



Public Works



Development Servicing Plan –
Sewerage Services
Bega Valley Shire Council
Adopted 12th June 2013



Bega Valley Shire Council

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Abbreviations

Abbreviation	Description
ABS	Australian Bureau of Statistics
ADWF	Average Dry Weather Flow
ARI	Average Recurrence Interval
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: <ul style="list-style-type: none"> ▪ 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)
IPART	Independent Pricing and Regulatory Tribunal
L/ET/d	Litres per ET per day
LOS	Levels of Service
LWU	Local Water Utility
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
NRMCMC	Natural Resource Management Ministerial Council
NSW	New South Wales
OMA	Operation, Maintenance and Administration Costs
POEO Act	The NSW Protection of the Environment Operations Act 1997
PV	Present Value
PWWF	Peak Wet Weather Flow
ROI	Return on Investment
STP	Sewage Treatment Plant
TRB	Typical Residential Bill

Executive Summary

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

- The Bega Sewerage Scheme;
- The Bermagui-Wallaga Lake Sewerage Scheme;
- The Candelo Sewerage Scheme;
- The Cobargo Sewerage Scheme;
- The Eden Sewerage Scheme;
- The Kalaru Sewerage Scheme;
- The Merimbula-Pambula Sewerage Scheme;
- The Tathra Sewerage Scheme;
- The Tura Beach Sewerage Scheme; and
- The Wolumla Sewerage Scheme.

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 sewerage infrastructure to meet the loadings generated by both residential and non-residential development.
2. Facilitate the future provision of sewerage services to the Council service area which meets the required levels of service (Section 4) with regard to pump station, collector main, and treatment plant and treated effluent management system capacities.
3. Sets out the schedule of proposed works to meet increasing sewer loads generated by development (Section 3).
4. Details the resultant developer charges and payment policies (Section 5).

A future sewage load 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 sewage load 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. Note that not all land within the mapped DSP boundaries can necessarily be serviced. Individual development proposals are required to provide proposed layouts including details of elevation of proposed allotments to determine if service by gravity sewer is achievable in low lying areas.

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

In its meeting on 12th June 2013, Council resolved to levy developer charges for sewerage 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 Sewer Developer Charges

Sewerage Service Area	Calculated Developer Charge / ET (\$2012/13)	Proposed Developer Charge / ET (\$2012/13)
Bega	\$8,386	\$10,500
Bermagui-Wallaga Lake	\$24,165	\$10,500
Candelo	\$106,265	\$10,500
Cobargo	\$79,583	\$10,500
Kalaru	\$55,169	\$10,500
Eden	\$20,470	\$10,500
Merimbula-Pambula	\$17,800	\$10,500
Tathra	\$22,931	\$10,500
Tura Beach	\$14,038	\$10,500
Wolumla	\$77,093	\$10,500
Weighted Average	\$20,925	\$10,500

Adopting the proposed developer charges and maintaining the current level of the Sewer Typical Residential Bill (TRB) of \$1,045 p.a. for the next 5 years (until 2017/18) will result in \$85 per year cross-subsidy by each residential customer over the model forecast period. Figure 1 graphically represents the impact of the proposed developer charges on the typical residential sewer bill.

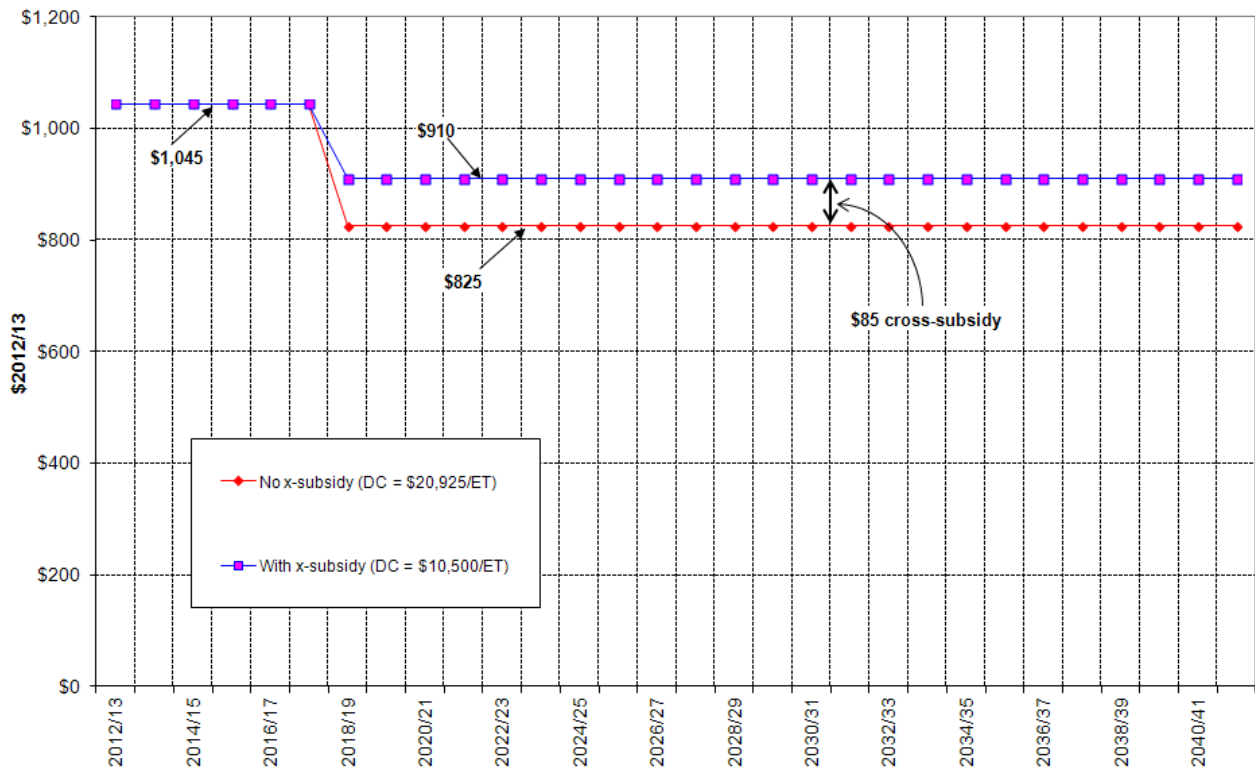


Figure 1 Impact of DC cross subsidy on Typical Residential Sewer Bill

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 sewerage reticulation works within subdivisions (including pumps stations) as well as associated sewerage infrastructure downstream of development 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 sewerage services achieves the following outcomes for Council:

1. Allows Council to require an equitable monetary contribution for the provision of sewerage infrastructure to meet the loadings generated by both residential and non-residential development.
2. Facilitate the future provision of sewerage services to the Council service area which meets the required levels of service (Section 4) with regard to pump station, collector main, and treatment plant and treated effluent management system capacities.
3. Sets out the schedule of proposed works to meet increasing sewer loads generated by development (Section 3).
4. Details the resultant DC and payment policies (Section 5).

This DSP covers sewerage DC for the following Bega Valley Shire Council service areas:

- The Bega Sewerage Scheme;
- The Bermagui-Wallaga Lake Sewerage Scheme;
- The Candelo Sewerage Scheme;
- The Cobargo Sewerage Scheme;
- The Eden Sewerage Scheme;
- The Kalaru Sewerage Scheme;
- The Merimbula-Pambula Sewerage Scheme;
- The Tathra Sewerage Scheme;
- The Tura Beach Sewerage Scheme; and
- The Wolumla Sewerage Scheme.

Figure 2 shows the Bega Valley Shire Council Area. The development servicing areas covered by this DSP are outlined in Appendix A. Note that not all land within the mapped DSP boundaries can necessarily be serviced. Individual development proposals are required to provide proposed layouts including details of elevation of proposed allotments to determine if service by gravity sewer is achievable in low lying areas.

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 sewerage 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 sewerage DC. (The term "Developer Contributions" may formerly have been used to refer to Developer Charges.)

The developer shall be responsible for the full cost of the design and construction of sewerage reticulation works within subdivisions (including pumps stations) as well as other sewerage items downstream of development not contained in the proposed works schedule (Section 3).

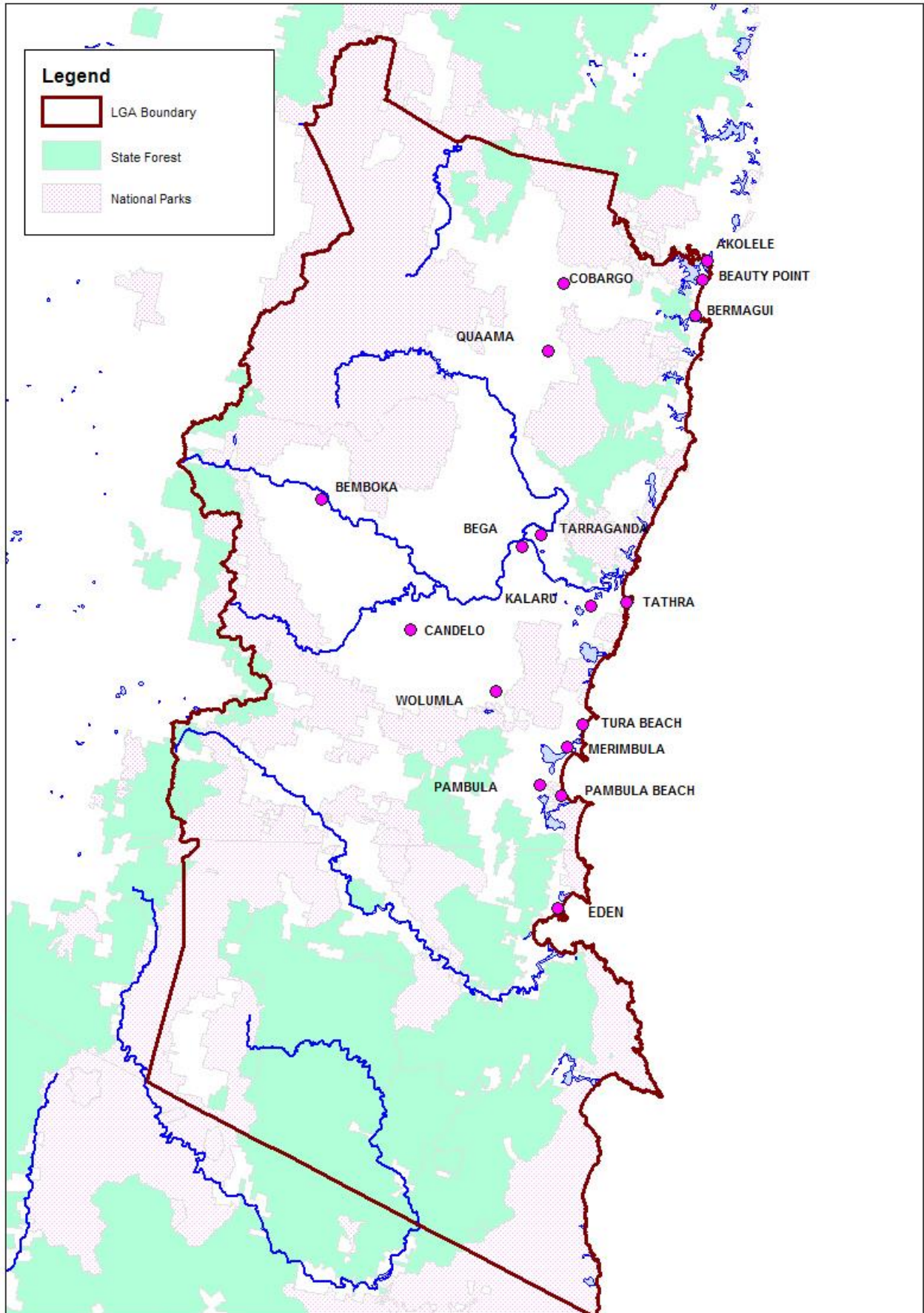


Figure 2 Bega Valley Shire

2 Demographic Information

2.1 Growth Projections

A future sewage load growth 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 sewage load growth estimate has taken the following factors into account as part of the analysis:

- Historical ABS information;
- Sewer flow data in conjunction with climatic trends;
- Historical spatial and temporal trends in internal 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 growth relevant for the serviced sewerage areas.

Details relating to the sewage load estimate is outlined in the supporting document – Population and Water Cycle Projections. Table 2-1, Table 2-2 and Table 2-3 show the projected residential, non-residential and total equivalent tenements (ET) for the sewerage service areas.

