NSW GOVERNMENT | Public Works

Development Servicing Plan – Water Supply

Bega Valley Shire Council

Adopted 12th June 2013

Bega Valley Shire Council

A division of the Department of Finance & Services

Document Control

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Abbreviations

Abbreviation	Description
ABS	Australian Bureau of Statistics
ADWG	Australian Drinking Water Guidelines
DC	Developer Charges
DCP	Development Control Plan
DSP	Development Servicing Plan
EP	Equivalent Persons
ERP	Estimated Resident Population – the census population of the shire corrected to account for: ▪ people staying in other parts of Australia on census night ▪ an estimate of people overseas on census night ▪ people who did not return the census ▪ an estimate of births, deaths and migration to account for change in population between census night and the 30th of June
ET	Equivalent Tenements (Equal to one occupied residential single detached dwelling)
kL	1,000 Litres
kL/ET/year	Kilolitres per ET per year
L/ET/d	Litres per ET per day
L/s	Litres per second
LOS	Levels of Service
IPART	Independent Pricing and Regulatory Tribunal
LWU	Local Water Utility
NHMRC	National Health and Medical Research Council
NOW	The New South Wales Office of Water, the Office of the NSW Department of Primary Industries responsible for the management of the State's surface and ground water resources
NPV	Net Present Value
NRMMC	Natural Resource Management Ministerial Council
NSW	New South Wales
OMA	Operation, Maintenance and Administration Costs
PDD	Peak Day Demand
PV	Present Value
ROI	Return on Investment
TRB	Typical Residential Bill

Executive Summary

This Development Servicing Plan (DSP) covers water supply developer charges for the following Bega Valley Shire Council service areas:

- The Bega-Tathra Water Supply and Tantawanglo-Kiah Water Supply;
- The Bemboka Water Supply; and
- The Brogo-Bermagui Water Supply.

This DSP has been prepared in accordance with the Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002) issued by the Minister for Land and Water Conservation, pursuant to section 306 (3) of the Water Management Act (2000). This DSP is to be registered with the NSW Office of Water (NOW).

This DSP achieves the following outcomes for Council:

1. Allows Council to require an equitable monetary contribution for the provision of water supply infrastructure to meet the loadings generated by both residential and non-residential development.
2. Facilitate the future provision of water supply services to the Council service area which meets the required levels of service (Section 4) with regard to flows, pressure, water quality, water quantity and the frequency of restrictions.
3. Sets out the schedule of proposed works to meet increasing water supply demands generated by development (Section 3).
4. Details the resultant developer charges and payment policies (Section 5).

A future water supply demand estimate for the Council service areas has been undertaken. This estimate is the basis used for determining the infrastructure required to meet the need generated by future development. The demand estimate is outlined in the supporting document – Population and Water Cycle Projections.

The Council development servicing areas covered by this DSP are outlined in Appendix A. It is to be noted that not all land within the mapped DSP boundary can necessarily be serviced. Individual development proposals are required to provide layouts including elevation details of the proposed allotments to determine if levels of service for water supply will be achievable.

Developer charges are applicable for existing and proposed works which service future development. Section 3 details the existing works and proposed works schedule for water supply infrastructure to service the expected growth.

In its meeting on 12th June 2013, Council resolved to levy developer charges for water supply services lower than the calculated value. The calculated developer charges based on full cost recovery as well as Council's proposed developer charges are shown in Table S1.

Table S1 Bega Valley Shire Council Water Supply Developer Charges

Water Supply Service Area	Calculated Developer Charge / ET ($2012/13)	Proposed Developer Charge / ET ($2012/13)
Bega-Tathra and Tantawanglo-Kiah	10,063	7,500
Bemboka	18,816	7,500
Brogo-Bermagui	17,607	7,500
Weighted Average	**10,975**	**7,500**

Adopting the proposed developer charges and maintaining the current level of Typical Residential Water Bill (TRB) of $540 p.a. for the next 5 years (until 2017/18) will result in $18 per year cross-subsidy by each residential customer over the model forecast period. Note the works schedule has been adjusted to maintain the current level of typical residential water bill for the next 5 years. Figure 1 graphically represents the impact of the proposed developer charges on the typical residential water bill.

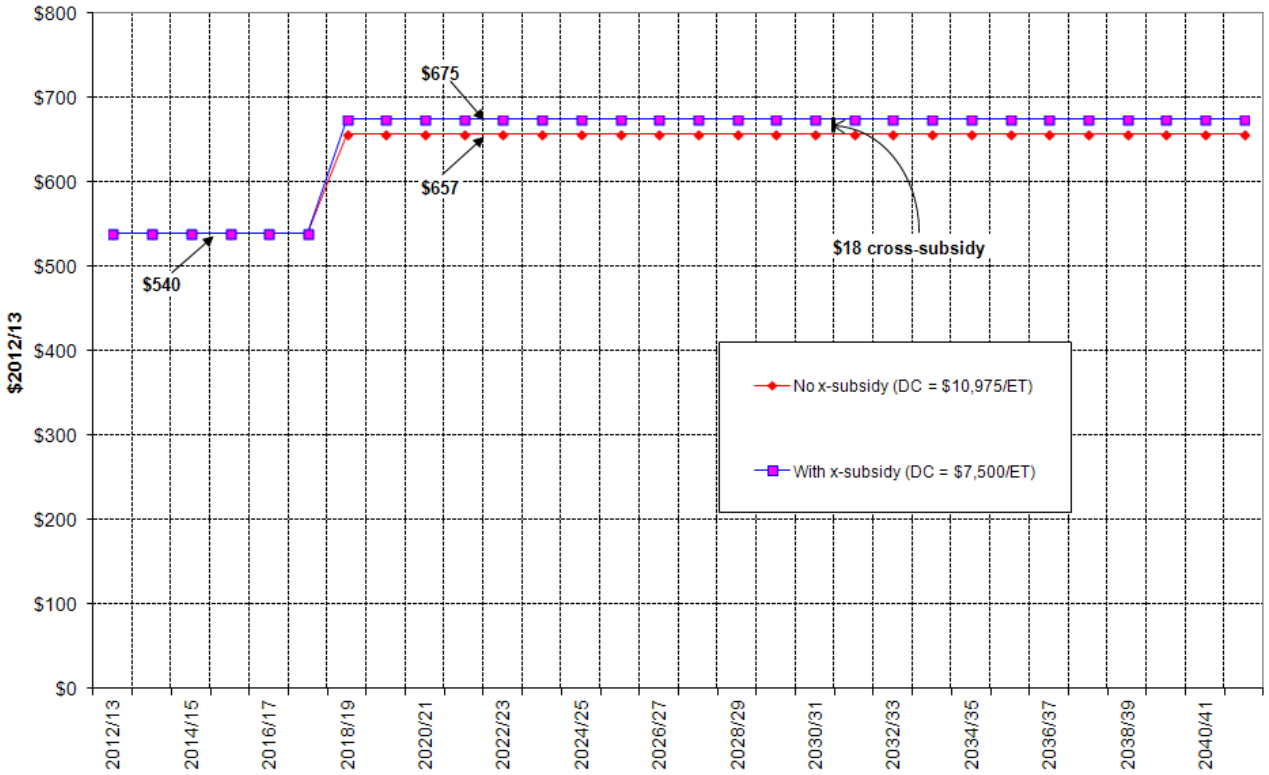

Figure 1 Impact of DC cross subsidy on Typical Residential Water Bill

Developer charges calculations relating to this DSP will be reviewed after a period of five years, or when any significant changes occur in proposed works, growth projections or standards.

In the period between any reviews, developer charges will be revised on 1 July each year on the basis of movements in the Consumer Price Index (CPI) for Sydney, in the preceding 12 months to December, excluding the impact of GST.

The developer shall be responsible for the full cost of the design and construction of water supply reticulation works within subdivisions and associated infrastructure (e.g. lead-in mains, reservoirs etc.) not contained in the proposed works schedule (Section 3).

1 Introduction

Section 64 of the *Local Government Act 1993* enables a local government council to levy developer charges for water supply, sewerage and stormwater. This derives from a cross-reference in that Act to Section 306 of the *Water Management Act 2000*.

A Development Servicing Plan (DSP) documents developer charges (DC) payable by developers to water utilities for water supply, sewerage and stormwater. This DSP for water supply services achieves the following outcomes for Council:

1. Allows Council to require an equitable monetary contribution for the provision of water supply infrastructure to meet the demands generated by both residential and non-residential development.
2. Facilitate the future provision of water supply services to the Council service area which meets the required levels of service (Section 4) regard to flows, pressure, water quality, water quantity and the frequency of restrictions.
3. Sets out the schedule of proposed works to meet increasing water demands generated by development (Section 3).
4. Details the resultant developer charges and payment policies (Section 5).

This DSP covers water supply developer charges for the following Bega Valley Shire Council service areas:

- The Bega-Tathra Water Supply and Tantawanglo-Kiah Water Supply;
- The Bemboka Water Supply; and
- The Brogo-Bermagui Water Supply.

Figure 2 shows the Bega Valley Shire Council Area. The development servicing areas covered by this DSP are outlined in Appendix A. It is to be noted that not all land within the mapped DSP boundary can necessarily be serviced. Individual development proposals are required to provide layouts including elevation details of the proposed allotments to determine if levels of service for water supply will be achievable.

This DSP has been prepared in accordance with the Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002) issued by the Minister for Land and Water Conservation, pursuant to section 306 (3) of the Water Management Act (2000). This DSP is to be registered with the NSW Office of Water (NOW).

This DSP was adopted by Bega Valley Shire Council on 12th June 2013 and came into effect on 1st July 2013.

DC will be levied pursuant to this DSP, as a condition of development consent granted on or after the day this DSP came into effect.

This DSP supersedes any other requirements related to water supply DC for the area covered by this DSP. This DSP takes precedence over any of Bega Valley Shire Council's codes or policies where there are any inconsistencies relating to water supply DC. (The term "Developer Contributions" may formerly have been used to refer to Developer Charges.)

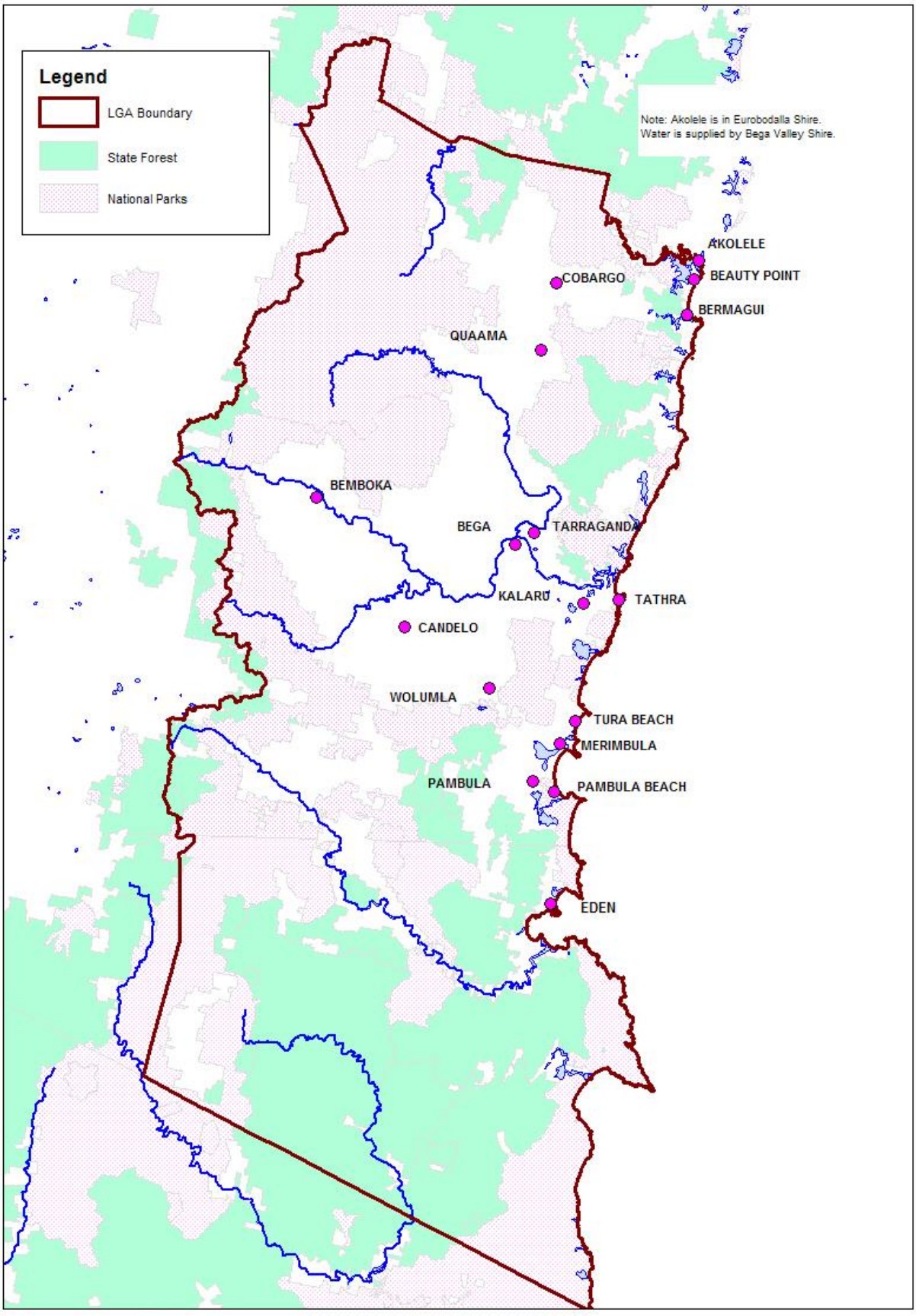

Figure 2 Bega Valley Shire

2 Demographic Information

2.1 Growth Projections

A future water supply growth estimate for the Council service areas has been undertaken. This estimate was the basis used for determining the infrastructure required to meet the need generated by future development. The water supply growth estimate has taken the following factors into account as part of the analysis:

- Historical ABS information;
- Historical spatial and temporal trends in water usage; and
- Utilisation of Council's demographic projections (via the consultant ForecastID) for the quantum and timing of growth while consulting with Council's Planning Department for identification of which growth is relevant for the serviced water supply areas.

Details relating to the water supply growth estimate are outlined in the supporting document – Population and Water Cycle Projections. Table 2-1, Table 2-2 and Table 2-3 show the projected permanent equivalent tenements (ET) for the water supply service areas.

Table 2-1: Projected Permanent Residential ET

Water Supply Service Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega-Tathra and Tantawanglo-Kiah	7,728	8,085	8,462	8,856	9,541	0.8%
Bemboka	120	124	128	132	145	0.7%
Brogo-Bermagui	1,110	1,174	1,264	1,362	1,566	1.3%
All	**8,958**	**9,383**	**9,854**	**10,350**	**11,252**	**0.8%**

Table 2-2: Projected Permanent Non-Residential ET

Water Supply Service Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega-Tathra and Tantawanglo-Kiah	1,309	1,398	1,484	1,544	1,596	0.7%
Bemboka	18	18	18	19	19	0.2%
Brogo-Bermagui	190	194	203	216	241	0.9%
All	**1,517**	**1,610**	**1,705**	**1,779**	**1,856**	**0.7%**

Table 2-3: Projected Permanent Total ET

Water Supply Service Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega-Tathra and Tantawanglo-Kiah	9,037	9,483	9,946	10,400	11,137	0.8%
Bemboka	138	142	146	151	164	0.6%
Brogo-Bermagui	1,300	1,368	1,467	1,578	1,807	1.3%
All	**10,475**	**10,993**	**11,559**	**12,129**	**13,108**	**0.8%**

3 Water Supply Infrastructure

3.1 Assets Relevant to this DSP

The existing and proposed water supply assets servicing the areas covered by this DSP are listed in Appendix C.

3.2 Estimates of Capital Costs

A capital works program consisting of works to improve levels of service, meet growth demand and to renew and replace existing assets has been developed for the next 30 years. Table 3-1 shows the summary of costs for these types of assets while the detailed water supply capital works program and the associated costs can be seen in Appendix B.

Table 3-1: Summary of Water Supply Capital Works

Type of Sewerage Capital Works	Capital Cost over 30 years ($M)
Works to Improve Levels of Service	$66.5
New Assets for Growth	$42.1
Renewals / Replacements	$52.5
Total	**$161.1**

3.3 Works Program and Expenditure

The 30-year annual capital works expenditure for water supply is shown graphically in Figure 3.

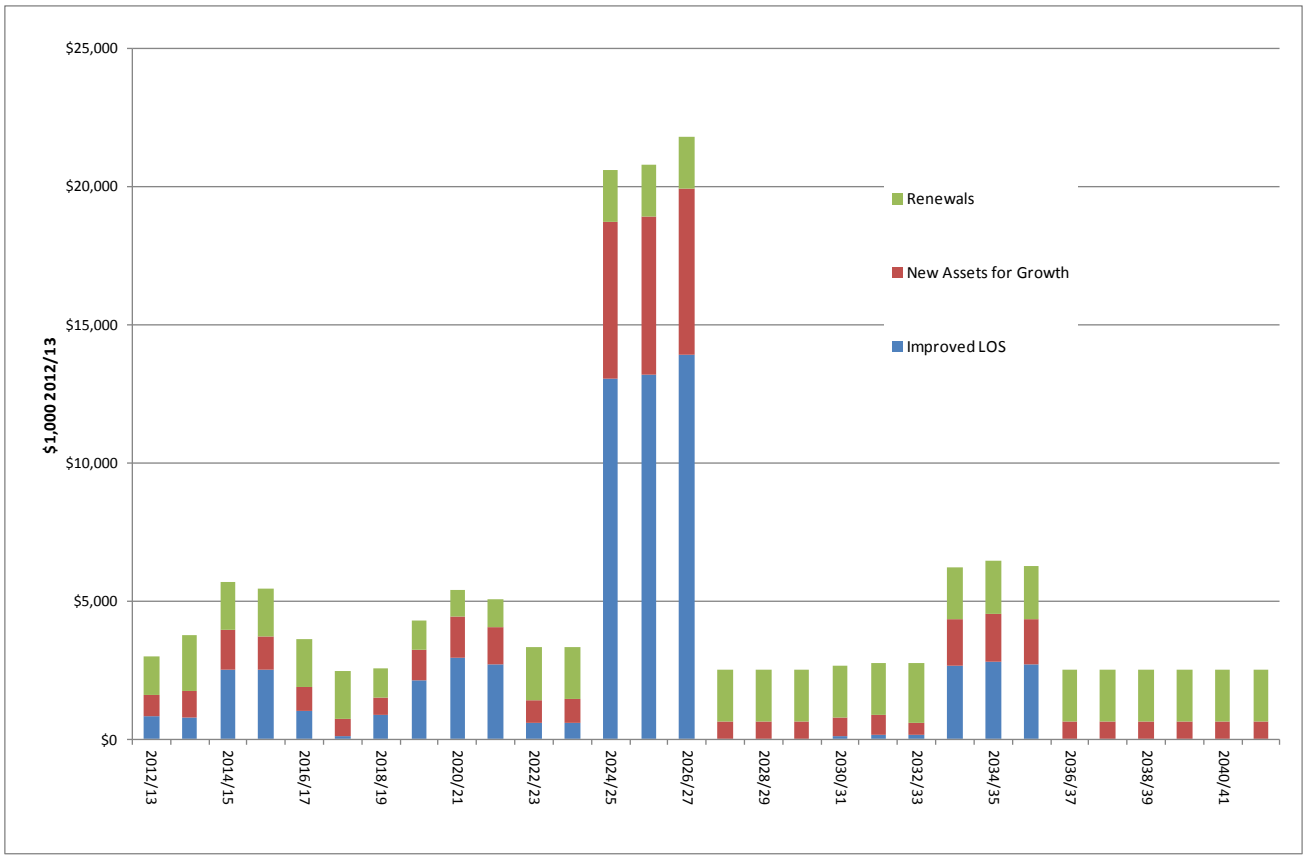

Figure 3 Thirty-Year Water Supply Capital Works Program

4 Levels of Service and Design Parameters

4.1 Levels of Service

The levels of service (LOS) are the standards required from the water supply systems from the perspective of the individual customer. LOS shape the objectives and requirements for operation, maintenance and provision of the 30-year capital works plan (see Section 3). LOS are a target and are not intended as a formal customer contract.

Table 4-1 shows the water supply LOS relevant to this DSP. For the full list of LOS relevant to water supply refer to the current Bega Valley Shire Council Strategic Business Plan for Water Supply and Sewerage Services.

Table 4-1 Water Supply Levels of Service

DESCRIPTION	UNIT	LEVEL OF SERVICE	
		Current Target	Future Target
AVAILABILITY OF SERVICE			
Unrestricted Quantity Available:			
Domestic Peak day			
Urban Areas	L/ET/day	2,000	2,000
Non Urban (connected to trunk main)	L/ET/day	No guarantee	No guarantee
Domestic Average Annual Consumption			
Urban Areas	kL/ET/year	205	190
Non Urban (connected to trunk main)	kL/ET/year	No guarantee	No guarantee
Urban Supply Pressure at Meter:			
Minimum pressure when delivering 0.1 L/s			
Urban Areas	Metres	20	20
Urban Areas (Existing high level zones)	Metres	10	10
Non Urban (connected to trunk main)	Metres	No guarantee	No guarantee
Drought Restrictions: – Level, frequency and duration of restrictions	Refer to Council's Drought Management Plan		
WATER QUALITY (Potable Water) (Compliance with ADWG, NHMRC&NRMMC 2011)			
Microbiological Compliance:		**Pre-filtration**	**Post-filtration**
Urban customers	% compliance	100%	100%
Non-urban customers	% compliance	No guarantee	No guarantee
Physical-Chemical Compliance:		**Pre-filtration**	**Post-filtration**
Urban customers	% compliance	90%	100%
Urban customers (Villages between Tantawanglo Weir and Yellow Pinch Dam)	% compliance	No guarantee	No guarantee
Non-urban customers	% compliance	No guarantee	No guarantee

4.2 Design Parameters

The following documents have been relied upon for the design of water supply components relevant for this DSP:

- *Water Supply Investigation Manual* (1987). This manual was prepared by NSW Public Works is administered by NOW;
- Water Supply Code of Australia WSA 03-2002;
- Bega Valley Shire Council Development Design Specification D11 Water Reticulation; and
- Bega Valley Shire Council Development Construction Specification C401 Water Reticulation.

Technical reports relating to the system components in the DSP are included in the References Section.

5 Calculated Developer Charges

5.1 Overview

DC are up-front charges levied to recover the infrastructure costs incurred in servicing new developments or additions/changes to existing developments.

The DC calculation is based on the net present value (NPV) approach adopted by the Independent Pricing and Regulatory Tribunal (IPART) for the metropolitan water utilities. The fundamental principle of the NPV approach is that the investment in assets for serving a development is fully recovered through up-front charges (i.e. DC) and the present value (PV) of that part of annual bills received from the development in excess of operation, maintenance and administration (OMA) costs.

Developer Charge = Capital Charge – Reduction Amount

The DC process is described fully in the Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002).

NSW Local Water Utilities (LWU) which propose to levy DC for water supply and/or sewerage need to prepare a DSP. The DSP details the calculation of the DC and is required to be fair and transparent.

The method of calculations of charges for developments other than a standard ET, is based on values published in Council's Annual Fees and Charges, derived from industry standard publications and, where appropriate, the actual measured load of similar specific types of development in the shire or other local government utilities of a similar nature. Note that 1 ET is equal to one occupied residential single detached dwelling currently consuming 205 kL/ET/year on an average basis. Refer to Table 4-1 for water usage targets.

5.2 Capital Charge

In accordance with the Guidelines the capital charge is calculated using the following formula:

Capital Charge = Capital Cost x Return on Investment (ROI) Factor

The capital cost includes the cost of providing, extending or augmenting assets required, or likely to be required, to provide services to a development area. The capital cost per ET is the value of the relevant assets divided by the capacity of these assets (in ET).

Typically, the capacity of an asset would not be fully utilised until some time after construction of the asset. The ROI, also known as a holding charge, is based on the cost of early investment, and recovery of the cost over time. The ROI factor is dependent on the period for take-up of the asset capacity, and the rate of return for the asset.

The calculated capital charges for the area serviced by this DSP are shown in Table 5-1. Detailed information relating to the capital charge can be found in Appendix C.

Table 5-1 Capital Charge for each Water Supply Service Area

Water Supply Service Area	Calculated Capital Charge / ET ($2012/13)
Bega-Tathra and Tantawanglo-Kiah	$14,490
Bemboka	$23,243
Brogo-Bermagui	$22,034
Weighted Average	**$15,402**

5.3 Reduction Amount and Calculated Developer Charge

In accordance with the Guidelines, Council has adopted the NPV of Annual Charges method for calculation of the Reduction Amount. This method involves calculation of the PV of the difference between annual rates and charges revenue, and operating costs projected for new development over the next 30 years. This is divided by the PV of the new ETs over the planning horizon to give the reduction amount. The method involves 30-year forecasting of income and expenditures relating to new development.

Table 5-2 shows the calculated capital charge, reduction amount and weighted average calculated developer charge. Detailed information relating to the reduction amount can be found in Appendix C.

Table 5-2 Bega Valley Shire Council Water Supply Developer Charges

Supply Service Area	Weighted Capital Charge / ET ($12/13)	Reduction Amount / ET ($12/13)	Calculated Developer Charge / ET ($12/13)
Water Supply	15,402	4,427	10,975

5.4 Summary of Proposed Developer Charges

In its meeting on 12th June 2013 2013, Council resolved to levy developer charges for water supply services lower than the calculated value. The calculated developer charges based on full cost recovery as well as Council's proposed developer charges are shown in Table 5-3.

Table 5-3 Bega Valley Shire Council Water Supply Developer Charges

Water Supply Service Area	Calculated Developer Charge / ET ($12/13)	Proposed Developer Charge / ET ($12/13)
Bega-Tathra and Tantawanglo-Kiah	10,063	7,500
Bemboka	18,816	7,500
Brogo-Bermagui	17,607	7,500
Weighted Average	**10,975**	**7,500**

Adopting the proposed developer charges and maintaining the current level of Typical Residential Water Bill (TRB) of $540 p.a. for the next 5 years (until 2017/18) will result in $18 per year cross-subsidy by each residential customer over the model forecast period. Note the capital works schedule (as outlined in Section 3) has been adjusted to maintain the current level of TRB for the next 5 years. Table 5-4 summarises the impact on the TRB of adopting the proposed developer charges.

Table 5-4 Bega Valley Shire Council Sewer Level of Cross Subsidy

Supply Service Area	Current Typical Residential Bill ($/assessment) ($2012/13)	TRB ($2012/13) from 2018/19 with:		Level of cross subsidy ($2012/13)
		No cross-subsidy	With cross-subsidy	
Water Supply	540	657	675	18

Figure 4 graphically represents the impact of the proposed developer charges on the TRB for water supply.

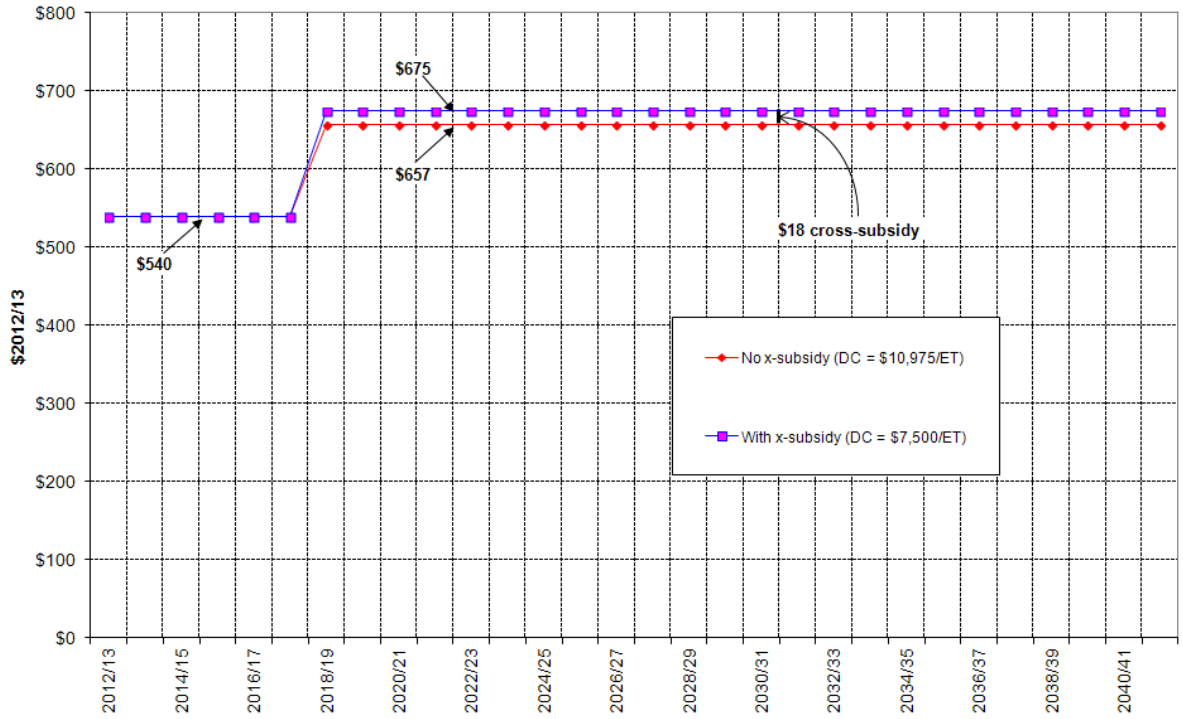

Figure 4 Impact of DC cross subsidy on Typical Residential Water Bill

5.5 Reviewing / Updating of Developer Charges

DC calculations relating to this DSP will be reviewed after a period of five years, or when any significant changes occur in proposed works, growth projections or standards.

