



BELLINGEN SHIRE COUNCIL

DEVELOPMENT SERVICING PLAN

FINAL

June 2007

DEVELOPMENT SERVICING PLAN

Table of Contents

1. Introduction	1
2. Background	1
2.1 General	1
2.2 Previous Developer Charges	2
3. Administration of Charges	3
3.1 Reference	3
3.2 DSP Area	3
3.2.1 Water Supply DSP Area	3
3.2.2 Sewerage DSP Area	3
3.3 When are Developer Charges Applicable	3
3.4 How is a Developer Charge Applied	4
3.5 Monitoring and Review/Update of Developer Charges	5
4. System Background and Timing of Future Works	6
4.1 Water Supply Source, Treatment and Distribution System	6
4.2 Sewerage Transportation and Treatment System	7
5. Methodology	9
5.1 General	9
5.2 Net Present Value Process	9
5.3 Determination of Demands/Loadings	9
5.3.1 General	9
5.3.2 Future Demands/Loadings	9
5.3.3 Historical Demands/Loadings	10
5.4 Discount Rates	11
5.5 Assets	11
5.5.1 Definition of Assets	11
5.5.2 Inclusion of Pre 1996 Capital Works	11
5.5.3 Inclusion of Post 1996 Capital Works	12
5.6 Pro-Rata of Asset Costs	12
5.6.1 Pre 1996 Assets	12
5.6.2 Post 1996 Assets	12
5.7 Calculation of Capital Charge	12
5.8 Reduction Amount	12
6. Developer Charge	13
6.1 Calculated Charges	13
6.2 Comparison with Current Developer Charge	13
6.3 Comparison with Developer Charges from Other Councils	14
7. Recommendations	15
8. References	16
Appendices	
Appendix A - Plan of Lower Bellinger Water Supply Scheme	
Appendix B - Plan of Dorrigo Water Supply Scheme	
Appendix C - Plan of Bellingen Sewerage Supply Scheme	
Appendix D - Plan of Dorrigo Sewerage Supply Scheme	
Appendix E - Plan of Urunga Sewerage Supply Scheme	
Appendix F - Developer Charge Model (Water Supply System)	
Appendix G - Developer Charge Model (Sewerage Supply System)	

DEVELOPMENT SERVICING PLAN FOR BELLINGEN SHIRE COUNCIL

1. INTRODUCTION

This Development Servicing Plan (DSP) details a review of Bellingen Shire Council's (BSC'S) Section 64 (s.64) Developer Contribution Policy. A DSP is a document that contains all relevant information used to calculate the unit charge (developer charge per Equivalent Tenement) for development in the relevant DSP area.

Development growth will place additional demands and loadings on the water supply and sewerage systems respectively. Generally, additional capacity is required in the water supply and sewerage systems to accommodate the increased demand and loadings. This normally requires system components to be upgraded such as pump stations and pipelines. On occasion it is necessary to construct additional system components to service the growth.

The purpose of this DSP is to identify the demand for capacity in water and sewer infrastructure as a result of development and to provide for that capacity through developer contributions.

Bellingen Shire Council maintains an asset register which includes details on the cost and date of construction of existing infrastructure. The Council has also prepared a schedule of capital works based on the current projections of growth.

In this plan, a developer charge is determined by analysing the costs of existing infrastructure, existing demand, anticipated growth and the costs of works required to meet the demands created by growth. The total cost of these works is divided between demand units to determine the capital cost per unit.

2. BACKGROUND

2.1 General

The development or redevelopment of land for residential, commercial or industrial purposes creates a need for additional capacity in water supply and sewerage systems. Water and sewerage providers recover the cost of providing this additional capacity predominantly through developer charge contributions. BSC initiated its current s.64 Developer Contribution Policy in April 2002.

The S.64 policy refers to section 64 of the Local Government Act – 1993. This section of the Act details the laws relating to the construction of works for developers. It states that the rules of operation for water supply authorities, detailed in Division 5 of Part 2 of Chapter 6 of the Water Management Act 2000, apply to Councils exercising functions in the same way. Developers are required to pay a contribution to the water supply authority towards the cost of existing and projected water management works. The water supply authorities are also authorised, when calculation developer contributions, to take into consideration the value of existing water management works and the estimated cost of projected water management works.

Prior to the implementation of proposed Developer Charges for water supply and sewerage in local government areas of country New South Wales (NSW), the proposed charges are to be registered with the NSW Department of Energy, Utilities and Sustainability (DEUS). DEUS issued guidelines for the calculation of water supply and sewerage charges in May 2004. These guidelines were based on a determination issued by the Independent Pricing and Regulatory Tribunal (IPART) in September 2000.

IPART is a independent authority that regulates the pricing of declared government monopoly services. The Tribunal regulates urban water services under the Independent Pricing and Regulatory Tribunal Act, 1992 for the following government agencies.

- Sydney Water Corporation
- Hunter Water Corporation
- Gosford City Council
- Wyong City Council

This draft incorporating the revised Developer Contributions Policy will be placed on Public Exhibition for a 30-day period prior to being forwarded to DEUS for registration.

2.2 Previous Developer Charges

The previous developer charges adopted by Bellingen Shire Council are shown below in **Tables 2.1 and 2.2**. The contribution rates previously adopted represent charges which could be justified in accordance with the Department of Land and Water Conservation, Developer Charges for Water Supply, Sewerage and Stormwater, Guidelines (2001) under section 64 of the Local Government Act-1993.

The contribution rates were calculated of the basis of charge for each town within the sewerage system catchments which comprise Bellingen, Dorrigo and Urunga and a charge for each town in the water supply system which comprise the Lower Belling System and the Dorrigo system.

Table 1.1 *Previously Adopted Developer Charges for Sewer (\$ per unit capacity)*

Sewer Servicing Contribution at 1st July 2006	
Sewer Catchment	Charge per ET
Bellingen	\$2,599
Dorrigo	\$4,106
Urunga	\$4,959

Note: Current Charges are subject to ongoing adjustment in line with CPI

Table 1.2 *Previously Adopted Developer Charges for Water (\$ per unit capacity)*

Water Servicing Contribution at 1st July 2006	
Water Catchment	Charge per ET
Bellingen	\$2,789
Fernmount	\$5,592
Mylestom, Repton, Raleigh North	\$9,520
Urunga and Raleigh South	\$6,475
Dorrigo	\$7,890

Note: Current Charges are subject to ongoing adjustment in line with CPI.

3. ADMINISTRATION OF CHARGES

3.1 Reference

This document shall be officially referred to as the Bellingen Water Supply and Sewerage Development Servicing Plan (DPS).

3.2 DSP Area

Bellingen Shire Council has determined to agglomerate their services into five (5) DSP areas for water supply and three (3) DSP areas for sewerage supply.

3.2.1 Water Supply DSP Area

Water supply in the Lower Bellinger system is distributed from a balance tank which feeds the Bellingen Reservoir servicing Bellingen and the two reservoirs at Marx Hill servicing the villages of Fernmount, Raleigh, Repton, Mylestom and Urunga located to the East of Bellingen.

The areas covered by the DSP for the Lower system are defined by four (4) areas which include the townships of Bellingen, Urunga and Raleigh South, the village of Fernmount and the combined area of three villages comprising of Raleigh North, Repton and Mylestom. The boundaries of each area enclose all lands within the Council LGA which are serviced by the potable water supply source in the Lower Bellinger System.

Water supply in the Dorrigo system is distributed from two reservoirs which service the township of Dorrigo. The reservoirs are supplied from clear water pumps at the Dorrigo water treatment plant via Bielsdown pump station or Rocky Creek pump station. One DSP area defines this system.

A plan has been prepared for each of the water service areas showing the area included within the DSP. These plans are as follows:

- **Appendix A** – Lower Bellinger Water Supply System
- **Appendix B** – Dorrigo Water Supply System

3.2.2 Sewerage DSP Areas

The sewerage DSP areas in the Bellingen LGA are defined by three catchments which are each serviced by a sewerage treatment plant and comprise Bellingen, Dorrigo and Urunga.

Plans have been prepared for each of the sewerage catchments showing the areas included within the DSP. These plans are as follows:

- **Appendix C** – Bellingen Sewerage System
- **Appendix D** – Dorrigo Sewerage System
- **Appendix E** – Urunga Sewerage System

3.3 When Are Developer Charges Applicable?

When a Developer proposes to subdivide land, erect or extend a commercial/industrial building or multiple residential dwelling units, a Development Application is lodged with Bellingen Shire Council. If the new development is to be connected to Council's water and/or sewer mains, Council will investigate the impact of the proposed development on its systems. When additional demand is placed on its systems as a result of the development connecting to the water supply and / or sewerage system, Council will issue a notice stating the required developer charge.

3.4 How Is A Developer Charge Applied?

The developer charge is the cost per unit of capacity within the relevant water and/or sewer infrastructure. A unit capacity is referred to as an Equivalent Tenement (ET). An ET is the equivalent demand or loading from a standard residential dwelling.

The developer charge payable for the respective water and/or sewer system is thus:

$$\text{Assessed Demand or Loading (ET) X Developer Charge (\$/ET)}$$

In order to assess the developer charge applicable to a specific development, it is necessary to assess the demand that the proposed development will place on the water and/or sewer systems.

For the case of a development involving the creation of additional residential lots, this is a relatively simple process. The additional demand or loading created by the development is the number of additional lots. The process is illustrated in the following example.

Example 1

The developer charge for a water system is determined to be \$2,500/ET, and for a sewer \$3,500/ET. Council receives an application to connect a proposed subdivision, which will create an additional 10 residential lots.

$$\begin{aligned} \text{The developer charge for water is: } & 10 \text{ ET} \times \$2,500/\text{ET} = \$25,000 \\ \text{The developer charge for sewer is } & 10 \text{ ET} \times \$3,500/\text{ET} = \$35,000 \\ \text{Total Section 64 developer charge is } & \$60,000 \end{aligned}$$

The process of assessing the demand or loading of a potential development can be more complex if the development contains non residential elements. For this case it is necessary to estimate the number of standard residential dwellings required to generate an equivalent demand or loading to the proposed non residential development.