Table 2-1: Projected Permanent Residential ET

Sewerage Scheme	Development Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega	Bega	1,598	1,681	1,804	1,954	2,228	1.3%
Bermagui-Wallaga Lake	Bermagui	514	562	629	694	819	1.9%
	Wallaga Lake	194	194	209	235	297	1.7%
	Sub-Total	708	756	838	929	1,116	1.9%
Candelo	Candelo	153	156	159	162	171	0.4%
Cobargo	Cobargo	161	165	170	174	187	0.5%
Eden	Eden	1,130	1,203	1,298	1,378	1,560	1.2%
Kalaru	Kalaru	84	92	109	131	158	2.9%
Merimbula-Pambula	Merimbula	1,631	1,656	1,684	1,714	1,740	0.2%
	Pambula	728	759	787	817	850	0.5%
	Sub-Total	2,359	2,415	2,471	2,531	2,590	0.3%
Tathra	Tathra	623	637	650	664	705	0.4%
Tura Beach	Tura Beach	1,073	1,090	1,127	1,177	1,274	0.6%
Wolumla	Wolumla	144	157	174	191	206	1.4%
All	TOTAL	8,033	8,352	8,800	9,291	10,195	0.9%

Table 2-2: Projected Permanent Non-Residential ET

Sewerage Scheme	Development Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega	Bega	361	516	539	563	712	3.1%
Bermagui-Wallaga Lake	Bermagui	118	130	142	154	176	1.6%
	Wallaga Lake	23	27	30	33	38	2.0%
	Sub-Total	141	157	172	187	214	1.7%
Candelo	Candelo	11	11	12	13	13	0.7%
Cobargo	Cobargo	62	69	75	83	88	1.4%
Eden	Eden	371	388	405	422	435	0.6%
Kalaru	Kalaru	10	43	69	69	69	19.5%
Merimbula-Pambula	Merimbula	251	265	276	285	292	0.5%
	Pambula	153	156	159	162	165	0.3%
	Sub-Total	404	421	435	447	457	0.4%
Tathra	Tathra	71	74	77	81	84	0.6%
Tura Beach	Tura Beach	43	46	49	52	54	0.9%
Wolumla	Wolumla	4	4	5	5	5	0.7%
All	TOTAL	1,478	1,729	1,838	1,922	2,131	1.4%

Table 2-3: Projected Total Permanent ET

Sewerage Scheme	Development Area	2012	2017	2022	2027	2042	2012-42 (% p.a.)
Bega	Bega	1,959	2,197	2,343	2,517	2,940	1.6%
Bermagui-Wallaga Lake	Bermagui	632	692	771	848	995	1.9%
	Wallaga Lake	217	221	239	268	335	1.8%
	Sub-Total	849	913	1,010	1,116	1,330	1.8%
Candelo	Candelo	164	167	171	175	184	0.4%
Cobargo	Cobargo	223	234	245	257	275	0.8%
Eden	Eden	1,501	1,591	1,703	1,800	1,995	1.1%
Kalaru	Kalaru	94	135	178	200	227	4.6%
Merimbula-Pambula	Merimbula	1,882	1,921	1,960	1,999	2,032	0.3%
	Pambula	881	915	946	979	1,015	0.5%
	Sub-Total	2,763	2,836	2,906	2,978	3,046	0.3%
Tathra	Tathra	694	711	727	745	789	0.4%
Tura Beach	Tura Beach	1,116	1,136	1,176	1,229	1,328	0.6%
Wolumla	Wolumla	148	161	179	196	211	1.4%
All	TOTAL	9,511	10,081	10,638	11,213	12,326	1.0%

3 Sewerage Infrastructure

3.1 Assets Relevant to this DSP

The existing and proposed sewerage 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, to 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 sewer capital works program and the associated costs can be seen in Appendix B.

Table 3-1: Summary of Sewerage Capital Works

Type of Sewerage Capital Works	Capital Cost over 30 years (\$M)
Works to Improve Levels of Service	\$31.4
New Assets for Growth	\$17.6
Renewals / Replacements	\$94.6
Total	\$143.6

3.3 Works Program and Expenditure

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

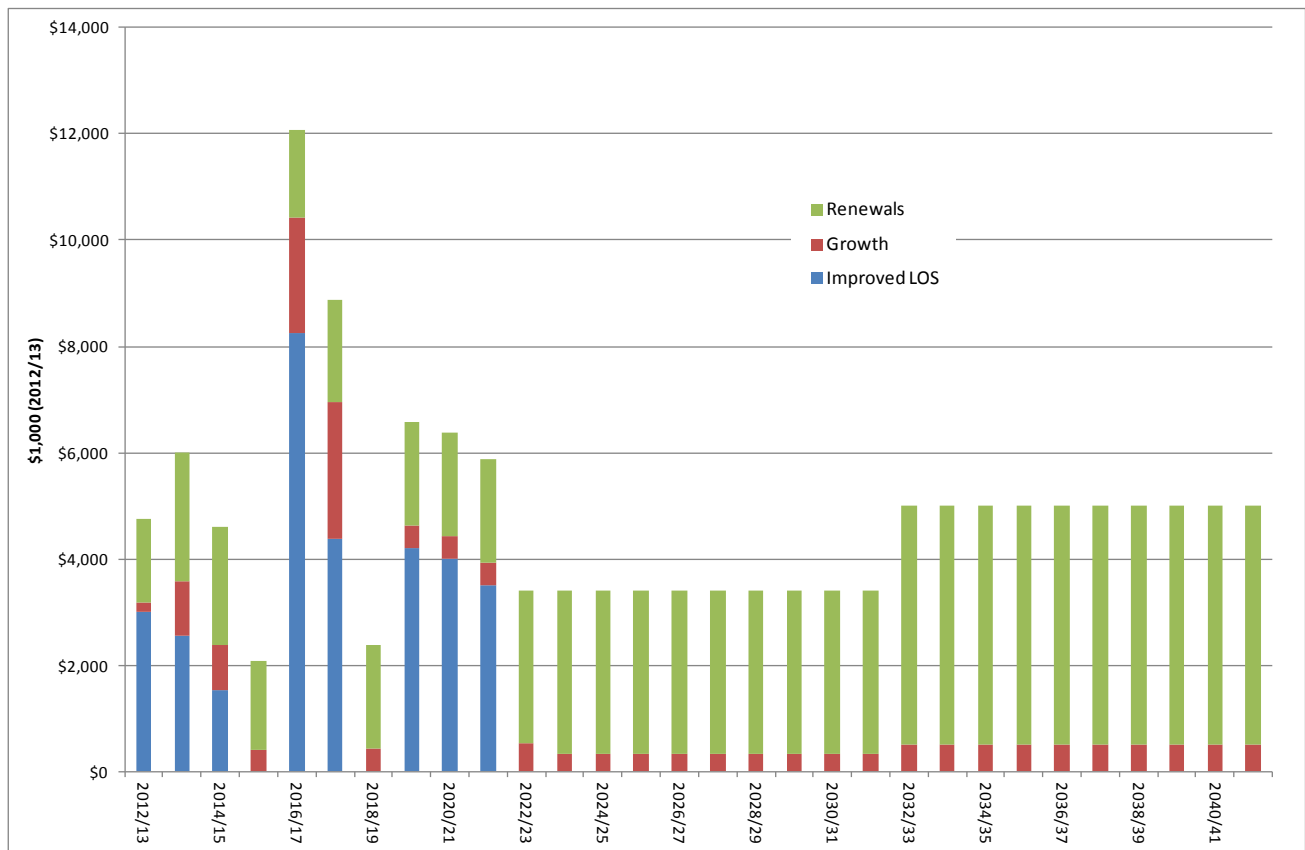


Figure 3 Thirty-Year Sewerage Capital Works Program

4 Levels of Service and Design Parameters

4.1 Levels of Service

The levels of service (LOS) are the standards required from the sewerage 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 sewerage LOS relevant to this DSP. For the full list of LOS relevant to sewerage refer to the Bega Valley Shire Council Strategic Business Plan for Water Supply and Sewerage Services.

Table 4-1 Sewerage Levels of Service

DESCRIPTION	UNIT	LEVEL OF SERVICE	
		Current Target	Future Target
SEWER LOADS			
- Average dry weather	L/ET/d-	508	484
- Wet weather system capacity	-	To contain and transfer a (24-hour) 1 in 2 year ARI wet weather event	
EFFLUENT QUALITY			
Effluent discharge compliance within licence limits	% compliance to POEO Act	98	100
Recycle/ reuse of wastewater	% compliance to Australian Guidelines for Water Recycling (2006)	100	100
SERVICE AVAILABILITY	Refer to Council's Strategic Business Plan for Water Supply and Sewerage Service		

4.2 Design Parameters

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

- Investigation and design of sewerage system components is based on the *Manual of Practice: Sewer Design* (1984) and the *Manual of Practice: Sewerage Pumping Station Design* (1986). These manuals were prepared by NSW Public Works and are administered by NOW;
- Sewer Code of Australia WSA 02-2002;
- Bega Valley Shire Council Development Design Specification D12 Sewerage System; and
- Bega Valley Shire Council Development Construction Specification C402 Sewerage System.

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.

$$\text{Developer Charge} = \text{Capital Charge} - \text{Reduction Amount}$$

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 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 discharging 508 L/ET/d to the sewerage system during dry weather. Refer to Table 4-1 for sewerage system targets.

5.2 Capital Charge

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

$$\text{Capital Charge} = \text{Capital Cost} \times \text{Return on Investment (ROI) Factor}$$

The capital cost includes the cost of providing, extending or augmenting assets required, or likely to be required, to provide services to a development. 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 Sewerage Service Area

Sewerage Service Area	Calculated Capital Charge / ET (\$2012/13)
Bega	\$11,595
Bermagui-Wallaga Lake	\$27,374
Candelo	\$109,474
Cobargo	\$82,792
Kalaru	\$58,378
Eden	\$23,679
Merimbula-Pambula	\$21,009
Tathra	\$26,140
Tura Beach	\$17,247
Wolumla	\$80,302
Weighted Average	\$24,134

5.3 Reduction Amount and Calculated Capital 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 Sewer Developer Charges

Supply Service Area	Calculated Capital Charge / ET (\$2012/13)	Reduction Amount / ET (\$2012/13)	Calculated Developer Charge / ET (\$2012/13)
Sewerage	24,134	3,209	20,925

5.4 Summary of Proposed Developer Charges

In its meeting on 12th June 2013, Council resolved to levy developer charges for sewerage 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 Sewer Developer Charges

Sewerage Service Area	Calculated Developer Charge / ET (\$2012/13)	Proposed Developer Charge / ET (\$2012/13)
Bega	\$8,386	\$10,500
Bermagui-Wallaga Lake	\$24,165	\$10,500
Candelo	\$106,265	\$10,500
Cobargo	\$79,583	\$10,500
Kalaru	\$55,169	\$10,500
Eden	\$20,470	\$10,500
Merimbula-Pambula	\$17,800	\$10,500
Tathra	\$22,931	\$10,500
Tura Beach	\$14,038	\$10,500
Wolumla	\$77,093	\$10,500
Weighted Average	\$20,925	\$10,500

Adopting the proposed developer charges and maintaining the current level of Sewer Typical Residential Bill (TRB) of \$1,045 p.a. for the next 5 years (until 2017/18) will result in \$85 per year cross-subsidy by each residential customer over the model forecast period. Table 5-4 summarises the impact on the TRB of adopting the proposed developer charges.

Table 5-4 Quantity of Sewer TRB Cross Subsidy due to Proposed Developer Charges

Supply Service Area	Current Typical Residential Bill (\$/assessment) (\$2012/13)	TRB (\$2012/13) from 2018/19 with:		Level of cross subsidy (\$/assessment) (\$2012/13)
		No cross-subsidy	With cross-subsidy	
Sewerage	1,045	825	910	85

Figure 4 graphically represents the impact of the proposed developer charges on the typical residential sewer bill.

