sec	15	1984	\$13,464	3%	\$13,464
20050621100168	B_PS	Bonalbo PS		201	1987	\$29,700	3%	\$29,700
20050621100169	B_PS	Bonalbo PS		201	1987	\$29,700	3%	\$29,700
20050621100174	W_PS	Woodenbong PS		110	2002	\$27,060	7%	\$27,060
20050621100175	W_PS	Woodenbong PS		110	2004	\$27,060	7%	\$27,060
20050621100181	K_STW	Kyogle STW		0	1957	\$66,000	3%	\$66,000
20050621100182	K_STW	Kyogle STW		0	2003	\$19,800	7%	\$19,800
20050621100184	K_STW	Kyogle STW		0	1990	\$22,044	3%	\$22,044
20050621100203	K_STW	Kyogle STW		0	2003	\$21,120	7%	\$21,120
20050621100207	B_STW	Bonalbo STW		201	1968	\$13,200	3%	\$13,200
20050621100208	B_STW	Bonalbo STW		201	2003	\$7,920	7%	\$7,920
20050621100209	B_STW	Bonalbo STW		201	1968	\$19,800	3%	\$19,800
20050621100216	B_STW	Bonalbo STW		201	2004	\$2,640	7%	\$2,640
20050621100221	W_STW	Woodenbong STP		100	1968	\$13,200	3%	\$13,200
20050621100222	W_STW	Woodenbong STP		100	2007	\$7,920	7%	\$7,920
20050621100223	W_STW	Woodenbong STP		100	2007	\$47,143	7%	\$47,143
20050922143000	K_STW	Kyogle STW		0	2002	\$0	7%	\$0
20050922143745	K_STW	Kyogle STW		0	2003	\$0	7%	\$0

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Asset_ID	GIS_ID	Asset_Type	Capacity	Catchment	Commissioned	Replacement Cost	Discount Rate	NPV
20050922144056	K_STW	Kyogle STW		0	2003	\$0	7%	\$0
20050922144159	K_STW	Kyogle STW		0	2004	\$0	7%	\$0
20070823171428	W_MULI-PS	Muli Muli PS		130	2007	\$20,952	7%	\$20,952
20070823171551	W_MULI-PS	Muli Muli PS		130	2007	\$20,952	7%	\$20,952
20070823171732	W_STW	Woodenbong STP		100	2007	\$62,857	7%	\$62,857
20070824131820	W_STW	Woodenbong STP		100	2007	\$53,429	7%	\$53,429
20070824132010	W_STW	Woodenbong STP		100	2007	\$6,286	7%	\$6,286

**4.3 Capital charge within zone**

Catchment	Asset NPV @ 3%	ET NPV @ 3%	Capital Cost per ET (3% comp)	Asset NPV @ 7%	ET NPV @ 7%	Capital Cost per ET (7% comp)	TOTAL capital cost per ET
0	\$1,490,412	1789.543	\$832.85	\$2,800,512	1686.429	\$1,660.62	\$2,493.46
1	\$377,472	296.7104	\$1,272.19	\$0	283.7181	\$0.00	\$1,272.19
2	\$57,791	527.4761	\$109.56	\$0	512.801	\$0.00	\$109.56
3	\$0	589.4761	\$0.00	\$0	574.801	\$0.00	\$0.00
4	\$0	627.4761	\$0.00	\$0	612.801	\$0.00	\$0.00
5	\$0	865.6361	\$0.00	\$0	823.2325	\$0.00	\$0.00
6	\$0	389.1977	\$0.00	\$52,863	335.3824	\$157.62	\$157.62
7	\$0	477.1977	\$0.00	\$0	423.3824	\$0.00	\$0.00
8	\$0	707.1977	\$0.00	\$0	653.3824	\$0.00	\$0.00
9	\$0	871.9067	\$0.00	\$0	811.1969	\$0.00	\$0.00
10	\$130,221	65.70897	\$1,981.79	\$0	58.81452	\$0.00	\$1,981.79
11	\$0	199	\$0.00	\$0	199	\$0.00	\$0.00
12	\$0	149	\$0.00	\$0	149	\$0.00	\$0.00
13	\$0	126.16	\$0.00	\$11,483	98.43153	\$116.66	\$116.66
14	\$0	260.7104	\$0.00	\$0	247.7181	\$0.00	\$0.00
15	\$150,162	58.70897	\$2,557.74	\$30,888	51.81452	\$596.12	\$3,153.85