In the period between any reviews, DC will be revised on 1 July each year on the basis of movements in the Consumer Price Index (CPI) for Sydney, in the preceding 12 months to December, excluding the impact of GST.

5.6 Exclusions

The DC do not cover the costs of reticulation works and assets commissioned pre-1970. The developer shall be responsible for the full cost of the design and construction of water supply reticulation works within subdivisions and associated infrastructure (e.g. lead-in mains, reservoirs etc.) not contained in the proposed works schedule (Section 3).

5.7 Payment of Developer Charges

Section 64 of the *Local Government Act 1993* enables a local government council to levy developer charges for water supply, sewerage and stormwater. This derives from a cross-reference in that Act to Section 306 of the *Water Management Act 2000*.

5.7.1 Timing of Payments

Subject to clauses 5.7.2 the timing for payments of developer charges is as follows:

For complying development	Prior to the issuing of a complying development certificate (whether or not the certificate is issued by Council or an accredited certifier).
For other development	Prior to the release of the Construction Certificate.
For subdivision	Prior to the release of the Linen Plan.

5.7.2 Method of Payment

DC must be made in the form of monetary payments to Bega Valley Shire Council. Development Consents requiring the payment of a DC will contain a condition specifying that a Certificate of Compliance under Division 5 of Part 2 of Chapter 6 of the Water Management Act 2000 must be obtained prior to the issue of a Subdivision / Construction / Occupation Certificate.

A note will be attached to the consent indicating the granting of a Certificate of Compliance is dependent on the payment of DC. The note will indicate the calculated additional load the development will impose on the water supply system expressed in ETs. The DC per ET will be specified for the financial year in which the consent is issued.

The note will advise that the payment of DC will be at the rate which applies at the time of payment, as published in Council's annually revised Fees and Charges schedule. That is the rate may increase, through indexation or replacement of this DSP with a new one, from the time the condition appears on the notice of development consent until the time the DC is actually paid to Council.

5.8 Developments Outside Boundaries of DSP

After the adoption of the DSP, new development may be proposed outside the boundary of the DSP (see Appendix A). Provided that there are no planning or other constraints to the development, Council may approve construction of essential assets to service such a development. These assets will be sized to suit all potential development in the proposed development area with the full capital cost being met by the developer, in addition to the DC levied on the development.

References

Background information and calculations relating to this DSP are contained in the following documents:

- Bega Valley Shire Council Development Design Specification D11 Water Reticulation; and
- Bega Valley Shire Council Development Construction Specification C401 Water Reticulation.
- Bega Valley Shire Development Servicing Plan for Water, February 2006
- Bega Valley Shire Council Strategic Business Plan for Water Supply and Sewerage Services
- Bega Valley Shire Council Report on Valuation of Water Supply and Sewerage Assets as at 30 June 2012
- Developer Charges for Water Supply, Sewerage and Stormwater Guidelines, December 2002
- NHMRC 2011. *Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy*. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.
- NSW Public Works 2013. Population and Water Cycle Projections – Development Servicing Strategy for Bega Valley Shire Council
- *Water Supply Investigation Manual* (1987). This manual was prepared by NSW Public Works is administered by NOW;
- Water Supply Code of Australia WSA 03-2002;