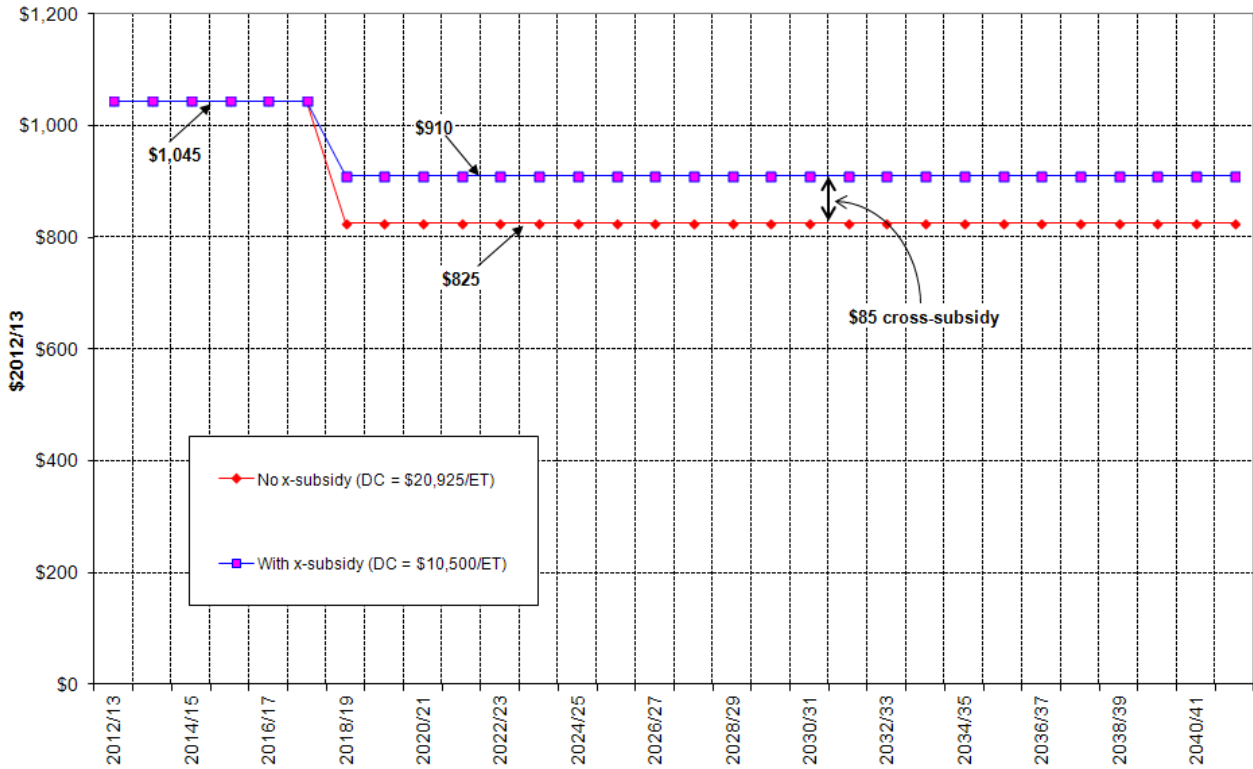


Figure 4 Impact of DC cross subsidy on Typical Residential Sewer Bill

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, 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.

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 sewerage reticulation works within subdivisions (including pumps stations) as well as other sewerage infrastructure downstream of development 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 clause 5.7.2 the timing for payments of developer charges is as follows:

For <u>complying development</u>	Prior to the issuing of a complying development certificate (whether or not the certificate is issued by Council or an accredited certifier).
For <u>other development</u>	Prior to the release of the Construction Certificate.
For <u>subdivision</u>	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 condition 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 sewerage 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 D12 Sewerage System; and
- Bega Valley Shire Council Development Construction Specification C402 Sewerage System.
- Developer Charges for Water Supply, Sewerage and Stormwater Guidelines, December 2002
- Investigation and design of sewerage system components is based on the *Manual of Practice: Sewer Design* (1984) and the *Manual of Practice: Sewerage Pumping Station Design* (1986). These manuals were prepared by NSW Public Works and are administered by NOW;
- NSW Public Works 2013. Population and Water Cycle Projections – Development Servicing Strategy for Bega Valley Shire Council
- NRMCC 2006. *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)*. Natural Resource Management Ministerial Council, Environment Protection and Heritage council, Australian Health Minister Conference.
- Sewer Code of Australia WSA 02-2002;