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Catchment	Asset NPV @ 3%	ET NPV @ 3%	Capital Cost per ET (3% comp)	Asset NPV @ 7%	ET NPV @ 7%	Capital Cost per ET (7% comp)	TOTAL capital cost per ET
16	\$984,536	923.9067	\$1,065.62	\$0	863.1969	\$0.00	\$1,065.62
100	\$310,200	259.3797	\$1,195.93	\$662,001	252.0226	\$2,626.75	\$3,822.68
110	\$0	175.3797	\$0.00	\$108,240	168.0226	\$644.20	\$644.20
120	\$0	84	\$0.00	\$56,766	84	\$675.79	\$675.79
130	\$0	34	\$0.00	\$916,924	34	\$26,968.37	\$26,968.37
201	\$92,400	311.4021	\$296.72	\$382,800	303.3788	\$1,261.79	\$1,558.51

## 4.4 Capital charge by zone

### 4.4.1 Kyogle system

Calculated charge for catchment																	
Catchment	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>TOTALS</b>	\$2,493	\$3,875	\$2,603	\$2,493	\$2,493	\$2,493	\$3,717	\$3,559	\$3,559	\$3,559	\$5,541	\$2,603	\$3,559	\$2,610	\$3,875	\$8,695	\$3,559
Catchment contribution																	
0	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493	\$2,493
1		\$1,272															\$1,272
2		\$110	\$110									\$110					\$110
3		\$0	\$0	\$0								\$0					\$0
4		\$0	\$0	\$0	\$0							\$0					\$0
5		\$0	\$0	\$0	\$0	\$0						\$0		\$0	\$0		
6							\$158										
7							\$0	\$0									
8							\$0	\$0	\$0				\$0				
9							\$0	\$0	\$0	\$0	\$0		\$0				\$0
10											\$1,982						\$1,982

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Calculated charge for catchment																	
Catchment	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>TOTALS</b>	\$2,493	\$3,875	\$2,603	\$2,493	\$2,493	\$2,493	\$3,717	\$3,559	\$3,559	\$3,559	\$5,541	\$2,603	\$3,559	\$2,610	\$3,875	\$8,695	\$3,559
11												\$0					
12													\$0				
13														\$117			
14															\$0		
15																\$3,154	
16							\$1,066	\$1,066	\$1,066	\$1,066	\$1,066		\$1,066			\$1,066	\$1,066

**4.4.2 Bonalbo, Woodenbong, Muli Muli**

Calculated charge for catchment					
Catchment	100	110	120	130	201
<b>TOTALS</b>	\$3,823	\$4,625	\$4,498	\$31,467	\$1,559
<b>Catchment contribution</b>					
100	\$3,823	\$3,823	\$3,823	\$3,823	
110		\$644			
120			\$676	\$676	
130				\$26,968	
201					\$1,559

## 4.5 Capital charge by system

Catchment	Catchment Name	Catchment Cost	NPV Growth (7%)	Weighted Cost
<b>Kyogle</b>				
0	Sewage Treatment Plant	\$2,576	0.0	\$0
1	Geneva South-east	\$4,004	0.0	\$0
2	Kyogle Hospital	\$2,690	3.1	\$8,292
3	Highfield nr Hale St & Craig Sr	\$2,576	0.0	\$0
4	Works depot	\$2,576	0.0	\$0
5	Highfield	\$2,576	0.0	\$0
6	Kyogle North-East	\$3,840	81.4	\$312,533
7	Campbell Rd	\$3,677	0.0	\$0
8	Ettrick St	\$3,677	0.0	\$0
9	River flats	\$3,677	0.0	\$0
10	Recreation ground & Caravan park	\$5,725	0.0	\$0
11	Wyndham St	\$2,690	0.0	\$0
12	Irwin St	\$3,677	0.0	\$0
13	South Kyogle	\$2,697	47.4	\$127,919
14	Geneva	\$4,004	20.7	\$82,957
15	Golf Course/New Park	\$8,984	11.8	\$106,140
16	CBD West	\$3,677	0.0	\$0
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$3,879</b>