In order to assist with the assessment of water and/or sewer demand, general guidelines can be obtained from the *Water Supply Investigation Manual (1986)* and the *Manual of Practice: Sewer Design (1984)*. Both documents were originally prepared by the Public Works Department of NSW and are now managed by DEUS of NSW.

The process of determining a developer charge for a non residential development, using the guidelines is illustrated in the following example.

Example 2

The developer charge for a water supply system is determined to be \$2,500/ET, and for a sewer \$3,500/ET. Council receives an application to connect a proposed restaurant to the water and sewer systems.

The expected annual water demand for the proposed restaurant is 6,000 kL. The average annual demand for a standard residential lot is 200 kL. Hence the assessed water demand for the restaurant is $6,000/200 = 30$ ET.

The proposed restaurant will be a single floor building with a floor area of 400 m² (0.4 Ha). The assessed loading for a restaurant is 80 ET/built-up Ha. Hence the assessed sewer loading for the restaurant is 32 ET.

$$\begin{aligned} \text{The developer charge for water is: } & 30 \text{ ET} \times \$2,500/\text{ET} = \$75,000 \\ \text{The developer charge for sewer is : } & 32 \text{ ET} \times \$3,500/\text{ET} = \$112,000 \\ \text{Total Section 64 developer charge is } & \$187,000 \end{aligned}$$

Bellingen Shire Council recognises that the guidelines are general and cannot practically be applied to all development applications. Some developments will not "fit" a category in the guidelines. Also data required to assess the demand/loadings will not always be available at the time of the application eg the expected annual water consumption.

For this reason Council accepts that a proportion of the application will be assessed on individual merit. Council will determine a demand/loading for the development using the best available data. The Engineer retains discretion to assess the application on its merits and in situations requiring conflict resolution, discretion also remains with the Director of Engineering and Operations.

With some industrial and commercial development there is an option of metering consumption and discharge for a period of time after calculating charges and later adjusting the charge once actual consumption and discharge is known. If necessary, a bank guarantee or cash may be lodged with Council while the actual consumption and/or discharge is measured over a period of time (using fittings funded by the Developer). In these situations, if a bank guarantee or cash were not lodged, the development would not proceed.

If a Developer disagrees with Council's assessment the onus is on the Developer to demonstrate that there is an improved assessment.

3.5 Monitoring And Review/Update Of Developer Charges

The developer charge calculated in this plan is based on current projections of growth in population and development and BSC's assessment of infrastructure that will be required to service this growth. It is important that trends are monitored to ensure that contributions received are spent in a manner that provides services in an efficient and effective way.

Council's commitment to future works will be dependant on development and any changed in the current projections may necessitate the rescheduling of future works. This plan therefore will require periodic review, say every 5 to 6 years, to ensure the developer charges remain valid. Any review of the plan would include a public exhibition period.

In the period between any review, the developer charge will be adjusted annually (1 July each year) on the basis in the change in the Consumer Price Index (CPI) in the preceding 12 months to December, excluding the impact of GST.

4. SYSTEM BACKGROUND AND TIMING OF FUTURE WORKS

4.1 Water Supply Source, Treatment And Distribution System

Bellingen Shire Council operates a potable water supply scheme for the townships of Dorrigo, and townships on the Bellinger River from Bellingen in the West to Urunga and Mylestom in the East. The two systems currently serve a population of approximately 9000 persons.

Raw water for the Lower Bellinger system is sourced from three bore pumps and a well near the Bellinger River. The raw water is of good quality requiring only minimal treatment to comply with the Australian Drinking Water Guidelines. The treatment comprises chlorination, lime addition and fluoride will be added by mid 2007. After treatment the potable water is pumped to several service reservoirs within the water supply system.

Raw water for the Dorrigo water supply system is sourced from pumping stations on Rocky Creek and Bielsdown River and undergoes a treatment process of sedimentation, filtration and disinfection. The water will be dosed with fluoride beginning mid 2007. The system has a capacity of 2.7 megalitres per day which is expected to serve the projected population beyond the 2035 planning horizon.

The WTP, reservoirs, pumping stations and trunk water mains that constitute the lower Bellinger water supply system are shown in **Appendix A**. The WTP, reservoirs, pumping stations and trunk water mains that constitute the Dorrigo water supply system are shown in **Appendix B**.

The timing and costing of proposed capital works relative to the water supply system are shown below in **Table 2.1** and in the developer charge model asset schedules located in **Appendix F**.

Table 2.1 Capital Works Program For Water Supply

Capital Works Program for BSC Water Supply Systems				
Water Supply System	Description of Item	% Recoverable	Estimated Cost	Year
Dorrigo	1. Strategic planning and demand management studies	100	\$6,000	2007/08
			\$6,000	2013/14
			\$6,000	2018/19
			\$6,000	2023/24
			\$6,000	2028/29
Lower Bellinger	1. Chlorine Dosing upgrade	50	\$60,000	2006/07
	2. Duplicate Short Cut Rd – Ridells Reservoir	50	\$400,000	2007/08
	3. Duplicate Marx Hill to Raleigh Dam transfer main	50	\$400,000	2016/17
			\$300,000	2017/18
			\$300,000	2018/19
	4. New transfer main and reservoir North Bellingen	33	\$3,500,000	2019/20
	5. Lime Dosing Upgrade	50	\$160,000	2007/08
	6. Extra Headworks capacity	100	\$150,000	2013/14
7. New reservoir Bellingen	33	\$1,500,000	2010/11	
8. Strategic planning and demand management studies	100	\$24,000	2007/08	
		\$24,000	2013/14	
		\$24,000	2018/19	
		\$24,000	2023/24	
		\$24,000	2028/29	
			\$24,000	2033/34

Note: Non-recoverable capital expenditure, such as asset replacements or non-growth related upgrades, are not included in the above table.

4.2 SEWERAGE TRANSPORTATION AND TREATMENT SYSTEM

Bellingen Shire Council operates and maintains sewerage transportation systems that currently serve approximately 7650 persons. All sewerage flows collected in the areas serviced by Bellingen Council's sewerage systems are currently transported to one of the treatment plants comprising Bellingen, Dorrigo or Urunga Sewerage Treatment Plants (STP).

The Bellingen sewerage system comprises a conventional system of gravity sewers draining to seven (7) pump stations and a sewerage treatment plant. There are three major sewer reticulation areas, one on the southern side of the Bellinger River servicing the commercial and urban areas of Bellingen and two on the northern side servicing the urban growth area of North Bellingen. The Bellingen treatment plant discharges into the Bellinger River.

The treatment plant, pump stations and trunk mains that form the Bellingen sewerage system are shown in **Appendix C**.

The Dorrigo sewerage system was constructed in 1968 with the process designed to meet discharge standard requirements for an estimated capacity of 1,550 EP. The Dorrigo treatment plant discharges into a wetland which flows into the Bielsdown River. It is estimated by mid 2007 there will be an effluent reuse scheme in operation, where all effluent will be used for irrigation 85% of the time on a adjoining dairy farm.

The system comprises gravity sewers, four (4) pumping stations and a sewerage treatment plant. Two (2) pump stations transport sewer from the western part of town, across the Bielsdown to the treatment plant. The third pump station is located on the eastern part of town and the last at the Dorrigo Rainforest Centre. Sewer gravitates to the treatment plant from the main area of the township located on the eastern side of the river.

The treatment plant, pump stations and trunk mains that form the Dorrigo sewerage system are shown in **Appendix D**.

The Urunga sewerage scheme was originally constructed in 1971 to service Urunga township. The STP was augmented in 1988 to service an anticipated equivalent population (EP) of 6,650. The capacity of the scheme is not expected to be until 2035 based on current projections. The Urunga treatment plant discharges into an adjacent wetland which flows into the Urunga Lagoon.

A small section of Urunga (Crescent Close) which required sewerage services highlighted in the previous Strategic Business Plan 1997/98, was completed in early 2001 using a low pressure pump reticulation system.

The Urunga sewerage system is divided into three (3) main catchment areas including Bellinger Keys (located to the south-west of Urunga), Yellow Rock/Newry Island (located to the north-west of Urunga) and Urunga township. The system comprises gravity sewers, fourteen (14) pumping stations and a sewerage treatment plant. Two main pump stations deliver sewerage to the treatment plant.

The treatment plant, pump stations and trunk mains that form the Urunga sewerage system are shown in **Appendix E**.

Timing and costing of existing and proposed capital works, relative to the sewerage system, are shown below in **Table 2.2** and in the developer charge model asset schedules located in **Appendix G**.

Table 2.2 *Capital Works Program For Sewerage Supply*

Capital Works Program for BSC Sewerage Supply Systems				
Sewerage Supply System	Description of Item	% Recoverable	Estimated Cost	Year
Dorrigo	1. New Treatment Plant	33	\$3,000,000	2021/22
	2. Strategic Planning and studies	100	\$10,000	2007/08
			\$10,000	2012/13
			\$10,000	2019/20
			\$10,000	2023/24
			\$10,000	2027/28
		\$10,000	3032/33	
Bellingen	1. Augmentation of Capacity of Treatment Plant at 4000 EP	100	\$1,600,000	2019/20
	2. Strategic Planning and studies	100	\$10,000	2007/08
			\$10,000	2012/13
			\$10,000	2019/20
			\$10,000	2023/24
			\$10,000	2027/28
		\$10,000	3032/33	
Urunga	1. Recommission Biological Filter at 5000 EP	100	\$200,000	2015/16
	2. Strategic Planning and studies	100	\$10,000	2007/08
			\$10,000	2012/13
			\$10,000	2019/20
			\$10,000	2023/24
			\$10,000	2027/28
		\$10,000	3032/33	

Note: Non-recoverable capital expenditure, such as asset replacements or non-growth related upgrades, are not included in the above table.

5.0 METHODOLOGY

5.1 General

The developer charge is determined by analysing the cost of existing augmentation works, existing demand, anticipated growth and the costs of the works required to meet the demand created by growth.

The total cost of existing and proposed augmentation works required to service development is divided between demand units to determine the capital cost per unit. Any surplus income Council generates from a development (ie. Operational income minus operational, maintenance and administration costs) is deducted from the capital costs to obtain the Developer charge.