Appendices

Appendix A Development Servicing Plan Boundaries

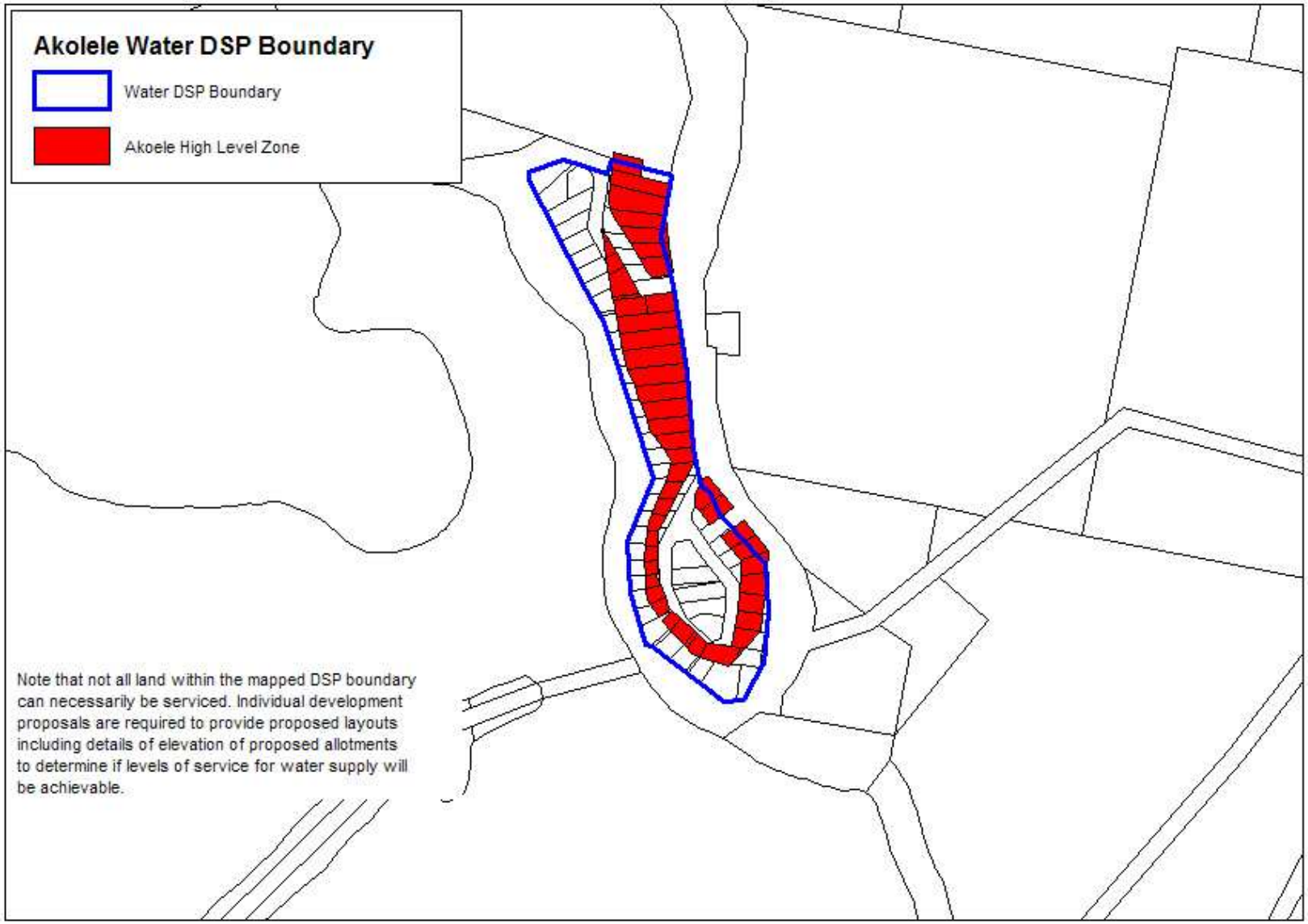

Figure 5 Akolele Water DSP Boundary

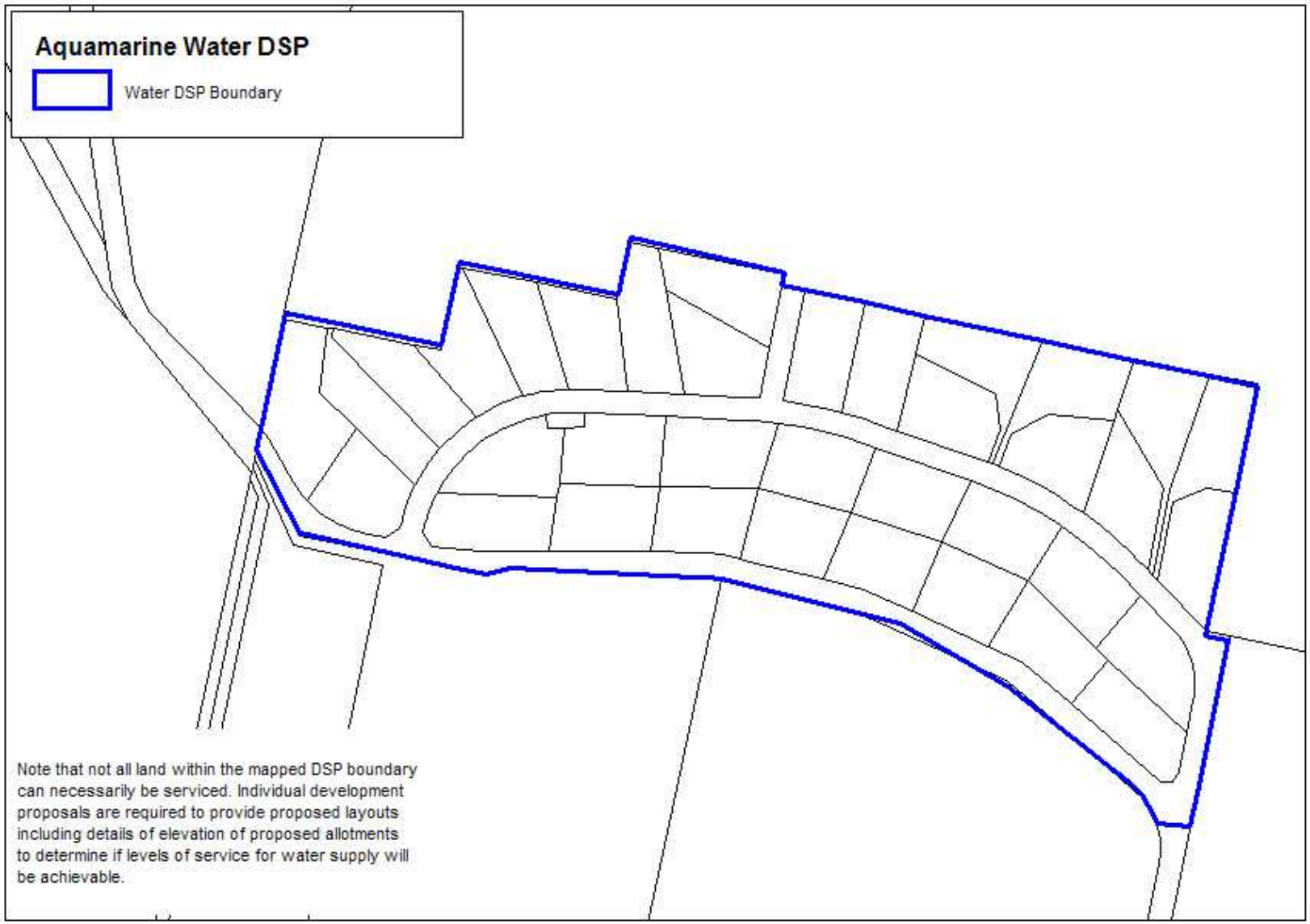

Figure 6 Aquamarine Water DSP Boundary

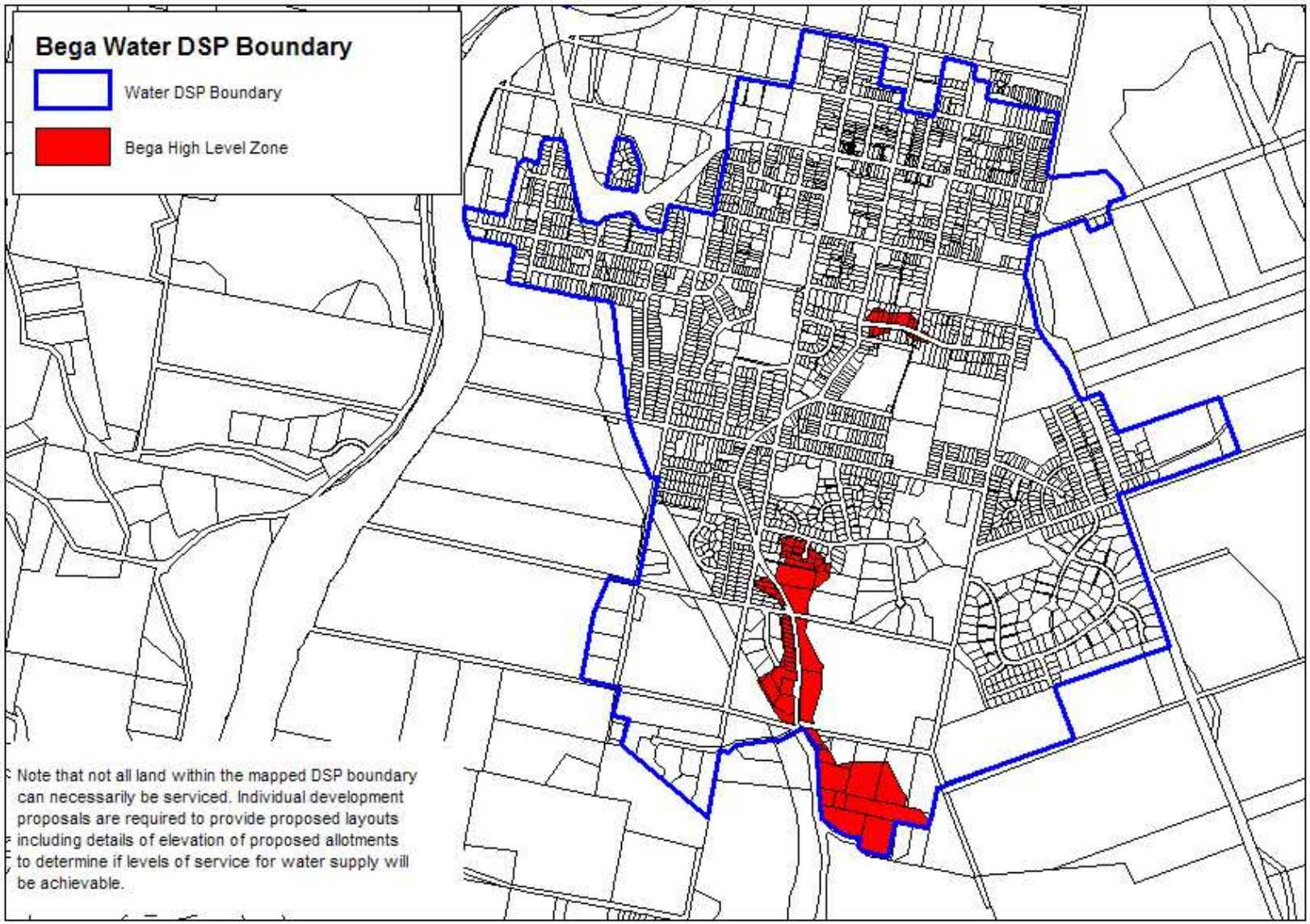

Figure 7 Bega Water DSP Boundary

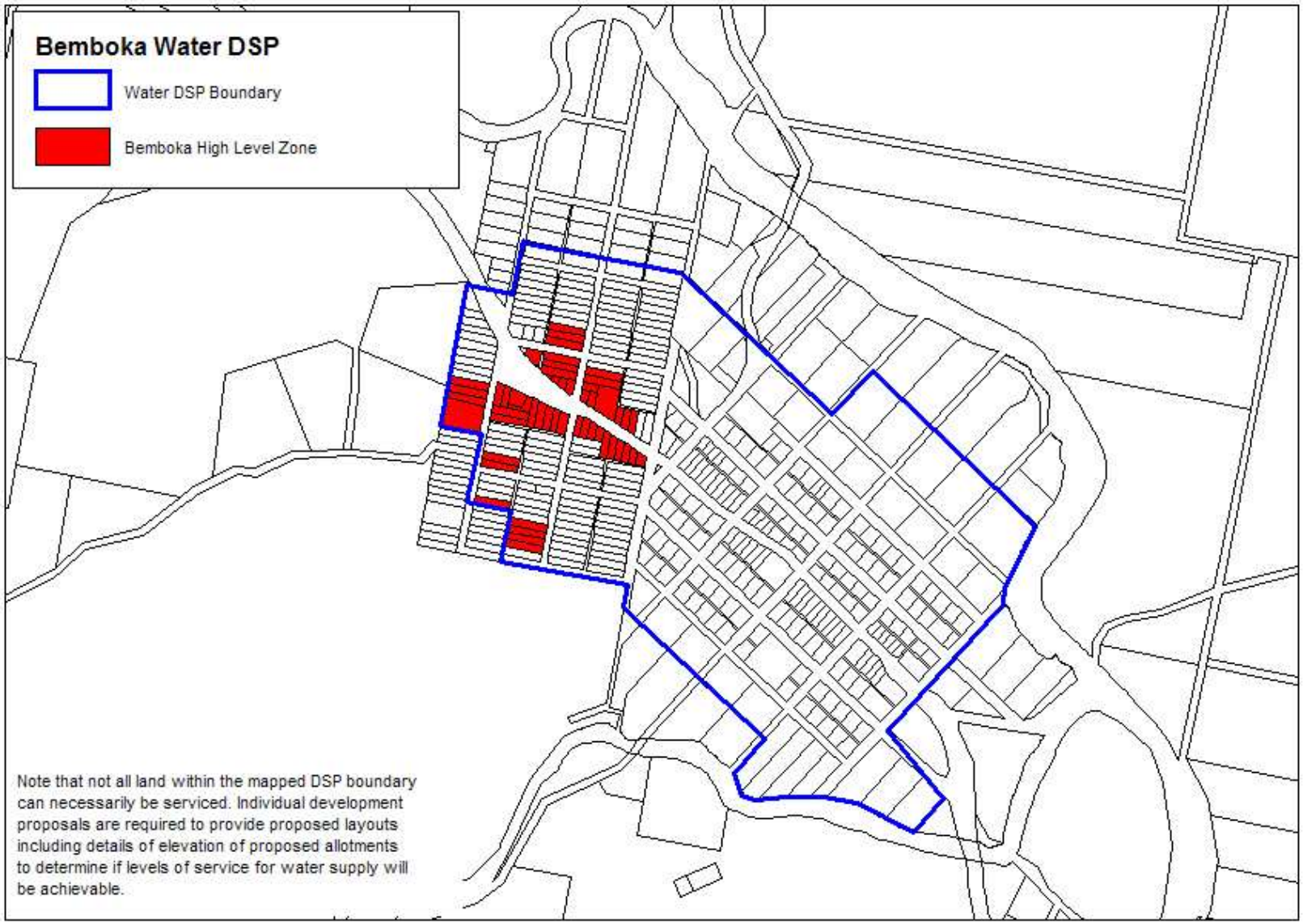

Figure 8 Bemboka Water DSP Boundary

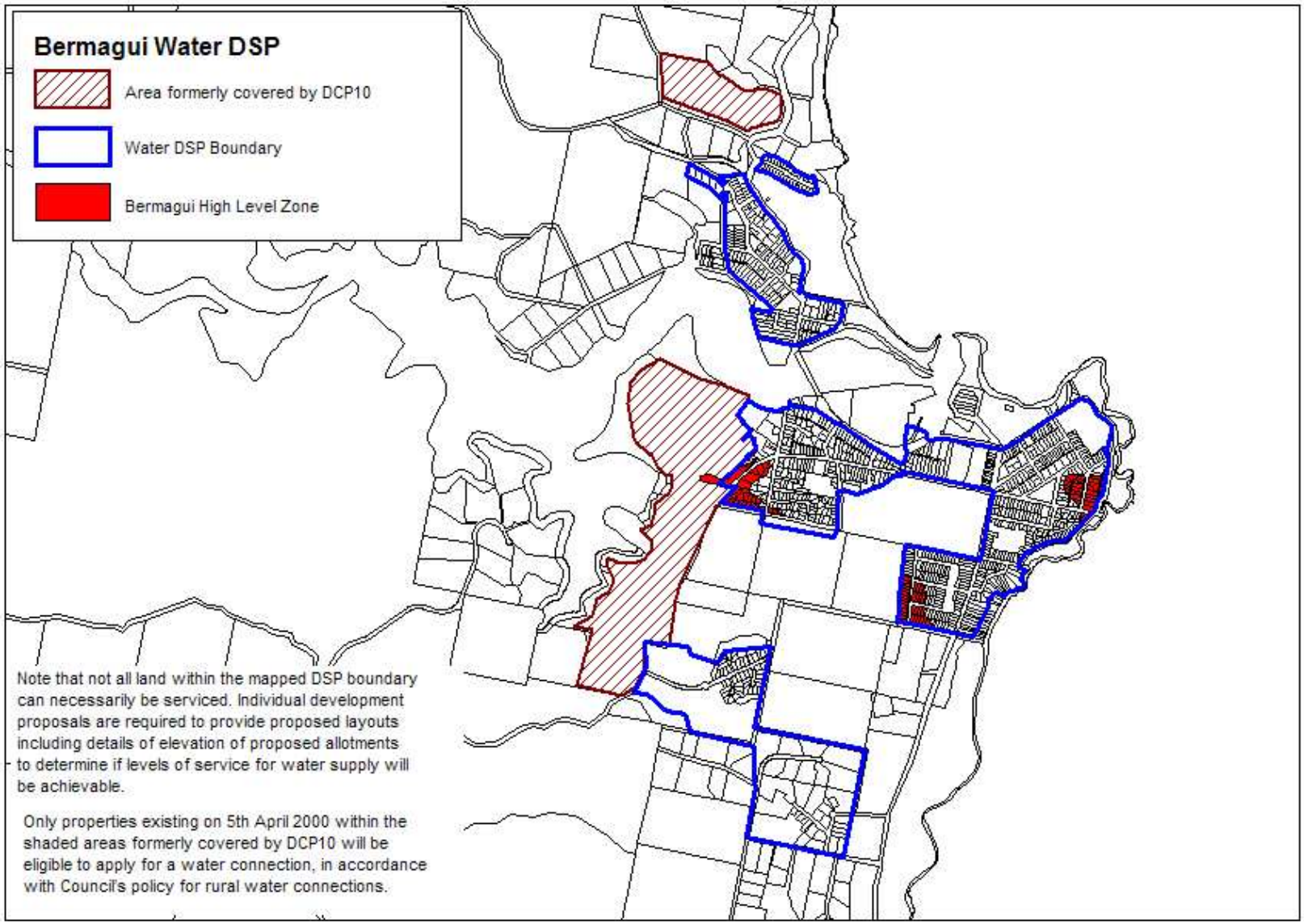

Figure 9 Bermagui Water DSP Boundary

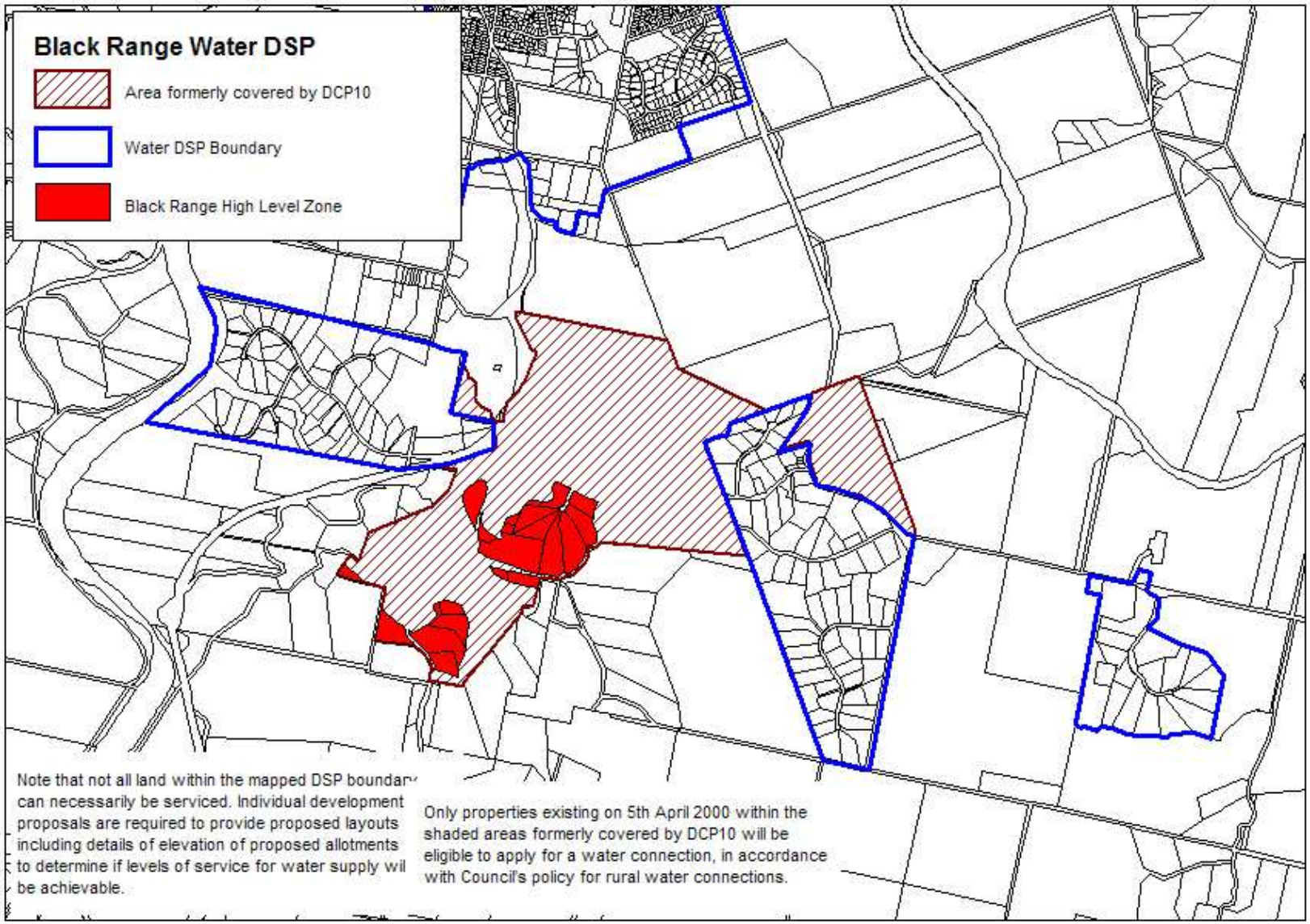

Figure 10 Black Range Water DSP Boundary

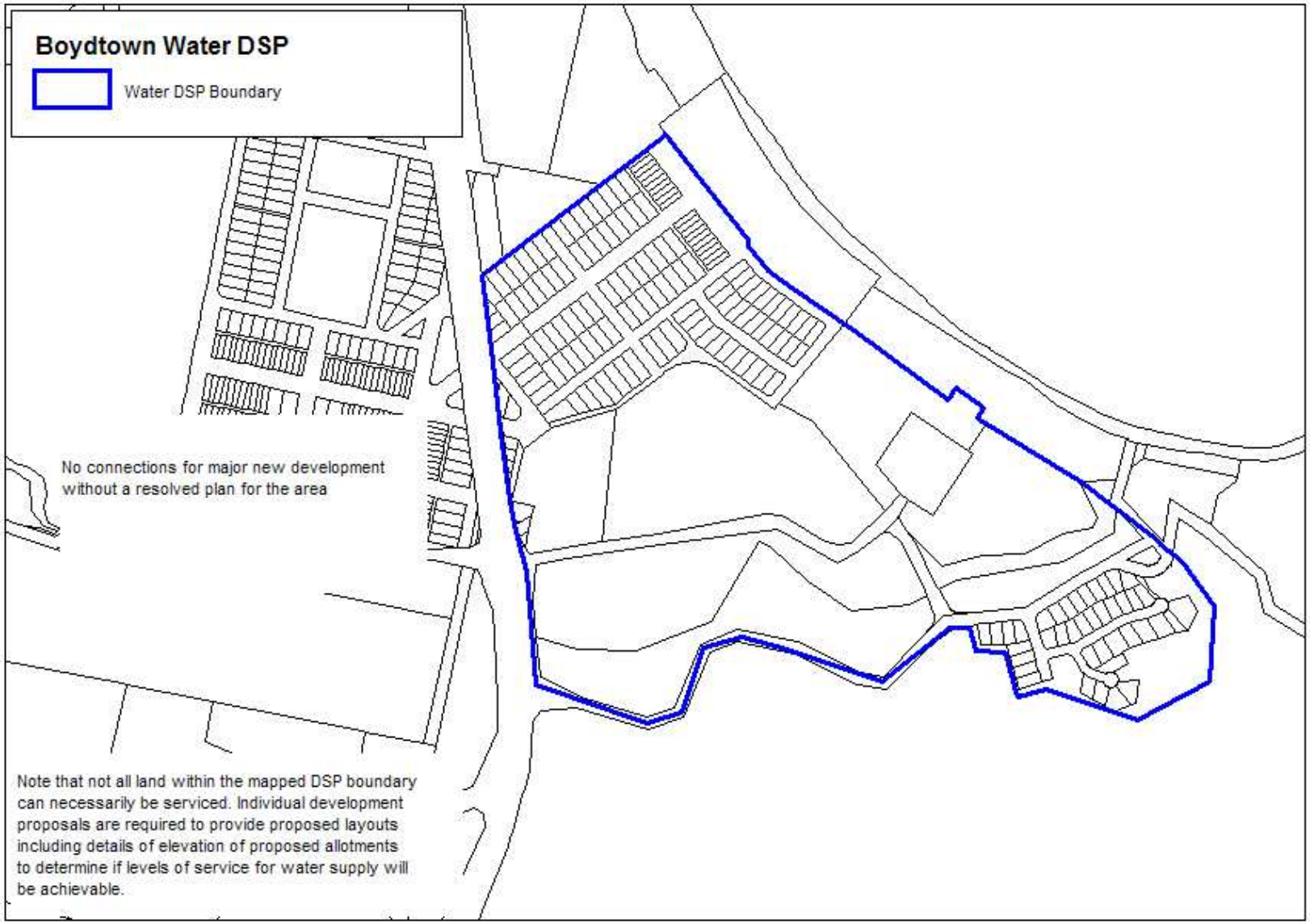

Figure 11 Boydtown Water DSP Boundary

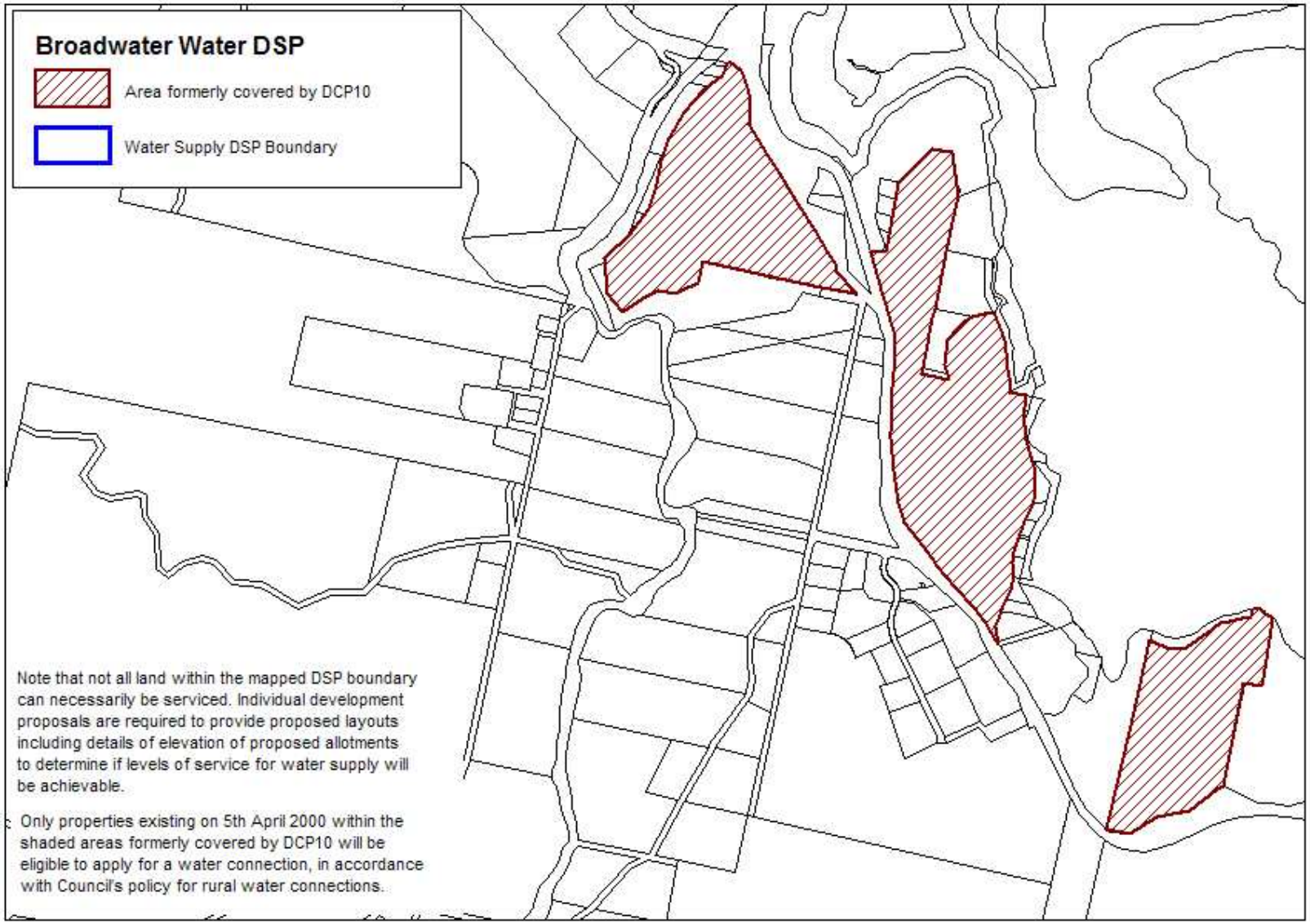

Figure 12 Broadwater Water DSP Boundary

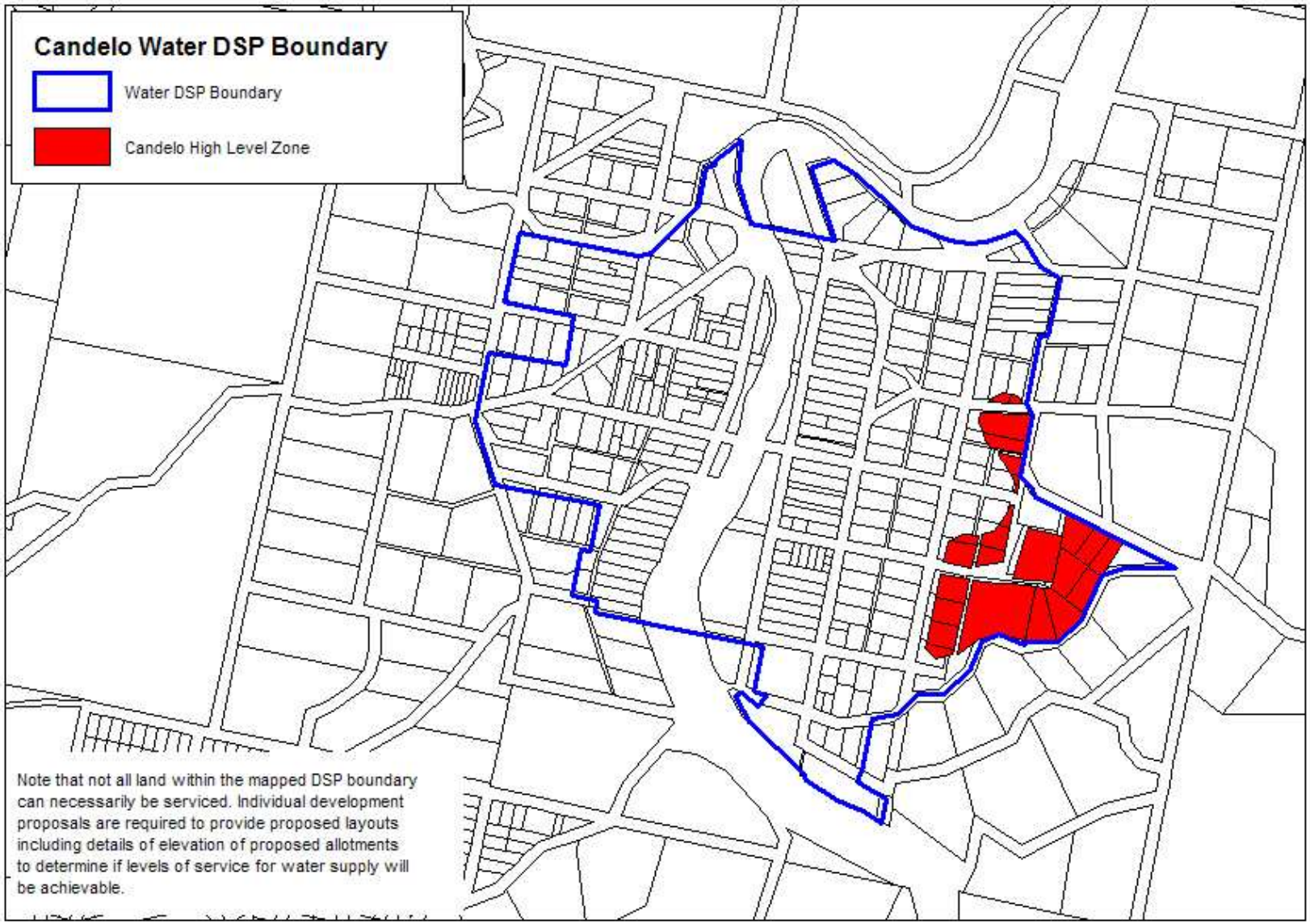

Figure 13 Candelo Water DSP Boundary

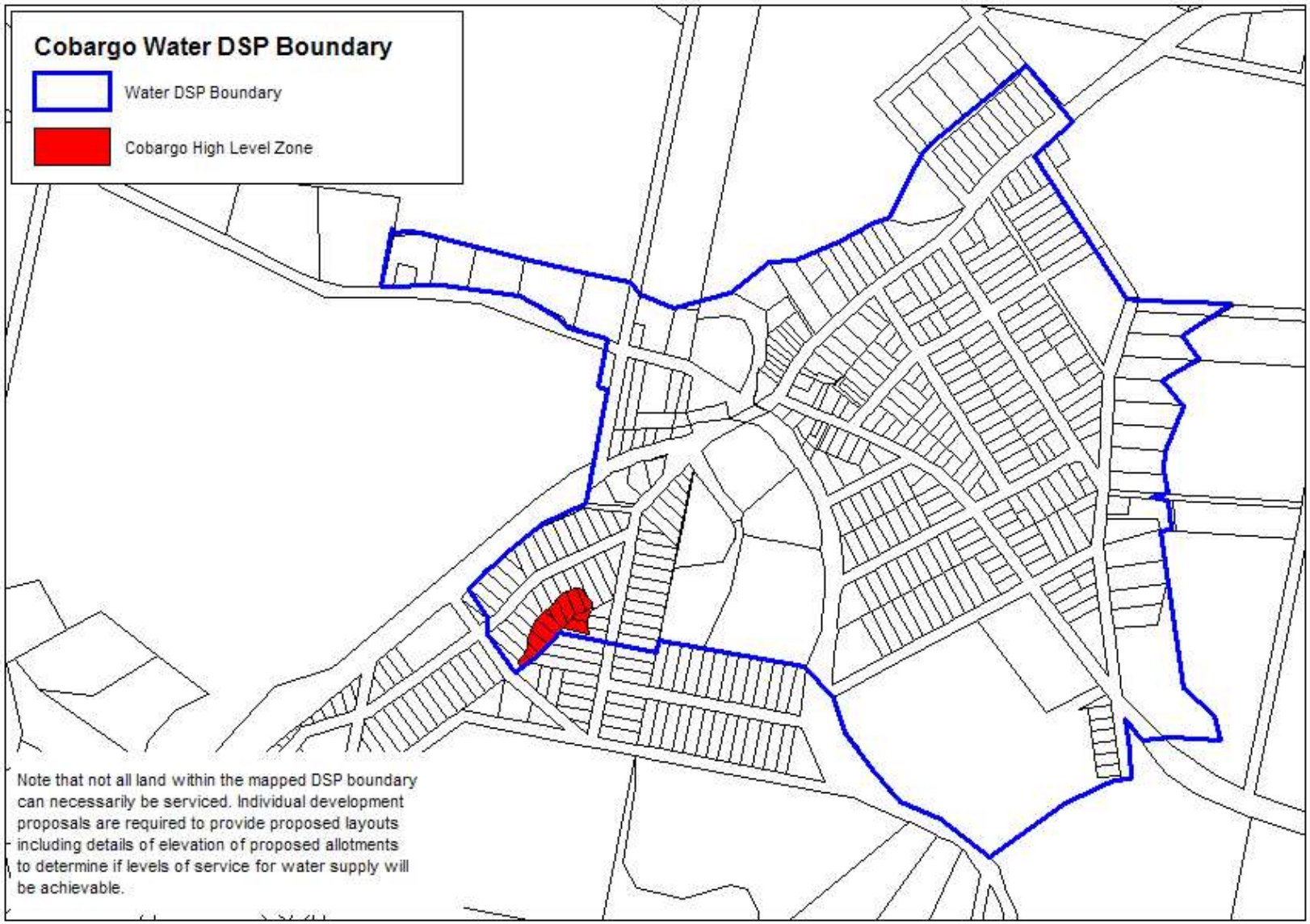

Figure 14 Cobargo Water DSP Boundary

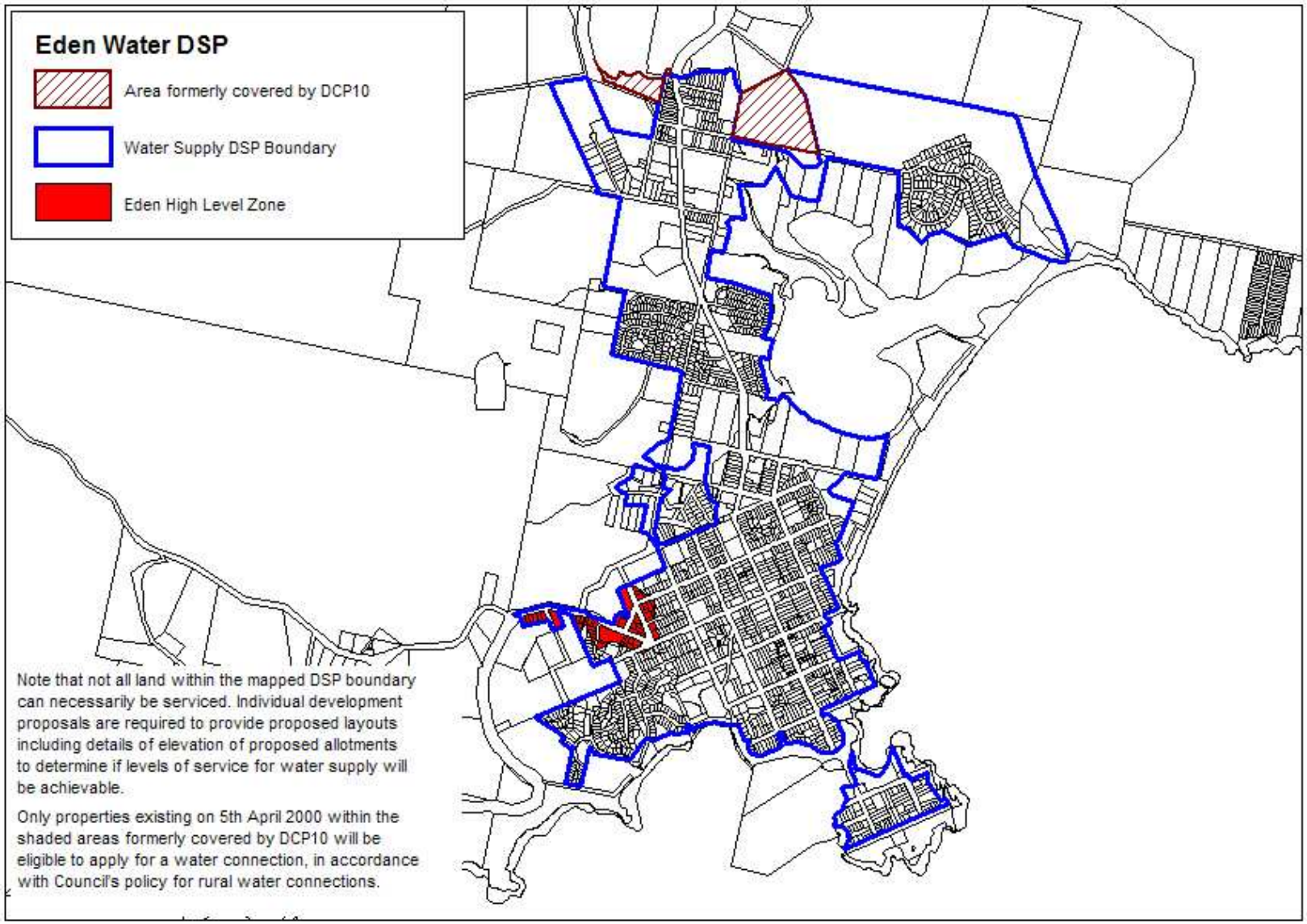

Figure 15 Eden Water DSP Boundary

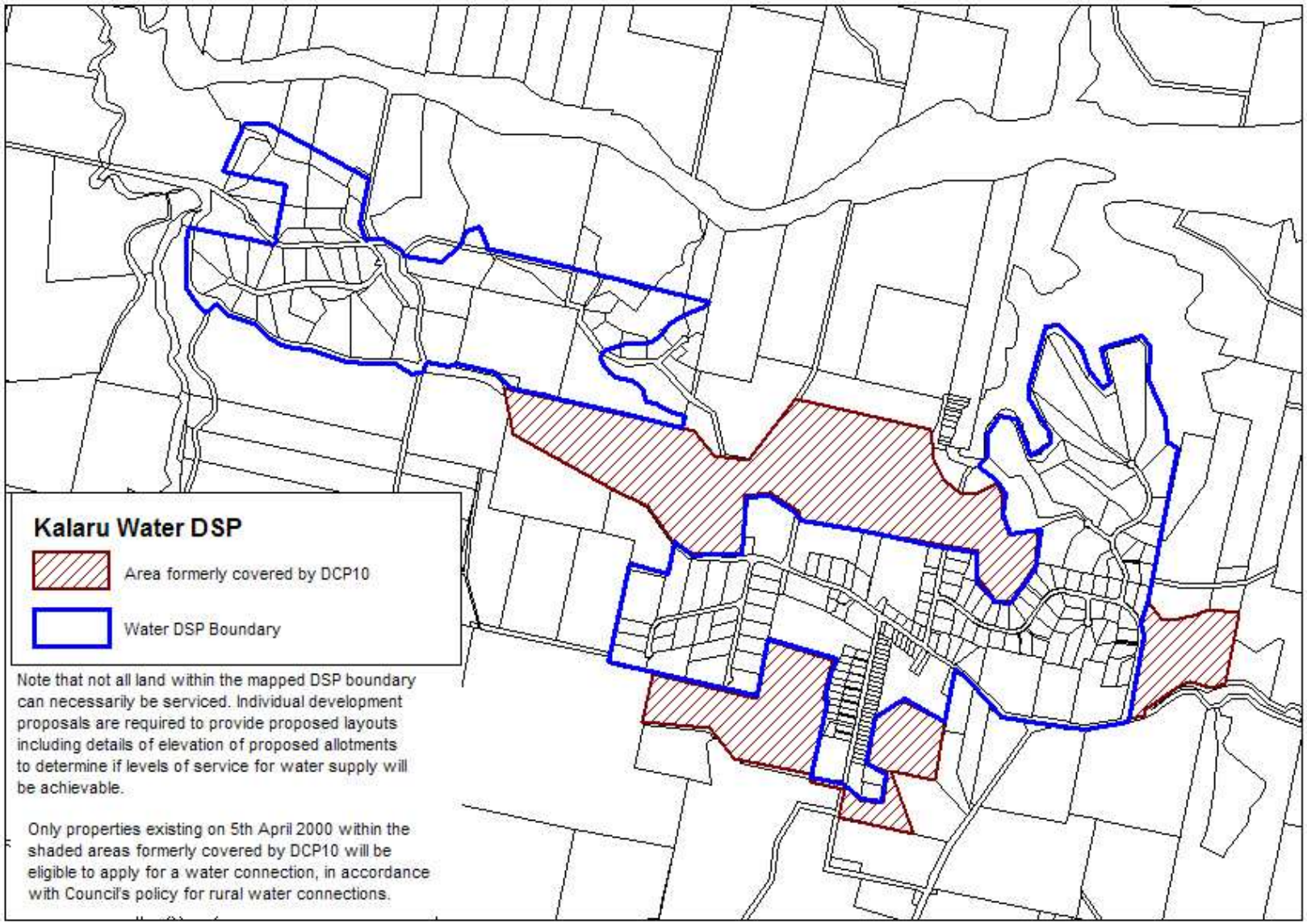

Figure 16 Kalaru Water DSP Boundary

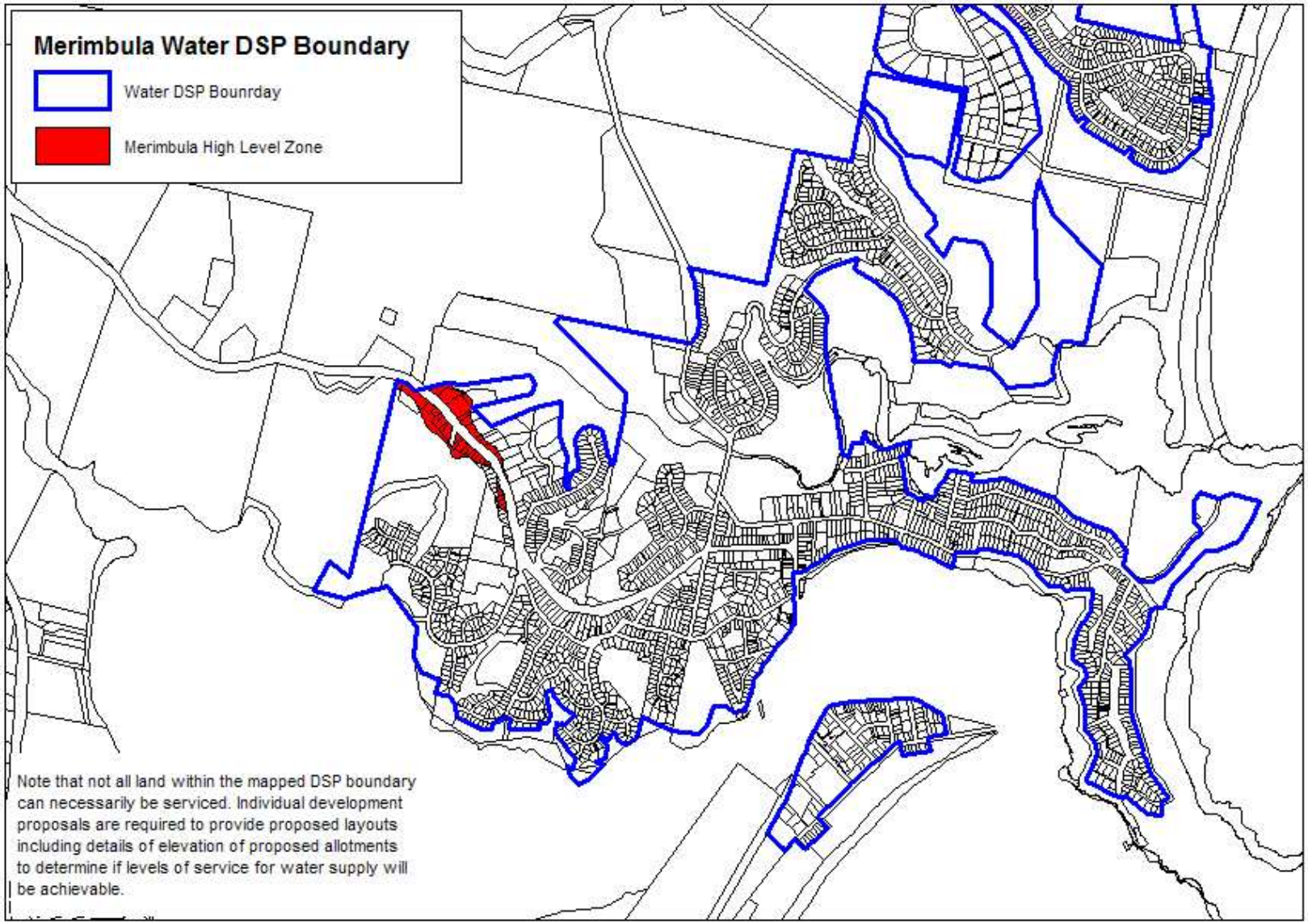

Figure 17 Merimbula Water DSP Boundary

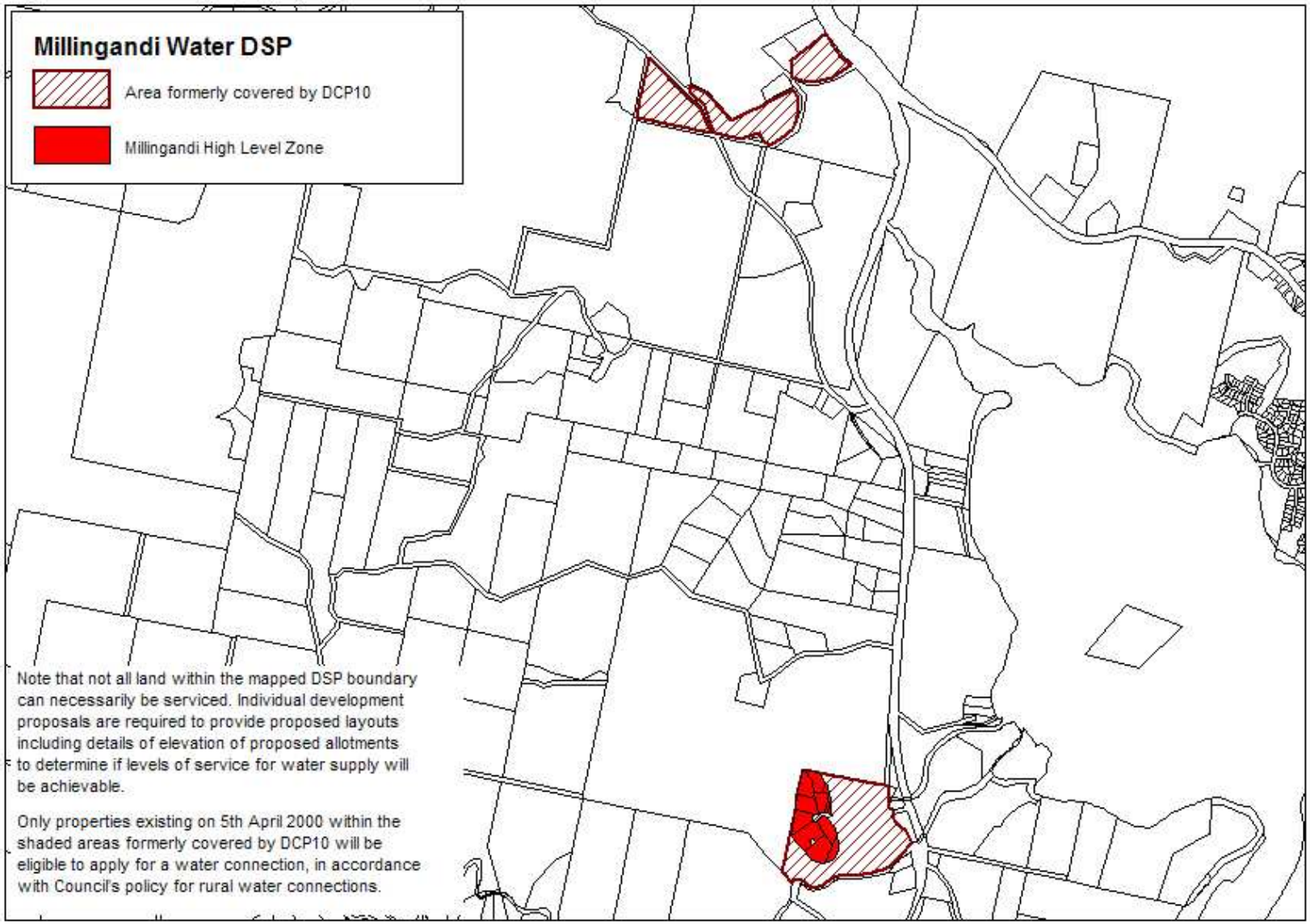

Figure 18 Milligandi Water DSP Boundary

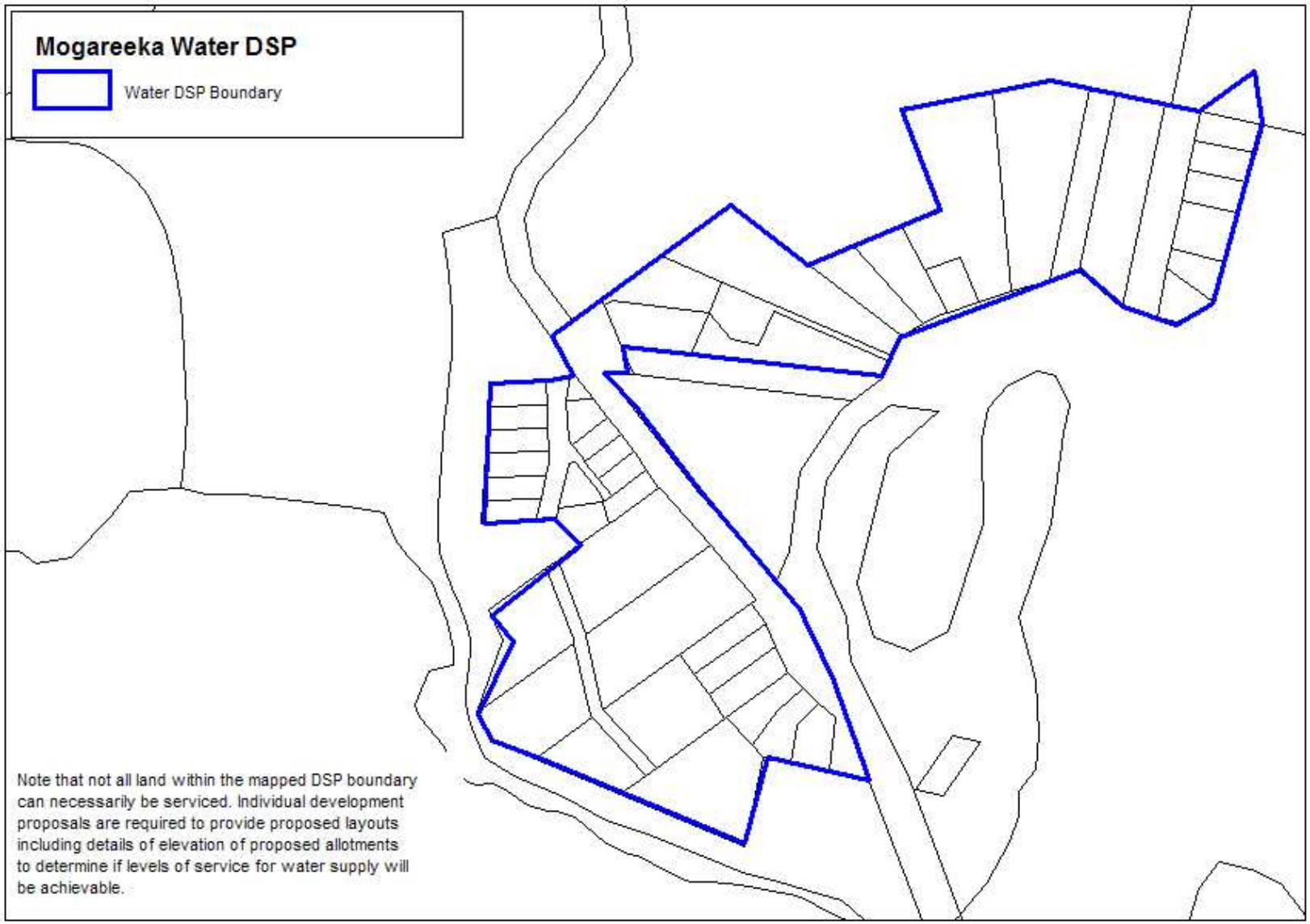

Figure 19 Mogareeka Water DSP Boundary

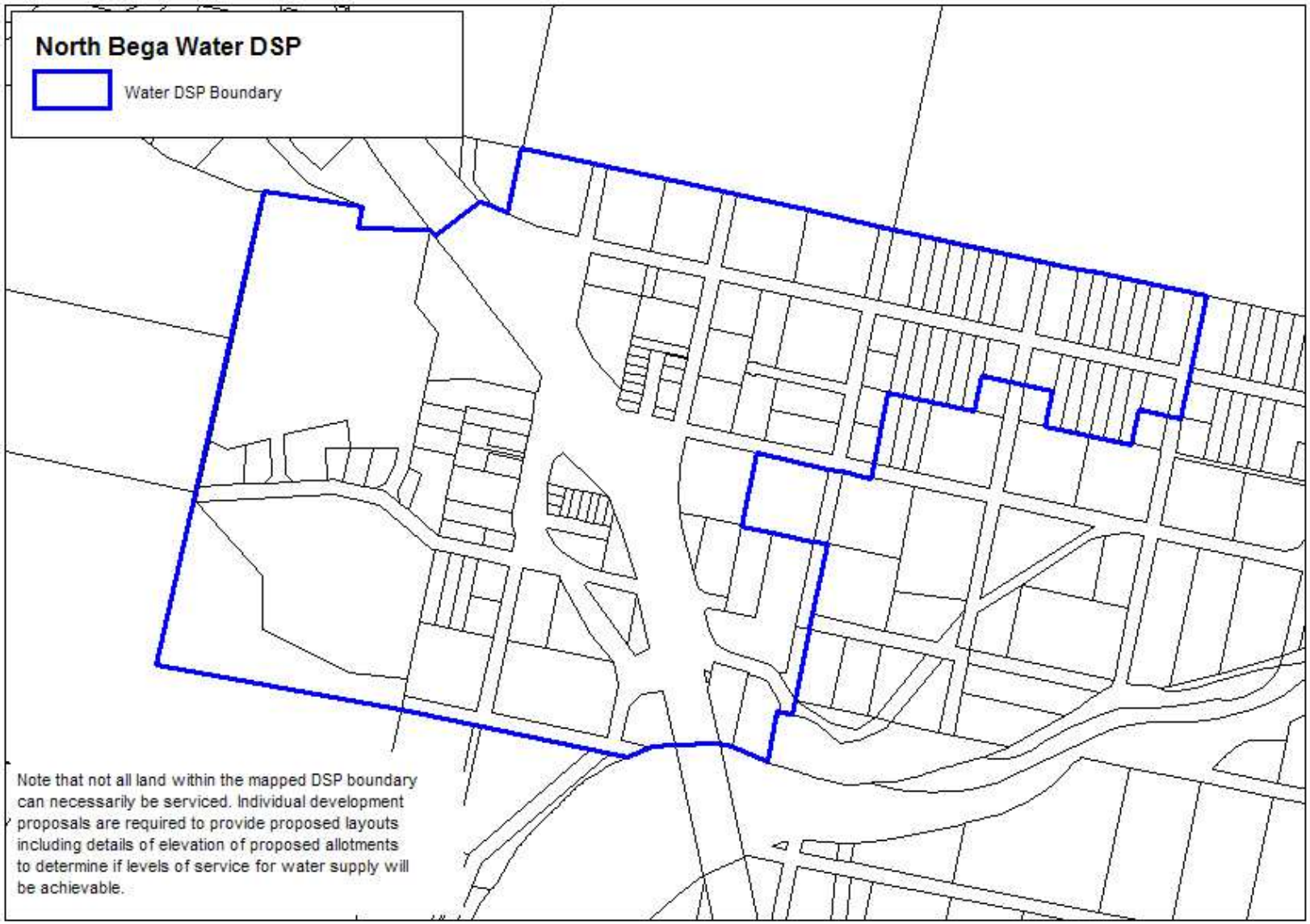

Figure 20 North Bega Water DSP Boundary

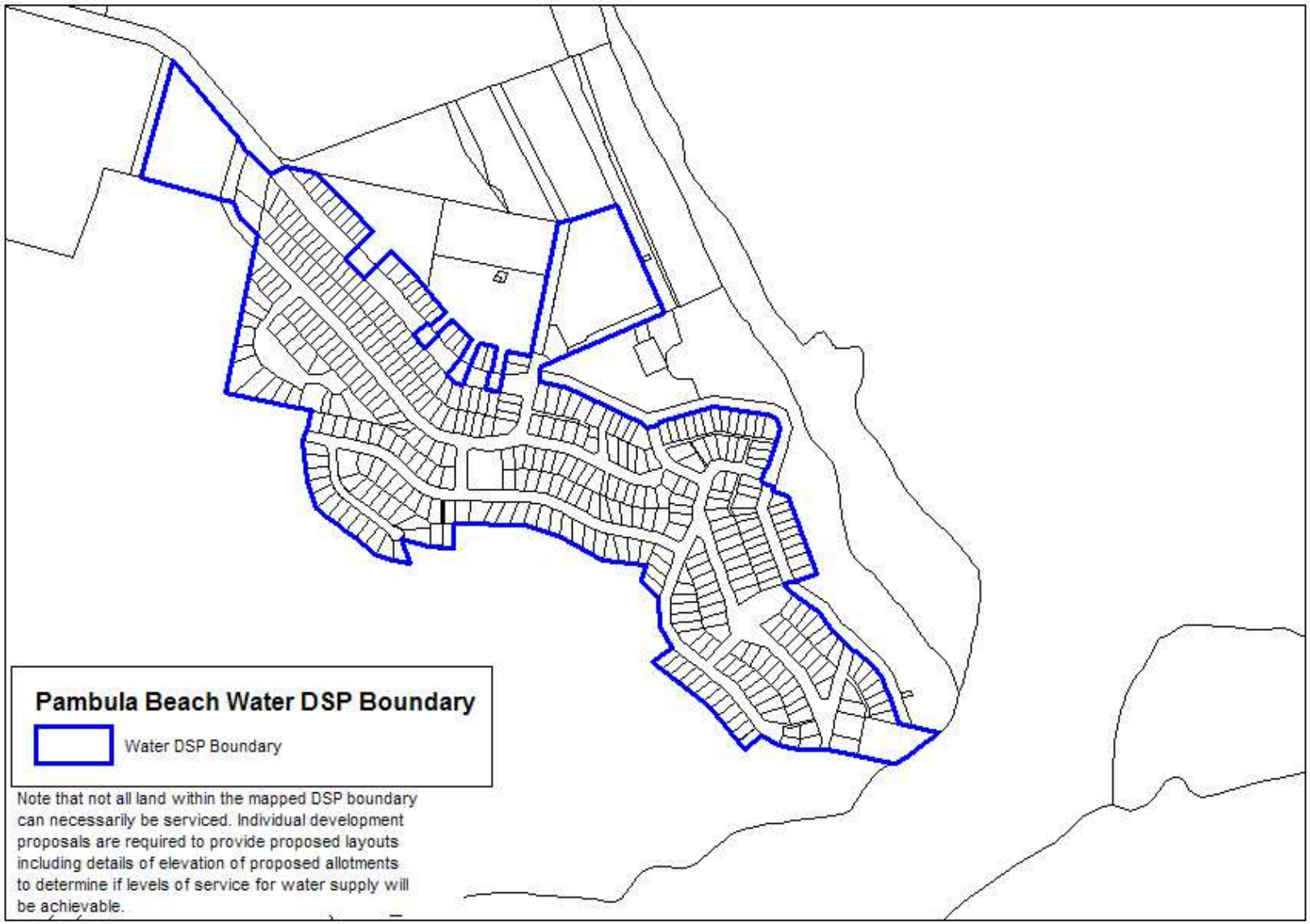

Figure 21 Pambula Beach Water DSP Boundary

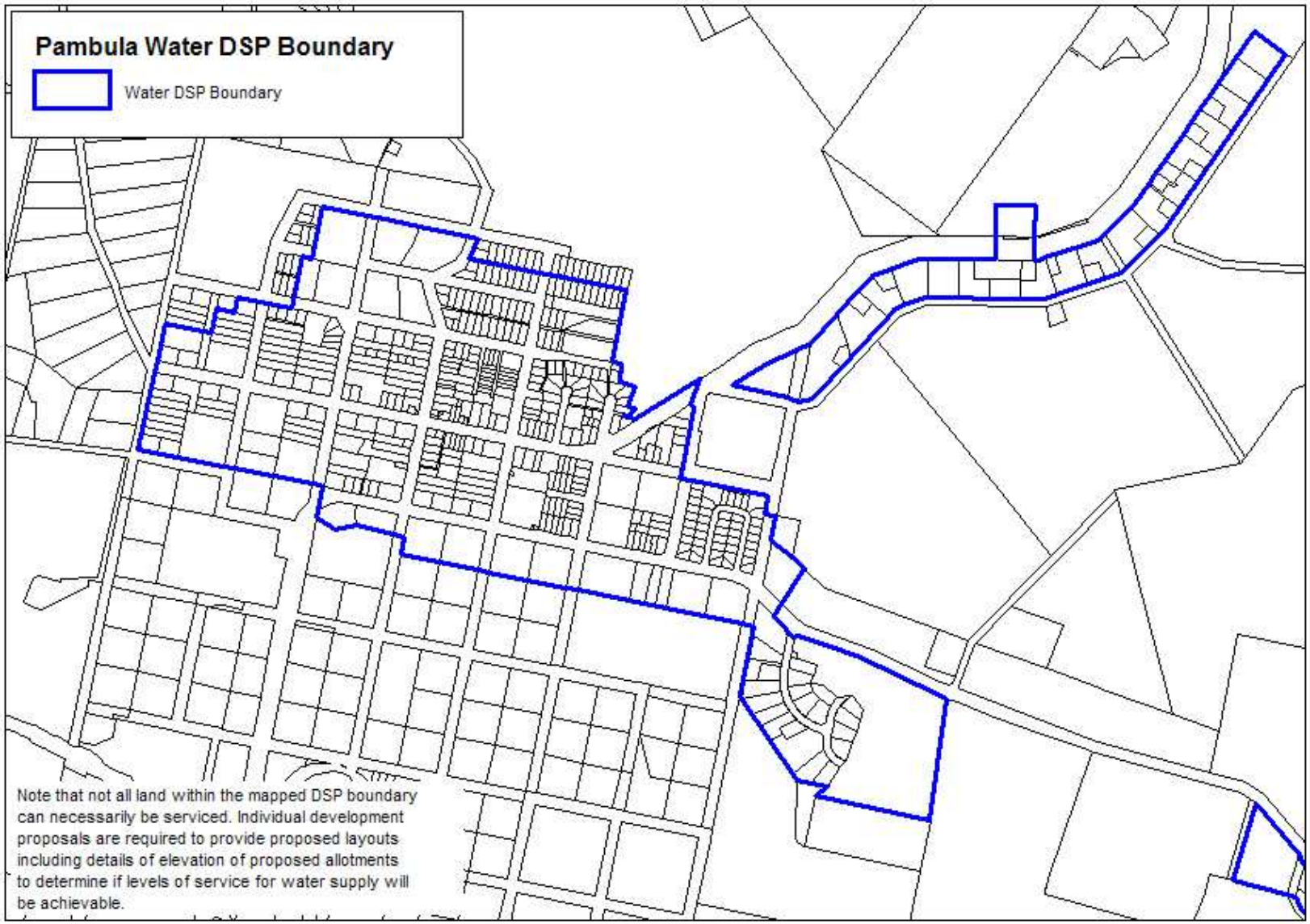

Figure 22 Pambula Water DSP Boundary

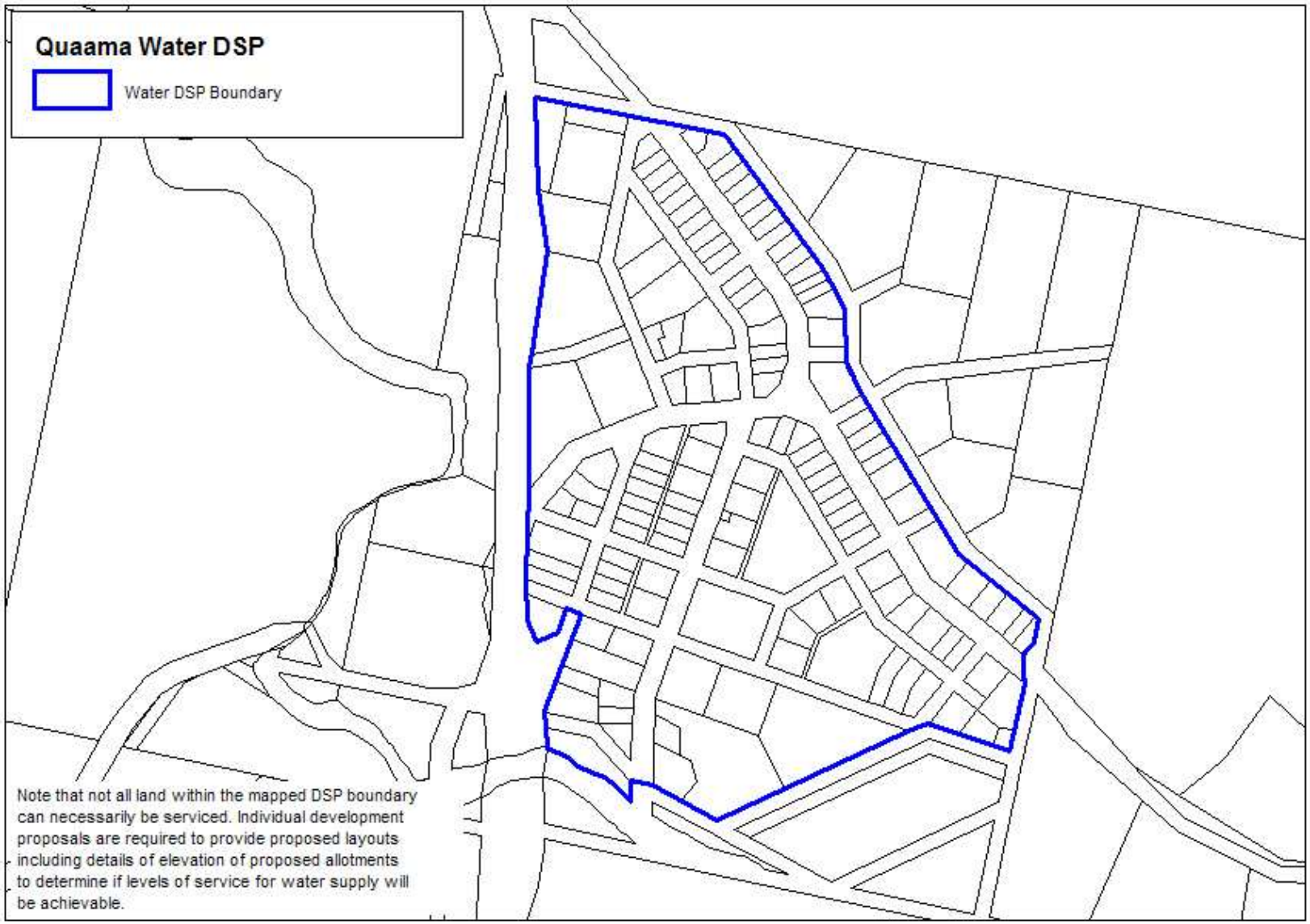

Figure 23 Quaama Water DSP Boundary

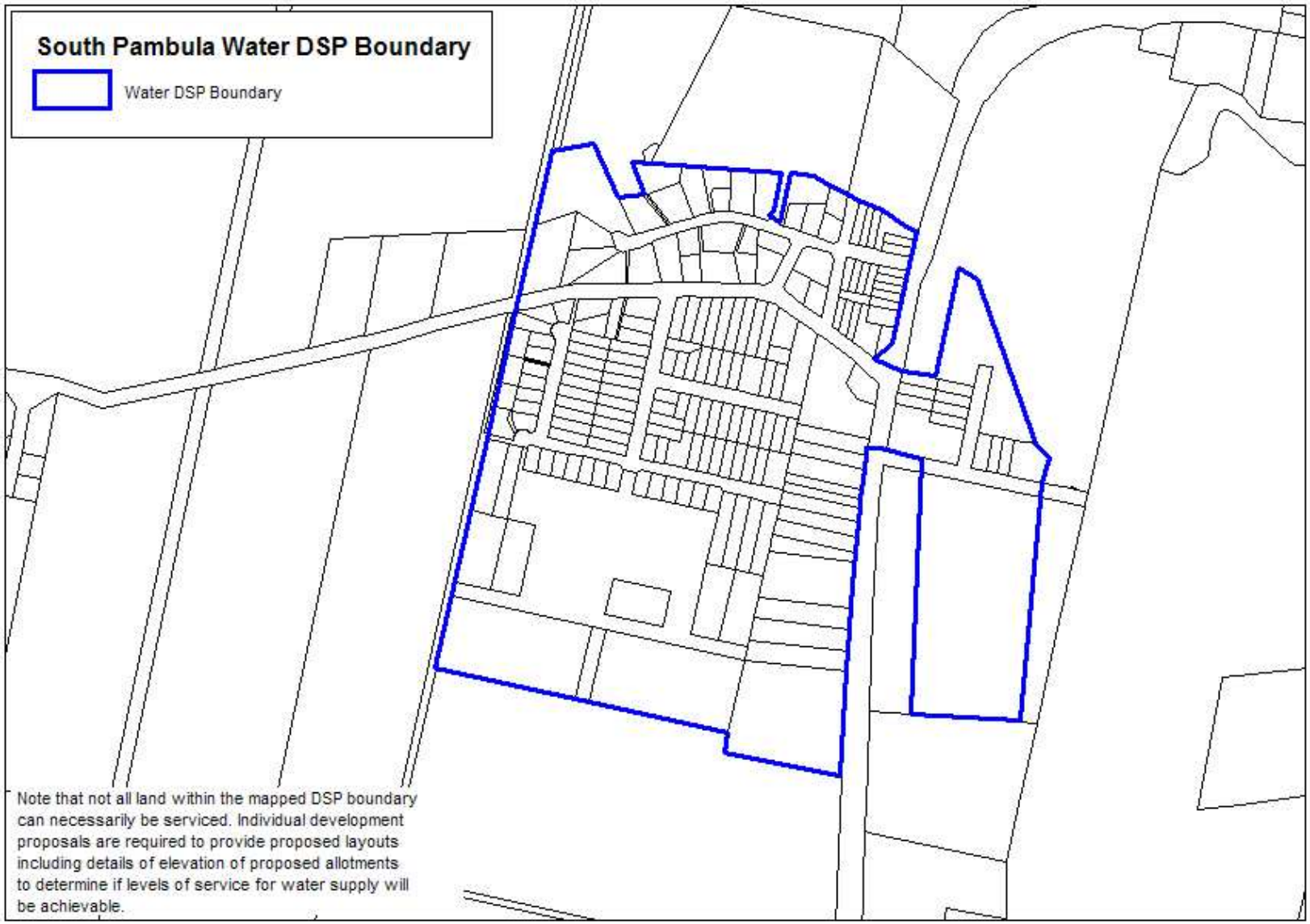

Figure 24 South Pambula Water DSP Boundary

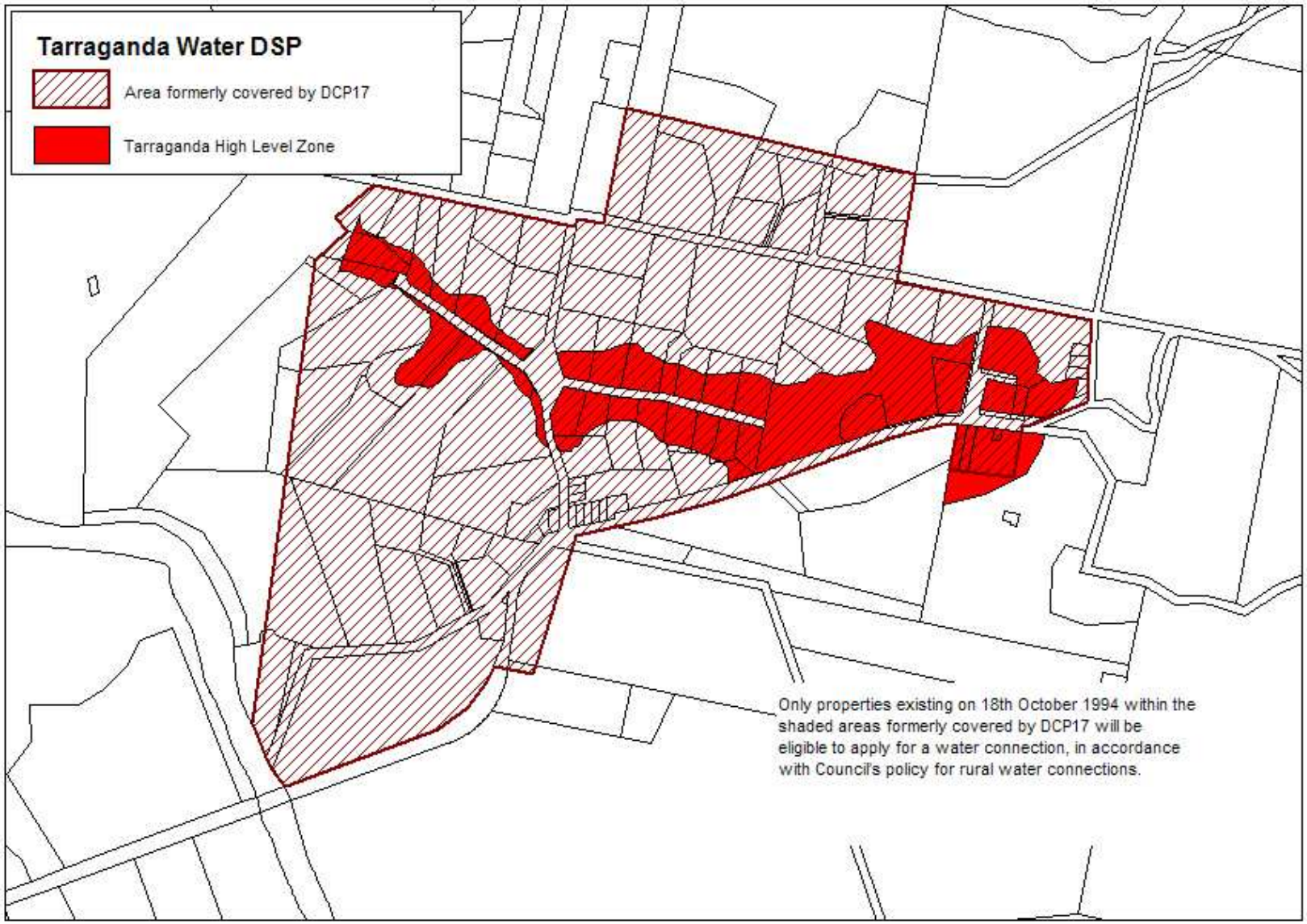

Figure 25 Tarraganda Water DSP Boundary

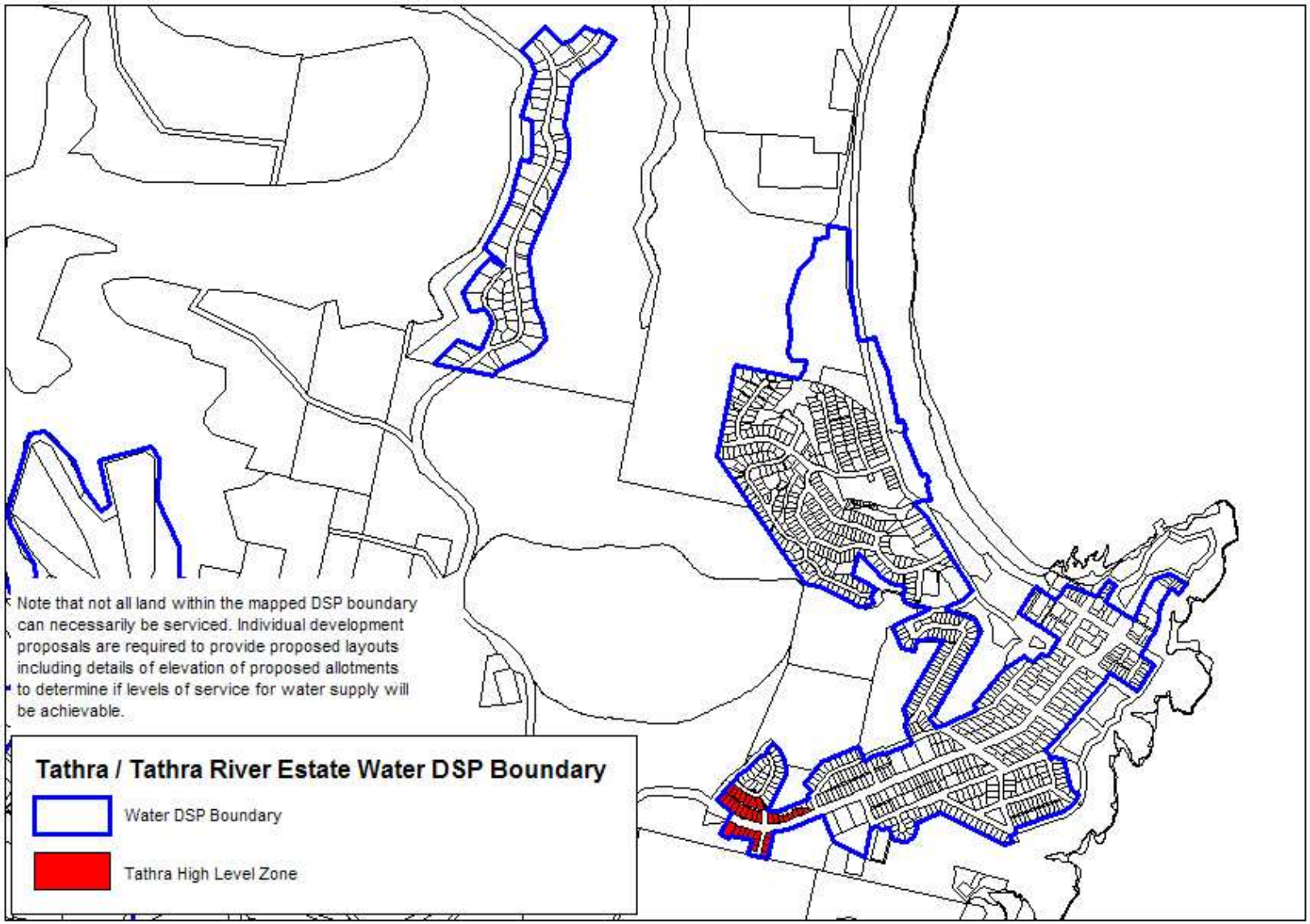

Figure 26 Tathra and Tathra River Estate Water DSP Boundary

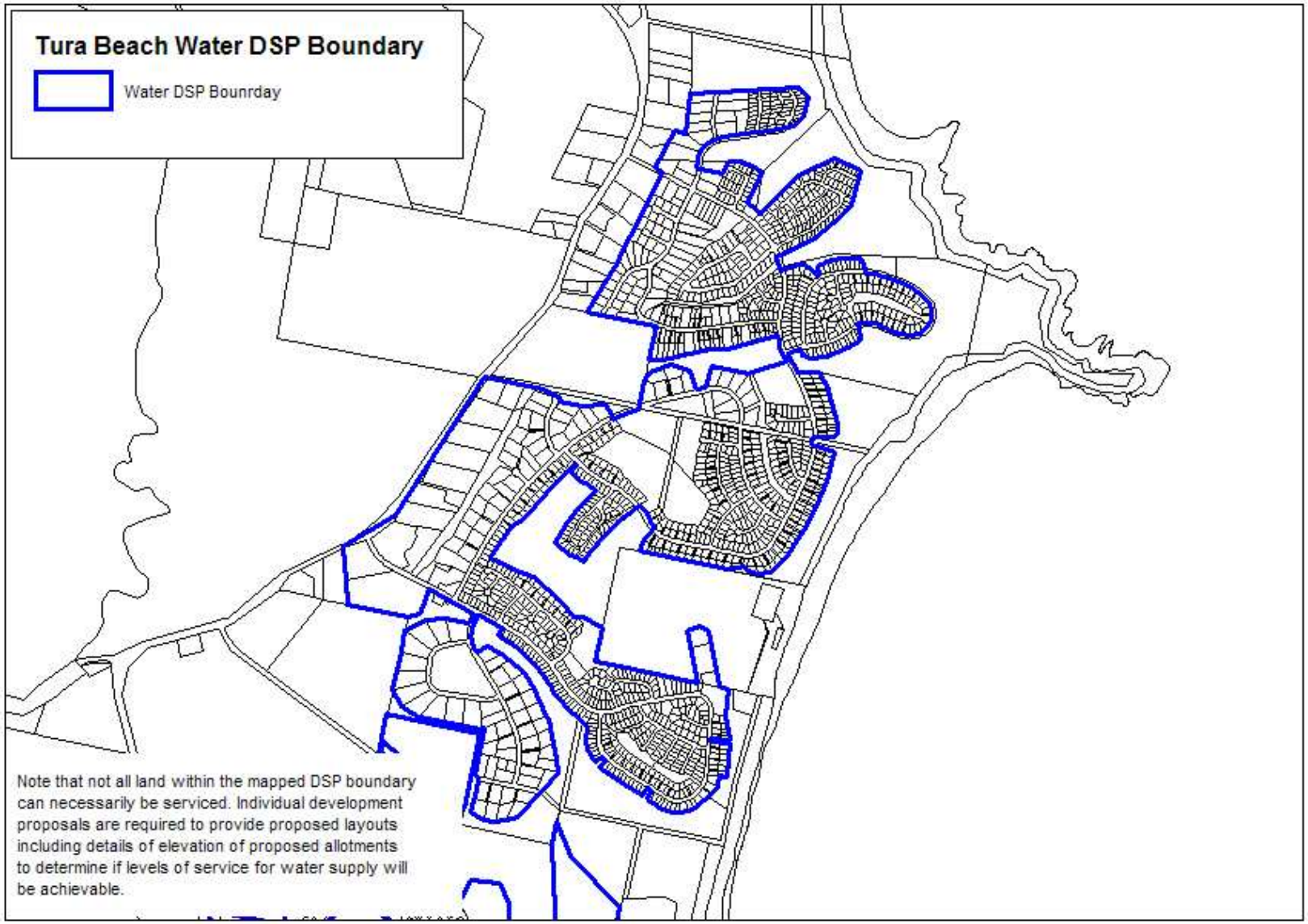

Figure 27 Tura Beach Water DSP Boundary

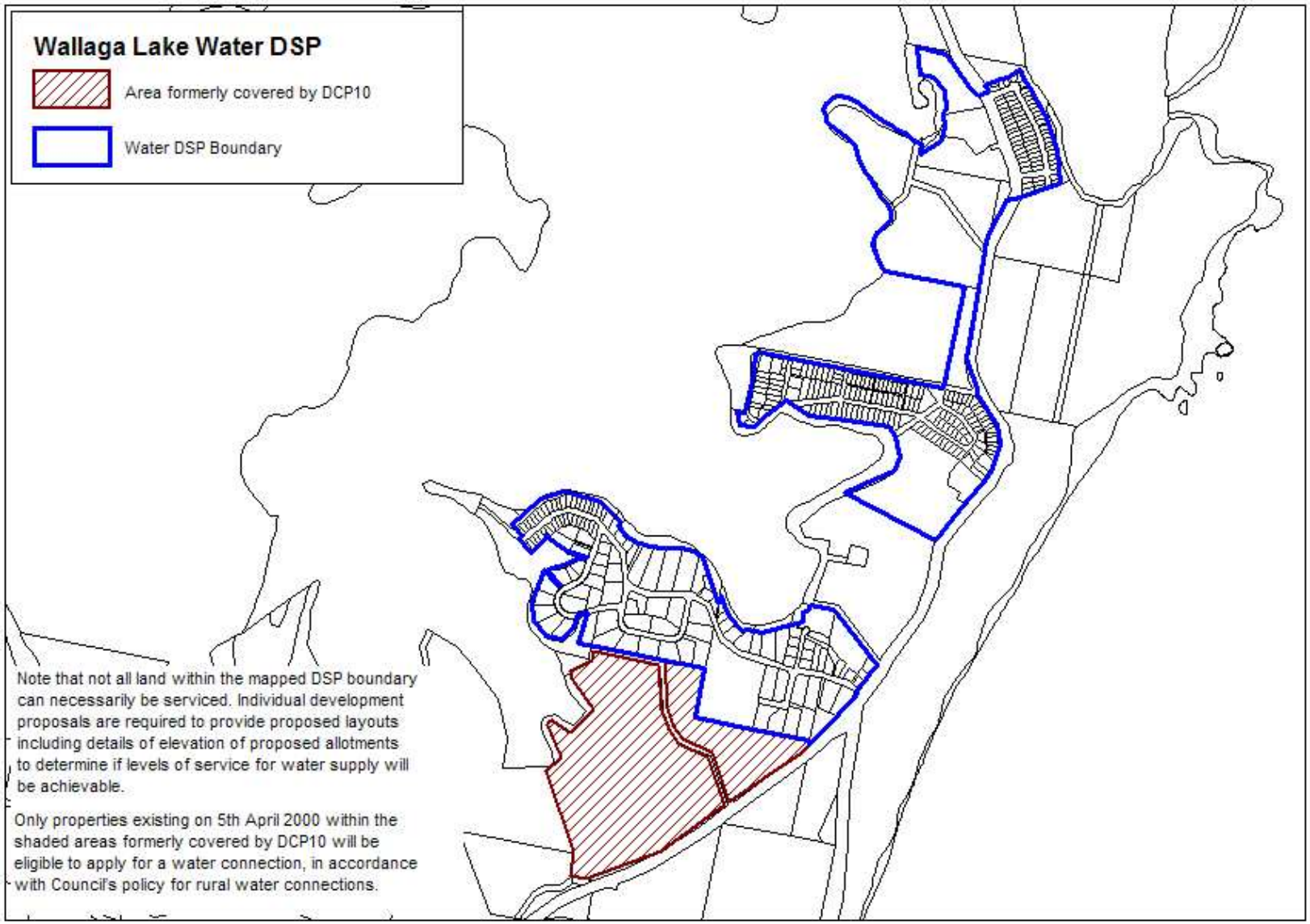

Figure 28 Wallaga Lake Water DSP Boundary

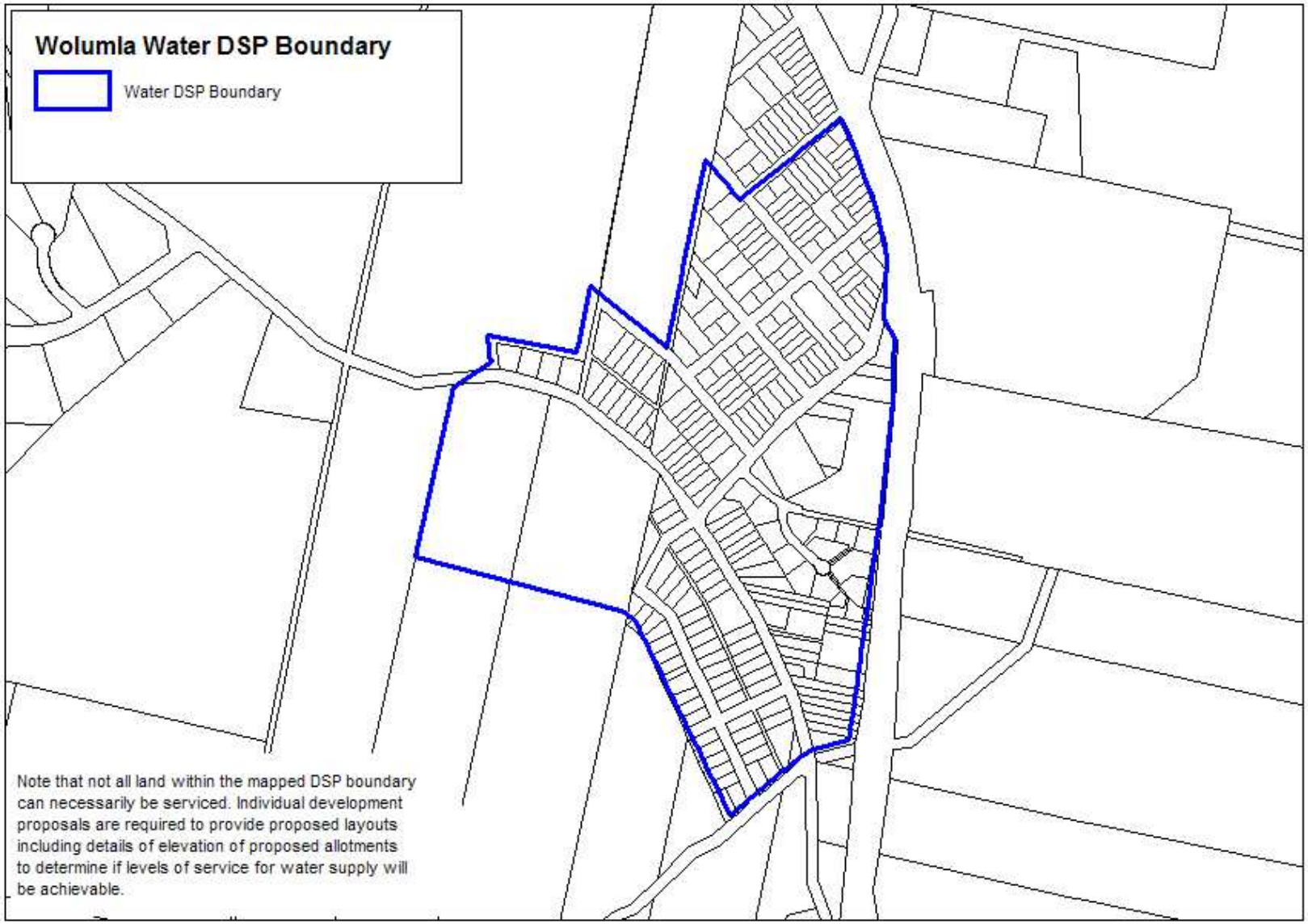

Figure 29 Wolumla Water DSP Boundary

Appendix B Water Supply Capital Works Program

BEGA VALLEY SHIRE COUNCIL

WATER - 30-Year Capital Works Program — Current Year 2012 /13

CAPITAL WORKS IN 2012$('000)

	SUBSIDY	ILOS	GROWTH	RENEW	0 Total	1 2012/13	2 2013/14	3 2014/15	4 2015/16	5 2016/17	6 2017/18	7 2018/19	8 2019/20	9 2020/21	10 2021/22	11 2022/23	12 2023/24	13 2024/25	14 2025/26	15 2026/27	16 2027/28	17 2028/29	18 2029/30	19 2030/31	20 2031/32	21 2032/33	22 2033/34	23 2034/35	24 2035/36	25 2036/37	26 2037/38	27 2038/39	28 2039/40	29 2040/41	30 2041/42
BERMAGUI:																																		
Water Treatment Plant - Pre Construction Activities say 20%		73%	27%		917										262	328	328																	
4ML/d Water Treatment Plant (iron, turbidity & colour)		73%	27%		8800													2904	2904	2992														
Nutley's Creek Reservoir 200mm Inlet & 300mm Outlet Main -		73%	27%		2100		300	1800																										
Nutley's Creek Reservoir (4ML)		73%	27%		2900	1000		400	1000	500																								
Quamma Duplicate Main - 100mm		73%	27%		1000		200	800																										
Cobargo duplicate Mains		73%	27%		860														200	660														
Akolele duplicate main		73%	27%		400																					100	300							
BEGA-TATHRA					0																													
Tarraganda System Upgrade -Reservoir			50%	50%	510		510																											
Water Treatment Plant - Pre Construction Activities say 20%		72%	28%		900									257	212	212	218																	
10ML/d Water Treatment Plant (iron)		72%	28%		16500													5445	5445	5610														
BEMBOKA																																		
Water Treatment Plant - Pre Construction Activities say 20%		84%	16%		563		188	375																										
0.4ML/d Water Treatment Plant (iron, turbidity & colour)		84%	16%		2800				2100	700																								
TANTAWANGLO-KIAH																																		