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Catchment	Catchment Name	Catchment Cost	NPV Growth (7%)	Weighted Cost
<b>Woodenbong-Muli-Muli</b>				
100	Woodenbong STW	\$3,950	0.0	\$0
110	Woodenbong SPS1	\$4,778	9.0	\$43,113
120	Woodenbong Gravity	\$4,648	0.0	\$0
130	Muli Muli	\$32,513	0.0	\$0
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$4,778</b>
<b>Bonalbo</b>				
201	Bonalbo	\$1,610	10.4	\$16,713
<b>WEIGHTED CAPITAL CHARGE</b>				<b>\$1,610</b>

## 5. Stormwater

### 5.1 Methodology for calculating capital charges

This DSP has been prepared using an alternate costing approach outlined by the former Department of Land and Water Conservation in 2002. This approach has been confirmed with the NSW Department of Water and Energy by Kyogle Council as being current and appropriate for developing a stormwater DSP (pers comm. Graham Kennett, Manager Asset Services, with Sam Samra, Senior Manager Water Utility Performance, Department of Water and Energy, 9 December 2008).

This simplified approach involves finding the total current replacement cost of all chargeable stormwater assets, and dividing the result by the ET served:

$$\text{Capital cost per ET} = \frac{\text{Cost of assets}}{\text{No of ETs}}$$

The nature of the formula means that the charge can only be calculated for existing assets and assets proposed to be commissioned during the life of the DSP.

In calculating the capital cost per ET, the following approach has been used:

- The nature of the formula means that the charge should only be calculated for existing assets and assets proposed to be commissioned during the life of the DSP. Therefore it has been calculated using a planning horizon of 2015, the intended life of this DSP.
- The number of ETs used has been the forecast number of ETs as of 2015. This means the charge calculation will bias slightly towards a lower capital charge.

Existing assets have been valued by Kyogle Council as part of their financial statements for the year ending 30 June 2008. This valuation is made in accordance with fair value principles, which includes the valuation of assets according to the modern engineering equivalent asset.

## 5.2 Chargeable assets

### 5.2.1 Inclusion of pre-1970 assets

Pre-1970 pipelines were included where the diameter of the pipeline was the largest within the centre.

Community	Largest diameter (mm)
Bonalbo	450
Geneva	600
Kyogle	2,400
Loadstone	300
Mallanganee	750
New Park	600
Old Bonalbo	375
Tabulam	375
Wiangaree	600
Woodenbong	600

### 5.2.2 Assets included

#### Pipelines

Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
BONALBO	20061116082633	PIPE	CONCRETE	5	375	2005	\$1,129	Included
BONALBO	20061116085728	PIPE	CONCRETE	5	375	2005	\$1,132	Included
BONALBO	20061116085954	PIPE	CONCRETE	5	375	2005	\$1,142	Included
BONALBO	20061116092338	PIPE	CONCRETE	5	375	2005	\$1,145	Included
BONALBO	1171	PIPE	CONCRETE	8	450	1960	\$2,225	Pre1970 Included
BONALBO	1370	PIPE	CONCRETE	11	450	1960	\$3,039	Pre1970 Included
BONALBO	1179	PIPE	CONCRETE	11	450	1960	\$3,102	Pre1970 Included
BONALBO	1181	PIPE	CONCRETE	11	450	1960	\$3,150	Pre1970 Included
BONALBO	1180	PIPE	CONCRETE	11	450	1960	\$3,208	Pre1970 Included
BONALBO	1183	PIPE	CONCRETE	12	450	1960	\$3,319	Pre1970 Included