5.2 Net Present Value Process

In order to account for the time value of money, all calculations are undertaken using Net Present Value (NPV). NPV is a standard commercial procedure for calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present time, using the required return on investment.

The Developer Charge is therefore calculated as:

- The present value (PV) of the cost over time of capital works required to service development (referred to as the “capital charge”⁰
Less
- The present value of expected net income (revenue less expense) over time from servicing development (referred to as the “reduction amount”)

5.3 Determination Of Demands/Loadings

5.3.1 General

An equivalent Tenement (ET) is the basic unit of measure used to quantify the demand or loading on water supply or sewerage services respectively. As previously stated, one ET represents the equivalent demand or loading from a standard residential household.

An Equivalent Person (EP) is another basic unit of measure generally used to quantify loadings on a sewerage treatment works. One EP represents the equivalent loading from a standard person.

EP loadings can be converted to an ET loading by defining an EP/ET ratio referred to as the occupancy ratio. For this study, ET loadings/demands for each sewer and water system respectively in the Bellingen Shire Council local government area was adopted from information obtained from previous hydraulic analyses on each system.

A growth profile from 1970 to 2026 was adopted for Developer Charge calculation. Assets commissioned prior to 1970 are not included with the exception of major works such as water or sewer treatment plants in accordance with DEUS guidelines. Future projections are to 30 years in accordance with recommended methodology in the guidelines.

5.3.2 Future Demands/Loadings

Future ET and demand calculations were based on data determined in previous strategy reports on the water and sewerage systems. The ET projections include residential and non-residential loadings and demands and are shown in the tables below.

Table 3.1 *Projected Demands on the Lower Bellinger Water Supply System*

Equivalent Tenements (ET)						
Village/ Townships	1996	2001	2006	2011	2016	2026
Bellingen	1046	1134	1420	1490	1560	1700
Fernmount	72	98	107	112	117	127
Raleigh North / Repton / Mylestom	489	502	572	582	592	612
Raleigh South/ Urunga	1302	1335	1445	1505	1565	1685
Total	2909	2869	3544	3689	3834	4124

Table 3.2 *Projected Demands on the Dorrigo Water Supply System*

Equivalent Tenements (ET)						
Village/ Townships	1996	2001	2006	2011	2016	2026
Dorrigo	438	640	665	690	715	765

Table 3.3 *Projected Loadings on Sewerage System*

Equivalent Tenements (ET)						
Village/ Townships	1996	2001	2006	2011	2016	2026
Bellingen	1046	1134	1278	1348	1418	1558
Dorrigo	482	512	557	582	607	657
Urunga	1040	1102	1149	1199	1249	1349
Total	2526	2691	2984	3129	3274	3564

5.3.3 Historical Demands / Loadings

Historical ETs were estimated from present ET's using the following regression formula:

$$ET_{\text{present-5}} = \left(ET_{\text{present}} * \left(\frac{(1 - GR)^5}{100} \right) \right) * \Delta \text{Occupancy}$$

Note: GR is the population growth rate between present-5 and present. It has been calculated from historical population figures.

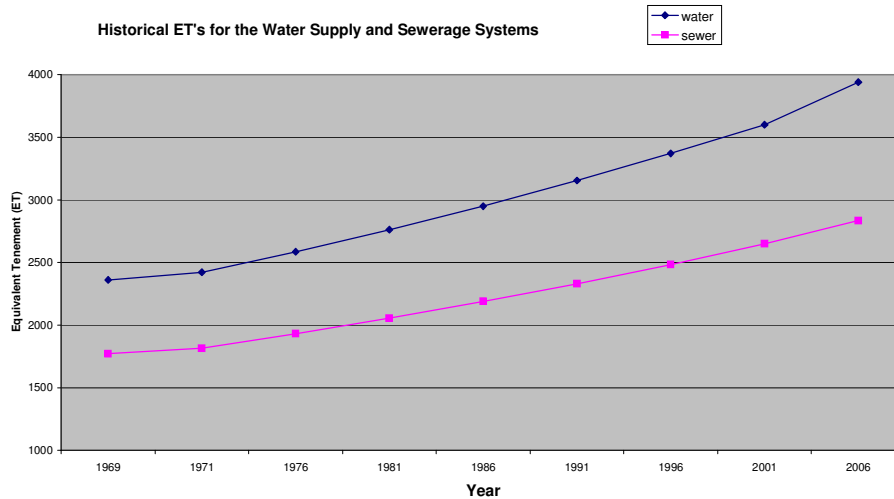
Table 3.4 *Historical Demands on Water Supply System*

Equivalent Tenements (ET)							
Townships	1971	1976	1981	1986	1991	1996	2001
Bellingen	707	762	821	884	953	1046	1134
Fernmount	47	49	54	59	65	72	98
Raleigh North, Repton, Mylestom	380	390	418	448	480	489	502
Urunga, Raleigh South	811	874	941	1014	1092	1302	1335
Dorrigo	466	479	493	508	523	538	640
Total	2411	2554	2727	2913	3113	3447	3509

Table 3.5 *Historical Loadings on Sewerage System*

Equivalent Tenements (ET)							
Townships	1971	1976	1981	1986	1991	1996	2001
Bellingen	599	599	645	695	807	1046	1134
Dorrigo	417	429	442	455	468	482	512
Urunga	800	857	919	985	1006	1040	1102
Total	1816	1885	2006	2135	2281	2568	2748

A graphical representation of historical ETs estimated for the water supply and sewerage systems is shown in the figure below.



5.4 Discount Rates

A discount rate calculates the present value of money arising in the future. The discount rate used in the developer charge calculation should reflect the opportunity cost to Council of funding infrastructure works. It should recognise that in providing infrastructure prior to development, Council faces a number of uncertain risks. These uncertainties include growth rates, cost of capital works and changes in interest rates.

IPART has specified the discount rate to be used by Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council. The specified discount rates vary depending on whether the assets were commissioned prior to or following 1996. Similar values are recommended by DEUS for regional Councils.

For Bellingen Shire Council, a pre-1996 asset real discount rate of 3% and a post-1996 real asset discount rate of 7% have been adopted.

The commonly suggested values chosen for the real discount rate for the reduction amount vary between 7 and 12 percent. The value prescribed for the four major water authorities is 7% and this has also been adopted for the Bellingen Shire Council.

5.5 Assets

5.5.1 Definition of Assets

IPART defines assets on the basis of whether they were commissioned before or after the initial application of the NVP methodology for calculating developer charges, ie 1996. This ensures a consistent rate of return is applied to all assets in subsequent reviews of a DSP.

5.5.2 Inclusion of Pre 1996 Capital Works

Assets constructed prior to 1970 has been excluded from the developer charge calculation as it is assumed the cost of the asset has been fully recovered. This practice is consistent with guidelines issued by both IPART and DEUS. The allowable exception to this is for major works and include Dorrigo Sewerage Treatment Plant which was constructed in 1968. Only 50% of the cost of this asset can be recovered as it was subsidised by funding.

5.5.3 Inclusion of Post 1996 Capital Works

Bellinghen Shire Council has prepared a future Capital Works Schedule which includes works proposed to be constructed until 2036. Sufficient confidence of the timing of construction and costing of these works governs their inclusion in the developer charge calculation.

5.6 Pro-Rata Of Asset Costs

5.6.1 Pre 1996 ASSETS

The estimated present day value of assets was pro-rated with respect to the amount of capacity provided by the asset for development. Bellinghen Shire Council provides estimates of the percentage of each asset's capacity attributable to growth. The HWA developer charge model recognises assets that service growth as "Upgrade". Hence, for "Upgrade" assets that present day value of each asset (MEERA value), also provided by Bellinghen Shire Council, was multiplied by the corresponding percentage attributable to growth.

5.6.2 Post 1996 Assets

Bellinghen Shire Council supplied details of works commissioned since 1996 and proposed works to 2036. Some of these assets are "augmentations" and therefore the entire cost of the asset is fully recoverable as an augmented asset is constructed servicing growth.

5.7 Calculations Of Capital Charge

The capital charge is calculated in a spreadsheet model comprising a number of separate but linked worksheets.

The initial pro-rata of asset costs occurs in the "Existing Asset" and "Future Asset" worksheets, where the asset constructed in each year, and their costs, are tabulated prior to being referred to the "Asset Schedule" spreadsheet. The "Asset Schedule" spreadsheet separates the total asset costs for each year into pre-1996 assets and post 1996 assets. The separated total costs are then referred to the "Capital Charge" spreadsheet. The following formula is then applied to the pre 1996 and post 1996 assets to calculate the net present value charge:

$$\text{NPV(Charge)} = \text{NVP}(\Sigma \text{ ASSET COSTS}) / \text{NPV}(\Sigma \text{ INCREMENTAL})$$

The calculations can be found in the developer charge models located in **Appendix F** and **Appendix G**.

5.8 Reduction Amount

The reduction amount (cost) is determined as the difference between the operating revenue arising from a DSP area and the operating, maintenance and administration costs for that area. Projected net revenue and costs were determined until 2036 and hence a forecast horizon of 30 years was adopted to calculate the operating surplus. The calculations can be found in the developer charge model located in **Appendix F** and **Appendix G**.

6.0 DEVELOPER CHARGE

The developer charge calculations are detailed in **Appendix F** (water supply) and **Appendix G** (sewerage).

6.1 Calculated Charges

The developer charges have been calculated with a proposed capital works cut-off year of 2036 and real discount rates of 3%, 7% and 7% for pre 1996 assets, post 1996 assets and the reduction amount respectively. The developer charges for Bellinghen Shire Council water supply and sewerage systems are shown in the tables below. The total applicable charge is calculated as the capital charge minus the reduction amount.