Appendices

Appendix A Development Servicing Plan Boundaries

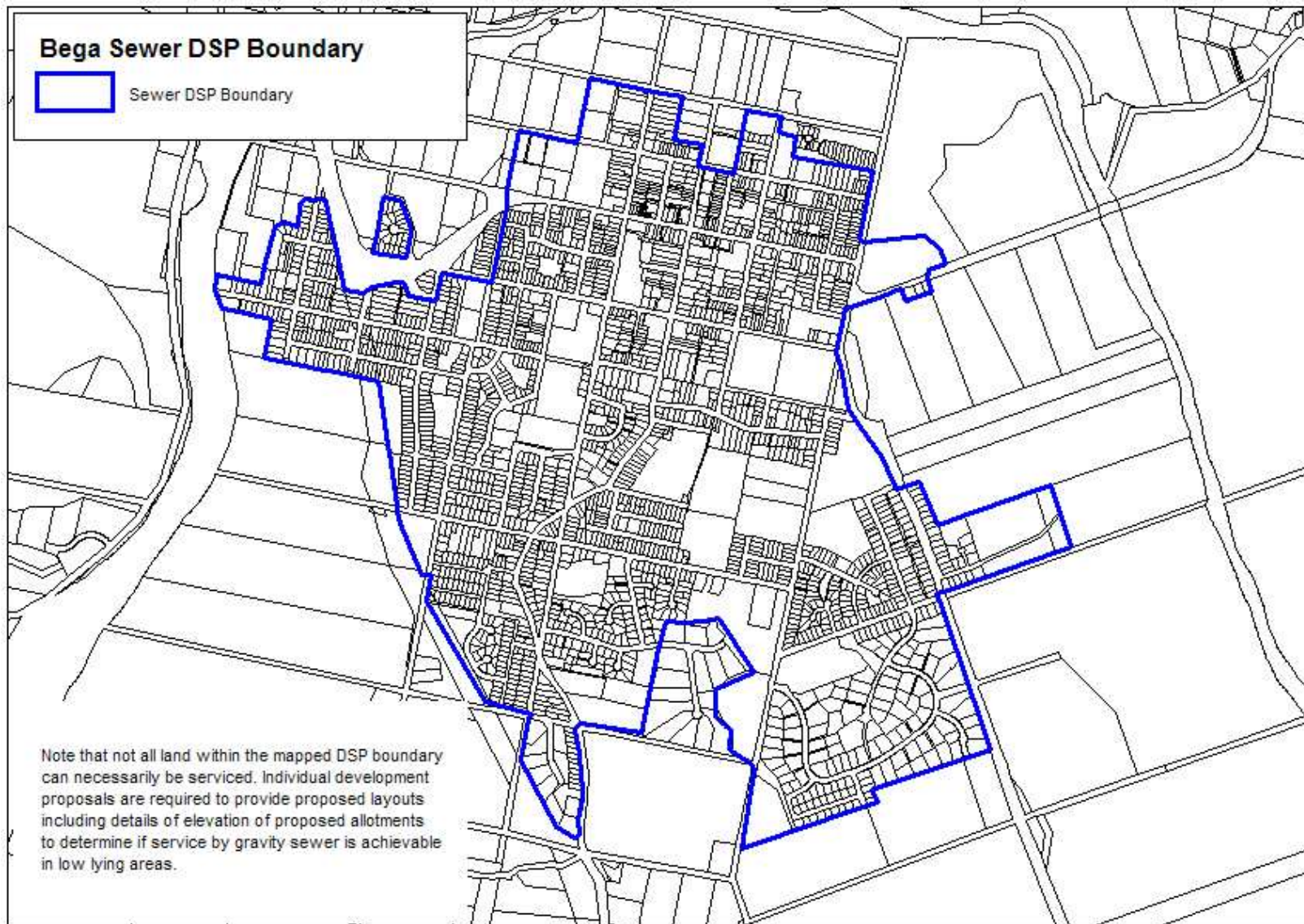


Figure 5 Bega Sewer DSP Boundary

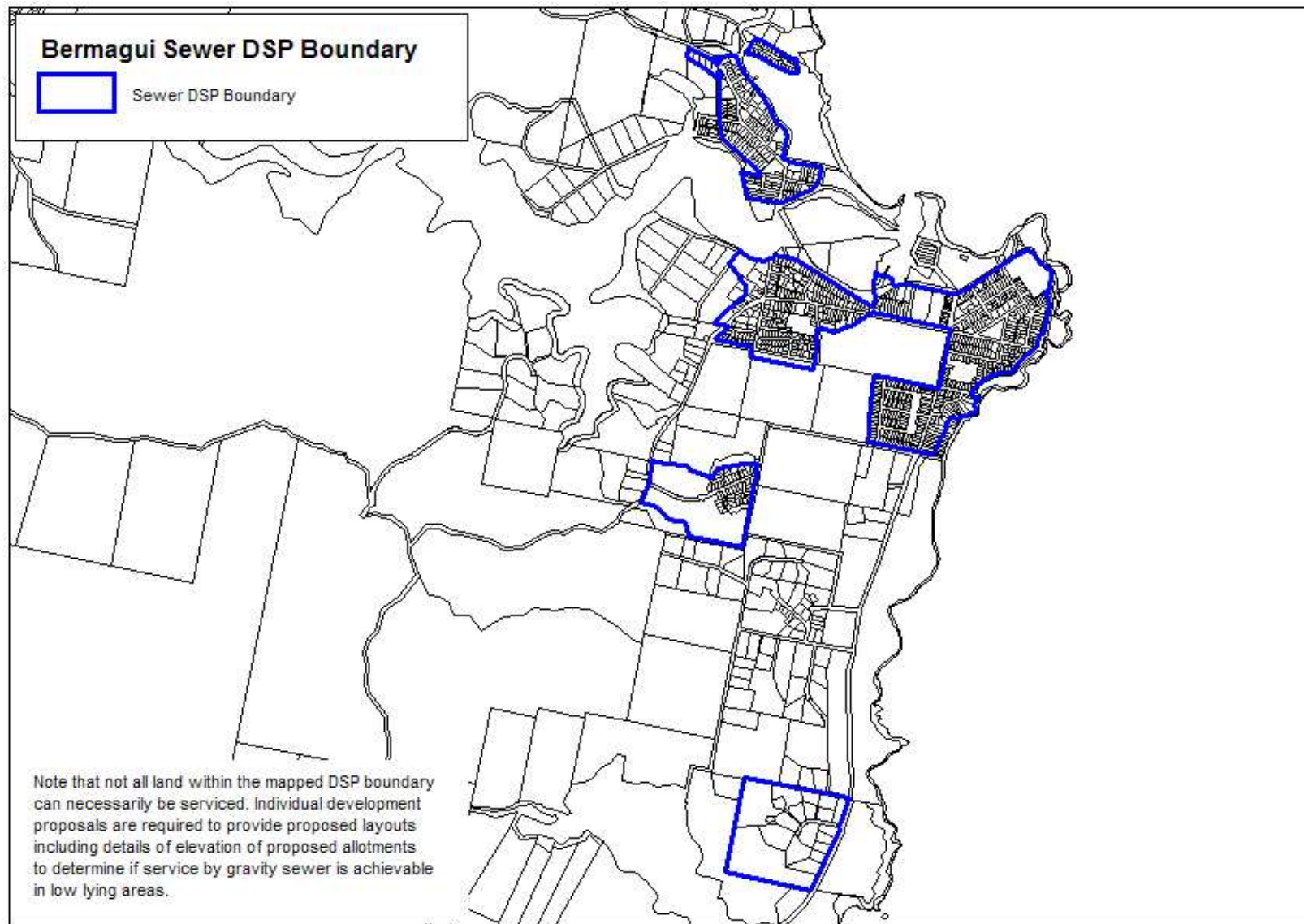


Figure 6 Bermagui Sewer DSP Boundary

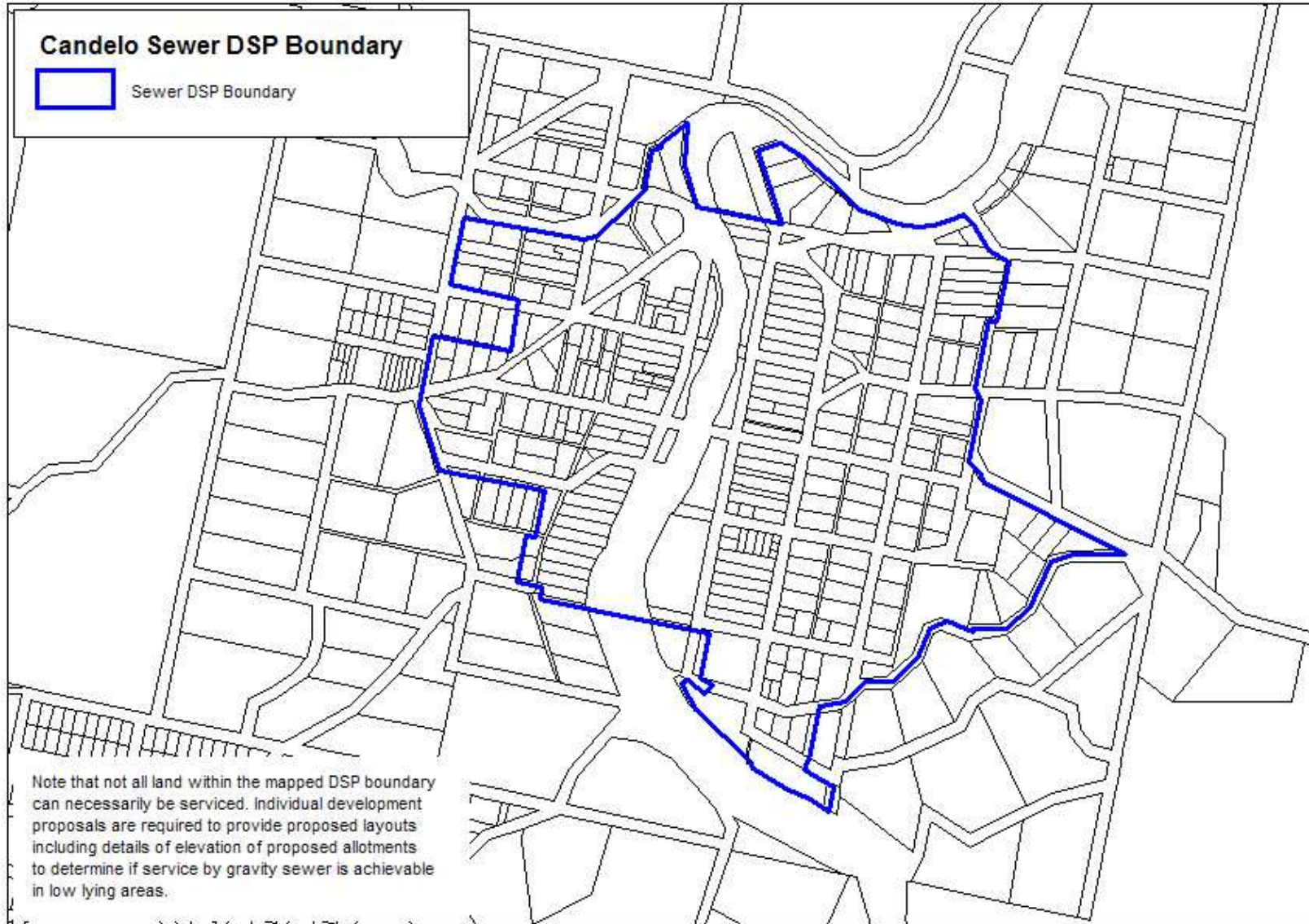


Figure 7 Candelo Sewer DSP Boundary

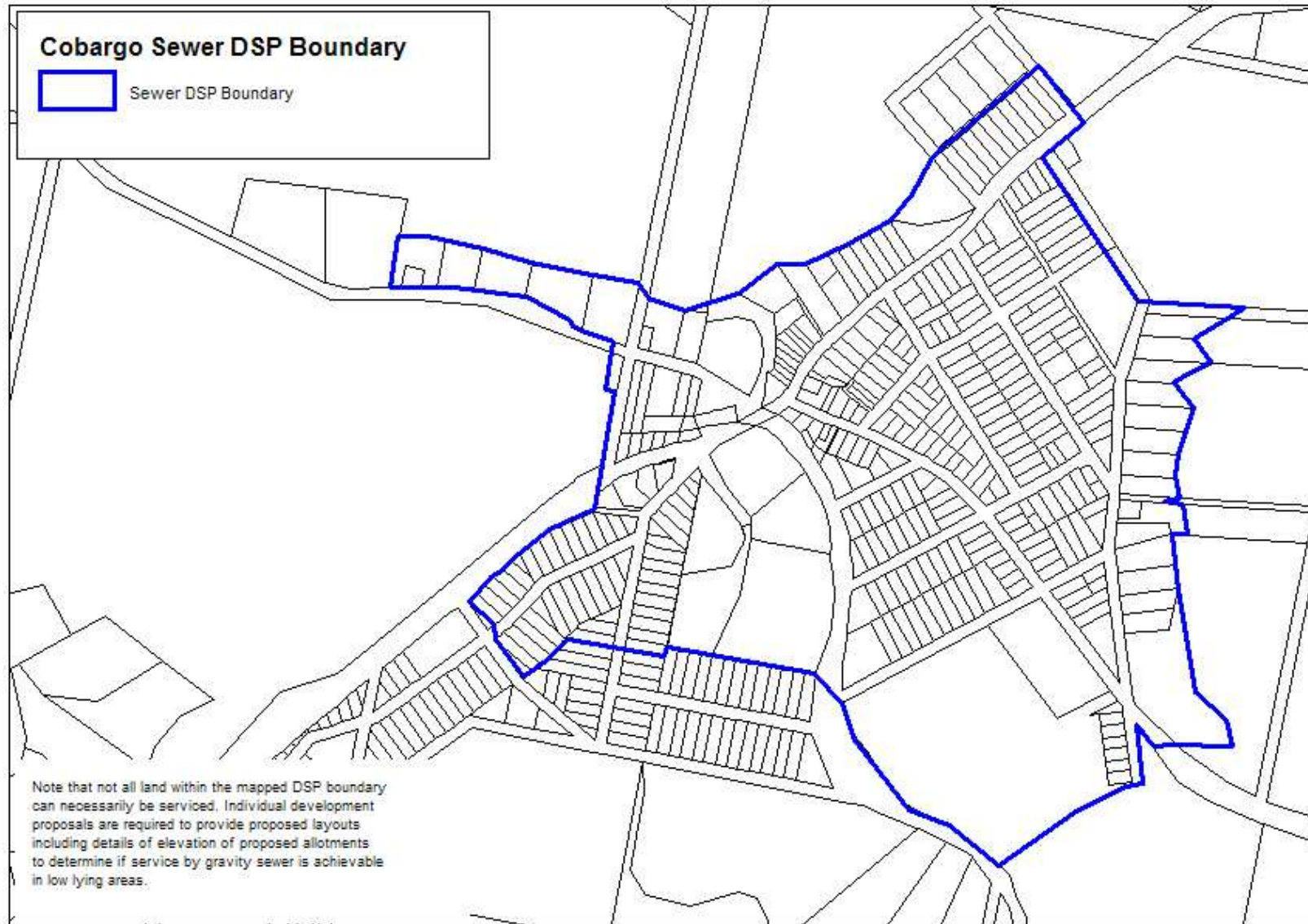


Figure 8 Cobargo Sewer DSP Boundary

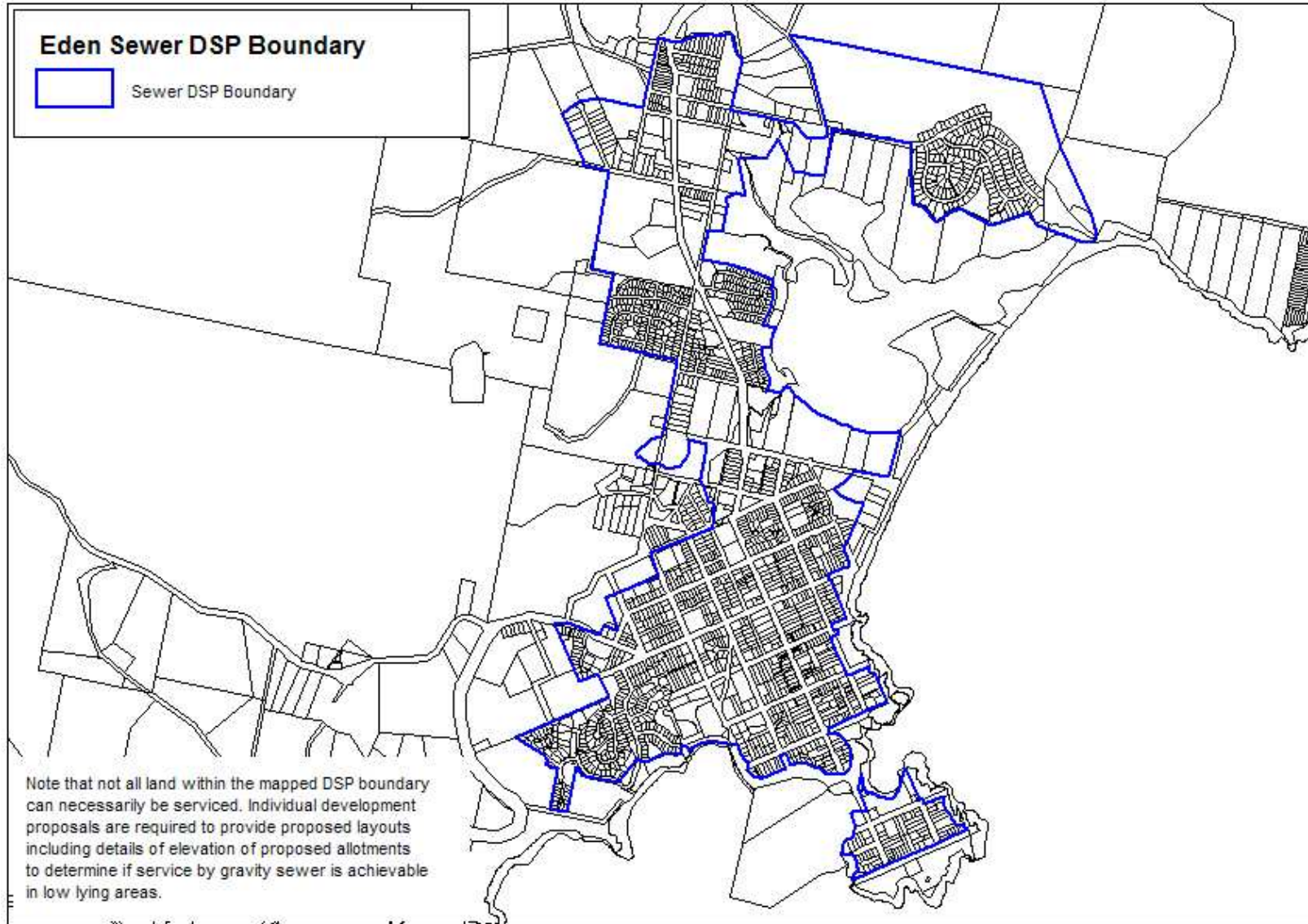


Figure 9 Eden Sewer DSP Boundary

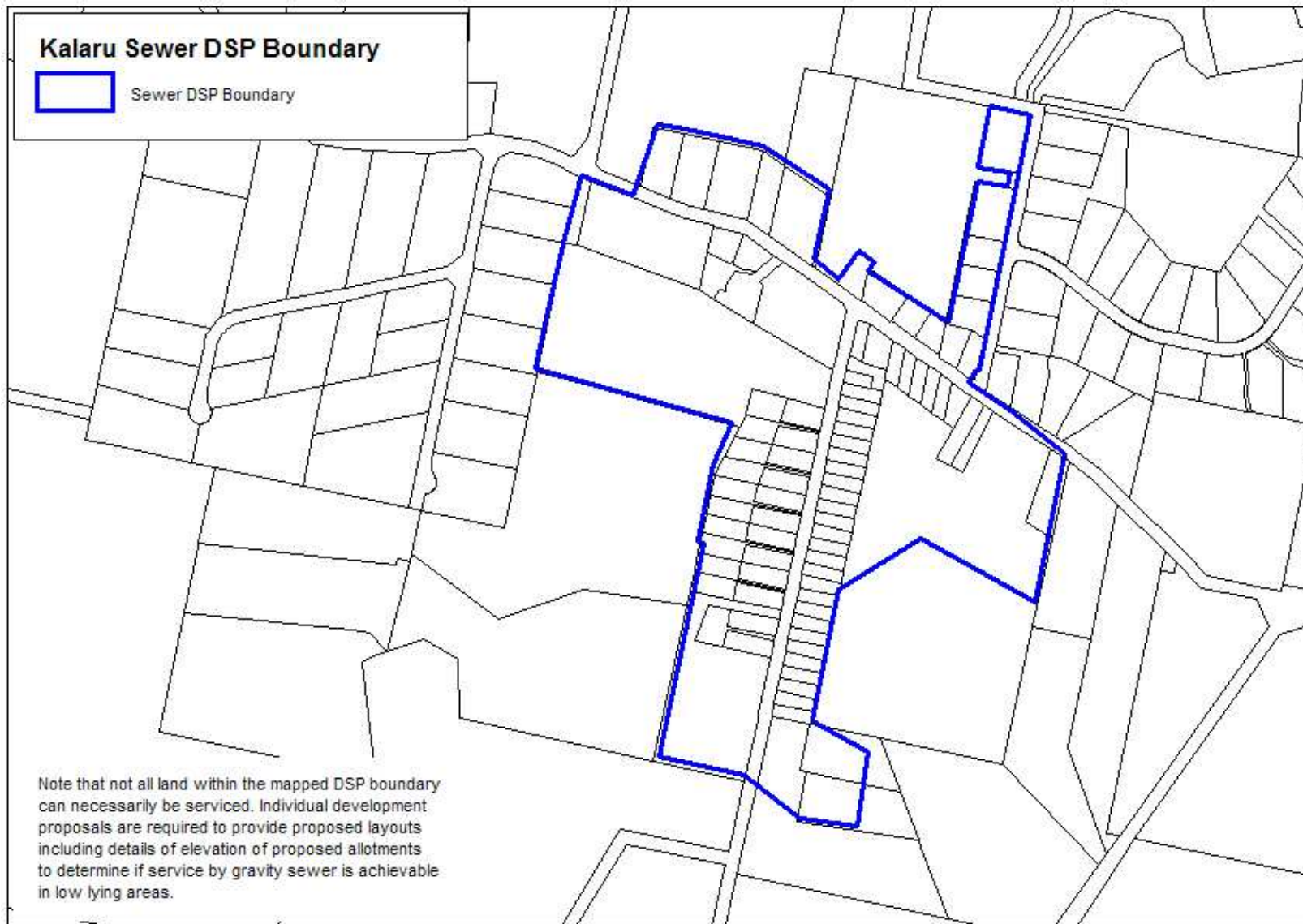


Figure 10 Kalaru Sewer DSP Boundary

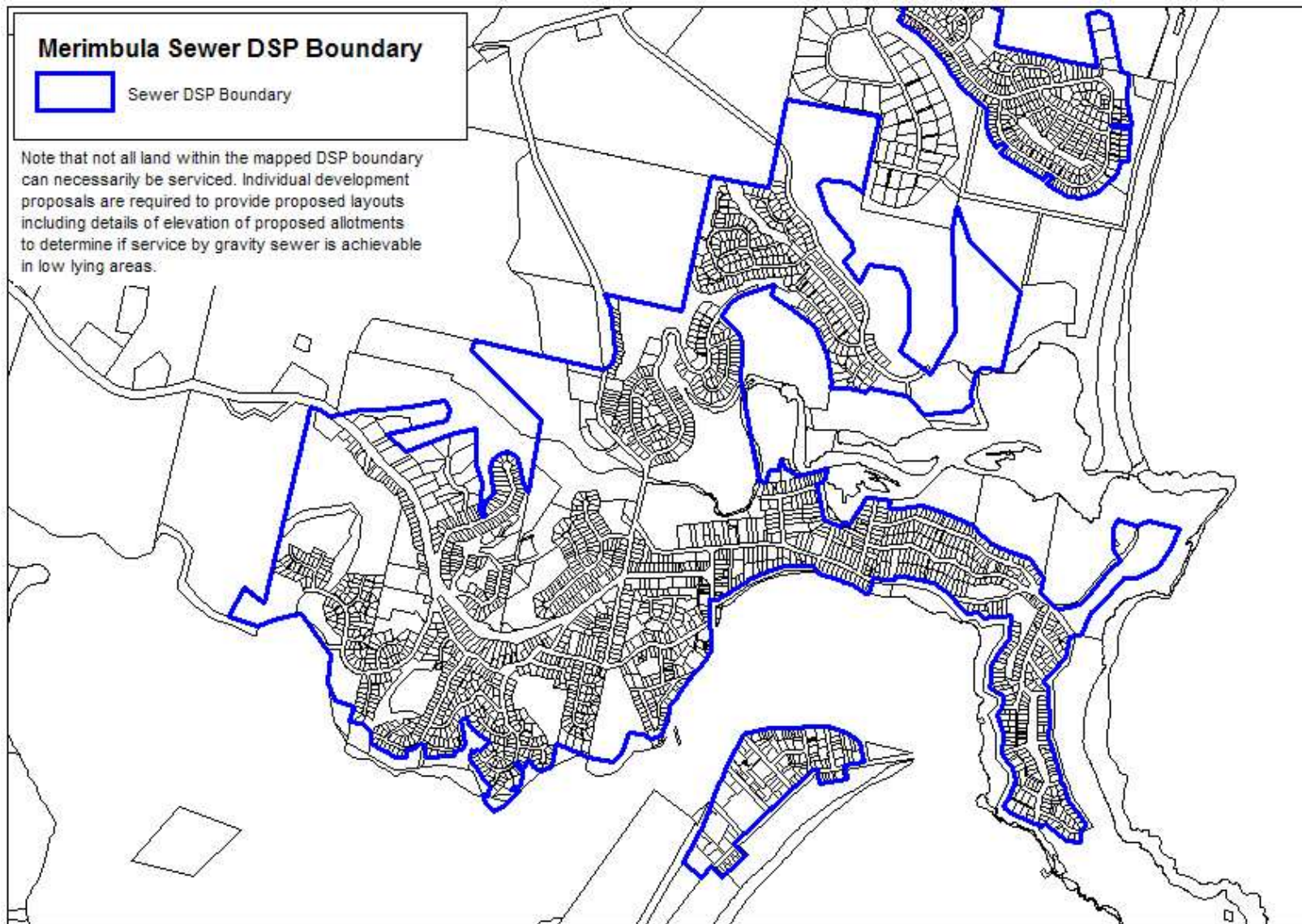


Figure 11 Merimbula Sewer DSP Boundary

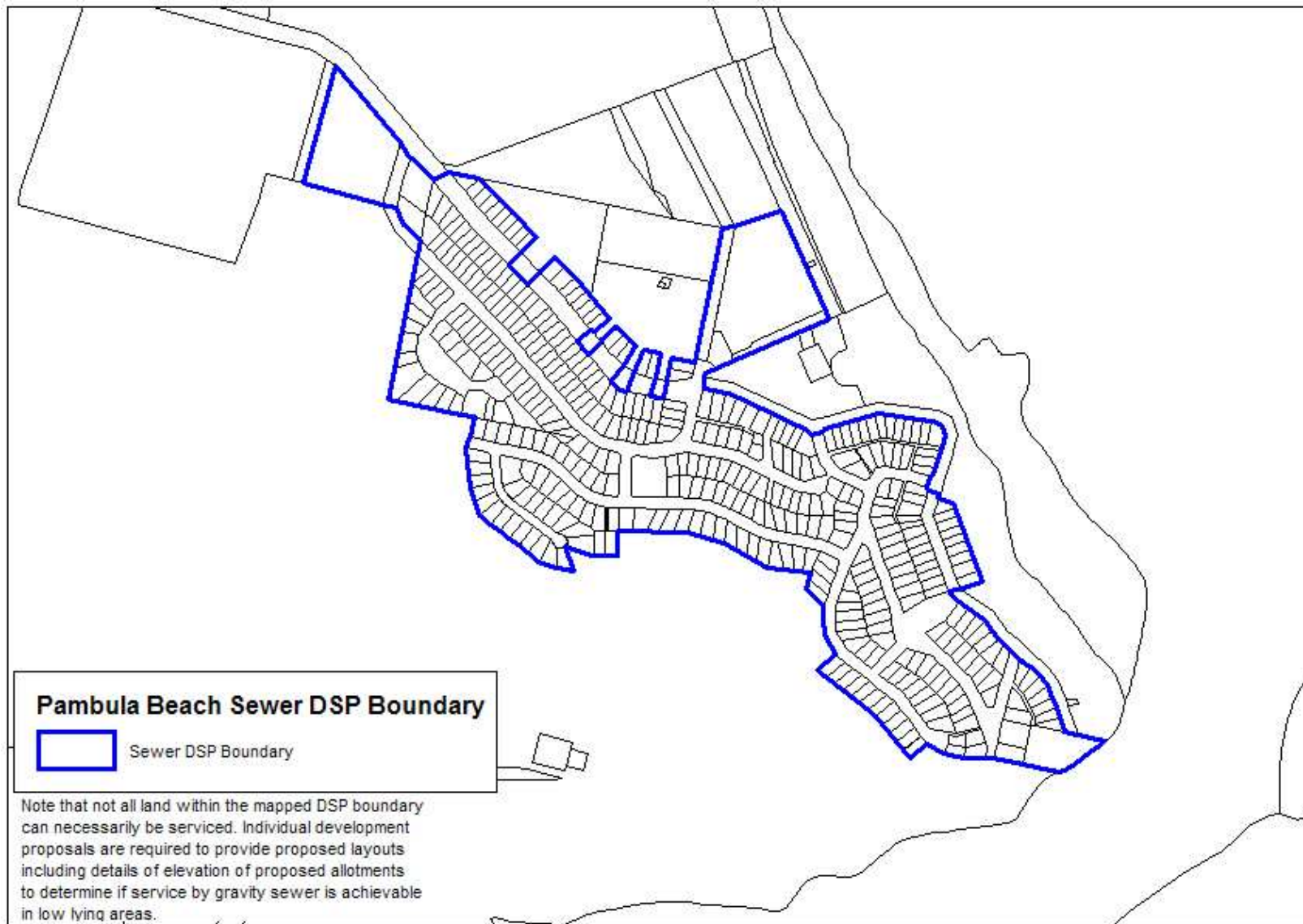


Figure 12 Pambula Beach Sewer DSP Boundary

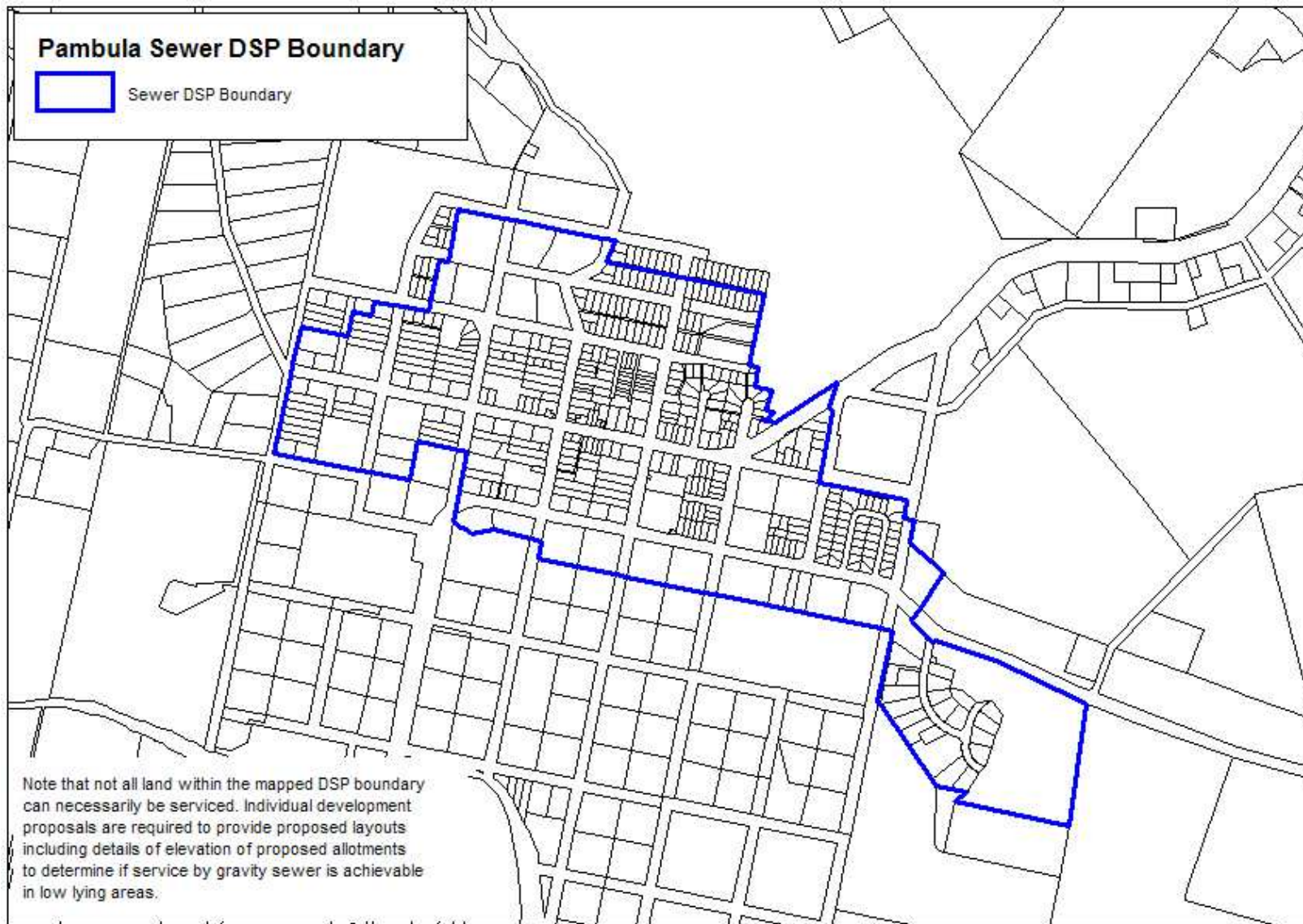


Figure 13 Pambula Sewer DSP Boundary

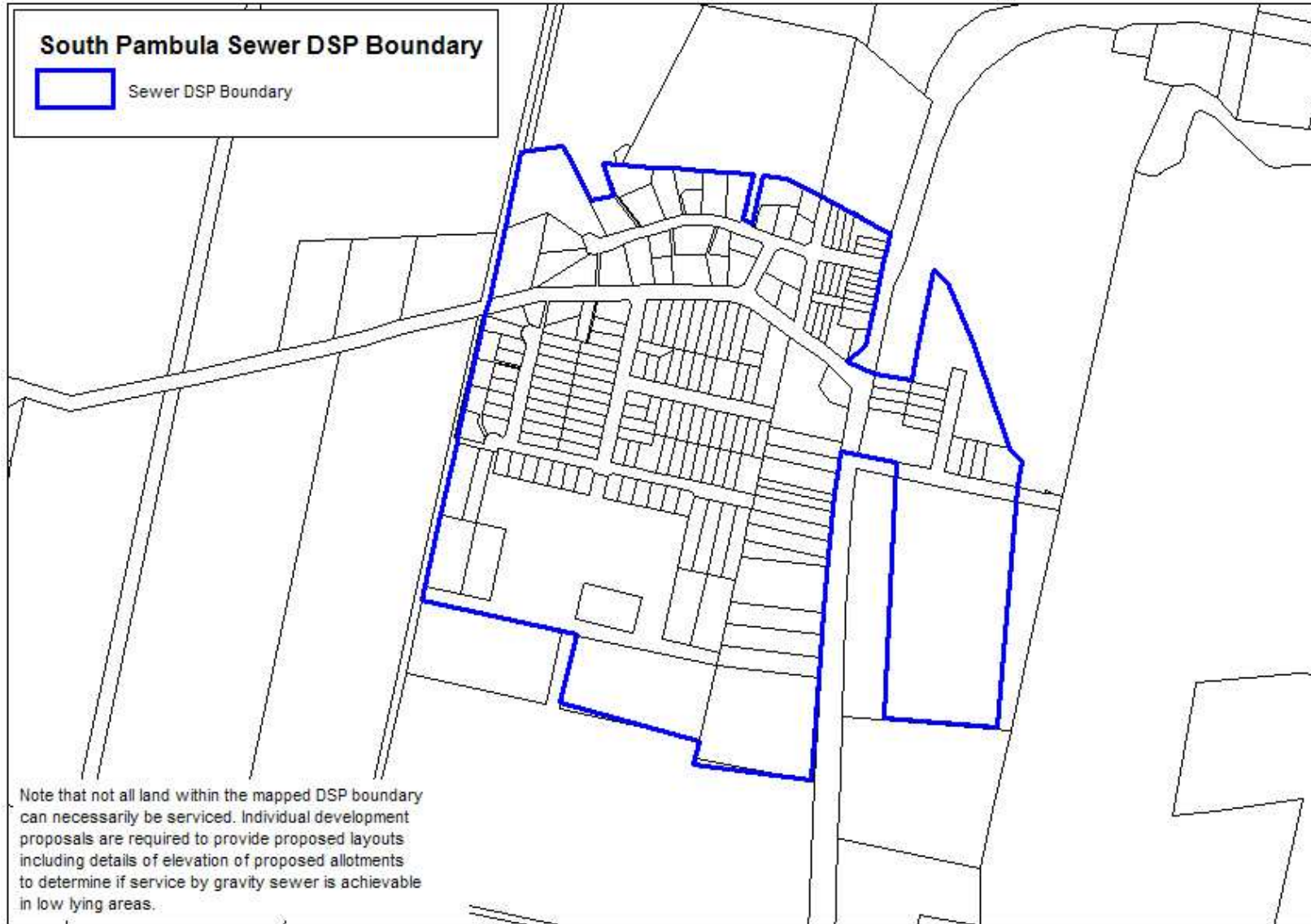


Figure 14 South Pambula Sewer DSP Boundary

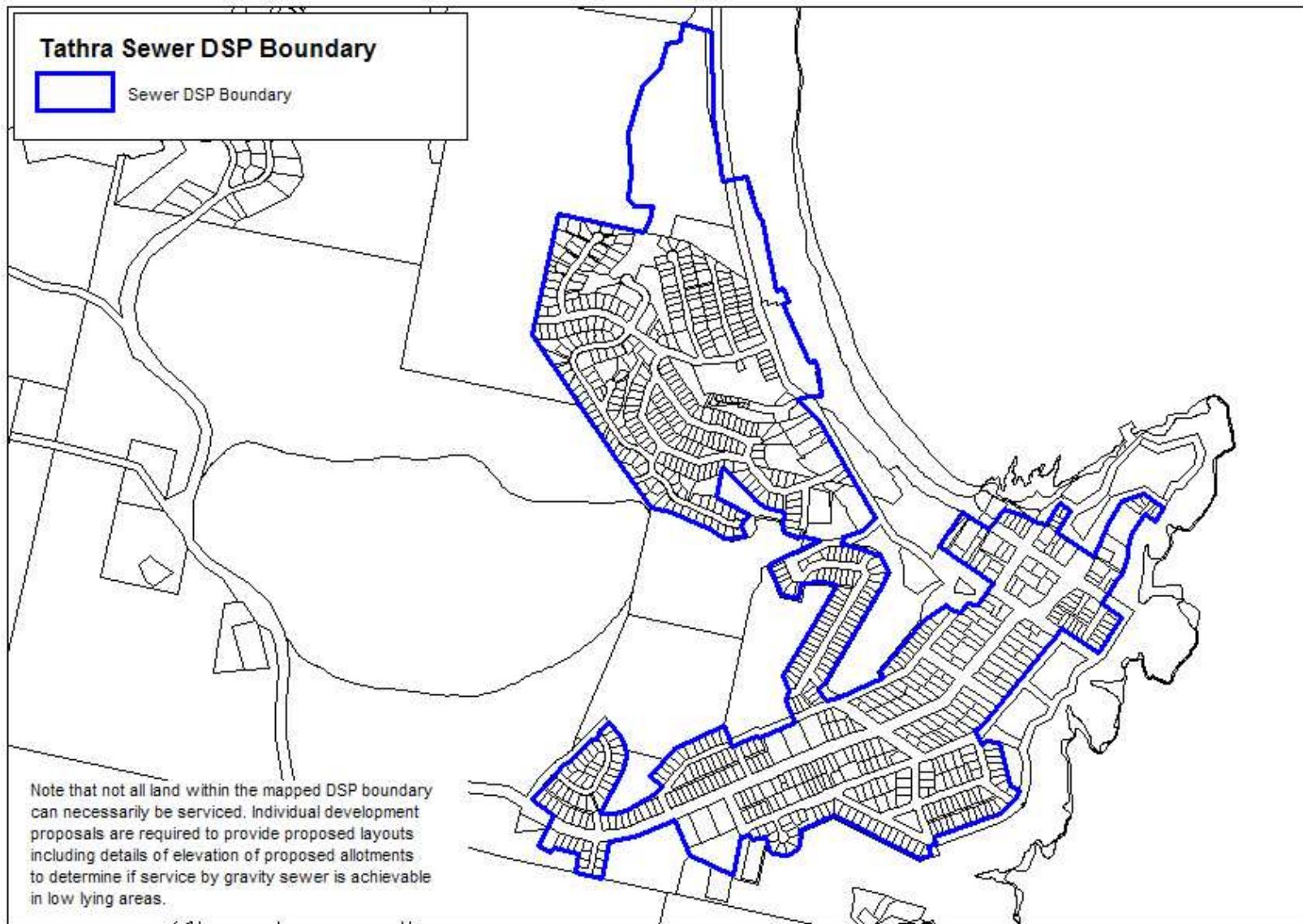


Figure 15 Tathra Sewer DSP Boundary

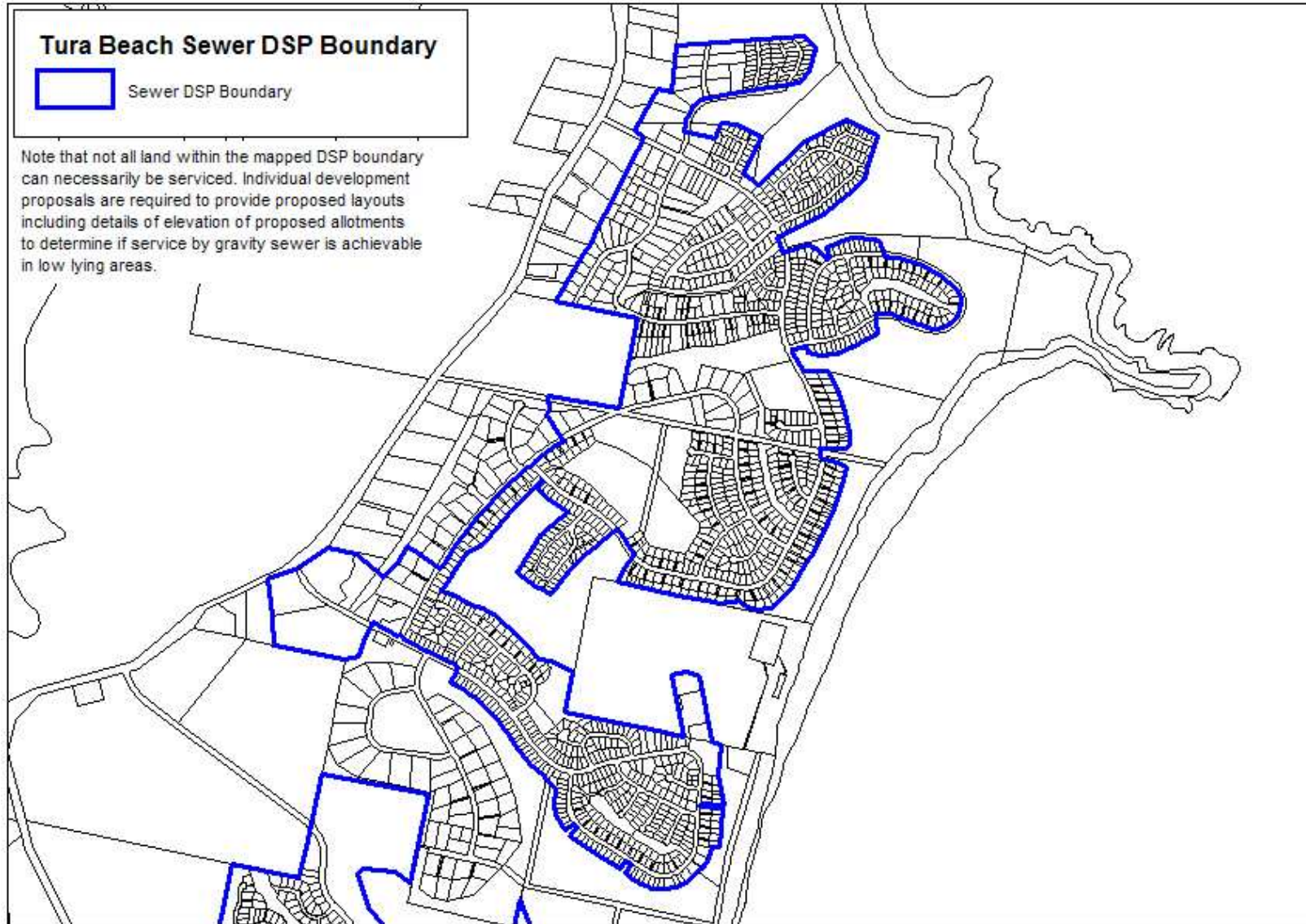


Figure 16 Tura Beach Sewer DSP Boundary

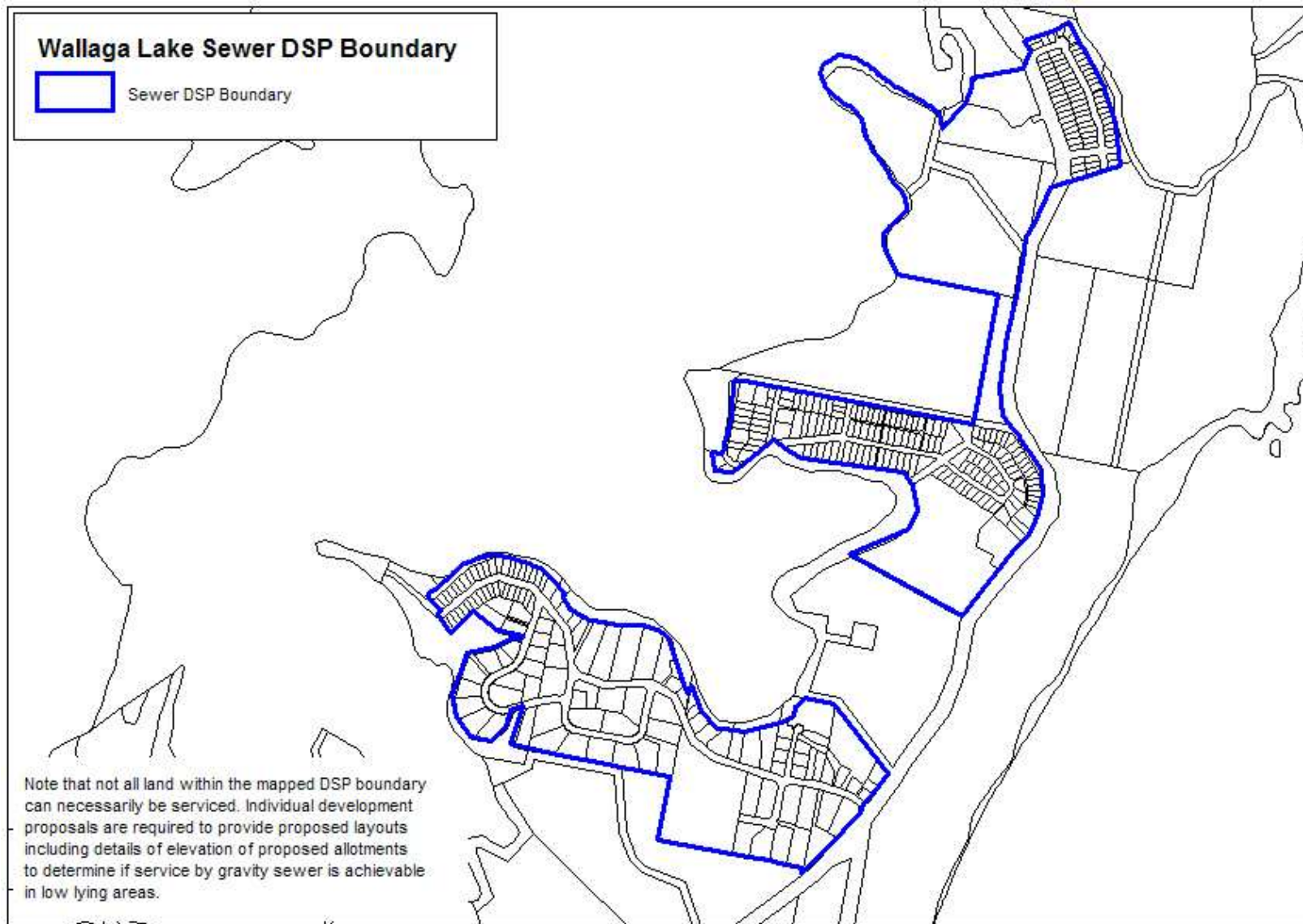


Figure 17 Wallaga Lake Sewer DSP Boundary

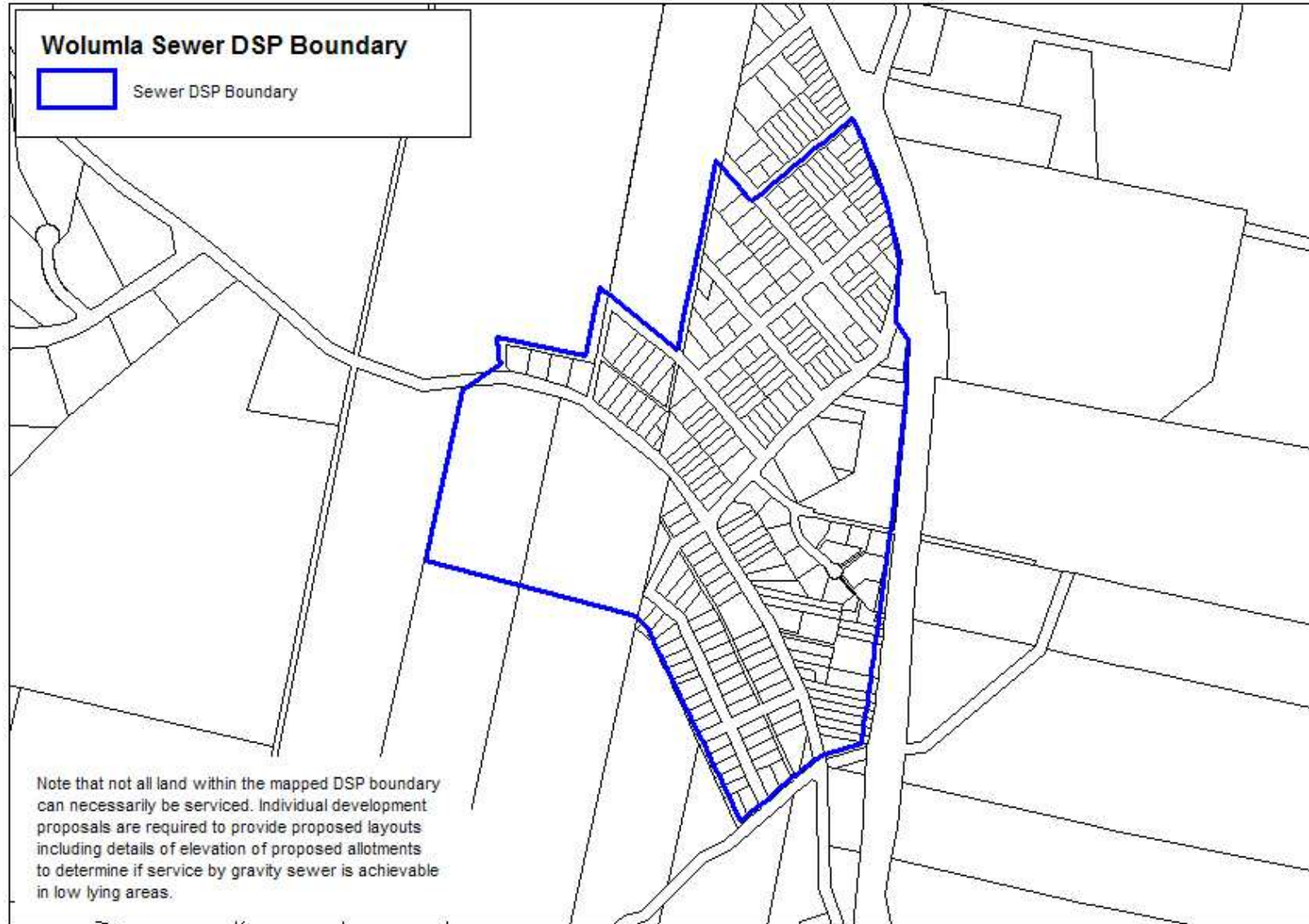