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Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
BONALBO	1184	PIPE	CONCRETE	12	450	1960	\$3,427	Pre1970 Included
GENEVA	396	PIPE	CONCRETE	12	600	1960	\$4,738	Pre1970 Included
GENEVA	979	PIPE	CONCRETE	27	600	1960	\$10,880	Pre1970 Included
GENEVA	407	PIPE	CONCRETE	27	600	1960	\$11,061	Pre1970 Included
GENEVA	978	PIPE	CONCRETE	31	600	1960	\$12,675	Pre1970 Included
GENEVA	397	PIPE	CONCRETE	38	600	1960	\$15,513	Pre1970 Included
GENEVA	399	PIPE	CONCRETE	55	600	1960	\$22,406	Pre1970 Included
GENEVA	398	PIPE	CONCRETE	56	600	1960	\$22,986	Pre1970 Included
GENEVA	406	PIPE	CONCRETE	73	600	1960	\$29,810	Pre1970 Included
GENEVA	394	PIPE	CONCRETE	147	600	1960	\$59,941	Pre1970 Included
KYOGLE	20080812163925	PIPE	CONCRETE	1	600	2008	\$286	Included
KYOGLE	20080812163831	PIPE	CONCRETE	4	450	2008	\$1,142	Included
KYOGLE	20080825094659	PIPE	CONCRETE	6	375	2008	\$1,291	Included
KYOGLE	20080812164212	PIPE	CONCRETE	5	900	2008	\$3,618	Included
KYOGLE	20080825094711	PIPE	CONCRETE	32	375	2008	\$7,204	Included
KYOGLE	20080812164235	PIPE	CONCRETE	18	900	2008	\$14,034	Included
KYOGLE	20070723090117	OPEN DRAIN	EARTH	3	100	2007	\$251	Included
KYOGLE	20080812172318	PIPE	PVC	5	150	2007	\$531	Included
KYOGLE	20070719133538	PIPE	CONCRETE	3	375	2007	\$740	Included
KYOGLE	20080812173028	PIPE	PVC	5	300	2007	\$950	Included
KYOGLE	20080812172420	PIPE	PVC	6	300	2007	\$1,108	Included
KYOGLE	20080812173345	PIPE	PVC	11	150	2007	\$1,214	Included
KYOGLE	20080812171248	PIPE	PVC	11	150	2007	\$1,222	Included
KYOGLE	20080812171313	PIPE	PVC	11	225	2007	\$1,524	Included
KYOGLE	20080812173401	PIPE	PVC	12	225	2007	\$1,725	Included
KYOGLE	20070822102953	PIPE	CONCRETE	5	600	2007	\$1,908	Included
KYOGLE	20080812173006	PIPE	PVC	17	225	2007	\$2,311	Included
KYOGLE	20070719135634	PIPE	CONCRETE	10	375	2007	\$2,333	Included
KYOGLE	20070719134046	PIPE	CONCRETE	11	375	2007	\$2,481	Included
KYOGLE	20070719140552	OPEN DRAIN	EARTH	31	100	2007	\$2,781	Included

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Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
KYOGLE	20070822104106	PIPE	CONCRETE	12	375	2007	\$2,816	Included
KYOGLE	20070822103010	PIPE	CONCRETE	7	600	2007	\$2,928	Included
KYOGLE	20070719133743	PIPE	CONCRETE	13	375	2007	\$3,059	Included
KYOGLE	20070822102654	PIPE	CONCRETE	6	750	2007	\$3,131	Included
KYOGLE	20080812172351	PIPE	PVC	24	225	2007	\$3,376	Included
KYOGLE	20070822102517	PIPE	CONCRETE	15	375	2007	\$3,412	Included
KYOGLE	20080825094505	PIPE	CONCRETE	17	450	2007	\$4,679	Included
KYOGLE	20070719134227	PIPE	CONCRETE	21	375	2007	\$4,776	Included
KYOGLE	20070719135842	OPEN DRAIN	EARTH	57	100	2007	\$5,164	Included
KYOGLE	20070719140654	OPEN DRAIN	EARTH	63	100	2007	\$5,692	Included
KYOGLE	20070821141448	PIPE	CONCRETE	8	900	2007	\$6,175	Included
KYOGLE	20070719133418	PIPE	CONCRETE	18	600	2007	\$7,194	Included
KYOGLE	20080812171344	PIPE	PVC	41	300	2007	\$7,444	Included
KYOGLE	20070719134724	OPEN DRAIN	EARTH	17	1050	2007	\$17,088	Included
KYOGLE	20070822103610	OPEN DRAIN	EARTH	74	900	2007	\$56,587	Included
KYOGLE	20070822103955	PIPE	CONCRETE	107	900	2007	\$81,394	Included
KYOGLE	20060901145021	PIPE	CONCRETE	10	100	2005	\$870	Included
KYOGLE	20060901132744	PIPE	CONCRETE	4	375	2005	\$997	Included
KYOGLE	20060901132305	PIPE	CONCRETE	5	375	2005	\$1,175	Included
KYOGLE	20060901132800	PIPE	CONCRETE	5	375	2005	\$1,212	Included
KYOGLE	20060901144956	PIPE	CONCRETE	19	100	2005	\$1,692	Included
KYOGLE	20060901132436	PIPE	CONCRETE	10	375	2005	\$2,188	Included
KYOGLE	20060901145009	PIPE	CONCRETE	26	100	2005	\$2,355	Included
KYOGLE	20060901145104	PIPE	CONCRETE	12	375	2005	\$2,762	Included
KYOGLE	20060901132426	PIPE	CONCRETE	13	375	2005	\$2,838	Included
KYOGLE	20060901132853	PIPE	CONCRETE	13	375	2005	\$3,001	Included
KYOGLE	20060901141627	PIPE	CONCRETE	14	375	2005	\$3,121	Included
KYOGLE	20060901145035	PIPE	CONCRETE	19	375	2005	\$4,204	Included
KYOGLE	20060901150728	PIPE	CONCRETE	44	225	2005	\$6,100	Included
KYOGLE	20060901132530	OPEN DRAIN	CONCRETE	31	900	2005	\$11,628	Included