Table 4.1 *Calculated Developer Charges for Water Supply Systems*

(\$/ET)			
Town / Village	Capital Charge	Reduction Amount	Total Charge
Bellinghen	\$5,971	\$1,244	\$4,727
Fernmount	\$3,604	\$1,244	\$2,360
Raleigh North, Repton, Mylestom	\$11,180	\$1,244	\$9,936
Urunga, Raleigh South	\$5,551	\$1,244	\$4,307
Dorrigo	\$5,628	\$1,244	\$4,384

Table 4.2 *Calculated Developer Charges for Sewerage Services*

(\$/ET)			
Town / Village	Capital Charge	Reduction Amount	Total Charge
Bellinghen	\$6,150	\$1,824	\$4,326
Dorrigo	\$7,055	\$1,824	\$5,231
Urunga	\$3,912	\$1,824	\$2,088

The calculated developer charges are the maximum value that may be imposed by Bellinghen Shire Council. If Council elects to subsidise the calculated developer charges, then the resulting cross-subsidy from existing customers must be calculated and disclosed both in this DSP and also in Council's Annual Report.

Adoption of the calculated charges without subsidy is likely impact on potential development in some villages in the shire. The resulting cross-subsidies could be calculated by running the Council's financial planning model.

6.2 Comparison With Current Developer Charge

The previous (or current) charges are summarised below in **Tables 4.3** and **Tables 4.4** with a comparison of the calculated charge determined in this study.

Table 4.3 *Previous and Calculated Developer Charges for Sewer*

Village / Town	Current Charge (\$/ET)	Calculated Charge (\$/ET)
Bellinghen	\$2,599	\$4,326
Dorrigo	\$4,106	\$5,231
Urunga	\$4,959	\$2,088

Table 4.4 *Previous and Calculated Developer Charges for Water*

Village / Town	Current Charge (\$/ET)	Calculated Charge (\$/ET)
Bellingen	\$2,789	\$4,727
Fernmount	\$5,592	\$2,360
Mylestom, Repton, Raleigh North	\$9,592	\$9,936
Urunga and Raleigh South	\$6,475	\$4,307
Dorrigo	\$7,890	\$4,384

The change in the magnitude of the developer charge for the water and sewerage system may be attributed to:

- a change in the planned capital works program over the next 30 years
- addition or removal of projects in the 30 year capital works program
- some significant changes to the costings of previous and future works
- revised growth projections since 2001

6.3 Comparison With Developer Charges From Other Council

A survey of charges imposed by other regional Councils for residential dwellings was undertaken and the results summarised below in **Table 4.5**

Table 4.5 *Developer Charges for Other Regional Councils*

Council	Water Supply (\$/ET)	Sewerage (\$/ET)
Bega Council	\$10,400	\$ 7,900
Armidale Council	\$ 4,520	\$ 4,060
Parkes Council	\$ 8,820	\$ 2,620
Coffs Harbour Council	\$ 6,650	\$ 4,113
Kempsey Council	\$ 7,692	\$ 6,489
Bellingen Council	\$ 5,143	\$ 3,882

Notes: 1. The above charges apply to urban areas. Some Council have separate charges for villages and rural areas but these have not been included.

2. If a Council has a range of charges the average is shown.

A comparison with developer charges applied by other regional Councils should be treated with caution as it is not known if they have been calculated using similar methodology. Also it is not known if the above charges are subsidised by the respective Councils.

7.0 RECOMMENDATIONS

The recommended developer charges are detailed below in **Table 5.1** and **Table 5.2**. A combination of the cost of infrastructure required to service the four outlying villages and minimal projected future growth has caused a high charge result for Raleigh, Repton, Mylestom and Fernmount. The existing infrastructure has been sized for a higher existing ET and future growth rate. It is therefore not expected the infrastructure will reach full capacity within the 30 year planning period.

Table 7.1 *Recommended Developer Charges for Water*

Water Supply Charge per ET (\$)					
Area	Bellingen	Fernmount	Raleigh North, Repton, Mylestom	Urunga, Raleigh South	Dorrigo
Calculated Charge	\$ 4,727	\$ 2,360	\$ 9,936	\$ 4,307	\$ 4,384
Recommended Charge	\$ 4,727	\$ 2,360	\$ 9,936	\$ 4,307	\$ 4,384

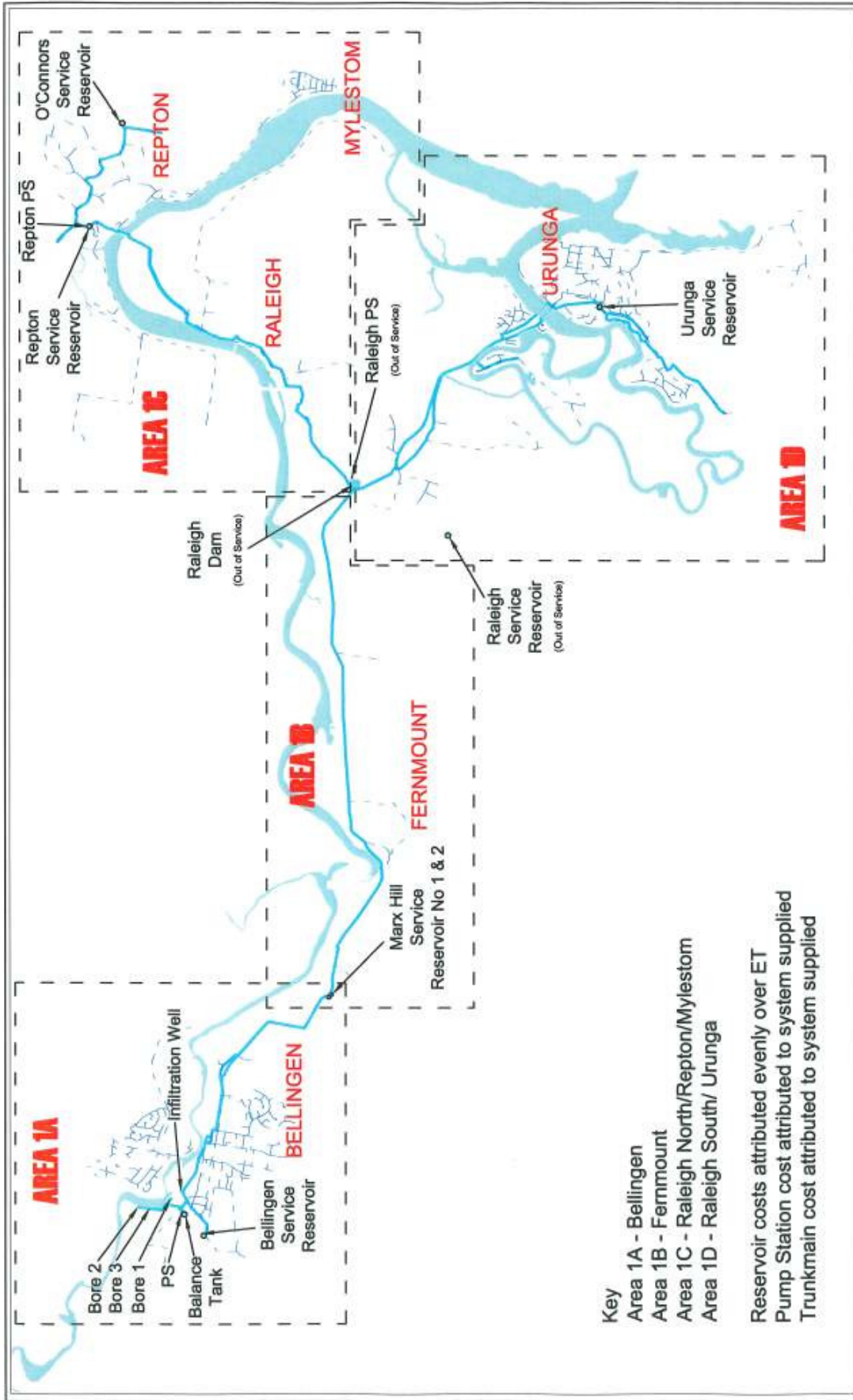
Table 7.2 *Recommended Developer Charges for Sewer*

Sewerage Charge per ET (\$)			
Area	Bellingen	Dorrigo	Urunga
Calculated Charge	\$ 4,326	\$ 5,231	\$ 2,088
Recommended Charge	\$ 4,326	\$ 5,231	\$ 2,088