Water Treatment Plant - Pre Construction Activities say 20%		72%	28%		1178									353	272	272	280																	
17ML/d Yellow Pinch Dam Water Treatment Plant (algae, iron, Mn, colour)		72%	28%		29500													9735	9735	10030														
Transfer Main Upgrade to supply water to South with YPD WTP		72%	28%		11000				50	100	150	1200	3000	3500	3000																			
Transfer Main Upgrade from Palestine PS to South Eden Reservoir				100%	1200																				1200									
0.75ML/d Refurbished PS for Boyd Town Reservoir & Reservoir Controls				100%	350						20	30	300																					
Water Treatment Plant - Pre Construction Activities say 20%		72%	28%		681																		170	255	255									
6.5ML/d Ben Boyd Dam Water Treatment Plant (Iron)		72%	28%		11000																					3630	3630	3740						
Disinfection Tanta trunk main -investigation and capital					0																													
Water Quality Risk Assessment		100%			250		250																											
Developemt Servicing Strategy, DSP & SBP		100%			125	125																												
RENEWALS/ REPLACEMENT - ALL SYSTEMS					0																													
30-year renewal works (AMP & consolidated)			25%	75%	67540	1860	2320	2320	2320	2320	2320	1320	1020	1320	1320	2515	2515	2515	2515	2515	2515	2515	2515	2515	2515	1315	2515	2515	2515	2515	2515	2515	2515	2515	2515
GRAND TOTAL					161073	2985	3768	5695	5470	3620	2490	2550	4320	5430	5066	3327	3341	20599	20799	21807	2515	2515	2515	2685	2770	2770	6245	6445	6255	2515	2515	2515	2515	2515	2515

Appendix C Capital Charge and Reduction Amount Calculations

Overview

In accordance with the Guidelines, Council has adopted the NPV of Annual Charges method for calculation of the Reduction Amount. This method involves calculation of the PV of the difference between annual rates and charges revenue, and operating costs projected for new development over the next 30 years. This is divided by the PV of the new ETs over the planning horizon to give the reduction amount. The method involves 30-year forecasting of income and expenditures relating to new development.

List of Items in Appendix C

Table C1 Capital Charge Calculation – Bega-Tathra and Tantawanglo-Kiah Schemes

Table C2 Capital Charge Calculation – Bemboka

Table C3 Capital Charge Calculation – Brogo-Bermagui Water Supply Scheme

Table C4 – Calculation of DC using the NPV Annual Charges Method – 3rd Iteration

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
Pre 1996 Works									
Dams & Reservoirs									
BEGA/ TATHRA									
High Street Reservoir (new)	1985	1995/96	$1,184,566.71	$1,184,566.71	19,046	$62.20	30	1.49	$92.00
Mogareeka Reservoir	1985	1995/96	$594,034.91	$594,034.91	19,046	$31.19	30	1.49	$46.00
South Bega Reservoir (new)	1985	1995/96	$2,619,245.38	$2,619,245.38	19,046	$137.52	30	1.49	$204.00
Tathra Trig Reservoir	1985	1995/96	$2,830,280.81	$2,830,280.81	19,046	$148.60	30	1.49	$221.00
Bemboka Reservoir No.2	1988	1995/96	$507,653.77	$507,653.77	19,046	$26.65	30	1.49	$40.00
Aquamarine Service Reservoir No.1	1993	1995/96	$218,472.93	$218,472.93	19,046	$11.47	30	1.49	$17.00
Aquamarine Service Reservoir No.2	1993	1995/96	$218,472.93	$218,472.93	19,046	$11.47	30	1.49	$17.00
Aquamarine Service Reservoir No.3	1993	1995/96	$218,472.93	$218,472.93	19,046	$11.47	30	1.49	$17.00
Aquamarine Storage Reservoir No.1	1993	1995/96	$115,399.87	$115,399.87	19,046	$6.06	30	1.49	$9.00
Aquamarine Storage Reservoir No.2	1993	1995/96	$115,399.87	$115,399.87	19,046	$6.06	30	1.49	$9.00
Kalaru Reservoir	1996	1995/96	$1,060,877.81	$1,060,877.81	19,046	$55.70	30	1.49	$83.00
TANTAWANGLO / KIAH									
Tantawanglo Weir - Weir Wall	1951	1995/96	$216,000.00	$216,000.00	19,046	$11.34	30	1.49	$17.00
Tantawanglo Weir - M&E Items	1951	1995/96	$31,000.00	$31,000.00	19,046	$1.63	30	1.49	$2.00
Tantawanglo Weir - Prelim and Others	1951	1995/96	$81,000.00	$81,000.00	19,046	$4.25	30	1.49	$6.00
Yellow Pinch Dam - Dam wall	1985	1995/96	$13,437,000.00	$13,437,000.00	19,046	$705.50	30	1.49	$1,048.00
Yellow Pinch Dam - Spillway	1985	1995/96	$964,000.00	$964,000.00	19,046	$50.61	30	1.49	$75.00