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Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
KYOGLE	20060901132505	OPEN DRAIN	CONCRETE	31	900	2005	\$11,769	Included
KYOGLE	20051215165802	PIPE	CONCRETE	28	750	2005	\$14,153	Included
KYOGLE	20060901150749	PIPE	CONCRETE	35	600	2005	\$14,261	Included
KYOGLE	20060901132923	OPEN DRAIN	CONCRETE	46	900	2005	\$17,658	Included
KYOGLE	20060901141537	OPEN DRAIN	CONCRETE	115	600	2005	\$23,546	Included
KYOGLE	20050131115238	PIPE	PVC	27	100	2004	\$2,430	Included
KYOGLE	20060811121157	PIPE	PVC	29	200	2004	\$3,758	Included
KYOGLE	20051219094457	PIPE	CONCRETE	25	375	2004	\$5,565	Included
KYOGLE	20050131114707	PIPE	CONCRETE	36	375	2004	\$8,228	Included
KYOGLE	20050131113901	LINED OPEN DRAIN	CONCRETE	19	600	2004	\$11,441	Included
KYOGLE	20050131114804	PIPE	CONCRETE	47	450	2004	\$13,126	Included
KYOGLE	20050131114538	PIPE	CONCRETE	85	450	2004	\$24,001	Included
KYOGLE	20040902102711	PIPE	PVC	21	375	2003	\$4,729	Included
KYOGLE	20040902102624	PIPE	PVC	30	375	2003	\$6,876	Included
KYOGLE	20040902102742	PIPE	PVC	42	375	2003	\$9,535	Included
KYOGLE	20051208083942	PIPE	PVC	31	150	1998	\$3,371	Included
KYOGLE	20070822104405	BOX CULVERT	CONCRETE	12	2400	1980	\$35,074	Included
KYOGLE	20070822104454	BOX CULVERT	CONCRETE	12	2400	1980	\$35,349	Included
KYOGLE	517	PIPE	STEEL	25	2400	1960	\$73,712	Pre1970 Included
LOADSTONE	PIPE	PIPE	PVC	4	300	2005	\$713	Included
LOADSTONE	LINED OPEN DRAIN	LINED OPEN DRAIN	CONCRETE	25	600	2005	\$10,359	Included
MALLANGANEE	20060901130544	PIPE	CONCRETE	3	375	2006	\$756	Included
MALLANGANEE	20060901130339	PIPE	CONCRETE	3	750	2006	\$1,384	Included
MALLANGANEE	20060901130555	PIPE	CONCRETE	7	450	2006	\$1,999	Included
MALLANGANEE	20060901125449	PIPE	CONCRETE	17	750	2006	\$8,526	Included
MALLANGANEE	20060901125152	PIPE	CONCRETE	17	750	2006	\$8,725	Included
MALLANGANEE	20060901130412	PIPE	CONCRETE	42	750	2006	\$21,571	Included
MALLANGANEE	20060901130631	OPEN DRAIN	CONCRETE	37	1200	2006	\$22,083	Included
NEW PARK	139	PIPE	CONCRETE	16	600	1960	\$6,648	Pre1970 Included
OLD BONALBO	1611	PIPE	CONCRETE	8	375	1960	\$1,775	Pre1970 Included