8.0 REFERENCES

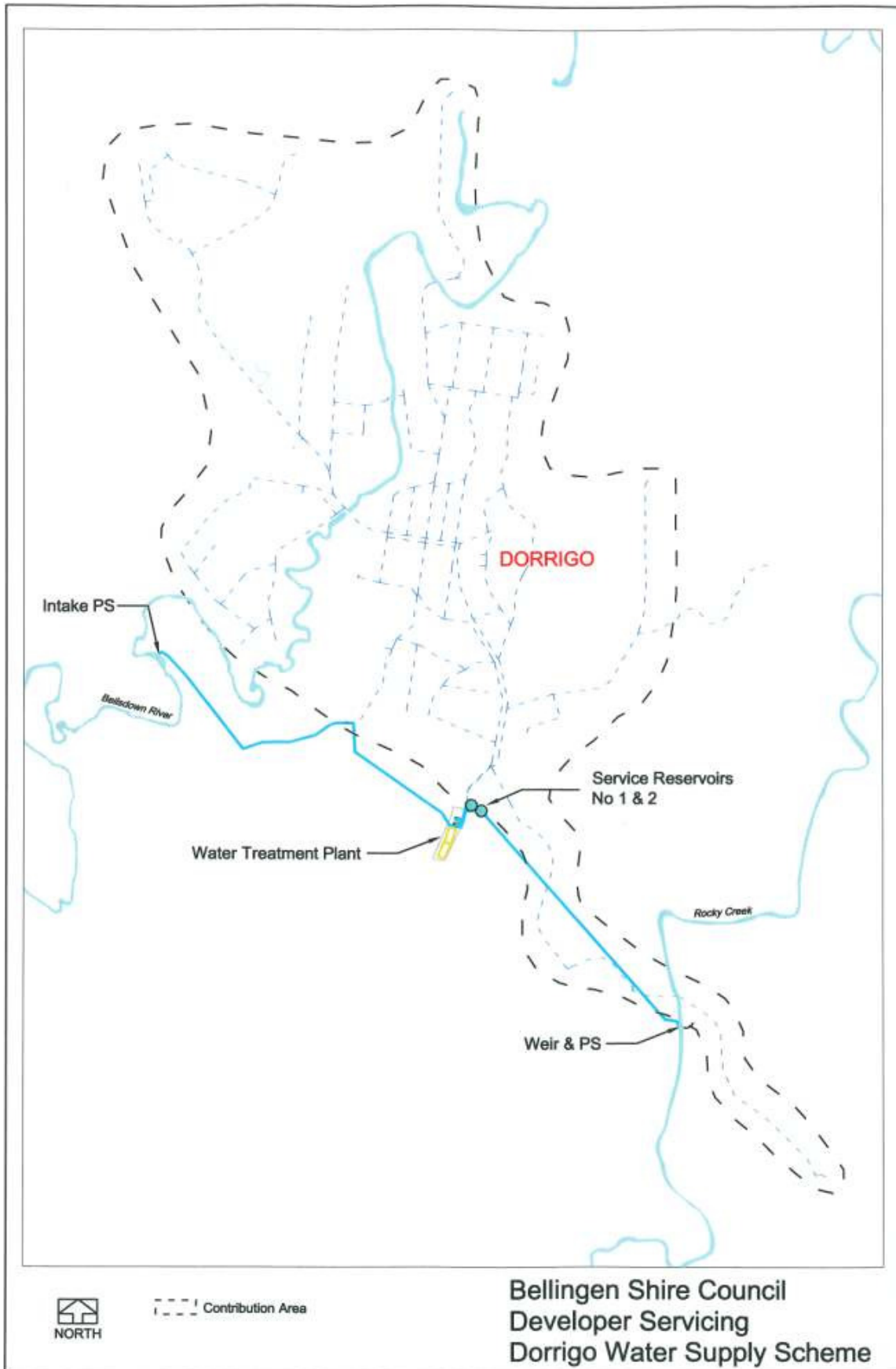
- [1] Public Works Department of New South Wales (September 1992), *Bellingen Shire Council Assessment of Section 94 Contributions for Sewerage*.
- [2] Public Works Department of New South Wales (September 1992), *Bellingen Shire Council Assessment of Section 94 Contributions for Water Supply*.
- [3] Independent Pricing Regulatory Tribunal of New South Wales (September 2000), *Developer Charges, Determination No 9, 2000*.
- [4] Department of Energy, Utilities and Sustainability (May 2004) *Developer Charges for Water Supply, Sewerage and Stormwater, Guidelines*.
- [5] New South Wales Public Works Department (September 1996), *Water Supply Investigation Manual*.
- [6] New South Wales Public Works Department (January 1987), *Manual of Practice, Sewer Design*.

Appendix A

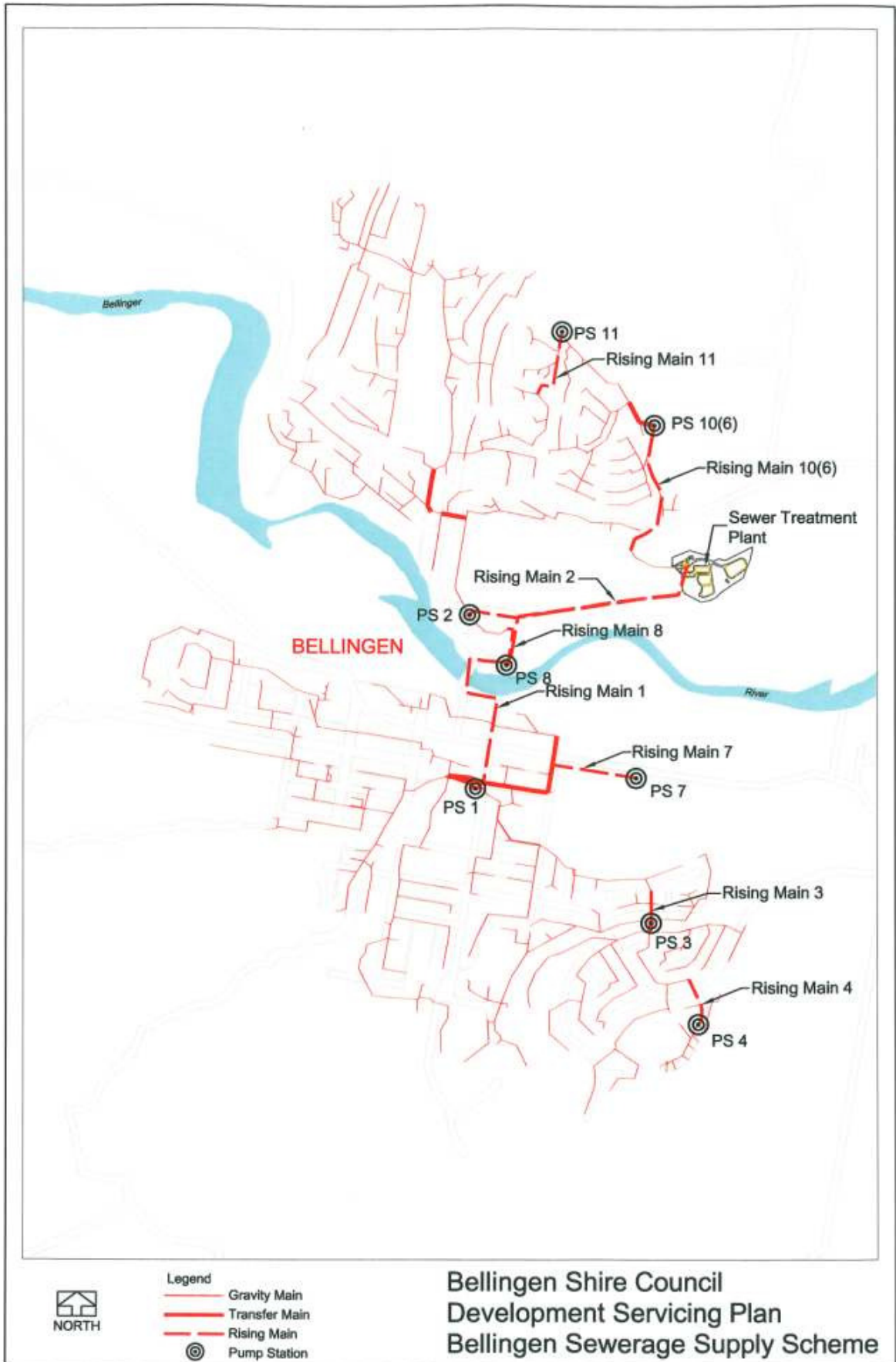


Bellinghen Shire Council
Developer Servicing
Lower Bellinghen Water Supply Scheme