Yellow Pinch Dam - Appurtenant Works	1985	1995/96	$1,945,000.00	$1,945,000.00	19,046	$102.12	30	1.49	$152.00
Yellow Pinch Dam - M&E Items	1985	1995/96	$1,690,000.00	$1,690,000.00	19,046	$88.73	30	1.49	$132.00
Yellow Pinch Dam - Access Roads	1985	1995/96	$1,466,000.00	$1,466,000.00	19,046	$76.97	30	1.49	$114.00
Yellow Pinch Dam - Prelim and Others	1985	1995/96	$2,448,000.00	$2,448,000.00	19,046	$128.53	30	1.49	$191.00
Ben Boyd Dam - Dam Wall	1975	1995/96	$9,531,000.00	$9,531,000.00	19,046	$500.42	30	1.49	$744.00
Ben Boyd Dam - Spillway	1975	1995/96	$350,000.00	$350,000.00	19,046	$18.38	30	1.49	$27.00
Ben Boyd Dam - Appurtenant Works	1975	1995/96	$1,722,000.00	$1,722,000.00	19,046	$90.41	30	1.49	$134.00
Ben Boyd Dam - M&E Items	1975	1995/96	$1,345,000.00	$1,345,000.00	19,046	$70.62	30	1.49	$105.00
Ben Boyd Dam - Access Roads	1975	1995/96	$0.00	$0.00	19,046	$0.00	30	1.49	$0.00
Ben Boyd Dam - Prelim and Others	1975	1995/96	$1,975,000.00	$1,975,000.00	19,046	$103.70	30	1.49	$154.00
Pambula Beach Reservoir No.2	1984	1995/96	$2,806,851.46	$2,806,851.46	19,046	$147.37	30	1.49	$219.00
Merimbula Reservoir No.3	1985	1995/96	$2,796,448.20	$2,796,448.20	19,046	$146.83	30	1.49	$218.00
Mirador Tank	1992	1995/96	$487,653.77	$487,653.77	19,046	$25.60	30	1.49	$38.00
Millingandi Reservoir	1996	1995/96	$245,495.83	$245,495.83	19,046	$12.89	30	1.49	$19.00
North Tura Reservoir	1996	1995/96	$1,020,208.90	$1,020,208.90	19,046	$53.57	30	1.49	$80.00
South Pambula Reservoir	1996	1995/96	$771,229.88	$771,229.88	19,046	$40.49	30	1.49	$60.00
Tura Reservoir-B	1996	1995/96	$3,827,885.34	$3,827,885.34	19,046	$200.98	30	1.49	$299.00
Transfer System									
BEGA/ TATHRA									
KIAH TRUNK	1972	1995/96	$69,294.83	$69,294.83	19,046	$3.64	30	1.49	$5.00
KIAH TRUNK	1972	1995/96	$3,812.61	$3,812.61	19,046	$0.20	30	1.49	$0.00
KIAH TRUNK	1972	1995/96	$4,451.00	$4,451.00	19,046	$0.23	30	1.49	$0.00
KIAH TRUNK	1972	1995/96	$9,740.24	$9,740.24	19,046	$0.51	30	1.49	$1.00
KIAH TRUNK	1972	1995/96	$9,876.22	$9,876.22	19,046	$0.52	30	1.49	$1.00
TATHRA TRUNK (OLD)	1975	1995/96	$35,899.73	$35,899.73	19,046	$1.88	30	1.49	$3.00
TATHRA TRUNK (OLD)	1975	1995/96	$33,395.10	$33,395.10	19,046	$1.75	30	1.49	$3.00
TATHRA TRUNK (OLD)	1975	1995/96	$16,697.55	$16,697.55	19,046	$0.88	30	1.49	$1.00
EDEN TRUNK	1975	1995/96	$4,634.48	$4,634.48	19,046	$0.24	30	1.49	$0.00
EDEN TRUNK	1975	1995/96	$4,634.48	$4,634.48	19,046	$0.24	30	1.49	$0.00
Ben Boyd	1980	1995/96	$5,287.56	$5,287.56	19,046	$0.28	30	1.49	$0.00
KIAH TRUNK	1980	1995/96	$4,418.03	$4,418.03	19,046	$0.23	30	1.49	$0.00
KIAH TRUNK	1980	1995/96	$9,561.41	$9,561.41	19,046	$0.50	30	1.49	$1.00
KIAH TRUNK	1980	1995/96	$18,827.66	$18,827.66	19,046	$0.99	30	1.49	$1.00
Ben Boyd	1980	1995/96	$10,853.41	$10,853.41	19,046	$0.57	30	1.49	$1.00
Ben Boyd	1980	1995/96	$10,018.53	$10,018.53	19,046	$0.53	30	1.49	$1.00
BEGA TRUNK	1985	1995/96	$27,245.84	$27,245.84	19,046	$1.43	30	1.49	$2.00
BEGA (TRUNK)	1985	1995/96	$8,846.74	$8,846.74	19,046	$0.46	30	1.49	$1.00
BEGA (TRUNK)	1985	1995/96	$2,937.53	$2,937.53	19,046	$0.15	30	1.49	$0.00
BEGA TRUNK	1985	1995/96	$1,318.82	$1,318.82	19,046	$0.07	30	1.49	$0.00
BEGA TRUNK	1985	1995/96	$1,239.42	$1,239.42	19,046	$0.07	30	1.49	$0.00
BEGA	1985	1995/96	$175.78	$175.78	19,046	$0.01	30	1.49	$0.00
BEGA	1985	1995/96	$38,105.66	$38,105.66	19,046	$2.00	30	1.49	$3.00
BEGA	1985	1995/96	$16,406.07	$16,406.07	19,046	$0.86	30	1.49	$1.00
BEGA	1985	1995/96	$20,300.82	$20,300.82	19,046	$1.07	30	1.49	$2.00
BEGA TRUNK	1985	1995/96	$5,109.85	$5,109.85	19,046	$0.27	30	1.49	$0.00
BEGA TRUNK	1985	1995/96	$1,338.59	$1,338.59	19,046	$0.07	30	1.49	$0.00
BEGA	1985	1995/96	$3,037.41	$3,037.41	19,046	$0.16	30	1.49	$0.00
BEGA	1985	1995/96	$14,442.15	$14,442.15	19,046	$0.76	30	1.49	$1.00
BEGA TRUNK	1987	1995/96	$38,775.42	$38,775.42	19,046	$2.04	30	1.49	$3.00
TATHRA TRUNK (NEW)	1987	1995/96	$109,791.42	$109,791.42	19,046	$5.76	30	1.49	$9.00
BEGA TRUNK	1987	1995/96	$246,281.04	$246,281.04	19,046	$12.93	30	1.49	$19.00