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Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
OLD BONALBO	1617	PIPE	CONCRETE	9	375	1960	\$2,050	Pre1970 Included
OLD BONALBO	1615	PIPE	CONCRETE	10	375	1960	\$2,299	Pre1970 Included
OLD BONALBO	1612	PIPE	CONCRETE	10	375	1960	\$2,359	Pre1970 Included
OLD BONALBO	1613	PIPE	CONCRETE	11	375	1960	\$2,400	Pre1970 Included
OLD BONALBO	1616	PIPE	CONCRETE	11	375	1960	\$2,413	Pre1970 Included
OLD BONALBO	1614	PIPE	CONCRETE	11	375	1960	\$2,419	Pre1970 Included
OLD BONALBO	1606	PIPE	CONCRETE	11	375	1960	\$2,454	Pre1970 Included
OLD BONALBO	1609	PIPE	CONCRETE	13	375	1960	\$2,893	Pre1970 Included
TABULAM	1512	PIPE	CONCRETE	8	375	1960	\$1,833	Pre1970 Included
TABULAM	1508	PIPE	CONCRETE	9	375	1960	\$2,092	Pre1970 Included
TABULAM	1521	PIPE	CONCRETE	10	375	1960	\$2,351	Pre1970 Included
TABULAM	1510	PIPE	CONCRETE	10	375	1960	\$2,381	Pre1970 Included
TABULAM	1516	PIPE	CONCRETE	12	375	1960	\$2,623	Pre1970 Included
TABULAM	1511	PIPE	CONCRETE	13	375	1960	\$2,945	Pre1970 Included
TABULAM	1507	PIPE	CONCRETE	14	375	1960	\$3,242	Pre1970 Included
TABULAM	1509	PIPE	CONCRETE	15	375	1960	\$3,298	Pre1970 Included
TABULAM	1517	PIPE	CONCRETE	15	375	1960	\$3,353	Pre1970 Included
TABULAM	1519	PIPE	CONCRETE	15	375	1960	\$3,413	Pre1970 Included
TABULAM	1506	PIPE	CONCRETE	15	375	1960	\$3,442	Pre1970 Included
TABULAM	1513	PIPE	CONCRETE	15	375	1960	\$3,518	Pre1970 Included
TABULAM	1514	PIPE	CONCRETE	16	375	1960	\$3,618	Pre1970 Included
TABULAM	1518	PIPE	CONCRETE	18	375	1960	\$4,190	Pre1970 Included
TABULAM	1515	PIPE	CONCRETE	29	375	1960	\$6,639	Pre1970 Included
TABULAM	1520	PIPE	CONCRETE	56	375	1960	\$12,675	Pre1970 Included
TABULAM	1522	PIPE	CONCRETE	85	375	1960	\$19,240	Pre1970 Included
WIANGAREE	LINED OPEN DRAIN	LINED OPEN DRAIN	CONCRETE	4	100	2005	\$341	Included
WIANGAREE	PIPE	PIPE	CONCRETE	15	300	2005	\$2,645	Included
WIANGAREE	PIPE	PIPE	CONCRETE	13	375	2005	\$3,006	Included
WIANGAREE	PIPE	PIPE	CONCRETE	18	300	2005	\$3,213	Included
WIANGAREE	PIPE	PIPE	CONCRETE	14	450	2005	\$3,990	Included

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Community	Asset ID	Asset type	Material	Length	Diameter	Commissioning	Replacement Cost	Inclusion Status
WIANGAREE	PIPE	PIPE	CONCRETE	15	450	2005	\$4,236	Included
WIANGAREE	PIPE	PIPE	CONCRETE	25	300	2005	\$4,509	Included
WIANGAREE		0 PIPE	PVC	30	300	2005	\$5,436	Included
WIANGAREE	PIPE	PIPE	CONCRETE	68	375	2005	\$15,520	Included
WIANGAREE	KERB AND GUTTER	LINED OPEN DRAIN	CONCRETE	70	500	2005	\$23,101	Included
WIANGAREE	LINED OPEN DRAIN	LINED OPEN DRAIN	CONCRETE	77	600	2005	\$31,481	Included
WIANGAREE	PIPE	PIPE	CONCRETE	12	600	1960	\$4,893	Pre1970 Included
WIANGAREE	PIPE	PIPE	CONCRETE	16	600	1960	\$6,524	Pre1970 Included
WOODENBONG	1785	PIPE	CONCRETE	21	600	1960	\$8,500	Pre1970 Included