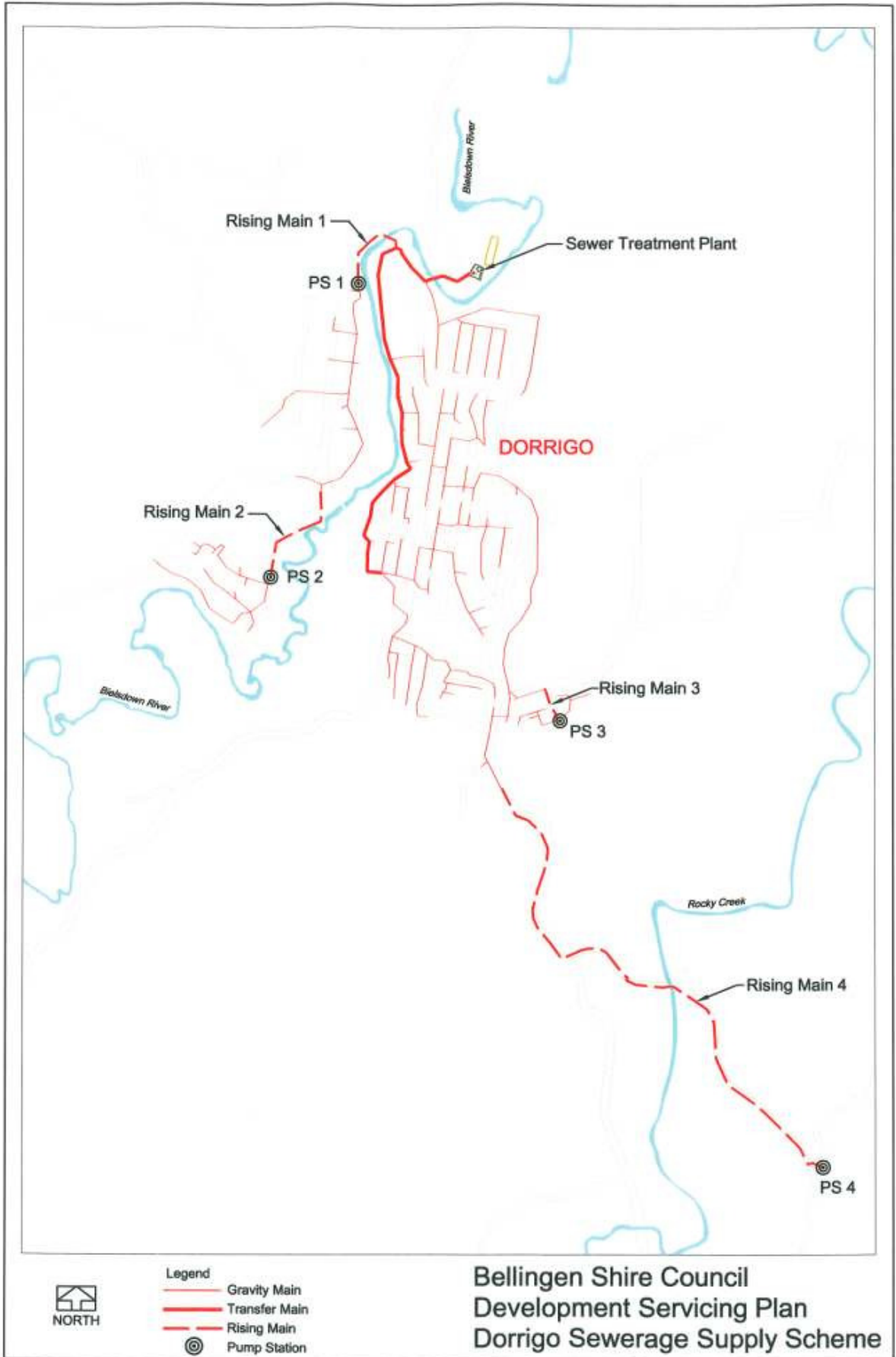
Appendix B



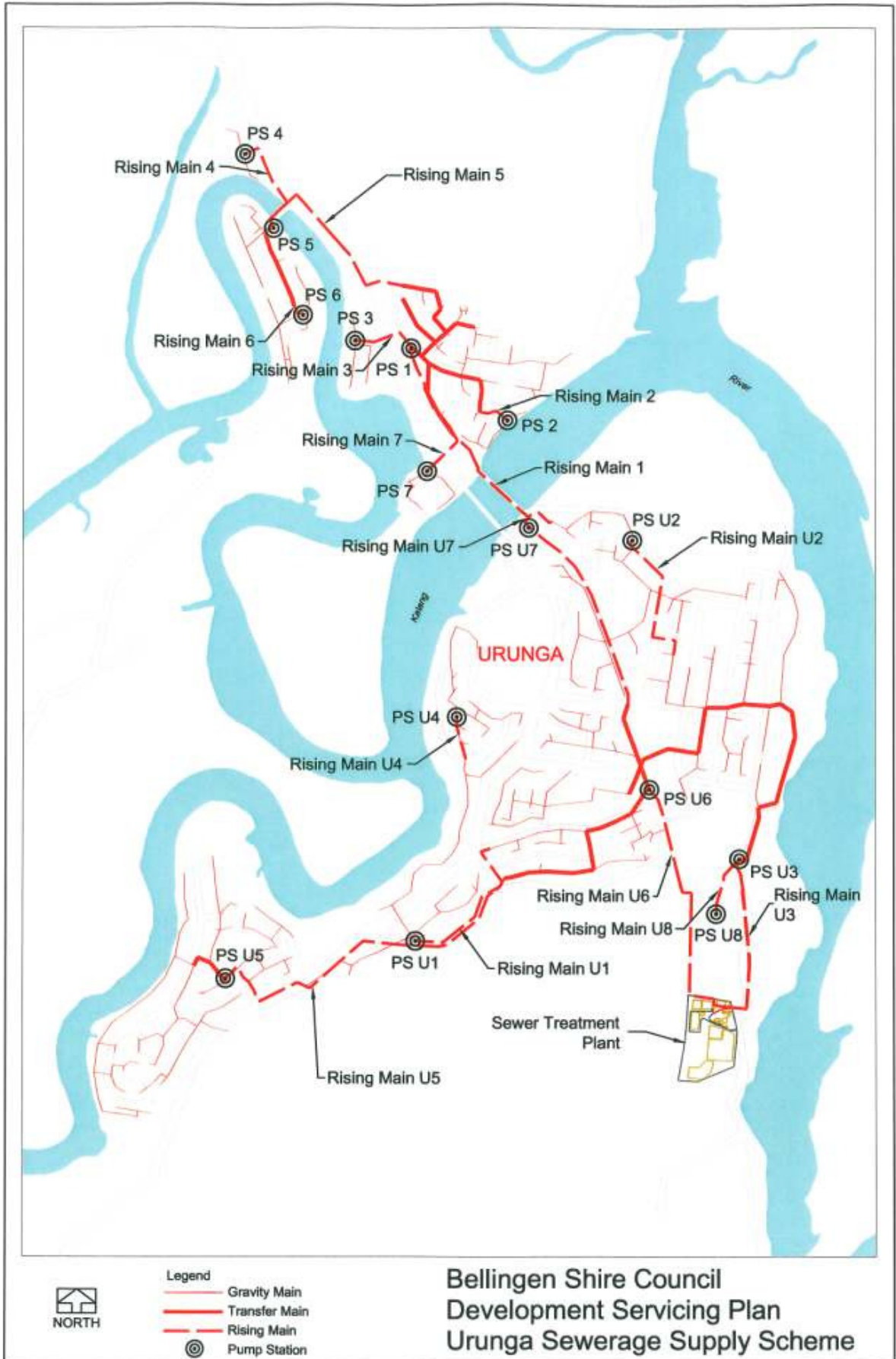
Appendix C



Appendix D



Appendix E



Appendix F

Bellingen Water Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Headworks - PS	1982	1996	50	216	216	108	1680	\$ 64.29	2035	30	3	1.49	\$ 95.53
Headworks - Mains	1982	1996	50	86	86	43	1680	\$ 25.60	2035	30	3	1.49	\$ 38.03
Chlorine Lime	1986	1996	50	88	88	44	1680	\$ 26.19	2035	30	3	1.49	\$ 38.92
Reservoirs Balance Tank - Roof	1989	1996	50	40	40	20	1680	\$ 11.90	2035	30	3	1.49	\$ 17.69
Bellingen Reservoir - Roof	1993	1996	50	70	70	35	1680	\$ 20.83	2035	30	3	1.49	\$ 30.96
Distribution - Site/Civil	1984	1996	50	33.6	33.6	16.8	1680	\$ 10.00	2035	30	3	1.49	\$ 14.86
Distribution - Bellingen PS	1984	1996	50	180	180	90	1680	\$ 53.57	2035	30	3	1.49	\$ 79.61
Trunk Mains - Shared (PS - Marx Hill)	1984	1996	50	420.8	420.8	210.4	1680	\$ 125.24	2035	30	3	1.49	\$ 186.10
Trunk Mains - Non Shared (PS - Bellingen)	1984	1996	50	50	50	25	1680	\$ 14.88	2035	30	3	1.49	\$ 22.11
Capital Charge per ET													\$ 523.81

Future Works

						Discount Rate	7%
Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	NPV of Expenditure (@ 7%) (\$'000)	Number of New Lots (ETs)	NPV New Lots (ETs)	
1	2006/07	12	1.00	12	14	14	
2	2007/08	98	0.93	92	14	13	
3	2008/09	0	0.87	0	14	12	
4	2009/10	0	0.82	0	14	11	
5	2010/11	500	0.76	381	14	11	
6	2011/12	0	0.71	0	14	10	
7	2012/13	0	0.67	0	14	9	
8	2013/14	66	0.62	41	14	9	
9	2014/15	0	0.58	0	14	8	
10	2015/16	0	0.54	0	15	8	
11	2016/17	0	0.51	0	14	7	
12	2017/18	0	0.48	0	14	7	
13	2018/19	6	0.44	3	14	6	
14	2019/20	1166	0.41	484	14	6	
15	2020/21	0	0.39	0	14	5	
16	2021/22	0	0.36	0	14	5	
17	2022/23	0	0.34	0	14	5	
18	2023/24	6	0.32	2	14	4	
19	2024/25	0	0.30	0	14	4	
20	2025/26	0	0.28	0	14	4	
21	2026/27	0	0.26	0	15	4	
22	2027/28	0	0.24	0	14	3	
23	2028/29	6	0.23	1	14	3	
24	2029/30	0	0.21	0	14	3	
25	2030/31	0	0.20	0	14	3	
26	2031/32	0	0.18	0	14	3	
27	2032/33	0	0.17	0	14	2	
28	2033/34	6	0.16	1	14	2	
29	2034/35	0	0.15	0	14	2	
30	2035/36	0	0.14	0	14	2	
Total		1,866		1,017	422	187	
Capital Charge per ET						\$ 5,446.84	

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 523.81
	Future Works	\$ 5,446.84
	Total	\$ 5,971.00
	Reduction Amount	\$ 1,244.00
	Developer Charge	\$ 4,727.00

Fernmount Water Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Headworks - PS	1982	1996	50	16.2	16.2	8.1	126	\$ 64.29	2035	30	3	1.49	\$ 95.53
Headworks - Mains	1982	1996	50	6.45	6.45	3.225	126	\$ 25.60	2035	30	3	1.49	\$ 38.03
Chlorine Lime	1996	1996	50	6.6	6.6	3.3	126	\$ 26.19	2035	30	3	1.49	\$ 38.92
Reservoirs Balance Tank - Roof	1989	1996	50	3	3	1.5	126	\$ 11.90	2035	30	3	1.49	\$ 17.69
Marx Hill Reservoir 1 - Roof	1984	1996	50	4.5	4.5	2.25	126	\$ 17.86	2035	30	3	1.49	\$ 26.54
Marx Hill Reservoir 2	1986	1996	50	36.25	36.25	18.125	126	\$ 143.85	2035	30	3	1.49	\$ 213.76
Distribution - Site/Civil	1984	1996	50	2.52	2.52	1.26	126	\$ 10.00	2035	30	3	1.49	\$ 14.86
Distribution - Marx Hill PS	1984	1996	50	13.25	13.25	6.625	126	\$ 52.58	2035	30	3	1.49	\$ 78.13
Trunk Mains - Shared (PS - Marx Hill)	1984	1996	50	31.56	31.56	15.78	126	\$ 125.24	2035	30	3	1.49	\$ 186.10
Trunk Mains - Shared (Marx Hill - Raleigh Dam)	1984	1996	50	0.9	0.9	0.45	126	\$ 3.57	2035	30	3	1.49	\$ 5.31
Capital Charge per ET													\$ 714.87

Future Works

				Discount Rate		7%
Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	NPV of Expenditure (@ 7%) (\$'000)	Number of New Lots (ETs)	NPV New Lots (ETs)
1	2006/07	0.9	1.00	1	1	1
2	2007/08	12.9	0.93	12	1	1
3	2008/09	0	0.87	0	1	1
4	2009/10	0	0.82	0	1	1
5	2010/11	0	0.76	0	1	1
6	2011/12	0	0.71	0	1	1
7	2012/13	0	0.67	0	1	1
8	2013/14	10.5	0.62	7	1	1
9	2014/15	0	0.58	0	1	1
10	2015/16	0	0.54	0	1	1
11	2016/17	10	0.51	5	1	1
12	2017/18	7.5	0.48	4	1	0
13	2018/19	13.5	0.44	6	1	0
14	2019/20	0	0.41	0	1	0
15	2020/21	0	0.39	0	1	0
16	2021/22	0	0.36	0	1	0
17	2022/23	0	0.34	0	1	0
18	2023/24	6	0.32	2	1	0
19	2024/25	0	0.30	0	1	0
20	2025/26	0	0.28	0	1	0
21	2026/27	0	0.26	0	1	0
22	2027/28	0	0.24	0	1	0
23	2028/29	6	0.23	1	1	0
24	2029/30	0	0.21	0	1	0
25	2030/31	0	0.20	0	1	0
26	2031/32	0	0.18	0	1	0
27	2032/33	0	0.17	0	1	0
28	2033/34	6	0.16	1	1	0
29	2034/35	0	0.15	0	1	0
30	2035/36	0	0.14	0	1	0
Total		73		38	30	13
Capital Charge per ET						\$ 2,888.69