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
BEGA TRUNK	1987	1995/96	$219,035.20	$219,035.20	19,046	$11.50	30	1.49	$17.00
BEGA TRUNK	1987	1995/96	$147,448.08	$147,448.08	19,046	$7.74	30	1.49	$12.00
BEGA TRUNK	1987	1995/96	$28,314.31	$28,314.31	19,046	$1.49	30	1.49	$2.00
BEGA TRUNK	1987	1995/96	$33,656.63	$33,656.63	19,046	$1.77	30	1.49	$3.00
BEGA TRUNK	1987	1995/96	$26,177.38	$26,177.38	19,046	$1.37	30	1.49	$2.00
BEGA TRUNK	1987	1995/96	$126,078.80	$126,078.80	19,046	$6.62	30	1.49	$10.00
BEGA TRUNK	1987	1995/96	$96,909.72	$96,909.72	19,046	$5.09	30	1.49	$8.00
BEGA TRUNK	1987	1995/96	$76,963.34	$76,963.34	19,046	$4.04	30	1.49	$6.00
BEGA TRUNK	1987	1995/96	$74,025.80	$74,025.80	19,046	$3.89	30	1.49	$6.00
BEGA TRUNK	1987	1995/96	$158,039.22	$158,039.22	19,046	$8.30	30	1.49	$12.00
BEGA TRUNK	1987	1995/96	$209,739.78	$209,739.78	19,046	$11.01	30	1.49	$16.00
BEGA TRUNK	1987	1995/96	$35,837.89	$35,837.89	19,046	$1.88	30	1.49	$3.00
BEGA TRUNK	1987	1995/96	$138,651.51	$138,651.51	19,046	$7.28	30	1.49	$11.00
BEGA TRUNK	1987	1995/96	$121,026.31	$121,026.31	19,046	$6.35	30	1.49	$9.00
TATHRA TRUNK (NEW)	1987	1995/96	$55,060.56	$55,060.56	19,046	$2.89	30	1.49	$4.00
TATHRA TRUNK (NEW)	1987	1995/96	$180,348.07	$180,348.07	19,046	$9.47	30	1.49	$14.00
TATHRA TRUNK (NEW)	1987	1995/96	$77,810.14	$77,810.14	19,046	$4.09	30	1.49	$6.00
TATHRA TRUNK (NEW)	1987	1995/96	$70,886.35	$70,886.35	19,046	$3.72	30	1.49	$6.00
TATHRA TRUNK (NEW)	1987	1995/96	$145,069.74	$145,069.74	19,046	$7.62	30	1.49	$11.00
TATHRA TRUNK (NEW)	1987	1995/96	$92,317.11	$92,317.11	19,046	$4.85	30	1.49	$7.00
TATHRA TRUNK (NEW)	1987	1995/96	$180,348.07	$180,348.07	19,046	$9.47	30	1.49	$14.00
TATHRA TRUNK (NEW)	1987	1995/96	$158,587.61	$158,587.61	19,046	$8.33	30	1.49	$12.00
TATHRA TRUNK (NEW)	1987	1995/96	$77,810.14	$77,810.14	19,046	$4.09	30	1.49	$6.00
TATHRA TRUNK (NEW)	1987	1995/96	$192,876.82	$192,876.82	19,046	$10.13	30	1.49	$15.00
TATHRA TRUNK (NEW)	1987	1995/96	$192,217.41	$192,217.41	19,046	$10.09	30	1.49	$15.00
TATHRA TRUNK (NEW)	1987	1995/96	$163,533.17	$163,533.17	19,046	$8.59	30	1.49	$13.00
TATHRA TRUNK (NEW)	1987	1995/96	$90,998.29	$90,998.29	19,046	$4.78	30	1.49	$7.00
TATHRA TRUNK (NEW)	1987	1995/96	$13,847.57	$13,847.57	19,046	$0.73	30	1.49	$1.00
TATHRA TRUNK (NEW)	1987	1995/96	$118,693.43	$118,693.43	19,046	$6.23	30	1.49	$9.00
BEGA TRUNK	1987	1995/96	$4,452.68	$4,452.68	19,046	$0.23	30	1.49	$0.00
BEGA TRUNK	1987	1995/96	$91,513.97	$91,513.97	19,046	$4.80	30	1.49	$7.00
BEGA TRUNK	1987	1995/96	$46,413.00	$46,413.00	19,046	$2.44	30	1.49	$4.00
TATHRA TRUNK (NEW)	1987	1995/96	$37,256.55	$37,256.55	19,046	$1.96	30	1.49	$3.00
TATHRA TRUNK (NEW)	1987	1995/96	$61,324.94	$61,324.94	19,046	$3.22	30	1.49	$5.00
BEGA TRUNK	1987	1995/96	$19,215.04	$19,215.04	19,046	$1.01	30	1.49	$1.00
BEGA TRUNK	1987	1995/96	$3,244.14	$3,244.14	19,046	$0.17	30	1.49	$0.00
BEGA TRUNK	1987	1995/96	$199,802.84	$199,802.84	19,046	$10.49	30	1.49	$16.00
BEGA TRUNK	1987	1995/96	$256,965.68	$256,965.68	19,046	$13.49	30	1.49	$20.00
BEGA TRUNK	1987	1995/96	$292,578.18	$292,578.18	19,046	$15.36	30	1.49	$23.00
BEGA TRUNK	1987	1995/96	$302,565.79	$302,565.79	19,046	$15.89	30	1.49	$24.00
TATHRA TRUNK (NEW)	1987	1995/96	$98,911.19	$98,911.19	19,046	$5.19	30	1.49	$8.00
TATHRA TRUNK	1987	1995/96	$30,124.14	$30,124.14	19,046	$1.58	30	1.49	$2.00
TATHRA TRUNK (NEW)	1987	1995/96	$154,301.45	$154,301.45	19,046	$8.10	30	1.49	$12.00
TATHRA TRUNK (NEW)	1987	1995/96	$197,822.38	$197,822.38	19,046	$10.39	30	1.49	$15.00
TATHRA TRUNK (NEW)	1987	1995/96	$182,326.29	$182,326.29	19,046	$9.57	30	1.49	$14.00
TATHRA TRUNK (NEW)	1987	1995/96	$164,851.98	$164,851.98	19,046	$8.66	30	1.49	$13.00
TATHRA TRUNK (NEW)	1987	1995/96	$218,923.43	$218,923.43	19,046	$11.49	30	1.49	$17.00
TATHRA TRUNK (NEW)	1987	1995/96	$123,638.99	$123,638.99	19,046	$6.49	30	1.49	$10.00
TATHRA TRUNK (NEW)	1987	1995/96	$164,851.98	$164,851.98	19,046	$8.66	30	1.49	$13.00
TATHRA TRUNK (NEW)	1987	1995/96	$162,873.76	$162,873.76	19,046	$8.55	30	1.49	$13.00
TATHRA TRUNK (NEW)	1987	1995/96	$188,920.37	$188,920.37	19,046	$9.92	30	1.49	$15.00
TATHRA TRUNK (NEW)	1987	1995/96	$169,467.84	$169,467.84	19,046	$8.90	30	1.49	$13.00
TATHRA TRUNK (NEW)	1987	1995/96	$174,413.40	$174,413.40	19,046	$9.16	30	1.49	$14.00
TATHRA TRUNK (NEW)	1987	1995/96	$62,643.75	$62,643.75	19,046	$3.29	30	1.49	$5.00
TATHRA TRUNK (NEW)	1987	1995/96	$166,170.80	$166,170.80	19,046	$8.72	30	1.49	$13.00
BEGA TRUNK	1987	1995/96	$2,491.03	$2,491.03	19,046	$0.13	30	1.49	$0.00
TATHRA TRUNK	1995	1995/96	$22,625.52	$22,625.52	19,046	$1.19	30	1.49	$2.00
TATHRA TRUNK	1996	1995/96	$18,675.03	$18,675.03	19,046	$0.98	30	1.49	$1.00
TANTAWANGLO / KIAH									
TURA BEACH TRUNK	1970	1995/96	$52,752.63	$52,752.63	19,046	$2.77	30	1.49	$4.00
TURA BEACH TRUNK	1970	1995/96	$142,102.41	$142,102.41	19,046	$7.46	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$10,729.16	$10,729.16	19,046	$0.56	30	1.49	$1.00
KIAH TRUNK	1972	1995/96	$22,984.65	$22,984.65	19,046	$1.21	30	1.49	$2.00
KIAH TRUNK	1972	1995/96	$53,870.27	$53,870.27	19,046	$2.83	30	1.49	$4.00
KIAH TRUNK	1972	1995/96	$158,257.90	$158,257.90	19,046	$8.31	30	1.49	$12.00
KIAH TRUNK	1972	1995/96	$64,951.68	$64,951.68	19,046	$3.41	30	1.49	$5.00
KIAH TRUNK	1972	1995/96	$35,278.32	$35,278.32	19,046	$1.85	30	1.49	$3.00
KIAH TRUNK	1972	1995/96	$10,082.35	$10,082.35	19,046	$0.53	30	1.49	$1.00
KIAH TRUNK	1972	1995/96	$181,007.48	$181,007.48	19,046	$9.50	30	1.49	$14.00
KIAH TRUNK	1972	1995/96	$66,233.61	$66,233.61	19,046	$3.48	30	1.49	$5.00
KIAH TRUNK	1972	1995/96	$83,487.75	$83,487.75	19,046	$4.38	30	1.49	$7.00
KIAH TRUNK	1972	1995/96	$78,756.78	$78,756.78	19,046	$4.14	30	1.49	$6.00
KIAH TRUNK	1972	1995/96	$84,600.92	$84,600.92	19,046	$4.44	30	1.49	$7.00
KIAH TRUNK	1972	1995/96	$89,053.60	$89,053.60	19,046	$4.68	30	1.49	$7.00
KIAH TRUNK	1972	1995/96	$73,469.22	$73,469.22	19,046	$3.86	30	1.49	$6.00
KIAH TRUNK	1972	1995/96	$43,135.34	$43,135.34	19,046	$2.26	30	1.49	$3.00
KIAH TRUNK	1972	1995/96	$160,296.48	$160,296.48	19,046	$8.42	30	1.49	$13.00
KIAH TRUNK	1972	1995/96	$157,513.55	$157,513.55	19,046	$8.27	30	1.49	$12.00
KIAH TRUNK	1972	1995/96	$141,929.17	$141,929.17	19,046	$7.45	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$141,929.17	$141,929.17	19,046	$7.45	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$41,187.29	$41,187.29	19,046	$2.16	30	1.49	$3.00
KIAH TRUNK	1972	1995/96	$23,098.28	$23,098.28	19,046	$1.21	30	1.49	$2.00
KIAH TRUNK	1972	1995/96	$179,220.37	$179,220.37	19,046	$9.41	30	1.49	$14.00
KIAH TRUNK	1972	1995/96	$191,558.00	$191,558.00	19,046	$10.06	30	1.49	$15.00

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
KIAH TRUNK	1972	1995/96	$141,772.70	$141,772.70	19,046	$7.44	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$188,920.37	$188,920.37	19,046	$9.92	30	1.49	$15.00
KIAH TRUNK	1972	1995/96	$142,764.05	$142,764.05	19,046	$7.50	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$163,079.40	$163,079.40	19,046	$8.56	30	1.49	$13.00
KIAH TRUNK	1972	1995/96	$139,146.25	$139,146.25	19,046	$7.31	30	1.49	$11.00
KIAH TRUNK	1972	1995/96	$154,174.04	$154,174.04	19,046	$8.09	30	1.49	$12.00
KIAH TRUNK	1972	1995/96	$106,864.32	$106,864.32	19,046	$5.61	30	1.49	$8.00
KIAH TRUNK	1972	1995/96	$3,617.80	$3,617.80	19,046	$0.19	30	1.49	$0.00
KIAH TRUNK	1972	1995/96	$66,233.61	$66,233.61	19,046	$3.48	30	1.49	$5.00
KIAH TRUNK	1972	1995/96	$30,612.17	$30,612.17	19,046	$1.61	30	1.49	$2.00
KIAH TRUNK	1972	1995/96	$73,469.22	$73,469.22	19,046	$3.86	30	1.49	$6.00
KIAH	1972	1995/96	$386.98	$386.98	19,046	$0.02	30	1.49	$0.00
KIAH	1972	1995/96	$3,203.20	$3,203.20	19,046	$0.17	30	1.49	$0.00
MERIMBULA TRUNK	1973	1995/96	$70,226.94	$70,226.94	19,046	$3.69	30	1.49	$5.00
EDEN TRUNK	1975	1995/96	$6,024.83	$6,024.83	19,046	$0.32	30	1.49	$0.00
EDEN TRUNK	1975	1995/96	$98,251.04	$98,251.04	19,046	$5.16	30	1.49	$8.00
EDEN TRUNK	1975	1995/96	$4,402.76	$4,402.76	19,046	$0.23	30	1.49	$0.00
EDEN TRUNK	1975	1995/96	$39,161.38	$39,161.38	19,046	$2.06	30	1.49	$3.00
EDEN TRUNK	1975	1995/96	$62,565.52	$62,565.52	19,046	$3.28	30	1.49	$5.00
MERIMBULA TRUNK	1975	1995/96	$12,513.10	$12,513.10	19,046	$0.66	30	1.49	$1.00
TURA BEACH TRUNK	1975	1995/96	$151,947.70	$151,947.70	19,046	$7.98	30	1.49	$12.00
TURA BEACH TRUNK	1975	1995/96	$145,825.27	$145,825.27	19,046	$7.66	30	1.49	$11.00
TURA BEACH TRUNK	1975	1995/96	$119,109.19	$119,109.19	19,046	$6.25	30	1.49	$9.00
TURA BEACH TRUNK	1975	1995/96	$54,823.62	$54,823.62	19,046	$2.88	30	1.49	$4.00
EDEN TRUNK	1975	1995/96	$16,849.18	$16,849.18	19,046	$0.88	30	1.49	$1.00
MERIMBULA TRUNK	1975	1995/96	$34,063.45	$34,063.45	19,046	$1.79	30	1.49	$3.00
MERIMBULA TRUNK	1975	1995/96	$14,366.90	$14,366.90	19,046	$0.75	30	1.49	$1.00
MERIMBULA TRUNK	1975	1995/96	$46,113.10	$46,113.10	19,046	$2.42	30	1.49	$4.00
MERIMBULA TRUNK	1975	1995/96	$30,662.47	$30,662.47	19,046	$1.61	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$33,959.51	$33,959.51	19,046	$1.78	30	1.49	$3.00
EDEN TRUNK	1975	1995/96	$20,855.17	$20,855.17	19,046	$1.09	30	1.49	$2.00
EDEN TRUNK	1975	1995/96	$95,470.35	$95,470.35	19,046	$5.01	30	1.49	$7.00
EDEN TRUNK	1975	1995/96	$39,624.83	$39,624.83	19,046	$2.08	30	1.49	$3.00
EDEN TRUNK	1975	1995/96	$48,422.89	$48,422.89	19,046	$2.54	30	1.49	$4.00
EDEN TRUNK	1975	1995/96	$37,291.19	$37,291.19	19,046	$1.96	30	1.49	$3.00
EDEN TRUNK	1975	1995/96	$26,159.49	$26,159.49	19,046	$1.37	30	1.49	$2.00
EDEN TRUNK	1975	1995/96	$36,456.32	$36,456.32	19,046	$1.91	30	1.49	$3.00
EDEN TRUNK	1975	1995/96	$36,456.32	$36,456.32	19,046	$1.91	30	1.49	$3.00
TURA BEACH TRUNK	1975	1995/96	$47,003.60	$47,003.60	19,046	$2.47	30	1.49	$4.00
TURA BEACH TRUNK	1975	1995/96	$63,728.98	$63,728.98	19,046	$3.35	30	1.49	$5.00
MERIMBULA TRUNK	1975	1995/96	$19,122.83	$19,122.83	19,046	$1.00	30	1.49	$1.00
MERIMBULA TRUNK	1975	1995/96	$27,695.13	$27,695.13	19,046	$1.45	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$24,727.80	$24,727.80	19,046	$1.30	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$31,321.88	$31,321.88	19,046	$1.64	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$28,684.24	$28,684.24	19,046	$1.51	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$1,648.52	$1,648.52	19,046	$0.09	30	1.49	$0.00
MERIMBULA TRUNK	1975	1995/96	$20,441.65	$20,441.65	19,046	$1.07	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$22,749.57	$22,749.57	19,046	$1.19	30	1.49	$2.00
MERIMBULA TRUNK	1975	1995/96	$5,934.67	$5,934.67	19,046	$0.31	30	1.49	$0.00
MERIMBULA TRUNK	1975	1995/96	$10,220.82	$10,220.82	19,046	$0.54	30	1.49	$1.00
MERIMBULA TRUNK	1975	1995/96	$1,978.22	$1,978.22	19,046	$0.10	30	1.49	$0.00
MERIMBULA TRUNK	1975	1995/96	$7,583.19	$7,583.19	19,046	$0.40	30	1.49	$1.00
EDEN TRUNK	1975	1995/96	$3,707.59	$3,707.59	19,046	$0.19	30	1.49	$0.00
Eden Trunk	1975	1995/96	$1,622.07	$1,622.07	19,046	$0.09	30	1.49	$0.00
EDEN TRUNK	1975	1995/96	$1,158.62	$1,158.62	19,046	$0.06	30	1.49	$0.00
EDEN	1975	1995/96	$2,317.24	$2,317.24	19,046	$0.12	30	1.49	$0.00
EDEN TRUNK	1975	1995/96	$925.78	$925.78	19,046	$0.05	30	1.49	$0.00
Eden Trunk	1975	1995/96	$2,221.87	$2,221.87	19,046	$0.12	30	1.49	$0.00
TURA BEACH TRUNK	1975	1995/96	$49,536.06	$49,536.06	19,046	$2.60	30	1.49	$4.00
TURA BEACH TRUNK	1975	1995/96	$191,887.71	$191,887.71	19,046	$10.07	30	1.49	$15.00
MERIMBULA TRUNK	1975	1995/96	$3,244.14	$3,244.14	19,046	$0.17	30	1.49	$0.00
MERIMBULA TRUNK	1975	1995/96	$2,967.34	$2,967.34	19,046	$0.16	30	1.49	$0.00
TURA BEACH TRUNK	1976	1995/96	$44,805.09	$44,805.09	19,046	$2.35	30	1.49	$3.00
KIAH	1980	1995/96	$103,107.71	$103,107.71	19,046	$5.41	30	1.49	$8.00
KIAH TRUNK	1980	1995/96	$23,561.06	$23,561.06	19,046	$1.24	30	1.49	$2.00
TANTAWANGALO TRUNK	1980	1995/96	$107,699.20	$107,699.20	19,046	$5.65	30	1.49	$8.00
KIAH TRUNK	1980	1995/96	$30,526.49	$30,526.49	19,046	$1.60	30	1.49	$2.00
TANTAWANGALO TRUNK	1980	1995/96	$142,764.05	$142,764.05	19,046	$7.50	30	1.49	$11.00
TANTAWANGALO TRUNK	1980	1995/96	$41,187.29	$41,187.29	19,046	$2.16	30	1.49	$3.00
TANTAWANGALO TRUNK	1980	1995/96	$4,174.39	$4,174.39	19,046	$0.22	30	1.49	$0.00
Ben Boyd	1980	1995/96	$34,229.98	$34,229.98	19,046	$1.80	30	1.49	$3.00
MERIMBULA TRUNK	1980	1995/96	$46,488.26	$46,488.26	19,046	$2.44	30	1.49	$4.00
TANTAWANGALO TRUNK	1980	1995/96	$31,168.76	$31,168.76	19,046	$1.64	30	1.49	$2.00
KIAH	1980	1995/96	$8,502.35	$8,502.35	19,046	$0.45	30	1.49	$1.00
KIAH	1980	1995/96	$3,494.39	$3,494.39	19,046	$0.18	30	1.49	$0.00
MERIMBULA TRUNK	1983	1995/96	$60,040.77	$60,040.77	19,046	$3.15	30	1.49	$5.00
MERIMBULA TRUNK	1983	1995/96	$99,642.13	$99,642.13	19,046	$5.23	30	1.49	$8.00
MERIMBULA TRUNK	1983	1995/96	$121,784.82	$121,784.82	19,046	$6.39	30	1.49	$10.00
MERIMBULA TRUNK	1983	1995/96	$128,172.14	$128,172.14	19,046	$6.73	30	1.49	$10.00
MERIMBULA TRUNK	1983	1995/96	$113,268.40	$113,268.40	19,046	$5.95	30	1.49	$9.00
MERIMBULA TRUNK	1983	1995/96	$86,867.49	$86,867.49	19,046	$4.56	30	1.49	$7.00
MERIMBULA TRUNK	1983	1995/96	$63,021.52	$63,021.52	19,046	$3.31	30	1.49	$5.00
MERIMBULA TRUNK	1983	1995/96	$40,878.82	$40,878.82	19,046	$2.15	30	1.49	$3.00
MERIMBULA TRUNK	1983	1995/96	$4,684.03	$4,684.03	19,046	$0.25	30	1.49	$0.00
MERIMBULA TRUNK	1983	1995/96	$14,477.92	$14,477.92	19,046	$0.76	30	1.49	$1.00
MERIMBULA TRUNK	1983	1995/96	$58,763.30	$58,763.30	19,046	$3.09	30	1.49	$5.00
MERIMBULA TRUNK	1983	1995/96	$66,853.90	$66,853.90	19,046	$3.51	30	1.49	$5.00

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
EMERGENCY TRUNK	1983	1995/96	$102,885.52	$102,885.52	19,046	$5.40	30	1.49	$8.00
EMERGENCY TRUNK	1983	1995/96	$48,662.07	$48,662.07	19,046	$2.55	30	1.49	$4.00
EMERGENCY TRUNK	1983	1995/96	$102,653.79	$102,653.79	19,046	$5.39	30	1.49	$8.00
EMERGENCY TRUNK	1983	1995/96	$90,372.41	$90,372.41	19,046	$4.74	30	1.49	$7.00
EMERGENCY TRUNK	1983	1995/96	$101,263.45	$101,263.45	19,046	$5.32	30	1.49	$8.00
EMERGENCY TRUNK	1983	1995/96	$44,259.31	$44,259.31	19,046	$2.32	30	1.49	$3.00
EMERGENCY TRUNK	1983	1995/96	$24,794.48	$24,794.48	19,046	$1.30	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$19,928.28	$19,928.28	19,046	$1.05	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$7,415.17	$7,415.17	19,046	$0.39	30	1.49	$1.00
EMERGENCY TRUNK	1983	1995/96	$41,710.35	$41,710.35	19,046	$2.19	30	1.49	$3.00
EMERGENCY TRUNK	1983	1995/96	$53,760.00	$53,760.00	19,046	$2.82	30	1.49	$4.00
EMERGENCY TRUNK	1983	1995/96	$21,782.07	$21,782.07	19,046	$1.14	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$128,143.45	$128,143.45	19,046	$6.73	30	1.49	$10.00
EMERGENCY TRUNK	1983	1995/96	$26,416.55	$26,416.55	19,046	$1.39	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$38,466.21	$38,466.21	19,046	$2.02	30	1.49	$3.00
EMERGENCY TRUNK	1983	1995/96	$55,150.35	$55,150.35	19,046	$2.90	30	1.49	$4.00
EMERGENCY TRUNK	1983	1995/96	$26,184.83	$26,184.83	19,046	$1.37	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$15,525.52	$15,525.52	19,046	$0.82	30	1.49	$1.00
EDEN TRUNK	1983	1995/96	$75,728.72	$75,728.72	19,046	$3.98	30	1.49	$6.00
EMERGENCY TRUNK	1983	1995/96	$11,586.21	$11,586.21	19,046	$0.61	30	1.49	$1.00
EMERGENCY TRUNK	1983	1995/96	$25,489.66	$25,489.66	19,046	$1.34	30	1.49	$2.00
EMERGENCY TRUNK	1983	1995/96	$52,369.66	$52,369.66	19,046	$2.75	30	1.49	$4.00
EMERGENCY TRUNK	1983	1995/96	$61,870.35	$61,870.35	19,046	$3.25	30	1.49	$5.00
EMERGENCY TRUNK	1983	1995/96	$63,492.41	$63,492.41	19,046	$3.33	30	1.49	$5.00
EDEN TRUNK	1983	1995/96	$38,999.17	$38,999.17	19,046	$2.05	30	1.49	$3.00
EDEN TRUNK	1983	1995/96	$96,165.52	$96,165.52	19,046	$5.05	30	1.49	$8.00
EDEN TRUNK	1983	1995/96	$33,831.72	$33,831.72	19,046	$1.78	30	1.49	$3.00
EDEN TRUNK	1983	1995/96	$36,612.41	$36,612.41	19,046	$1.92	30	1.49	$3.00
MERIMBULA TRUNK	1983	1995/96	$31,977.93	$31,977.93	19,046	$1.68	30	1.49	$2.00
MERIMBULA TRUNK	1983	1995/96	$73,920.00	$73,920.00	19,046	$3.88	30	1.49	$6.00
MERIMBULA TRUNK	1983	1995/96	$108,678.62	$108,678.62	19,046	$5.71	30	1.49	$8.00
EDEN TRUNK	1983	1995/96	$69,702.62	$69,702.62	19,046	$3.66	30	1.49	$5.00
EDEN TRUNK	1983	1995/96	$19,996.82	$19,996.82	19,046	$1.05	30	1.49	$2.00
EDEN TRUNK	1983	1995/96	$10,659.31	$10,659.31	19,046	$0.56	30	1.49	$1.00
EDEN TRUNK	1983	1995/96	$34,526.90	$34,526.90	19,046	$1.81	30	1.49	$3.00
EDEN TRUNK	1983	1995/96	$17,379.31	$17,379.31	19,046	$0.91	30	1.49	$1.00
EDEN TRUNK	1983	1995/96	$27,575.17	$27,575.17	19,046	$1.45	30	1.49	$2.00
EDEN TRUNK	1983	1995/96	$44,722.76	$44,722.76	19,046	$2.35	30	1.49	$3.00
EDEN TRUNK	1983	1995/96	$25,721.38	$25,721.38	19,046	$1.35	30	1.49	$2.00
EDEN TRUNK	1983	1995/96	$23,635.86	$23,635.86	19,046	$1.24	30	1.49	$2.00
EDEN TRUNK	1983	1995/96	$46,576.55	$46,576.55	19,046	$2.45	30	1.49	$4.00
EDEN TRUNK	1983	1995/96	$54,686.90	$54,686.90	19,046	$2.87	30	1.49	$4.00
EDEN TRUNK	1983	1995/96	$1,622.07	$1,622.07	19,046	$0.09	30	1.49	$0.00
MERIMBULA TRUNK	1983	1995/96	$138,391.84	$138,391.84	19,046	$7.27	30	1.49	$11.00
EMERGENCY TRUNK	1983	1995/96	$124,899.31	$124,899.31	19,046	$6.56	30	1.49	$10.00
EMERGENCY TRUNK	1983	1995/96	$69,748.97	$69,748.97	19,046	$3.66	30	1.49	$5.00
EMERGENCY TRUNK	1983	1995/96	$83,884.14	$83,884.14	19,046	$4.40	30	1.49	$7.00
MERIMBULA TRUNK	1983	1995/96	$66,002.26	$66,002.26	19,046	$3.47	30	1.49	$5.00
MERIMBULA TRUNK	1983	1995/96	$83,460.93	$83,460.93	19,046	$4.38	30	1.49	$7.00
MERIMBULA TRUNK	1983	1995/96	$113,268.40	$113,268.40	19,046	$5.95	30	1.49	$9.00
EDEN TRUNK	1983	1995/96	$52,833.10	$52,833.10	19,046	$2.77	30	1.49	$4.00
EMERGENCY TRUNK	1983	1995/96	$2,548.97	$2,548.97	19,046	$0.13	30	1.49	$0.00
MERIMBULA TRUNK	1983	1995/96	$1,978.22	$1,978.22	19,046	$0.10	30	1.49	$0.00
EMERGENCY TRUNK	1983	1995/96	$85,506.21	$85,506.21	19,046	$4.49	30	1.49	$7.00
EMERGENCY TRUNK	1983	1995/96	$121,655.17	$121,655.17	19,046	$6.39	30	1.49	$9.00
EMERGENCY TRUNK	1983	1995/96	$117,252.42	$117,252.42	19,046	$6.16	30	1.49	$9.00
EMERGENCY TRUNK	1983	1995/96	$95,470.35	$95,470.35	19,046	$5.01	30	1.49	$7.00
EMERGENCY TRUNK	1983	1995/96	$114,935.17	$114,935.17	19,046	$6.03	30	1.49	$9.00
EMERGENCY TRUNK	1983	1995/96	$136,207.45	$136,207.45	19,046	$7.15	30	1.49	$11.00
STH WOLUMLA TRUNK	1984	1995/96	$52,521.10	$52,521.10	19,046	$2.76	30	1.49	$4.00
STH WOLUMLA TRUNK	1984	1995/96	$53,112.33	$53,112.33	19,046	$2.79	30	1.49	$4.00
STH WOLUMLA TRUNK	1984	1995/96	$56,955.34	$56,955.34	19,046	$2.99	30	1.49	$4.00
STH WOLUMLA TRUNK	1984	1995/96	$55,871.41	$55,871.41	19,046	$2.93	30	1.49	$4.00
STH WOLUMLA TRUNK	1984	1995/96	$41,583.31	$41,583.31	19,046	$2.18	30	1.49	$3.00
STH WOLUMLA TRUNK	1984	1995/96	$39,514.00	$39,514.00	19,046	$2.07	30	1.49	$3.00
PAMBULA BEACH TRUNK	1984	1995/96	$989.11	$989.11	19,046	$0.05	30	1.49	$0.00
STH WOLUMLA TRUNK	1984	1995/96	$55,181.64	$55,181.64	19,046	$2.90	30	1.49	$4.00
PAMBULA BEACH TRUNK	1984	1995/96	$19,480.47	$19,480.47	19,046	$1.02	30	1.49	$2.00
PAMBULA BEACH TRUNK	1985	1995/96	$49,455.59	$49,455.59	19,046	$2.60	30	1.49	$4.00
PAMBULA BEACH TRUNK	1985	1995/96	$166,170.80	$166,170.80	19,046	$8.72	30	1.49	$13.00
PAMBULA BEACH TRUNK	1985	1995/96	$172,105.47	$172,105.47	19,046	$9.04	30	1.49	$13.00
PAMBULA BEACH TRUNK	1985	1995/96	$170,456.95	$170,456.95	19,046	$8.95	30	1.49	$13.00
PAMBULA BEACH TRUNK	1985	1995/96	$177,051.03	$177,051.03	19,046	$9.30	30	1.49	$14.00
PAMBULA BEACH TRUNK	1985	1995/96	$94,625.04	$94,625.04	19,046	$4.97	30	1.49	$7.00
PAMBULA BEACH TRUNK	1985	1995/96	$169,467.84	$169,467.84	19,046	$8.90	30	1.49	$13.00
PAMBULA BEACH TRUNK	1985	1995/96	$195,844.15	$195,844.15	19,046	$10.28	30	1.49	$15.00
PAMBULA BEACH TRUNK	1985	1995/96	$179,029.25	$179,029.25	19,046	$9.40	30	1.49	$14.00
PAMBULA BEACH TRUNK	1985	1995/96	$38,905.07	$38,905.07	19,046	$2.04	30	1.49	$3.00
PAMBULA BEACH TRUNK	1985	1995/96	$142,102.41	$142,102.41	19,046	$7.46	30	1.49	$11.00
PAMBULA BEACH TRUNK	1985	1995/96	$104,516.16	$104,516.16	19,046	$5.49	30	1.49	$8.00
PAMBULA BEACH TRUNK	1985	1995/96	$8,038.18	$8,038.18	19,046	$0.42	30	1.49	$1.00
PAMBULA BEACH TRUNK	1985	1995/96	$86,548.97	$86,548.97	19,046	$4.54	30	1.49	$7.00
PAMBULA BEACH TRUNK	1985	1995/96	$111,317.00	$111,317.00	19,046	$5.84	30	1.49	$9.00
PAMBULA BEACH TRUNK	1985	1995/96	$124,953.33	$124,953.33	19,046	$6.56	30	1.49	$10.00
PAMBULA BEACH TRUNK	1985	1995/96	$120,778.94	$120,778.94	19,046	$6.34	30	1.49	$9.00
PAMBULA BEACH TRUNK	1985	1995/96	$50,092.65	$50,092.65	19,046	$2.63	30	1.49	$4.00
PAMBULA BEACH TRUNK	1985	1995/96	$83,487.75	$83,487.75	19,046	$4.38	30	1.49	$7.00