**Facilities and pits**

Community	ASSET_ID	ASSET_TYPE	Trunk Asset Flag	Commissioning	Replacement Cost	Inclusion status
BONALBO	20061116091000	SIDE/DROP INLET	0	2005	\$1,650	Included
BONALBO	20061116091136	BLIND PIT	0	2005	\$1,650	Included
BONALBO	20061116091449	SIDE/DROP INLET	0	2005	\$1,650	Included
BONALBO	20061116092428	GUTTER INLET	0	2005	\$2,376	Included
KYOGLE	20040902102540	GUTTER INLET	1	2003	\$2,376	Included
KYOGLE	20040902102812	GUTTER INLET	1	2003	\$2,376	Included
KYOGLE	20040830163029	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131114404	SIDE/DROP INLET	1	2004	\$1,650	Included
KYOGLE	20050131115002	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115011	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115019	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115044	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115103	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115114	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115121	GUTTER INLET	1	2004	\$2,376	Included
KYOGLE	20050131115159	SIDE/DROP INLET	1	2004	\$1,650	Included
KYOGLE	20051219094335	GUTTER INLET	1	2004	\$2,376	Included



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Community	ASSET_ID	ASSET_TYPE	Trunk Asset Flag	Commissioning	Replacement Cost	Inclusion status
KYOGLE	20051219094515	HEADWALL	1	2004	\$462	Included
KYOGLE	20051215165646	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20051215171305	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901131056	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901131128	GUTTER INLET	1	2005	\$2,376	Included
KYOGLE	20060901131149	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901132404	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901132635	GUTTER INLET	1	2005	\$2,376	Included
KYOGLE	20060901132808	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901132838	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901132903	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901132932	GUTTER INLET	1	2005	\$2,376	Included
KYOGLE	20060901141550	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901141634	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901144909	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901145046	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901145156	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901145203	HEADWALL	1	2005	\$462	Included
KYOGLE	20060901150520	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901150759	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20060901150805	SIDE/DROP INLET	1	2005	\$1,650	Included
KYOGLE	20070719133019	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070719133218	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070719133640	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070719133819	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070719134142	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070719134438	HEADWALL	1	2007	\$462	Included
KYOGLE	20070719135554	HEADWALL	1	2007	\$462	Included
KYOGLE	20070719135710	HEADWALL	1	2007	\$462	Included
KYOGLE	20070821141141	SIDE/DROP INLET	1	2007	\$1,650	Included

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Community	ASSET_ID	ASSET_TYPE	Trunk Asset Flag	Commissioning	Replacement Cost	Inclusion status
KYOGLE	20070821141420	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070822102355	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822102444	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822102543	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822102730	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070822102811	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822103842	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822103930	SIDE/DROP INLET	1	2007	\$1,650	Included
KYOGLE	20070822104036	HEADWALL	1	2007	\$462	Included
KYOGLE	20070822104054	HEADWALL	1	2007	\$462	Included
KYOGLE	20080812171115	GUTTER INLET	1	2007	\$2,376	Included
KYOGLE	20080825094527	GUTTER INLET	1	2007	\$2,376	Included
KYOGLE	20080812163532	SIDE/DROP INLET	1	2008	\$1,650	Included
KYOGLE	20080812164014	SIDE/DROP INLET	1	2008	\$1,650	Included
KYOGLE	20080812164128	GROSS POLLUTANT TRAP	1	2008	\$18,000	Included
KYOGLE	20080825094629	GUTTER INLET	1	2008	\$2,376	Included
KYOGLE	20080825094641	GUTTER INLET	1	2008	\$2,376	Included
KYOGLE	20040902102851	SIDE/DROP INLET	0	2003	\$1,650	Included
KYOGLE	20050131115025	GUTTER INLET	0	2004	\$2,376	Included
KYOGLE	20060901144858	BLIND PIT	0	2005	\$1,650	Included
KYOGLE	20070822120258	GUTTER INLET	0	2007	\$2,376	Included
KYOGLE	20080825094113	GUTTER INLET	0	2008	\$2,376	Included
KYOGLE	20080825094208	SIDE/DROP INLET	0	2008	\$1,650	Included
KYOGLE	20080825094356	GUTTER INLET	0	2008	\$2,376	Included
LOADSTONE	HEADWALL	HEADWALL	0	2005	\$462	Included
MALLANGANEE	921	HEADWALL	1	2006	\$462	Included
MALLANGANEE	922	HEADWALL	1	2006	\$462	Included
MALLANGANEE	20060901124641	HEADWALL	1	2006	\$462	Included
MALLANGANEE	20060901124911	HEADWALL	1	2006	\$462	Included
MALLANGANEE	20060901130252	SIDE/DROP INLET	1	2006	\$1,650	Included