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 714.87
	Future Works	\$ 2,888.69
	Total	\$ 3,604.00
	Reduction Amount	\$ 1,244.00
	Developer Charge	\$ 2,360.00

Raleigh North/Repton/Mylestom Water Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Head Works - PS	1982	1996	50	86.4	86.4	43.2	672	\$ 64.29	2035	30	3	1.49	\$ 95.53
Headworks - Mains	1982	1996	50	34.4	34.4	17.2	672	\$ 25.60	2035	30	3	1.49	\$ 38.03
Chlorine Lime	1986	1996	50	35.2	35.2	17.6	672	\$ 26.19	2035	30	3	1.49	\$ 38.92
Reservoirs Balance Tank - Roof	1989	1996	50	16	16	8	672	\$ 11.90	2035	30	3	1.49	\$ 17.69
Marx Hill Reservoir 1 - Roof	1984	1996	50	24.3	24.3	12.15	672	\$ 18.08	2035	30	3	1.49	\$ 26.87
Marx Hill Reservoir 2	1986	1996	50	195.75	195.75	97.875	672	\$ 145.65	2035	30	3	1.49	\$ 216.43
Repton Reservoir - Roof	1984	1996	50	50	50	25	672	\$ 37.20	2035	30	3	1.49	\$ 55.28
Raleigh Dam	1986	1996	50	108	108	54	672	\$ 80.36	2035	30	3	1.49	\$ 119.41
Riddels Reservoir	1986	1996	50	342	342	171	672	\$ 254.46	2035	30	3	1.49	\$ 378.13
O'Connors Reservoir	1986	1996	50	701.5	701.5	350.75	672	\$ 521.95	2035	30	3	1.49	\$ 775.62
Distribution - Site/Civil	1984	1996	50	13.44	13.44	6.72	672	\$ 10.00	2035	30	3	1.49	\$ 14.86
Distribution - Marx Hill PS	1984	1996	50	71.55	71.55	35.775	672	\$ 53.24	2035	30	3	1.49	\$ 79.11
Distribution - Repton PS	1984	1996	50	168	168	84	672	\$ 125.00	2035	30	3	1.49	\$ 185.75
Distribution - Raleigh PS	1984	1996	50	97.5	97.5	48.75	672	\$ 72.54	2035	30	3	1.49	\$ 107.80
Trunk Mains - Shared (PS - Marx Hill)	1984	1996	50	168.32	168.32	84.16	672	\$ 125.24	2035	30	3	1.49	\$ 186.10
Trunk Mains - Shared (Marx Hill - Raleigh Dam)	1984	1996	50	4.86	4.86	2.43	672	\$ 3.62	2035	30	3	1.49	\$ 5.37
Trunk Mains - Non Shared (Raleigh Dam - Repton Res, Repton Res - O'Connors, O'Connors - Mylestom)	1984	1996	50	1485	1485	742.5	672	\$ 1,104.91	2035	30	3	1.49	\$ 1,641.89
Capital Charge per ET													\$ 3,982.81

Future Works

Year Number	Year	Estimated Expenditure (2000/01)(\$'000)	PW Factor	Discount Rate		NPV New Lots (ETs)
					7%	
1	2006/07	4.8	1.00	5	2	2
2	2007/08	102.8	0.93	96	2	2
3	2008/09	0	0.87	0	2	2
4	2009/10	0	0.82	0	2	2
5	2010/11	0	0.76	0	2	2
6	2011/12	0	0.71	0	2	1
7	2012/13	0	0.67	0	2	1
8	2013/14	30	0.62	19	2	1
9	2014/15	0	0.58	0	2	1
10	2015/16	0	0.54	0	2	1
11	2016/17	54	0.51	27	2	1
12	2017/18	40.5	0.48	19	2	1
13	2018/19	46.5	0.44	21	2	1
14	2019/20	0	0.41	0	2	1
15	2020/21	0	0.39	0	2	1
16	2021/22	0	0.36	0	2	1
17	2022/23	0	0.34	0	2	1
18	2023/24	6	0.32	2	2	1
19	2024/25	0	0.30	0	2	1
20	2025/26	0	0.28	0	2	1
21	2026/27	0	0.26	0	2	1
22	2027/28	0	0.24	0	2	0
23	2028/29	6	0.23	1	2	0
24	2029/30	0	0.21	0	2	0
25	2030/31	0	0.20	0	2	0
26	2031/32	0	0.18	0	2	0
27	2032/33	0	0.17	0	2	0
28	2033/34	6	0.16	1	2	0
29	2034/35	0	0.15	0	2	0
30	2035/36	0	0.14	0	2	0
Total		297		191	60	27
Capital Charge per ET						\$ 7,196.86

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 3,982.81
	Future Works	\$ 7,196.86
	Total	\$ 11,180.00
	Reduction Amount	\$ 1,244.00
	Developer Charge	\$ 9,936.00

Raleigh South/Urunga Water Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Headworks - PS	1982	1996	50	221.4	221.4	221.4	1722	\$ 64.29	2035	30	3	1.49	\$ 95.53
Headworks - Mains	1982	1996	50	88.15	88.15	88.15	1722	\$ 25.60	2035	30	3	1.49	\$ 38.03
Chlorine Lime	1986	1996	50	90.2	90.2	90.2	1722	\$ 26.19	2035	30	3	1.49	\$ 38.92
Reservoirs Balance Tank - Roof	1989	1996	50	41	41	41	1722	\$ 11.90	2035	30	3	1.49	\$ 17.69
Marx Hill Reservoir 1 - Roof	1984	1996	50	61.2	61.2	61.2	1722	\$ 17.77	2035	30	3	1.49	\$ 26.41
Marx Hill Reservoir 2	1986	1996	50	493	493	493	1722	\$ 143.15	2035	30	3	1.49	\$ 212.72
Urunga Reservoir - Roof	1984	1996	50	54	54	54	1722	\$ 15.68	2035	30	3	1.49	\$ 23.30
Raleigh Dam	1986	1996	50	252	252	252	1722	\$ 73.17	2035	30	3	1.49	\$ 108.73
Riddels Reservoir	1986	1996	50	798	798	798	1722	\$ 231.71	2035	30	3	1.49	\$ 344.32
Distribution - Site/Civil	1984	1996	50	34.44	34.44	34.44	1722	\$ 10.00	2035	30	3	1.49	\$ 14.86
Distribution - Marx Hill PS	1984	1996	50	180.2	180.2	180.2	1722	\$ 52.32	2035	30	3	1.49	\$ 77.75
Distribution - Raleigh PS	1984	1996	50	227.5	227.5	227.5	1722	\$ 66.06	2035	30	3	1.49	\$ 98.16
Distribution - Harmony Glen Booster	1990	1996	50	120	120	120	1722	\$ 34.84	2035	30	3	1.49	\$ 51.78
Trunk Mains - Shared (PS - Marx Hill)	1984	1996	50	431.32	431.32	431.32	1722	\$ 125.24	2035	30	3	1.49	\$ 186.10
Trunk Mains - Shared (Marx Hill - Raleigh Dam)	1984	1996	50	12.24	12.24	12.24	1722	\$ 3.55	2035	30	3	1.49	\$ 5.28
Trunk Mains - Non Shared (Raleigh Dam - Urunga Res, Urunga Res - South Urunga)	1984	1996	50	3235	3235	3235	1722	\$ 939.31	2035	30	3	1.49	\$ 1,395.82
Capital Charge per ET													\$ 2,735.40

Future Works

Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	Discount Rate		NPV New Lots (ETs)
				NPV of Expenditure (@ 7%) (\$'000)	7%	
1	2006/07	12.3	1.00	12	12	12
2	2007/08	240.3	0.93	225	12	11
3	2008/09	0	0.87	0	12	10
4	2009/10	0	0.82	0	12	10
5	2010/11	0	0.76	0	12	9
6	2011/12	0	0.71	0	12	9
7	2012/13	0	0.67	0	12	8
8	2013/14	67.5	0.62	42	12	7
9	2014/15	0	0.58	0	12	7
10	2015/16	0	0.54	0	12	7
11	2016/17	136	0.51	69	12	6
12	2017/18	102	0.48	48	12	6
13	2018/19	108	0.44	48	12	5
14	2019/20	0	0.41	0	12	5
15	2020/21	0	0.39	0	12	5
16	2021/22	0	0.36	0	12	4
17	2022/23	0	0.34	0	12	4
18	2023/24	6	0.32	2	12	4
19	2024/25	0	0.30	0	12	4
20	2025/26	0	0.28	0	12	3
21	2026/27	0	0.26	0	12	3
22	2027/28	0	0.24	0	12	3
23	2028/29	6	0.23	1	12	3
24	2029/30	0	0.21	0	12	3
25	2030/31	0	0.20	0	12	2
26	2031/32	0	0.18	0	12	2
27	2032/33	0	0.17	0	12	2
28	2033/34	6	0.16	1	12	2
29	2034/35	0	0.15	0	12	2
30	2035/36	0	0.14	0	12	2
Total		684		449	360	159
Capital Charge per ET						\$ 2,816.02

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 2,735.40
	Future Works	\$ 2,816.02
	Total	\$ 5,551.00
	Reduction Amount	\$ 1,244.00
	Developer Charge	\$ 4,307.00