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
PAMBULA BEACH TRUNK	1985	1995/96	$85,714.09	$85,714.09	19,046	$4.50	30	1.49	$7.00
PAMBULA BEACH TRUNK	1985	1995/96	$88,775.31	$88,775.31	19,046	$4.66	30	1.49	$7.00
PAMBULA BEACH TRUNK	1985	1995/96	$38,575.36	$38,575.36	19,046	$2.03	30	1.49	$3.00
YELLOW PINCH TRUNK	1985	1995/96	$127,200.68	$127,200.68	19,046	$6.68	30	1.49	$10.00
YELLOW PINCH TRUNK	1985	1995/96	$87,079.85	$87,079.85	19,046	$4.57	30	1.49	$7.00
YELLOW PINCH TRUNK	1985	1995/96	$96,161.79	$96,161.79	19,046	$5.05	30	1.49	$8.00
YELLOW PINCH TRUNK	1985	1995/96	$360,072.49	$360,072.49	19,046	$18.91	30	1.49	$28.00
YELLOW PINCH TRUNK	1985	1995/96	$233,459.46	$233,459.46	19,046	$12.26	30	1.49	$18.00
YELLOW PINCH TRUNK	1985	1995/96	$57,162.84	$57,162.84	19,046	$3.00	30	1.49	$4.00
YELLOW PINCH TRUNK	1985	1995/96	$40,067.41	$40,067.41	19,046	$2.10	30	1.49	$3.00
YELLOW PINCH TRUNK	1985	1995/96	$232,925.23	$232,925.23	19,046	$12.23	30	1.49	$18.00
YELLOW PINCH TRUNK	1985	1995/96	$149,050.78	$149,050.78	19,046	$7.83	30	1.49	$12.00
YELLOW PINCH TRUNK	1985	1995/96	$141,357.84	$141,357.84	19,046	$7.42	30	1.49	$11.00
YELLOW PINCH TRUNK	1985	1995/96	$75,860.97	$75,860.97	19,046	$3.98	30	1.49	$6.00
YELLOW PINCH TRUNK	1985	1995/96	$186,981.26	$186,981.26	19,046	$9.82	30	1.49	$15.00
YELLOW PINCH TRUNK	1985	1995/96	$89,751.01	$89,751.01	19,046	$4.71	30	1.49	$7.00
YELLOW PINCH TRUNK	1985	1995/96	$102,572.58	$102,572.58	19,046	$5.39	30	1.49	$8.00
YELLOW PINCH TRUNK	1985	1995/96	$126,506.18	$126,506.18	19,046	$6.64	30	1.49	$10.00
YELLOW PINCH TRUNK	1985	1995/96	$293,293.47	$293,293.47	19,046	$15.40	30	1.49	$23.00
YELLOW PINCH TRUNK	1985	1995/96	$215,829.80	$215,829.80	19,046	$11.33	30	1.49	$17.00
TURA BEACH TRUNK	1985	1995/96	$35,608.03	$35,608.03	19,046	$1.87	30	1.49	$3.00
TURA BEACH TRUNK	1985	1995/96	$4,945.56	$4,945.56	19,046	$0.26	30	1.49	$0.00
TANTAWANGALO TRUNK	1985	1995/96	$834.88	$834.88	19,046	$0.04	30	1.49	$0.00
PAMBULA BEACH TRUNK	1985	1995/96	$16,814.90	$16,814.90	19,046	$0.88	30	1.49	$1.00
MERIMBULA TRUNK	1985	1995/96	$6,387.32	$6,387.32	19,046	$0.34	30	1.49	$0.00
PAMBULA BEACH TRUNK	1985	1995/96	$143,877.22	$143,877.22	19,046	$7.55	30	1.49	$11.00
PAMBULA BEACH TRUNK	1985	1995/96	$142,791.88	$142,791.88	19,046	$7.50	30	1.49	$11.00
YELLOW PINCH TRUNK	1985	1995/96	$315,143.56	$315,143.56	19,046	$16.55	30	1.49	$25.00
YEL.PIN/CAND TRUNK	1985	1995/96	$232,391.00	$232,391.00	19,046	$12.20	30	1.49	$18.00
YELLOW PINCH TRUNK	1985	1995/96	$192,323.59	$192,323.59	19,046	$10.10	30	1.49	$15.00
YELLOW PINCH TRUNK	1985	1995/96	$204,610.93	$204,610.93	19,046	$10.74	30	1.49	$16.00
YELLOW PINCH TRUNK	1985	1995/96	$277,266.50	$277,266.50	19,046	$14.56	30	1.49	$22.00
YELLOW PINCH TRUNK	1985	1995/96	$384,914.29	$384,914.29	19,046	$20.21	30	1.49	$30.00
PAMBULA BEACH TRUNK	1985	1995/96	$151,669.41	$151,669.41	19,046	$7.96	30	1.49	$12.00
PAMBULA BEACH TRUNK	1985	1995/96	$138,122.13	$138,122.13	19,046	$7.25	30	1.49	$11.00
MERIMBULA TRUNK	1988	1995/96	$28,354.54	$28,354.54	19,046	$1.49	30	1.49	$2.00
MERIMBULA TRUNK	1988	1995/96	$18,463.42	$18,463.42	19,046	$0.97	30	1.49	$1.00
MERIMBULA TRUNK	1988	1995/96	$27,035.72	$27,035.72	19,046	$1.42	30	1.49	$2.00
MERIMBULA TRUNK	1988	1995/96	$104,186.45	$104,186.45	19,046	$5.47	30	1.49	$8.00
MERIMBULA TRUNK	1989	1995/96	$3,297.04	$3,297.04	19,046	$0.17	30	1.49	$0.00
MERIMBULA TRUNK	1989	1995/96	$61,175.17	$61,175.17	19,046	$3.21	30	1.49	$5.00
TURA BEACH TRUNK	1992	1995/96	$1,669.75	$1,669.75	19,046	$0.09	30	1.49	$0.00
TURA BEACH	1992	1995/96	$1,699.73	$1,699.73	19,046	$0.09	30	1.49	$0.00
TURA BEACH TRUNK	1992	1995/96	$7,399.80	$7,399.80	19,046	$0.39	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$16,351.08	$16,351.08	19,046	$0.86	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$79,653.12	$79,653.12	19,046	$4.18	30	1.49	$6.00
MERIMBULA TRUNK	1993	1995/96	$28,684.24	$28,684.24	19,046	$1.51	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$26,376.32	$26,376.32	19,046	$1.38	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$19,452.53	$19,452.53	19,046	$1.02	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$27,695.13	$27,695.13	19,046	$1.45	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$17,804.01	$17,804.01	19,046	$0.93	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$10,220.82	$10,220.82	19,046	$0.54	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$9,561.41	$9,561.41	19,046	$0.50	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$6,594.08	$6,594.08	19,046	$0.35	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$53,741.75	$53,741.75	19,046	$2.82	30	1.49	$4.00
MERIMBULA TRUNK	1993	1995/96	$26,706.02	$26,706.02	19,046	$1.40	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$26,046.61	$26,046.61	19,046	$1.37	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$5,934.67	$5,934.67	19,046	$0.31	30	1.49	$0.00
MERIMBULA TRUNK	1993	1995/96	$38,575.36	$38,575.36	19,046	$2.03	30	1.49	$3.00
MERIMBULA TRUNK	1993	1995/96	$9,561.41	$9,561.41	19,046	$0.50	30	1.49	$1.00
MERIMBULA TRUNK	1993	1995/96	$28,684.24	$28,684.24	19,046	$1.51	30	1.49	$2.00
MERIMBULA TRUNK	1993	1995/96	$3,956.45	$3,956.45	19,046	$0.21	30	1.49	$0.00
MERIMBULA TRUNK	1993	1995/96	$1,318.82	$1,318.82	19,046	$0.07	30	1.49	$0.00
MERIMBULA TRUNK	1993	1995/96	$1,868.70	$1,868.70	19,046	$0.10	30	1.49	$0.00
EDEN TRUNK	1995	1995/96	$19,572.87	$19,572.87	19,046	$1.03	30	1.49	$2.00
STH WOLUMLA	1995	1995/96	$23,156.58	$23,156.58	19,046	$1.22	30	1.49	$2.00
STH PAMBULA TRUNK	1996	1995/96	$45,786.57	$45,786.57	19,046	$2.40	30	1.49	$4.00
STH PAMBULA TRUNK	1996	1995/96	$8,930.51	$8,930.51	19,046	$0.47	30	1.49	$1.00
STH PAMBULA TRUNK	1996	1995/96	$51,598.48	$51,598.48	19,046	$2.71	30	1.49	$4.00
TURA BEACH TRUNK	1996	1995/96	$31,959.30	$31,959.30	19,046	$1.68	30	1.49	$2.00
TURA BEACH TRUNK	1996	1995/96	$12,059.25	$12,059.25	19,046	$0.63	30	1.49	$1.00
STH PAMBULA TRUNK	1996	1995/96	$5,877.12	$5,877.12	19,046	$0.31	30	1.49	$0.00
STH PAMBULA TRUNK	1996	1995/96	$75,330.76	$75,330.76	19,046	$3.96	30	1.49	$6.00
STH PAMBULA TRUNK	1996	1995/96	$65,568.62	$65,568.62	19,046	$3.44	30	1.49	$5.00
TURA BEACH	1996	1995/96	$798.00	$798.00	19,046	$0.04	30	1.49	$0.00
Treatment Works & Pumping Stations									

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
BEGA/ TATHRA									
Bores	1987	1995/96	$450,000.00	$450,000.00	19,046	$23.63	30	1.49	$35.00
Water Pumping Stations - Civil	1982	1995/96	$357,314.15	$357,314.15	19,046	$18.76	30	1.49	$28.00
Water Pumping Stations - Electrical	1990	1995/96	$2,770,000.00	$2,770,000.00	19,046	$145.44	30	1.49	$216.00
Water Pumping Stations - Mechanical	1995	1995/96	$2,213,000.00	$2,213,000.00	19,046	$116.19	30	1.49	$173.00
Water Pumping Stations - Telemetry	1990	1995/96	$980,000.00	$980,000.00	19,046	$51.45	30	1.49	$76.00
TANTAWANGLO / KIAH									
Water Pumping Stations - Civil	1982	1995/96	$1,241,791.45	$1,241,791.45	19,046	$65.20	30	1.49	$97.00
Water Pumping Stations - Electrical	1995	1995/96	$3,450,000.00	$3,450,000.00	19,046	$181.14	30	1.49	$269.00
Water Pumping Stations - Telemetry	1995	1995/96	$1,250,000.00	$1,250,000.00	19,046	$65.63	30	1.49	$98.00
Mobile Plant and Equipment	1996	1995/96	$20,126.75	$20,126.75	19,046	$1.06	30	1.49	$2.00
Kiah Borefields PS Bore No 6	1950	1995/96	$75,000.00	$75,000.00	19,046	$3.94	30	1.49	$6.00
Kiah Borefields PS Bore No 7	1950	1995/96	$75,000.00	$75,000.00	19,046	$3.94	30	1.49	$6.00
Kiah Borefields PS Bore No 8	1950	1995/96	$75,000.00	$75,000.00	19,046	$3.94	30	1.49	$6.00
Kiah Borefields PS Bore No 9	1950	1995/96	$75,000.00	$75,000.00	19,046	$3.94	30	1.49	$6.00
Kiah Borefields PS Bore No 10	1950	1995/96	$75,000.00	$75,000.00	19,046	$3.94	30	1.49	$6.00
Post 1996 Works									
Dams & Reservoirs									
BEGA/ TATHRA									
North Bega Reservoir	1998	1997/98	$709,377.30	$709,377.30	19,046	$37.25	30	2.26	$84.00
South Bega Balance Tank (new)	1998	1997/98	$990,052.58	$990,052.58	19,046	$51.98	30	2.26	$117.00
Bega Suction Tank for B-YPD	2011	2010/11	$709,377.30	$709,377.30	19,046	$37.25	30	2.26	$84.00
TANTAWANGLO / KIAH									
North Tura Reservoir (new)	2001	2000/01	$1,020,208.90	$1,020,208.90	19,046	$53.57	30	2.26	$121.00
Wolumla Reservoir for township	2011	2010/11	$1,060,877.81	$1,060,877.81	19,046	$55.70	30	2.26	$126.00
Transfer System									
BEGA/ TATHRA									
TATHRA TRUNK	1998	1997/98	$4,224.06	$4,224.06	19,046	$0.22	30	2.26	$1.00
TATHRA TRUNK	1998	1997/98	$463.45	$463.45	19,046	$0.02	30	2.26	$0.00
TATHRA TRUNK	2007	2006/07	$54,425.74	$54,425.74	19,046	$2.86	30	2.26	$6.00
TATHRA TRUNK	2008	2007/08	$117,727.79	$117,727.79	19,046	$6.18	30	2.26	$14.00
TOOTHDALE	2011	2010/11	$153,523.20	$153,523.20	19,046	$8.06	30	2.26	$18.00
B-YPD Pipeline	2011	2010/11	$10,569,783.75	$10,569,783.75	19,046	$554.96	30	2.26	$1,254.00
TATHRA TRUNK	2012	2011/12	$42,045.64	$42,045.64	19,046	$2.21	30	2.26	$5.00
TATHRA TRUNK	2012	2011/12	$96,237.79	$96,237.79	19,046	$5.05	30	2.26	$11.00
TATHRA TRUNK	2012	2011/12	$92,266.82	$92,266.82	19,046	$4.84	30	2.26	$11.00
TATHRA TRUNK	2012	2011/12	$11,912.93	$11,912.93	19,046	$0.63	30	2.26	$1.00
TATHRA TRUNK	2012	2011/12	$69,842.48	$69,842.48	19,046	$3.67	30	2.26	$8.00
TATHRA TRUNK	2012	2011/12	$59,097.48	$59,097.48	19,046	$3.10	30	2.26	$7.00
TANTAWANGLO / KIAH									
Sth Pambula Trunk	1997	1996/97	$7,776.54	$7,776.54	19,046	$0.41	30	2.26	$1.00
EMERGENCY TRUNK	1997	1996/97	$64,842.15	$64,842.15	19,046	$3.40	30	2.26	$8.00
EDEN	2001	2000/01	$5,394.45	$5,394.45	19,046	$0.28	30	2.26	$1.00
EDEN	2001	2000/01	$337.82	$337.82	19,046	$0.02	30	2.26	$0.00
EDEN	2001	2000/01	$930.99	$930.99	19,046	$0.05	30	2.26	$0.00
SOUTH WOLUMLA	2002	2001/02	$19,116.50	$19,116.50	19,046	$1.00	30	2.26	$2.00
SOUTH WOLUMLA	2004	2003/04	$19,707.73	$19,707.73	19,046	$1.03	30	2.26	$2.00
YELLOW PINCH CHLORIN	2004	2003/04	$1,424.88	$1,424.88	19,046	$0.07	30	2.26	$0.00
YELLOW PINCH CHLORIN	2004	2003/04	$1,401.52	$1,401.52	19,046	$0.07	30	2.26	$0.00
YELLOW PINCH	2004	2003/04	$1,490.28	$1,490.28	19,046	$0.08	30	2.26	$0.00
EDEN TRUNK	2006	2005/06	$2,154.81	$2,154.81	19,046	$0.11	30	2.26	$0.00
EDEN TRUNK	2006	2005/06	$12,569.73	$12,569.73	19,046	$0.66	30	2.26	$1.00
MERIMBULA TRUNK	2007	2006/07	$26,396.43	$26,396.43	19,046	$1.39	30	2.26	$3.00
TANTAWANGALO TRUNK	2007	2006/07	$146,437.51	$146,437.51	19,046	$7.69	30	2.26	$17.00
MERIMBULA TRUNK	2008	2008	$9,876.22	$9,876.22	19,046	$0.52	30	2.26	$1.00
TOOTHDALE	2011	2010/11	$2,482.19	$2,482.19	19,046	$0.13	30	2.26	$0.00
TOOTHDALE	2011	2010/11	$28,162.34	$28,162.34	19,046	$1.48	30	2.26	$3.00
TOOTHDALE	2011	2010/11	$8,907.89	$8,907.89	19,046	$0.47	30	2.26	$1.00
TOOTHDALE	2011	2010/11	$153,523.20	$153,523.20	19,046	$8.06	30	2.26	$18.00
Treatment Works & Pumping Stations									
BEGA/ TATHRA									
Chlorination/ Fluoridation Plants - Civil	2011	2010/11	$280,000.00	$280,000.00	19,046	$14.70	30	2.26	$33.00
Chlorination/ Fluoridation Plants - M&E	2011	2010/11	$365,463.00	$365,463.00	19,046	$19.19	30	2.26	$43.00
Chlorination/ Fluoridation Plants - Telemetry	2011	2010/11	$20,000.00	$20,000.00	19,046	$1.05	30	2.26	$2.00
TANTAWANGLO / KIAH									
Water Pumping Stations - Mechanical	1997	1996/97	$2,328,500.00	$2,328,500.00	19,046	$122.26	30	2.26	$276.00
Chlorination/ Fluoridation Plants - Civil	2000	1999/00	$390,000.00	$390,000.00	19,046	$20.48	30	2.26	$46.00

Table C1: Capital Charge Calculation

Bega-Tathra and Tantawanglo-Kiah Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$14,490** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
Chlorination/ Fluoridation Plants - M&E	2000	1999/00	$1,190,227.00	$1,190,227.00	19,046	$62.49	30	2.26	$141.00
Chlorination/ Fluoridation Plants - Telemetry	2000	1999/00	$100,000.00	$100,000.00	19,046	$5.25	30	2.26	$12.00
Kiah Borefield PS New East Bore (No 41032)	2006	2005/06	$75,000.00	$75,000.00	19,046	$3.94	30	2.26	$9.00
Kiah Borefield PS New West Bore (No 41033)	2006	2005/06	$75,000.00	$75,000.00	19,046	$3.94	30	2.26	$9.00
Miscellaneous									
BEGA/ TATHRA									
Mobile Plant and Equipment	2001	2000/01	$4,742.08	$4,742.08	19,046	$0.25	30	2.26	$1.00
Forward Works									
BEGA/ TATHRA									
Tarraganda System Upgrade - Reservoir	2013/14	2013/14	$255,000.00	$238,317.76	19,046	$12.51	30	2.26	$28.00
Water Treatment Plant - Pre Construction Activities say 20%	2020/21	2020/21	$257,000.00	$149,576.34	19,046	$7.85	30	2.26	$18.00
Water Treatment Plant - Pre Construction Activities say 20%	2021/22	2021/22	$212,000.00	$115,313.95	19,046	$6.05	30	2.26	$14.00
Water Treatment Plant - Pre Construction Activities say 20%	2022/23	2022/23	$212,000.00	$107,770.05	19,046	$5.66	30	2.26	$13.00
Water Treatment Plant - Pre Construction Activities say 20%	2023/24	2023/24	$218,000.00	$103,570.23	19,046	$5.44	30	2.26	$12.00
10ML/d Water Treatment Plant (iron)	2024/25	2024/25	$5,445,000.00	$2,417,645.12	19,046	$126.94	30	2.26	$287.00
10ML/d Water Treatment Plant (iron)	2025/26	2025/26	$5,445,000.00	$2,259,481.42	19,046	$118.63	30	2.26	$268.00
10ML/d Water Treatment Plant (iron)	2026/27	2026/27	$5,610,000.00	$2,175,654.72	19,046	$114.23	30	2.26	$258.00
South bega Reservior	2013/14	2013/14	$0.00	$0.00	19,046	$0.00	30	2.26	$0.00
TANTAWANGLO / KIAH									
Water Treatment Plant - Pre Construction Activities say 20%	2020/21	2020/21	$353,000.00	$205,449.21	19,046	$10.79	30	2.26	$24.00
Water Treatment Plant - Pre Construction Activities say 20%	2021/22	2021/22	$272,000.00	$147,949.98	19,046	$7.77	30	2.26	$18.00
Water Treatment Plant - Pre Construction Activities say 20%	2022/23	2022/23	$272,000.00	$138,271.01	19,046	$7.26	30	2.26	$16.00
Water Treatment Plant - Pre Construction Activities say 20%	2023/24	2023/24	$280,000.00	$133,025.98	19,046	$6.98	30	2.26	$16.00
17ML/d Yellow Pinch Dam Water Treatment Plant (algae, iron, Mn, colour)	2024/25	2024/25	$9,735,000.00	$4,322,456.42	19,046	$226.95	30	2.26	$513.00
17ML/d Yellow Pinch Dam Water Treatment Plant (algae, iron, Mn, colour)	2025/26	2025/26	$9,735,000.00	$4,039,678.90	19,046	$212.10	30	2.26	$479.00
17ML/d Yellow Pinch Dam Water Treatment Plant (algae, iron, Mn, colour)	2026/27	2026/27	$10,030,000.00	$3,889,806.93	19,046	$204.23	30	2.26	$461.00
Transfer Main Upgrade to supply water to South with YPD WTP	2015/16	2015/16	$50,000.00	$40,814.89	19,046	$2.14	30	2.26	$5.00
Transfer Main Upgrade to supply water to South with YPD WTP	2016/17	2016/17	$100,000.00	$76,289.52	19,046	$4.01	30	2.26	$9.00
Transfer Main Upgrade to supply water to South with YPD WTP	2017/18	2017/18	$150,000.00	$106,947.93	19,046	$5.62	30	2.26	$13.00
Transfer Main Upgrade to supply water to South with YPD WTP	2018/19	2018/19	$1,200,000.00	$799,610.67	19,046	$41.98	30	2.26	$95.00
Transfer Main Upgrade to supply water to South with YPD WTP	2019/20	2019/20	$3,000,000.00	$1,868,249.23	19,046	$98.09	30	2.26	$222.00
Transfer Main Upgrade to supply water to South with YPD WTP	2020/21	2020/21	$3,500,000.00	$2,037,031.87	19,046	$106.95	30	2.26	$242.00
Transfer Main Upgrade to supply water to South with YPD WTP	2021/22	2021/22	$3,000,000.00	$1,631,801.23	19,046	$85.68	30	2.26	$194.00
Water Treatment Plant - Pre Construction Activities say 20%	2030/31	2030/31	$170,000.00	$50,296.87	19,046	$2.64	30	2.26	$6.00
Water Treatment Plant - Pre Construction Activities say 20%	2031/32	2031/32	$255,000.00	$70,509.62	19,046	$3.70	30	2.26	$8.00
Water Treatment Plant - Pre Construction Activities say 20%	2032/33	2032/33	$255,000.00	$65,896.85	19,046	$3.46	30	2.26	$8.00
6.5ML/d Ben Boyd Dam Water Treatment Plant (Iron)	2033/34	2033/34	$3,630,000.00	$876,692.50	19,046	$46.03	30	2.26	$104.00
6.5ML/d Ben Boyd Dam Water Treatment Plant (Iron)	2034/35	2034/35	$3,630,000.00	$819,338.79	19,046	$43.02	30	2.26	$97.00
6.5ML/d Ben Boyd Dam Water Treatment Plant (Iron)	203536	203536	$3,740,000.00	$788,941.34	19,046	$41.42	30	2.26	$94.00
Water Quality Risk Assessment	2013/14	2013/14	$250,000.00	$233,644.86	19,046	$12.27	30	2.26	$28.00
Developemt Servicing Strategy, DSP & SBP	2012/13	2012/13	$125,000.00	$125,000.00	19,046	$6.56	30	2.26	$15.00
Renewal components	2012/13	2012/13		$6,211,000.00	19,046	$326.11	30	2.26	$737.00
Total			$191,154,456.81	$156,014,490.99		$8,191			$14,490.00

Rate of return (pre 1996)
Rate of return (post 1996)
Discount Rate
Year Now

1. For pre-1996 assets, the effective year of commissioning for calculating Return on Investment (ROI) factors is January 1996, ie: 1995/96.
4. The ROI factor for pre-1996 works is based on a rate of return (discount rate) of 3% pa real. The ROI factor assumes a uniform annual take-up of lots over the take-up period, commencing in the effective year of commissioning of the asset.
5. The ROI factor for post-1996 assets is based on a rate of return (discount rate) of 7% pa real, together with a uniform annual take-up of lots over the take-up period, commencing in the year of commissioning of the asset.
* Current Replacement Costs are based on "NSW Reference Rates for Valuation of Water Supply, Sewerage and Stormwater Assets", Ministry of Energy and Utilities, June 2003", adjusted to Year Now dollars

Table C2: Capital Charge Calculation

Bemboka Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$23,243** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
Pre 1996 Works									
Dams & Reservoirs									
Reservoirs - Civil	1972	1995/96	$909,062.04	$909,062.04	310	$2,932.46	30	1.49	$4,358.00
Reservoirs - Electrical	1972	1995/96	$20,000.00	$20,000.00	310	$64.52	30	1.49	$96.00
Reservoirs - Telemetry	1972	1995/96	$80,000.00	$80,000.00	310	$258.06	30	1.49	$383.00
Transfer System									
Treatment Works & Pumping Stations									
Chlorination/ Fluoridation Plants - Civil	1985	1995/96	$30,000.00	$30,000.00	310	$96.77	30	1.49	$144.00
Chlorination/ Fluoridation Plants - Mechanical & Electrical	1985	1995/96	$50,000.00	$50,000.00	310	$161.29	30	1.49	$240.00
Chlorination/ Fluoridation Plants - Telemetry	1985	1995/96	$10,000.00	$10,000.00	310	$32.26	30	1.49	$48.00
Post 1996 Works									
Dams & Reservoirs									
Transfer System									
Treatment Works & Pumping Stations									
Water Pumping Stations - Civil	2003	2002/03	$20,000.00	$20,000.00	310	$64.52	30	2.26	$146.00
Water Pumping Stations - Electrical	2003	2002/03	$135,000.00	$135,000.00	310	$435.48	30	2.26	$984.00
Water Pumping Stations - Mechanical	2003	2002/03	$44,000.00	$44,000.00	310	$141.94	30	2.26	$321.00
Water Pumping Stations - Telemetry	2003	2002/03	$105,000.00	$105,000.00	310	$338.71	30	2.26	$765.00
Miscellaneous									
Forward Works									
Water Treatment Plant - Pre Construction Activities say 20%	2013/14	2013/14	$188,000.00	$130,841.12	310	$422.07	30	2.26	$954.00
Water Treatment Plant - Pre Construction Activities say 20%	2014/15	2014/15	$375,000.00	$262,031.62	310	$845.26	30	2.26	$1,910.00
0.4ML/d Water Treatment Plant (iron, turbidity & colour)	2015/16	2015/16	$2,100,000.00	$1,387,706.39	310	$4,476.47	30	2.26	$10,114.00
0.4ML/d Water Treatment Plant (iron, turbidity & colour)	2016/17	2016/17	$700,000.00	$381,447.61	310	$1,230.48	30	2.26	$2,780.00
Renewal Component	2012/13	2012/13		$71,000.00	310	$1,230.48	30	2.26	
Total			$4,766,062.04	$3,636,088.78		$12,731			$23,243.00

Rate of return (pre 1996)
Rate of return (post 1996)
Discount Rate
Year Now

1. For pre-1996 assets, the effective year of commissioning for calculating Return on Investment (ROI) factors is January 1996, ie: 1995/96.