Figure 18 Wolumla Lake Sewer DSP Boundary

Appendix B Sewer Capital Works Program

Bega Valley Shire Council				Current Year 2012/13																																
SEWER - 30-Year Capital Works Program				CAPITAL WORKS IN 2012\$('000)																																
	SUBSIDY	ILOS	GROWTH	RENEW	Total	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	
BERMAGUI																																				
Bermagui STP upgrade - Balance Tank		100%			500			500																												
Bermagui STP - Effluent Reuse		50%	50%		2000					2000																										
Effluent Disposal - Ocean outfall		100%			4000									4000																						
TURA																																				
Tura - Effluent Disinfection		100%			2000	1500	500																													
EDEN																																				
Eden - Effluent disinfection		100%			2000	1500	500																													
Retic Mains Rehabilitation (MWH Report)			25%	75%	6150		615	615	615	615	615	615	615	615	615	615																				
2.1ML Storage at SPS 2 and related works		80%	20%				1795																													
BEGA																																				
Bega STP - Balance Tank		100%			1000					1000																										
Retic Mains Rehabilitation (MWH Report - Item 2)			25%	75%	7500		750	750	750	750	750	750	750	750	750	750																				
MH4 - SPS 4 - Sewer Main Upsize (Item 6)			25%	75%	238					238																										
0.4ML Storage at MH255 (Item 8)		80%	20%		1280			1280																												
North Bega Sewerage (treated at Bega STP)					0																															
North Bega Sewerage - Pre-construction		80%	20%		0																															
North Bega Sewerage (treated at Bega STP)		80%	20%		0																															
Tarraganda Sewerage - Pre-construction activities		80%	20%		0																															
Tarraganda Sewerage		80%	20%		0																															
MERIMBULA/PAMBULA																																				
STP Upgrade and Effluent disposal - Dunal Exfiltration		75%	25%		11500					7000	4500																									
Effluent reuse - Golf course and Millingandi		100%			7700									4200	3500																					
West Pambula SPS		25%	75%		1500		1000	500																												
OTHER WORKS																																				
Sludge Management - All Schemes		100%			2000					2000																										
Telemetry upgrade - All schemes					0																															
Developemnt Servicing Strategy, DSP & SBP		100%			125		125																													
30-YEAR RENEWALS PROGRAM																																				
			10%	90%	92292	1750	713	713	713	713	1011	1011	1011	1011	1011	2035	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	
GRAND TOTAL					143580	4750	5998	4596	2078	12078	8876	2376	6576	6376	5876	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	3400	

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 Sewerage Scheme
Table C2	Capital Charge Calculation – Bermagui-Wallaga Lake Sewerage Scheme
Table C3	Capital Charge Calculation – Candelo Sewerage Scheme
Table C4	Capital Charge Calculation – Cobargo Sewerage Scheme
Table C5	Capital Charge Calculation – Eden Sewerage Scheme
Table C6	Capital Charge Calculation – Kalaru Sewerage Scheme
Table C7	Capital Charge Calculation – Merimbula-Pambula Sewerage Scheme
Table C8	Capital Charge Calculation – Tathra Sewerage Scheme
Table C9	Capital Charge Calculation – Tura Beach Sewerage Scheme
Table C10	Capital Charge Calculation – Wolumla Sewerage Scheme
Table C11	Calculation of DC using the NPV Annual Charges Method – 3 rd Iteration