Dorrigo Water Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Treatment Plant	1993	1996	50	1800	1800	900	425	\$ 2,117.65		30	3	1.49	\$ 3,146.82
Headwork PS	1993	1996	50	240	240	120	425	\$ 282.35		30	3	1.49	\$ 419.58
Headworks Mains	1993	1996	50	276	276	138	425	\$ 324.71		30	3	1.49	\$ 482.51
Reservoir 1 Steel Roof	1974	1996	50	84	84	42	425	\$ 98.82		30	3	1.49	\$ 146.85
Reservoir 2	1993	1996	50	586.5	586.5	293.25	425	\$ 690.00		30	3	1.49	\$ 1,025.34
Trunk Mains	1974	1996	50	105	105	52.5	425	\$ 123.53		30	3	1.49	\$ 183.56
Capital Charge per ET													\$ 5,404.66

Future Works

					Discount Rate	7%
Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	NPV of Expenditure (@ 7%) (\$'000)	Number of New Lots (ETs)	NPV New Lots (ETs)
1	2006/07	0	1.00	0	5	5
2	2007/08	6	0.93	6	6	6
3	2008/09	0	0.87	0	5	4
4	2009/10	0	0.82	0	6	5
5	2010/11	0	0.76	0	5	4
6	2011/12	0	0.71	0	6	4
7	2012/13	0	0.67	0	5	3
8	2013/14	6	0.62	4	6	4
9	2014/15	0	0.58	0	5	3
10	2015/16	0	0.54	0	6	3
11	2016/17	0	0.51	0	5	3
12	2017/18	0	0.48	0	6	3
13	2018/19	6	0.44	3	5	2
14	2019/20	0	0.41	0	6	2
15	2020/21	0	0.39	0	5	2
16	2021/22	0	0.36	0	6	2
17	2022/23	0	0.34	0	5	2
18	2023/24	6	0.32	2	6	2
19	2024/25	0	0.30	0	5	1
20	2025/26	0	0.28	0	6	2
21	2026/27	0	0.26	0	5	1
22	2027/28	0	0.24	0	6	1
23	2028/29	6	0.23	1	5	1
24	2029/30	0	0.21	0	6	1
25	2030/31	0	0.20	0	5	1
26	2031/32	0	0.18	0	6	1
27	2032/33	0	0.17	0	5	1
28	2033/34	6	0.16	1	6	1
29	2034/35	0	0.15	0	5	1
30	2035/36	0	0.14	0	6	1
Total		36		16	165	73
Capital Charge per ET						\$ 222.89

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 5,404.66
	Future Works	\$ 222.89
	Total	\$ 5,628.00
	Reduction Amount	\$ 1,244.00
	Developer Charge	\$ 4,384.00

Appendix G

Bellingen Sewerage Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Treatment Plant - Upgrade	1994	1994	50	3316	3316	1658	1600	\$ 1,036.25	2035	30	3	1.49	\$ 1,539.87
Errosion Protection	1997	1996	50	162	162	81	1600	\$ 50.63	2035	30	3	1.49	\$ 75.23
Pump Stations - Augmentation	1987	1996	50	1093	1093	546.5	1600	\$ 341.56	2035	30	3	1.49	\$ 507.56
Rising Mains	1990	1996	50	610	610	305	1600	\$ 190.63	2035	30	3	1.49	\$ 283.27
Trunk Mains	1971	1996	50	85	85	42.5	1600	\$ 26.56	2035	30	3	1.49	\$ 39.47
Capital Charge per ET													\$ 2,445.40

Future Works

						Discount Rate	7%
Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	NPV of Expenditure (@ 7%) (\$'000)	Number of New Lots (ETs)	NPV New Lots (ETs)	
1	2006/07	0	1.00	0	14	14	
2	2007/08	10	0.93	9	14	13	
3	2008/09	0	0.87	0	14	12	
4	2009/10	0	0.82	0	14	11	
5	2010/11	0	0.76	0	14	11	
6	2011/12	0	0.71	0	14	10	
7	2012/13	10	0.67	7	14	9	
8	2013/14	0	0.62	0	14	9	
9	2014/15	0	0.58	0	14	8	
10	2015/16	0	0.54	0	15	8	
11	2016/17	0	0.51	0	14	7	
12	2017/18	0	0.48	0	14	7	
13	2018/19	0	0.44	0	14	6	
14	2019/20	1610	0.41	668	14	6	
15	2020/21	0	0.39	0	14	5	
16	2021/22	0	0.36	0	14	5	
17	2022/23	10	0.34	3	14	5	
18	2023/24	0	0.32	0	14	4	
19	2024/25	0	0.30	0	14	4	
20	2025/26	0	0.28	0	14	4	
21	2026/27	0	0.26	0	15	4	
22	2027/28	10	0.24	2	14	3	
23	2028/29	0	0.23	0	14	3	
24	2029/30	0	0.21	0	14	3	
25	2030/31	0	0.20	0	14	3	
26	2031/32	0	0.18	0	14	3	
27	2032/33	10	0.17	2	14	2	
28	2033/34	0	0.16	0	14	2	
29	2034/35	0	0.15	0	14	2	
30	2035/36	0	0.14	0	14	2	
Total		1,660		692	422	187	
Capital Charge per ET						\$ 3,704.68	

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 2,445.40
	Future Works	\$ 3,704.68
	Total	\$ 6,150.00
	Reduction Amount	\$ 1,824.00
	Developer Charge	\$ 4,326.00

Dorrigo Sewerage Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$000)	PV of Capital Cost (07/08) (\$000)	PV Claimable (\$000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Treatment Plant	1970	1996	50	1830	1830	915	800	\$ 1,143.75	2035	30	3	1.49	\$ 1,699.61
Capital Charge per ET													\$ 1,699.61

Future Works

Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	Discount Rate		NPV New Lots (ETs)
				NPV of Expenditure (@ 7%) (\$'000)	7%	
1	2006/07	0	1.00	0	5	5
2	2007/08	10	0.93	9	6	6
3	2008/09	0	0.87	0	5	4
4	2009/10	0	0.82	0	6	5
5	2010/11	0	0.76	0	5	4
6	2011/12	0	0.71	0	6	4
7	2012/13	10	0.67	7	5	3
8	2013/14	0	0.62	0	6	4
9	2014/15	0	0.58	0	5	3
10	2015/16	0	0.54	0	6	3
11	2016/17	0	0.51	0	5	3
12	2017/18	0	0.48	0	6	3
13	2018/19	0	0.44	0	5	2
14	2019/20	10	0.41	4	6	2
15	2020/21	0	0.39	0	5	2
16	2021/22	1000	0.36	362	6	2
17	2022/23	0	0.34	0	5	2
18	2023/24	10	0.32	3	6	2
19	2024/25	0	0.30	0	5	1
20	2025/26	0	0.28	0	6	2
21	2026/27	0	0.26	0	5	1
22	2027/28	10	0.24	2	6	1
23	2028/29	0	0.23	0	5	1
24	2029/30	0	0.21	0	6	1
25	2030/31	0	0.20	0	5	1
26	2031/32	0	0.18	0	6	1
27	2032/33	10	0.17	2	5	1
28	2033/34	0	0.16	0	6	1
29	2034/35	0	0.15	0	5	1
30	2035/36	0	0.14	0	6	1
Total		1,060		390	165	73
Capital Charge per ET						\$ 5,355.68

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 1,699.61
	Future Works	\$ 5,355.68
	Total	\$ 7,055.00
	Reduction Amount	\$ 1,824.00
	Developer Charge	\$ 5,231.00

Urunga Sewerage Supply System

Existing Assets

Component	Year Commenced	Effective Year Commenced	% Recoverable	Total Capital Cost (07/08) (\$'000)	PV of Capital Cost (07/08) (\$'000)	PV Claimable (\$'000)	Capacity (ETs)	Capital Cost per ET (\$/ET)	Year to full take-up	Take-up period (years)	Discount Rate	Return on Investment Factor	Capital Charge per ET (07/08)
Treatment Plant - Trickling Filter	1971	1996	50	840	840	420	2260	\$ 185.84	2035	30	3	1.49	\$ 276.16
Treatment Plant - EAT	1989	1996	50	2704	2704	1352	2260	\$ 598.23	2035	30	3	1.49	\$ 888.97
Pump Stations	1989	1996	50	2660	2660	1330	2260	\$ 588.50	2035	30	3	1.49	\$ 874.50
Rising Mains	1989	1996	50	1145	1145	572.5	2260	\$ 253.32	2035	30	3	1.49	\$ 376.43
Gravity Mains	1989	1996	50	1430	1430	715	2260	\$ 316.37	2035	30	3	1.49	\$ 470.13
Capital Charge per ET													\$ 2,886.19

Future Works

Year Number	Year	Estimated Expenditure (2000/01\$) (\$'000)	PW Factor	Discount Rate		NPV New Lots (ETs)
				NPV of Expenditure (@ 7%) (\$'000)	7%	
1	2006/07	0	1.00	0		10
2	2007/08	10	0.93	9		9
3	2008/09	0	0.87	0		9
4	2009/10	0	0.82	0		8
5	2010/11	0	0.76	0		8
6	2011/12	0	0.71	0		7
7	2012/13	10	0.67	7		7
8	2013/14	0	0.62	0		6
9	2014/15	0	0.58	0		6
10	2015/16	200	0.54	109		5
11	2016/17	0	0.51	0		5
12	2017/18	0	0.48	0		5
13	2018/19	0	0.44	0		4
14	2019/20	10	0.41	4		4
15	2020/21	0	0.39	0		4
16	2021/22	0	0.36	0		4
17	2022/23	0	0.34	0		3
18	2023/24	10	0.32	3		3
19	2024/25	0	0.30	0		3
20	2025/26	0	0.28	0		3
21	2026/27	0	0.26	0		3
22	2027/28	10	0.24	2		2
23	2028/29	0	0.23	0		2
24	2029/30	0	0.21	0		2
25	2030/31	0	0.20	0		2
26	2031/32	0	0.18	0		2
27	2032/33	10	0.17	2		2
28	2033/34	0	0.16	0		2
29	2034/35	0	0.15	0		2
30	2035/36	0	0.14	0		1
Total		260		136		133
Capital Charge per ET						\$ 1,026.15

Calculation of Developer Charge

Capital Charge		
	Existing Assets	\$ 2,886.19
	Future Works	\$ 1,026.15
	Total	\$ 3,912.00
	Reduction Amount	\$ 1,824.00
	Developer Charge	\$ 2,088.00