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Community	ASSET_ID	ASSET_TYPE	Trunk Asset Flag	Commissioning	Replacement Cost	Inclusion status
MALLANGANEE	20060901130308	HEADWALL	1	2006	\$462	Included
MALLANGANEE	20060901130355	SIDE/DROP INLET	1	2006	\$1,650	Included
MALLANGANEE	20060901130504	SIDE/DROP INLET	1	2006	\$1,650	Included
MALLANGANEE	20060901130527	HEADWALL	1	2006	\$462	Included
NEW PARK	20040831160751	HEADWALL	0	2004	\$462	Included
WIANGAREE		0 HEADWALL	1	2005	\$462	Included
WIANGAREE	HEADWALL	HEADWALL	1	2005	\$462	Included
WIANGAREE	HEADWALL	HEADWALL	1	2005	\$462	Included
WIANGAREE		0 HEADWALL	1	2005	\$462	Included
WIANGAREE	SIDE DROP INLET	GUTTER INLET	0	2005	\$2,376	Included
WIANGAREE		0 GUTTER INLET	0	2005	\$2,376	Included
WIANGAREE	BLIND PIT	BLIND PIT	0	2005	\$1,650	Included
WIANGAREE		0 SIDE/DROP INLET	0	2005	\$1,650	Included
WIANGAREE		0 HEADWALL	0	2005	\$462	Included
WIANGAREE	SIDE DROP INLET	GUTTER INLET	0	2005	\$2,376	Included
WIANGAREE	SIDE DROP INLET	SIDE/DROP INLET	0	2005	\$1,650	Included
WIANGAREE	SIDE DROP INLET	GUTTER INLET	0	2005	\$2,376	Included
WIANGAREE	HEADWALL	HEADWALL	0	2005	\$462	Included
WIANGAREE	SIDE DROP INLET	GUTTER INLET	0	2005	\$2,376	Included
WIANGAREE	20061026160216	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160309	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160348	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160511	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160531	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160707	HEADWALL	0	2006	\$462	Included
WIANGAREE	20061026160738	HEADWALL	0	2006	\$462	Included

### 5.3 Capital charge by system

Community	2015 ETs	Line Asset Value	Facility Asset Value	Current Assets	New Asset Allowance	Total Assets	Capital Charge/ET
Kyogle	1785	\$822,948	\$153,168	\$976,116	\$2,825,000	\$3,801,116	\$2,033
Wiangaree	70	\$108,894	\$22,836	\$131,730	\$14,699	\$146,430	\$2,092
Mallanganee	106	\$65,044	\$7,722	\$72,766	\$30,366	\$103,132	\$973
Old Bonalbo	68	\$21,063	\$14,058	\$35,121	\$11,925	\$47,045	\$692
Tabulam	160	\$80,852	\$28,248	\$109,100	\$34,244	\$143,344	\$896
Bonalbo	300	\$26,020	\$15,708	\$41,728	\$60,991	\$102,719	\$342
Woodenbong	219	\$8,500	\$4,752	\$13,252	\$47,775	\$61,027	\$279
<b>Totals</b>	<b>2708</b>					<b>\$4,404,813</b>	<b>\$1,626.59</b>

## 6. References

Department of Land and Water Conservation<sup>4</sup> (2002) *Developer Charges Guidelines: Water Supply, Sewerage and Stormwater*, NSW Crown.

Department of Land and Water Conservation (2003) *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets*, NSW Crown.

Government Pricing Tribunal (1995) *Sydney Water Corporation: Prices of Developer Charges for Water, Sewerage and Drainage Services*, available at <http://www.ipart.nsw.gov.au>

Independent Pricing and Regulatory Tribunal (2000) *Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wyong Shire Council: Developer Charges from 1 October 2000*, available at <http://www.ipart.nsw.gov.au>

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<sup>4</sup> The relevant functions of the former NSW Department of Land and Water Conservation are now executed by the NSW Office of Water, Department of Environment, Climate Change and Water.