Table C2: Capital Charge Calculation

Bemboka Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$23,243** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)

4. The ROI factor for pre-1996 works is based on a rate of return (discount rate) of 3% pa real. The ROI factor assumes a uniform annual take-up of lots over the take-up period, commencing in the effective year of commissioning of the asset.
5. The ROI factor for post-1996 assets is based on a rate of return (discount rate) of 7% pa real, together with a uniform annual take-up of lots over the take-up period, commencing in the year of commissioning of the asset.
* Current Replacement Costs are based on "NSW Reference Rates for Valuation of Water Supply, Sewerage and Stormwater Assets", Ministry of Energy and Utilities, June 2003", adjusted to Year Now dollars

Table C3: Capital Charge Calculation
Brogo-Bermagui Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$22,034** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
Pre 1996 Works									
Dams & Reservoirs									
Illawambra Weir - Weir Wall	1958	1995/96	$362,000.00	$362,000.00	2,418	$149.71	30	1.49	$222.00
Illawambra Weir - M&E Items	1958	1995/96	$39,000.00	$39,000.00	2,418	$16.13	30	1.49	$24.00
Illawambra Weir - Preliminaries and Others	1958	1995/96	$132,000.00	$132,000.00	2,418	$54.59	30	1.49	$81.00
Tantawanglo Weir - Weir Wall	1950	1995/96	$58,000.00	$58,000.00	2,418	$23.99	30	1.49	$36.00
Tantawanglo Weir - M&E Items	1950	1995/96	$25,000.00	$25,000.00	2,418	$10.34	30	1.49	$15.00
Tantawanglo Weir - Prelim and Others	1950	1995/96	$27,000.00	$27,000.00	2,418	$11.17	30	1.49	$17.00
Tilba Dam - Dam Wall	1968	1995/96	$2,209,000.00	$2,209,000.00	2,418	$913.56	30	1.49	$1,358.00
Tilba Dam - Spillway	1968	1995/96	$403,000.00	$403,000.00	2,418	$166.67	30	1.49	$248.00
Tilba Dam - Appurtenant Works	1968	1995/96	$380,000.00	$380,000.00	2,418	$157.15	30	1.49	$234.00
Tilba Dam - M&E Items	1968	1995/96	$770,000.00	$770,000.00	2,418	$318.44	30	1.49	$473.00
Tilba Dam - Access Roads	1968	1995/96	$423,000.00	$423,000.00	2,418	$174.94	30	1.49	$260.00
Tilba Dam - Prelim and Others	1968	1995/96	$774,000.00	$774,000.00	2,418	$320.10	30	1.49	$476.00
Brogo River Balance Tank No.1	1984	1995/96	$1,103,339.78	$1,103,339.78	2,418	$456.30	30	1.49	$678.00
Brogo River Balance Tank No.2	1984	1995/96	$1,500,327.29	$1,500,327.29	2,418	$620.48	30	1.49	$922.00
Quaama Reservoir (Balance Tank No.3)	1984	1995/96	$538,480.79	$538,480.79	2,418	$222.70	30	1.49	$331.00
Akolele Reservoir	1985	1995/96	$549,532.81	$549,532.81	2,418	$227.27	30	1.49	$338.00
Bermagui South Storage No.1 (north)	1990	1995/96	$270,122.56	$270,122.56	2,418	$111.71	30	1.49	$166.00
Bermagui South Storage No.2 (middle)	1991	1995/96	$270,122.56	$270,122.56	2,418	$111.71	30	1.49	$166.00
Bermagui South Storage No.3 (south)	1991	1995/96	$257,720.00	$257,720.00	2,418	$106.58	30	1.49	$158.00
Transfer System									
BERMAGUI TRUNK	1970	1995/96	$72,340.37	$72,340.37	2,418	$29.92	30	1.49	$44.00
BERMAGUI TRUNK	1970	1995/96	$12,035.13	$12,035.13	2,418	$4.98	30	1.49	$7.00
BERMAGUI TRUNK	1970	1995/96	$84,523.62	$84,523.62	2,418	$34.96	30	1.49	$52.00
BERM-WALLAGA TRUNK	1970	1995/96	$90,356.02	$90,356.02	2,418	$37.37	30	1.49	$56.00
BERM-WALLAGA TRUNK	1970	1995/96	$18,145.27	$18,145.27	2,418	$7.50	30	1.49	$11.00
BERM-WALLAGA TRUNK	1970	1995/96	$14,997.62	$14,997.62	2,418	$6.20	30	1.49	$9.00
BERM-WALLAGA TRUNK	1974	1995/96	$50,099.36	$50,099.36	2,418	$20.72	30	1.49	$31.00
BERM-WALLAGA TRUNK	1974	1995/96	$106,663.14	$106,663.14	2,418	$44.11	30	1.49	$66.00
BERM-WALLAGA TRUNK	1974	1995/96	$102,533.09	$102,533.09	2,418	$42.40	30	1.49	$63.00
BERM-WALLAGA TRUNK	1974	1995/96	$102,712.66	$102,712.66	2,418	$42.48	30	1.49	$63.00
BERM-WALLAGA TRUNK	1974	1995/96	$16,841.64	$16,841.64	2,418	$6.97	30	1.49	$10.00
BERMAGUI TRUNK	1977	1995/96	$72,218.58	$72,218.58	2,418	$29.87	30	1.49	$44.00
BERMAGUI TRUNK	1977	1995/96	$29,259.83	$29,259.83	2,418	$12.10	30	1.49	$18.00
BERMAGUI TRUNK	1981	1995/96	$6,480.45	$6,480.45	2,418	$2.68	30	1.49	$4.00
BERMAGUI TRUNK	1981	1995/96	$16,358.90	$16,358.90	2,418	$6.77	30	1.49	$10.00
BERMAGUI TRUNK	1981	1995/96	$5,319.97	$5,319.97	2,418	$2.20	30	1.49	$3.00
BERMAGUI TRUNK	1981	1995/96	$36,840.79	$36,840.79	2,418	$15.24	30	1.49	$23.00
BERMAGUI TRUNK	1981	1995/96	$10,772.94	$10,772.94	2,418	$4.46	30	1.49	$7.00
BERMAGUI TRUNK	1985	1995/96	$114,378.22	$114,378.22	2,418	$47.30	30	1.49	$70.00
BERMAGUI TRUNK	1985	1995/96	$74,860.68	$74,860.68	2,418	$30.96	30	1.49	$46.00
BERMAGUI TRUNK	1985	1995/96	$138,867.96	$138,867.96	2,418	$57.43	30	1.49	$85.00
BERMAGUI TRUNK	1985	1995/96	$135,250.15	$135,250.15	2,418	$55.93	30	1.49	$83.00
BERMAGUI TRUNK	1985	1995/96	$130,519.18	$130,519.18	2,418	$53.98	30	1.49	$80.00
BERMAGUI TRUNK	1985	1995/96	$113,543.34	$113,543.34	2,418	$46.96	30	1.49	$70.00
BERMAGUI TRUNK	1985	1995/96	$68,849.95	$68,849.95	2,418	$28.47	30	1.49	$42.00
BERMAGUI TRUNK	1985	1995/96	$77,964.74	$77,964.74	2,418	$32.24	30	1.49	$48.00
BERMAGUI TRUNK	1985	1995/96	$9,214.01	$9,214.01	2,418	$3.81	30	1.49	$6.00
BERMAGUI TRUNK	1985	1995/96	$17,690.91	$17,690.91	2,418	$7.32	30	1.49	$11.00
BERMAGUI TRUNK	1985	1995/96	$14,629.91	$14,629.91	2,418	$6.05	30	1.49	$9.00
BERMAGUI TRUNK	1985	1995/96	$5,452.97	$5,452.97	2,418	$2.26	30	1.49	$3.00
BERMAGUI TRUNK	1985	1995/96	$18,885.89	$18,885.89	2,418	$7.81	30	1.49	$12.00
BERMAGUI TRUNK	1985	1995/96	$5,585.97	$5,585.97	2,418	$2.31	30	1.49	$3.00
BERMAGUI TRUNK	1985	1995/96	$14,097.92	$14,097.92	2,418	$5.83	30	1.49	$9.00
BERMAGUI TRUNK	1985	1995/96	$9,974.94	$9,974.94	2,418	$4.13	30	1.49	$6.00
BERMAGUI TRUNK	1985	1995/96	$6,383.96	$6,383.96	2,418	$2.64	30	1.49	$4.00
BERMAGUI TRUNK	1985	1995/96	$158,348.43	$158,348.43	2,418	$65.49	30	1.49	$97.00
BERMAGUI TRUNK	1985	1995/96	$74,025.80	$74,025.80	2,418	$30.61	30	1.49	$45.00
BERMAGUI TRUNK	1985	1995/96	$80,426.53	$80,426.53	2,418	$33.26	30	1.49	$49.00
BERMAGUI TRUNK	1985	1995/96	$80,983.12	$80,983.12	2,418	$33.49	30	1.49	$50.00
BERMAGUI TRUNK	1985	1995/96	$82,931.16	$82,931.16	2,418	$34.30	30	1.49	$51.00

Table C3: Capital Charge Calculation
Brogo-Bermagui Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$22,034** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
BERMAGUI TRUNK	1985	1995/96	$60,111.18	$60,111.18	2,418	$24.86	30	1.49	$37.00
BERMAGUI TRUNK	1985	1995/96	$142,207.47	$142,207.47	2,418	$58.81	30	1.49	$87.00
BERMAGUI TRUNK	1985	1995/96	$60,667.76	$60,667.76	2,418	$25.09	30	1.49	$37.00
BERMAGUI TRUNK	1985	1995/96	$22,541.69	$22,541.69	2,418	$9.32	30	1.49	$14.00
BERMAGUI TRUNK	1985	1995/96	$20,593.64	$20,593.64	2,418	$8.52	30	1.49	$13.00
BERMAGUI TRUNK	1985	1995/96	$93,227.99	$93,227.99	2,418	$38.56	30	1.49	$57.00
BERMAGUI TRUNK	1985	1995/96	$14,192.92	$14,192.92	2,418	$5.87	30	1.49	$9.00
BERMAGUI TRUNK	1985	1995/96	$22,541.69	$22,541.69	2,418	$9.32	30	1.49	$14.00
BERMAGUI TRUNK	1985	1995/96	$14,471.21	$14,471.21	2,418	$5.98	30	1.49	$9.00
BERMAGUI TRUNK	1985	1995/96	$60,360.79	$60,360.79	2,418	$24.96	30	1.49	$37.00
BERM-WALLAGA TRUNK	1985	1995/96	$567.02	$567.02	2,418	$0.23	30	1.49	$0.00
BERM-WALLAGA TRUNK	1985	1995/96	$4,290.06	$4,290.06	2,418	$1.77	30	1.49	$3.00
BERMAGUI TRUNK	1985	1995/96	$105,472.86	$105,472.86	2,418	$43.62	30	1.49	$65.00
BERMAGUI TRUNK	1985	1995/96	$117,161.14	$117,161.14	2,418	$48.45	30	1.49	$72.00
BERMAGUI TRUNK	1985	1995/96	$123,005.28	$123,005.28	2,418	$50.87	30	1.49	$76.00
BERMAGUI TRUNK	1985	1995/96	$144,155.51	$144,155.51	2,418	$59.62	30	1.49	$89.00
BERMAGUI TRUNK	1985	1995/96	$151,391.12	$151,391.12	2,418	$62.61	30	1.49	$93.00
BERMAGUI TRUNK	1985	1995/96	$158,626.72	$158,626.72	2,418	$65.60	30	1.49	$97.00
BERMAGUI TRUNK	1985	1995/96	$141,929.17	$141,929.17	2,418	$58.70	30	1.49	$87.00
BERMAGUI TRUNK	1985	1995/96	$138,311.37	$138,311.37	2,418	$57.20	30	1.49	$85.00
BERMAGUI TRUNK	1985	1995/96	$159,183.31	$159,183.31	2,418	$65.83	30	1.49	$98.00
BERMAGUI TRUNK	1985	1995/96	$145,825.27	$145,825.27	2,418	$60.31	30	1.49	$90.00
BERMAGUI TRUNK	1985	1995/96	$156,122.09	$156,122.09	2,418	$64.57	30	1.49	$96.00
BERMAGUI TRUNK	1985	1995/96	$154,452.34	$154,452.34	2,418	$63.88	30	1.49	$95.00
BERMAGUI TRUNK	1985	1995/96	$55,284.09	$55,284.09	2,418	$22.86	30	1.49	$34.00
BERMAGUI TRUNK	1985	1995/96	$156,122.09	$156,122.09	2,418	$64.57	30	1.49	$96.00
BERMAGUI TRUNK	1985	1995/96	$138,867.96	$138,867.96	2,418	$57.43	30	1.49	$85.00
BERMAGUI TRUNK	1985	1995/96	$149,999.66	$149,999.66	2,418	$62.03	30	1.49	$92.00
BERMAGUI TRUNK	1985	1995/96	$139,702.83	$139,702.83	2,418	$57.78	30	1.49	$86.00
BERMAGUI TRUNK	1985	1995/96	$164,470.87	$164,470.87	2,418	$68.02	30	1.49	$101.00
BERMAGUI TRUNK	1985	1995/96	$163,079.40	$163,079.40	2,418	$67.44	30	1.49	$100.00
BERMAGUI TRUNK	1985	1995/96	$135,250.15	$135,250.15	2,418	$55.93	30	1.49	$83.00
BERMAGUI TRUNK	1985	1995/96	$130,519.18	$130,519.18	2,418	$53.98	30	1.49	$80.00
BERMAGUI TRUNK	1985	1995/96	$156,400.38	$156,400.38	2,418	$64.68	30	1.49	$96.00
BERMAGUI TRUNK	1985	1995/96	$78,478.48	$78,478.48	2,418	$32.46	30	1.49	$48.00
BERMAGUI TRUNK	1985	1995/96	$154,730.63	$154,730.63	2,418	$63.99	30	1.49	$95.00
BERMAGUI TRUNK	1985	1995/96	$154,452.34	$154,452.34	2,418	$63.88	30	1.49	$95.00
BERMAGUI TRUNK	1985	1995/96	$144,155.51	$144,155.51	2,418	$59.62	30	1.49	$89.00
BERMAGUI TRUNK	1985	1995/96	$149,999.66	$149,999.66	2,418	$62.03	30	1.49	$92.00
BERMAGUI TRUNK	1985	1995/96	$149,999.66	$149,999.66	2,418	$62.03	30	1.49	$92.00
BERMAGUI TRUNK	1985	1995/96	$114,656.51	$114,656.51	2,418	$47.42	30	1.49	$70.00
BERMAGUI TRUNK	1985	1995/96	$163,079.40	$163,079.40	2,418	$67.44	30	1.49	$100.00
BERMAGUI TRUNK	1985	1995/96	$166,697.21	$166,697.21	2,418	$68.94	30	1.49	$102.00
BERMAGUI TRUNK	1985	1995/96	$149,721.36	$149,721.36	2,418	$61.92	30	1.49	$92.00
BERMAGUI TRUNK	1985	1995/96	$153,060.87	$153,060.87	2,418	$63.30	30	1.49	$94.00
BERMAGUI TRUNK	1985	1995/96	$146,381.85	$146,381.85	2,418	$60.54	30	1.49	$90.00
BERMAGUI TRUNK	1985	1995/96	$127,736.26	$127,736.26	2,418	$52.83	30	1.49	$79.00
BERMAGUI TRUNK	1985	1995/96	$124,396.75	$124,396.75	2,418	$51.45	30	1.49	$76.00
BERMAGUI TRUNK	1985	1995/96	$166,140.62	$166,140.62	2,418	$68.71	30	1.49	$102.00
BERMAGUI TRUNK	1985	1995/96	$134,693.57	$134,693.57	2,418	$55.70	30	1.49	$83.00
BERMAGUI TRUNK	1985	1995/96	$128,014.55	$128,014.55	2,418	$52.94	30	1.49	$79.00
BERMAGUI TRUNK	1985	1995/96	$119,944.07	$119,944.07	2,418	$49.60	30	1.49	$74.00
BERMAGUI TRUNK	1985	1995/96	$4,174.39	$4,174.39	2,418	$1.73	30	1.49	$3.00
BERMAGUI TRUNK	1985	1995/96	$5,148.41	$5,148.41	2,418	$2.13	30	1.49	$3.00
BERMAGUI TRUNK	1985	1995/96	$115,044.33	$115,044.33	2,418	$47.58	30	1.49	$71.00
BERMAGUI TRUNK	1985	1995/96	$53,864.69	$53,864.69	2,418	$22.28	30	1.49	$33.00
BERMAGUI TRUNK	1985	1995/96	$71,470.13	$71,470.13	2,418	$29.56	30	1.49	$44.00
BERMAGUI TRUNK	1985	1995/96	$76,654.49	$76,654.49	2,418	$31.70	30	1.49	$47.00
BERMAGUI TRUNK	1985	1995/96	$81,468.55	$81,468.55	2,418	$33.69	30	1.49	$50.00
BERMAGUI TRUNK	1985	1995/96	$50,747.96	$50,747.96	2,418	$20.99	30	1.49	$31.00
BERMAGUI TRUNK	1985	1995/96	$60,245.48	$60,245.48	2,418	$24.92	30	1.49	$37.00
BERMAGUI TRUNK	1985	1995/96	$163,357.70	$163,357.70	2,418	$67.56	30	1.49	$100.00
BERMAGUI TRUNK	1985	1995/96	$147,773.32	$147,773.32	2,418	$61.11	30	1.49	$91.00
BERMAGUI TRUNK	1985	1995/96	$150,834.53	$150,834.53	2,418	$62.38	30	1.49	$93.00
BERMAGUI TRUNK	1985	1995/96	$159,461.60	$159,461.60	2,418	$65.95	30	1.49	$98.00
BERMAGUI TRUNK	1985	1995/96	$125,788.21	$125,788.21	2,418	$52.02	30	1.49	$77.00

Table C3: Capital Charge Calculation
Brogo-Bermagui Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$22,034** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)
BERMAGUI TRUNK	1985	1995/96	$143,877.22	$143,877.22	2,418	$59.50	30	1.49	$88.00
BERMAGUI TRUNK	1985	1995/96	$131,354.06	$131,354.06	2,418	$54.32	30	1.49	$81.00
BERMAGUI TRUNK	1985	1995/96	$160,296.48	$160,296.48	2,418	$66.29	30	1.49	$99.00
BERMAGUI TRUNK	1985	1995/96	$159,183.31	$159,183.31	2,418	$65.83	30	1.49	$98.00
BERMAGUI TRUNK	1985	1995/96	$155,843.80	$155,843.80	2,418	$64.45	30	1.49	$96.00
BERMAGUI TRUNK	1985	1995/96	$140,259.42	$140,259.42	2,418	$58.01	30	1.49	$86.00
BERMAGUI TRUNK	1985	1995/96	$146,381.85	$146,381.85	2,418	$60.54	30	1.49	$90.00
BERMAGUI TRUNK	1985	1995/96	$96,010.91	$96,010.91	2,418	$39.71	30	1.49	$59.00
BERMAGUI TRUNK	1985	1995/96	$129,127.72	$129,127.72	2,418	$53.40	30	1.49	$79.00
BERMAGUI TRUNK	1985	1995/96	$154,730.63	$154,730.63	2,418	$63.99	30	1.49	$95.00
BERMAGUI TRUNK	1985	1995/96	$159,183.31	$159,183.31	2,418	$65.83	30	1.49	$98.00
AKOLELE	1985	1995/96	$850.52	$850.52	2,418	$0.35	30	1.49	$1.00
Treatment Works & Pumping Stations									
Water Pumping Stations - Civil	1982	1995/96	$300,000.00	$300,000.00	2,418	$124.07	30	1.49	$184.00
Water Pumping Stations - Electrical	1985	1995/96	$3,150,000.00	$3,150,000.00	2,418	$1,302.73	30	1.49	$1,936.00
Water Pumping Stations - Mechancial	1985	1995/96	$1,250,000.00	$1,250,000.00	2,418	$516.96	30	1.49	$768.00
Water Pumping Stations - Telemetry	1985	1995/96	$690,000.00	$690,000.00	2,418	$285.36	30	1.49	$424.00
Chlorination/ Fluoridation Plants - Civil	1993	1995/96	$170,000.00	$170,000.00	2,418	$70.31	30	1.49	$104.00
Chlorination/ Fluoridation Plants - M&E	1993	1995/96	$275,000.00	$275,000.00	2,418	$113.73	30	1.49	$169.00
Chlorination/ Fluoridation Plants - Telemetry	1993	1995/96	$85,000.00	$85,000.00	2,418	$35.15	30	1.49	$52.00
Post 1996 Works									
Dams & Reservoirs									
Transfer System									
BERMAGUI TRUNK	2000	1999/00	$71,420.58	$71,420.58	2,418	$29.54	30	2.26	$67.00
BERMAGUI TRUNK	2000	1999/00	$51,337.70	$51,337.70	2,418	$21.23	30	2.26	$48.00
BERMAGUI TRUNK	2000	1999/00	$65,036.62	$65,036.62	2,418	$26.90	30	2.26	$61.00
BERMAGUI TRUNK	2000	1999/00	$74,479.57	$74,479.57	2,418	$30.80	30	2.26	$70.00
BERMAGUI TRUNK	2000	1999/00	$72,484.58	$72,484.58	2,418	$29.98	30	2.26	$68.00
BERMAGUI TRUNK	2000	1999/00	$51,470.70	$51,470.70	2,418	$21.29	30	2.26	$48.00
BERM-WALLAGA TRUNK	2000	1999/00	$295.62	$295.62	2,418	$0.12	30	2.26	$0.00
BERM-WALLAGA TRUNK	2000	1999/00	$6,649.96	$6,649.96	2,418	$2.75	30	2.26	$6.00
BERM-WALLAGA TRUNK	2001	2000/01	$12,822.46	$12,822.46	2,418	$5.30	30	2.26	$12.00
BERM-WALLAGA TRUNK	2007	2007/08	$244,331.87	$244,331.87	2,418	$101.05	30	2.26	$228.00
BERMAGUI TRUNK	2008	2008/09	$16,546.67	$16,546.67	2,418	$6.84	30	2.26	$15.00
Treatment Works & Pumping Stations									
Miscellaneous									
Mobile Plant and Equipment	2007	2006/07	$7,711.46	$7,711.46	2,418	$3.19	30	2.26	$7.00
Forward Works									
Water Treatment Plant - Pre Construction Activities say 20%	2021/22	2021/22	$262,000.00	$142,510.64	2,418	$58.94	30	2.26	$133.00
Water Treatment Plant - Pre Construction Activities say 20%	2022/23	2022/23	$328,000.00	$166,738.57	2,418	$68.96	30	2.26	$156.00
Water Treatment Plant - Pre Construction Activities say 20%	2023/24	2023/24	$328,000.00	$155,830.44	2,418	$64.45	30	2.26	$146.00
4ML/d Water Treatment Plant (iron, turbidity & colour)	2024/25	2024/25	$2,904,000.00	$1,289,410.73	2,418	$533.26	30	2.26	$1,205.00
4ML/d Water Treatment Plant (iron, turbidity & colour)	2025/26	2025/26	$2,904,000.00	$1,205,056.76	2,418	$498.37	30	2.26	$1,126.00
4ML/d Water Treatment Plant (iron, turbidity & colour)	2026/27	2026/27	$2,992,000.00	$1,160,349.19	2,418	$479.88	30	2.26	$1,084.00
Renewal Component	2012/13	2012/13		$857,000.00	2,418	$354.43	30	2.26	$801.00
Total			$37,656,177.19	$32,915,073.51		$13,613			$22,034.00

Rate of return (pre 1996)
Rate of return (post 1996)
Discount Rate

Table C3: Capital Charge Calculation

Brogo-Bermagui Water Supply

Pre 1996 discount rate	3%	**Summary**	
Post 1996 discount rate	7%	per ET	
Peak Day demand (L/ET/d)	2,000	Capital Charge	**$22,034** $2012/13 per ET

Component	Year Commissioned	Effective year of commissioing for ROI 1	Capital Cost* (2012/13$)	PV of Capital Cost (2012/13$)	Capacity (ETs)	Cost per ET ($ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13$)

Year Now

1. For pre-1996 assets, the effective year of commissioning for calculating Return on Investment (ROI) factors is January 1996, ie: 1995/96.
4. The ROI factor for pre-1996 works is based on a rate of return (discount rate) of 3% pa real. The ROI factor assumes a uniform annual take-up of lots over the take-up period, commencing in the effective year of commissioning of the asset.
5. The ROI factor for post-1996 assets is based on a rate of return (discount rate) of 7% pa real, together with a uniform annual take-up of lots over the take-up period, commencing in the year of commissioning of the asset.
* Current Replacement Costs are based on "NSW Reference Rates for Valuation of Water Supply, Sewerage and Stormwater Assets", Ministry of Energy and Utilities, June 2003", adjusted to Year Now dollars

GREEN CELLS HAVE BEEN CARRIED OVER FROM THE PREVIOUS ITERATION

Table C4 - Calculation of Developer Charges using the NPV of Annual Charges Method **Bega Valley Shire Council - Water Supply**

Based on Input Reduction Amounts of $4,390 /ET (3rd iteration)

Year																																	
Year No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Year		12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42		
Developer Charges																																	
Year 1		12/13																															
Base Year		2012/13																															
Average Capital Charges per ET	(2012/13$)	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402	15,402		
Inflation from 2012/13 to 12/13 (%)		0.00%																															
Capital Charges	(12/13$)	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,400	15,402	15,402	15,402		
Input Reduction Amounts	**(12/13$)**	**4,390**	**4,390**	**4,390**	**4,390**	**4,390**	**5,044**	**5,486**	**4,067**	**3,954**	**3,839**	**3,749**	**4,197**	**4,157**	**4,125**	**4,058**	**4,022**	**4,263**	**4,190**	**4,145**	**4,146**	**4,133**	**4,129**	**4,067**	**3,956**	**3,884**	**4,305**	**4,297**	**4,259**	**4,245**	**4,176**		
Developer Charge per ET	(12/13$)	11,010	11,010	11,010	11,010	11,010	10,360	9,910	11,330	11,450	11,560	11,650	11,200	11,240	11,280	11,340	11,380	11,140	11,210	11,260	11,250	11,270	11,270	11,330	11,440	11,520	11,100	11,100	11,140	11,160	11,230		
Developer Charges per assessment - Residential	(2012/13$)	7,930	7,930	7,930	7,930	7,930	7,460	7,140	8,160	8,240	8,320	8,390	8,060	8,090	8,120	8,160	8,190	8,020	8,070	8,110	8,100	8,110	8,110	8,160	8,240	8,290	7,990	7,990	8,020	8,040	8,090		
Developer Charges per assessment - Non-Residential	(2012/13$)	12,117	12,117	12,117	12,117	12,117	11,399	10,910	12,468	12,591	12,713	12,820	12,316	12,362	12,407	12,468	12,514	12,255	12,331	12,392	12,377	12,392	12,392	12,468	12,591	12,667	12,209	12,209	12,255	12,285	12,362		
Assessments & ETs																																	
		11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	41/42	
Residential Assessments at year end		13,444	13,532	13,620	13,766	13,902	14,032	14,146	14,254	14,400	14,546	14,684	14,822	14,960	15,101	15,241	15,371	15,495	15,619	15,735	15,849	15,963	16,077	16,191	16,256	16,321	16,385	16,448	16,511	16,548	16,585	16,621	
Non Residential Assessments at year end		993	1,003	1,013	1,028	1,042	1,054	1,066	1,078	1,094	1,107	1,116	1,125	1,134	1,146	1,155	1,164	1,173	1,182	1,193	1,202	1,204	1,206	1,208	1,209	1,210	1,211	1,212	1,213	1,214	1,215	1,215	
Backlog Assessments at year end		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Assessments at year end		14,437	14,535	14,633	14,794	14,944	15,086	15,212	15,332	15,494	15,653	15,800	15,947	16,094	16,247	16,396	16,535	16,668	16,801	16,928	17,051	17,167	17,283	17,399	17,465	17,531	17,596	17,660	17,724	17,762	17,800	17,836	
ET per Residential Assessment		0.72																															
ET per Non Residential Assessment		1.528																															
Total ETs		11,197	11,276	11,354	11,482	11,602	11,714	11,814	11,910	12,040	12,165	12,278	12,391	12,504	12,624	12,738	12,846	12,949	13,052	13,152	13,248	13,333	13,333	13,333	13,333	13,333	13,333	13,333	13,333	13,333	13,333	13,333	
New ETs per year (excluding backlog)		-	79	79	128	119	112	100	96	130	125	113	113	113	120	115	107	103	103	100	96	85	85	85	85	85	85	85	85	85	85	85	
Cumulative New ETs (excluding backlog)		-	79	157	285	405	517	617	713	843	968	1,081	1,194	1,307	1,427	1,541	1,649	1,752	1,855	1,955	2,051	2,136	2,221	2,306	2,391	2,477	2,562	2,647	2,732	2,817	2,902	2,987	
PV (new ETs excluding backlog) 30 years @ 7% pa		-	**1,372**	**1,396**	**1,422**	**1,396**	**1,378**	**1,367**	**1,367**	**1,372**	**1,341**	**1,313**	**1,296**	**1,278**	**1,258**	**1,230**	**1,206**	**1,187**	**1,172**	**1,156**	**1,141**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	**1,130**	
Revenue and Expenditure																																	
Rates & Charges Revenue, Trade Waste Charges, Other Sales and Charges, Pensioner Rebate Grant																																	
Revenue ($'000)	(2012/13$)	9,337	9,407	9,532	9,647	9,757	9,850	12,701	12,865	13,005	13,148	13,282	13,418	13,552	13,689	13,809	13,938	14,056	14,172	14,283	14,384	14,472	14,556	14,617	14,674	14,727	14,779	14,825	14,865	14,899	14,928		
OMA Expenditure ($'000)	(2012/13$)	6,841	7,043	6,902	6,990	7,154	7,585	7,643	7,701	7,784	7,872	8,469	8,540	8,623	8,691	8,765	9,005	9,053	9,110	9,190	9,238	9,324	9,391	9,397	9,432	9,669	9,710	9,734	9,755	9,759	9,776		
Revenue less OMA Expenditure ($'000)		2,496	2,364	2,630	2,657	2,603	2,265	5,058	5,164	5,221	5,276	4,813	4,878	4,929	4,998	5,044	4,933	5,003	5,062	5,093	5,146	5,148	5,165	5,220	5,242	5,058	5,069	5,091	5,110	5,140	5,152		
Revenue less OMA Expenditure for new ETs ($'000)		17	33	65	93	115	118	303	361	415	464	464	510	557	605	647	667	711	752	788	824	858	893	936	974	972	1,006	1,043	1,080	1,119	1,154		
PV (Revenue less OMA Expenditure for new ETs) 30 years @ 7% pa ($'000)		**5,598**	**5,907**	**6,270**	**6,413**	**6,641**	**6,961**	**7,572**	**5,632**	**5,342**	**5,096**	**4,899**	**5,399**	**5,268**	**5,109**	**4,932**	**4,812**	**5,008**	**4,880**	**4,771**	**4,734**	**4,693**	**4,688**	**4,646**	**4,500**	**4,419**	**4,897**	**4,891**	**4,850**	**4,810**	**4,730**		
Output (calculated) Reduction Amounts		**4,080**	**4,231**	**4,410**	**4,593**	**4,819**	**5,093**	**5,539**	**4,106**	**3,983**	**3,881**	**3,779**	**4,225**	**4,187**	**4,154**	**4,091**	**4,054**	**4,274**	**4,223**	**4,181**	**4,187**	**4,151**	**4,147**	**4,110**	**3,981**	**3,910**	**4,332**	**4,327**	**4,290**	**4,255**	**4,184**		
Average Calculated Reduction for a 5 yr Period		**4,427**	**4,427**	**4,427**	**4,427**	**4,427**	**5,093**	**5,539**	**4,106**	**3,983**	**3,881**	**3,779**	**4,225**	**4,187**	**4,154**	**4,091**	**4,054**	**4,274**	**4,223**	**4,181**	**4,187**	**4,151**	**4,147**	**4,110**	**3,981**	**3,910**	**4,332**	**4,327**	**4,290**	**4,255**	**4,184**		
% Difference Between the Input and Output		**1%**																															

Difference Less Than 2%, Calculation Complete

Developer Charges for the first 5 years = $10970 per ET in year 12/13 $

General Notes:

1. Approximately three iterations of the financial planning model are normally required until the Ouput Reduction Amount for the first 5 years is within 2% of the Input Reduction Amount.

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