Table C1: Capital Charge Calculation
Bega Sewerage Scheme

Pre 1996 discount rate
Post 1996 discount rate

3%
7%

Summary
per ET
Capital Charge

\$11,595 \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewage Pumping Stations - Civil	1954	1995/96	\$3,831,062.40	\$3,831,062.40	2,989	\$1,281.72	30	1.49	\$0.00
Sewage Pumping Stations - Electrical	1996	1995/96	\$1,671,450.00	\$1,671,450.00	2,989	\$559.20	30	1.49	\$831.00
Sewage Pumping Stations - Mechanical	1996	1995/96	\$720,720.00	\$720,720.00	2,989	\$241.12	30	1.49	\$358.00
Sewage Pumping Stations - Telemetry	1996	1995/96	\$200,000.00	\$200,000.00	2,989	\$66.91	30	1.49	\$99.00
EAST STREET	1975	1995/96	\$114,486.25	\$114,486.25	2,989	\$38.30	30	1.49	\$57.00
FISHERMEN'S COURT	1979	1995/96	\$3,654.68	\$3,654.68	2,989	\$1.22	30	1.49	\$2.00
CARP ST / SWAN ST	1975	1995/96	\$11,355.23	\$11,355.23	2,989	\$3.80	30	1.49	\$6.00
MINYAMA PARADE	1976	1995/96	\$31,416.13	\$31,416.13	2,989	\$10.51	30	1.49	\$16.00
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
Vents	2004	2003/04	\$262,837.27	\$262,837.27	2,989	\$87.93	30	2.26	\$199.00
PUMP STATIONS AND RISING MAINS									
TATHRA ROAD	2004	2003/04	\$43,715.54	\$43,715.54	2,989	\$14.63	30	2.26	\$33.00
TARRAGANDA LANE	2007	2006/07	\$486,514.52	\$486,514.52	2,989	\$162.77	30	2.26	\$368.00
Sewer Treatment Works									
Sewage Treatment Works-Conventional - Civil	2008	2008	\$4,264,375.00	\$4,264,375.00	2,989	\$1,426.69	30	2.26	\$3,224.00
Sewage Treatment Works-Conventional - Electrical	2008	2008	\$1,562,500.00	\$1,562,500.00	2,989	\$522.75	30	2.26	\$1,181.00
Sewage Treatment Works-Conventional - Mechanical	2008	2008	\$1,717,500.00	\$1,717,500.00	2,989	\$574.61	30	2.26	\$1,298.00
Miscellaneous									
Mobile Plant and Equipment	2000	1999/00	\$225,821.40	\$225,821.40	2,989	\$75.55	30	2.26	\$171.00
Forward Works									
Bega STP - Balance Tank	2016/17	2016/17	\$1,000,000.00	\$762,895.21	2,989	\$255.23	30	2.26	\$577.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2013/14	2013/14	\$187,500.00	\$175,233.64	2,989	\$58.63	30	2.26	\$132.00

Not less than 30 years old

Table C1: Capital Charge Calculation
Bega Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$11,595** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Retic Mains Rehabilitation (MWH Report - Item 2)	2014/15	2014/15	\$187,500.00	\$163,769.76	2,989	\$54.79	30	2.26	\$124.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2015/16	2015/16	\$187,500.00	\$153,055.85	2,989	\$51.21	30	2.26	\$116.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2016/17	2016/17	\$187,500.00	\$143,042.85	2,989	\$47.86	30	2.26	\$108.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2017/18	2017/18	\$187,500.00	\$133,684.91	2,989	\$44.73	30	2.26	\$101.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2018/19	2018/19	\$187,500.00	\$124,939.17	2,989	\$41.80	30	2.26	\$94.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2019/20	2019/20	\$187,500.00	\$116,765.58	2,989	\$39.07	30	2.26	\$88.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2020/21	2020/21	\$187,500.00	\$109,126.71	2,989	\$36.51	30	2.26	\$82.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2021/22	2021/22	\$187,500.00	\$101,987.58	2,989	\$34.12	30	2.26	\$77.00
Retic Mains Rehabilitation (MWH Report - Item 2)	2022/23	2022/23	\$187,500.00	\$95,315.49	2,989	\$31.89	30	2.26	\$72.00
MH4 - SPS 4 - Sewer Main Upsize(Item 6)	2014/15	2014/15	\$59,500.00	\$51,969.60	2,989	\$17.39	30	2.26	\$39.00
0.4ML Storage at MH255 (Item 8)	2014/15	2014/15	\$1,280,000.00	\$1,118,001.57	2,989	\$374.04	30	2.26	\$845.00
North Bega Sewerage - Pre-construction	2021/22	2021/22	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
North Bega Sewerage - Pre-construction	2022/23	2022/23	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
North Bega Sewerage (treated at Bega STP)	2022/23	2022/23	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
North Bega Sewerage (treated at Bega STP)	2023/24	2023/24	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
Tarraganda Sewerage - Pre-construction activities	2019/20	2019/20	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
Tarraganda Sewerage - Pre-construction activities	2020/21	2020/21	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
Tarraganda Sewerage	2021/22	2021/22	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
Tarraganda Sewerage	2022/23	2022/23	\$0.00	\$0.00	2,989	\$0.00	30	2.26	\$0.00
Renewal component	2013/14			\$604,000.00	2,989	\$202.07	30	2.26	\$457.00
Bega - Sewer Mains	2024/25	2024/25	\$2,000,000.00	\$888,023.92	2,989	\$297.10	30	2.26	\$671.00
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	2.26	\$157.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	2.26	\$12.00
Total			\$23,486,908.44	\$21,531,833.14		\$5.323			\$11,595.00

\$0.00

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

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

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge

\$27,374 \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
BUNGA STREET - Civil	1975		\$180,487.00	\$180,487.00	1,930	\$93.52	30	1.49	\$0.00
TUROSS STREET - Civil	1975		\$65,688.00	\$65,688.00	1,930	\$34.04	30	1.49	\$0.00
WEST STREET - Civil	1975		\$61,005.00	\$61,005.00	1,930	\$31.61	30	1.49	\$0.00
OPP 58 WALLAGA LAKE Rd - Civil	1975		\$42,210.00	\$42,210.00	1,930	\$21.87	30	1.49	\$0.00
STP Outfall - Civil	1975		\$87,570.00	\$87,570.00	1,930	\$45.37	30	1.49	\$0.00
WALLAGA LAKE RD / GINN ST - Civil	1981		\$51,601.20	\$51,601.20	1,930	\$26.74	30	1.49	\$0.00
HAY STREET - Civil	1989		\$61,005.00	\$61,005.00	1,930	\$31.61	30	1.49	\$47.00
TILLABUDGERY COURT - Civil	1991		\$51,601.20	\$51,601.20	1,930	\$26.74	30	1.49	\$40.00
OCEAN VIEW DRIVE - Civil	1992		\$56,515.60	\$56,515.60	1,930	\$29.28	30	1.49	\$44.00
MILL STREET	1975	1995/96	\$346,189.16	\$346,189.16	1,930	\$179.37	30	1.49	\$267.00
STP OUTFALL	1974	1995/96	\$184,115.63	\$184,115.63	1,930	\$95.40	30	1.49	\$142.00
WALLAGA LAKE ROAD	1981	1995/96	\$99,364.21	\$99,364.21	1,930	\$51.48	30	1.49	\$77.00
TUROSS / MURRAH STREETS	1975	1995/96	\$149,741.48	\$149,741.48	1,930	\$77.59	30	1.49	\$115.00
LAMONT STREET	1975	1995/96	\$122,690.48	\$122,690.48	1,930	\$63.57	30	1.49	\$94.00
VALLEY ST - KIRKLAND AVE	1975	1995/96	\$49,016.73	\$49,016.73	1,930	\$25.40	30	1.49	\$38.00
WALLAGA LAKE ROAD	1975	1995/96	\$47,313.45	\$47,313.45	1,930	\$24.51	30	1.49	\$36.00
TUROSS STREET	1975	1995/96	\$12,308.95	\$12,308.95	1,930	\$6.38	30	1.49	\$9.00
HAY STREET	1989	1995/96	\$205,958.80	\$205,958.80	1,930	\$106.71	30	1.49	\$159.00
TILLABUDGERY COURT	1991	1995/96	\$1,417.54	\$1,417.54	1,930	\$0.73	30	1.49	\$1.00
TILLABUDGERY COURT	1991	1995/96	\$361,189.39	\$361,189.39	1,930	\$187.14	30	1.49	\$278.00
GOLF COURSE	1993	1995/96	\$142,659.51	\$142,659.51	1,930	\$73.92	30	1.49	\$110.00
<u>Sewer Treatment Works</u>									
Post 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
Vents	2003	2002/03	\$73,273.65	\$73,273.65	1,930	\$37.97	30	2.26	\$86.00
PUMP STATIONS AND RISING MAINS									
Pressure Sewer - Property Components	2008	2007/08	\$3,918,840.00	\$3,918,840.00	1,930	\$2,030.49	30	2.26	\$0.00
Pressure Sewer - Discharge Lines	2008	2007/08	\$1,302,709.46	\$1,302,709.46	1,930	\$674.98	30	2.26	\$1,525.00

Table C2: Capital Charge Calculation
Bermagui-Wallaga Lake Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge

\$27,374 \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pressure Sewer - Main Components	2008	2007/08	\$72,000.00	\$72,000.00	1,930	\$37.31	30	2.26	\$84.00
Pressure Sewer - Main Pipes	2008	2007/08	\$1,452,498.89	\$1,452,498.89	1,930	\$752.59	30	2.26	\$1,700.00
WALLAGA LAKE RD FAIRHAVEN - civil	2009	2008/09	\$84,442.50	\$84,442.50	1,930	\$43.75	30	2.26	\$99.00
Sewage Pumping Stations - Electrical	2005	2004/05	\$2,013,000.00	\$2,013,000.00	1,930	\$1,043.01	30	2.26	\$2,357.00
Sewage Pumping Stations - Mechanical	2006	2005/06	\$943,800.00	\$943,800.00	1,930	\$489.02	30	2.26	\$1,105.00
Sewage Pumping Stations - Telemetry	2003	2002/03	\$250,000.00	\$250,000.00	1,930	\$129.53	30	2.26	\$293.00
LAMONT ST	2003	2002/03	\$126,817.56	\$126,817.56	1,930	\$65.71	30	2.26	\$148.00
MILL STREET	2007	2006/07	\$107,517.02	\$107,517.02	1,930	\$55.71	30	2.26	\$126.00
BERMAGUI	2008	2007/08	\$1,801,785.96	\$1,801,785.96	1,930	\$933.57	30	2.26	\$2,109.00
Sewer Treatment Works									
Sewage Treatment Works-Conventional - Civil	1999	1998/99	\$5,847,500.00	\$5,847,500.00	1,930	\$3,029.79	30	2.26	\$6,846.00
Sewage Treatment Works-Conventional - Electrical	2008	2007/08	\$1,250,000.00	\$1,250,000.00	1,930	\$647.67	30	2.26	\$1,463.00
Sewage Treatment Works-Conventional - Mechancial	2007	2006/07	\$1,175,000.00	\$1,175,000.00	1,930	\$608.81	30	2.26	\$1,376.00
Miscellaneous									
Mobile Plant and Equipment	2003	2002/03	\$183,244.92	\$183,244.92	1,930	\$94.95	30	2.26	\$215.00
Forward Works									
Bermagui STP upgrade - Balance Tank	2014/15	2014/15	\$500,000.00	\$436,719.36	1,930	\$226.28	30	2.26	\$511.00
Bermagui STP - Effluent Reuse	2017/18	2017/18	\$2,000,000.00	\$1,425,972.36	1,930	\$738.85	30	2.26	\$1,669.00
Effluent Disposal - Ocean outfall	2015/16	2015/16	\$4,000,000.00	\$3,265,191.51	1,930	\$1,691.81	30	2.26	\$3,823.00
Renewals Component				\$263,000.00	1,930	\$136.27	30	2.26	\$308.00
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$31,607,078.29	\$30,015,574.37		\$14,565			\$27,374.00

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

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

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$109,474** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS AND RISING MAINS									
Pressure Sewer - Property Components	2007	2006/07	\$2,095,960.00	\$2,095,960.00	191	\$10,973.61	30	2.26	\$0.00
Pressure Sewer - Discharge Lines	2007	2006/07	\$431,079.53	\$431,079.53	191	\$2,256.96	30	2.26	\$5,099.00
Pressure Sewer - Main Components	2007	2006/07	\$114,000.00	\$114,000.00	191	\$596.86	30	2.26	\$1,349.00
Pressure Sewer - Main Pipes	2007	2006/07	\$1,146,818.23	\$1,146,818.23	191	\$6,004.28	30	2.26	\$13,566.00
Sewer Treatment Works									
Sewage Treatment Works-MBR - Civil	2006	2005/06	\$3,238,848.41	\$3,238,848.41	191	\$16,957.32	30	2.26	\$38,314.00
Sewage Treatment Works-MBR - Electrical	2006	2005/06	\$2,294,184.29	\$2,294,184.29	191	\$12,011.44	30	2.26	\$27,139.00
Sewage Treatment Works-MBR - Mechanical	2006	2005/06	\$1,012,140.13	\$1,012,140.13	191	\$5,299.16	30	2.26	\$11,973.00
Sewage Treatment Works-MBR - Telemetry	2006	2005/06	\$202,428.03	\$202,428.03	191	\$1,059.83	30	2.26	\$2,395.00
Reuse - Civil	2006	2005/06	\$388,061.12	\$388,061.12	191	\$2,031.73	30	2.26	\$4,591.00
Reuse - Electrical	2006	2005/06	\$274,876.63	\$274,876.63	191	\$1,439.14	30	2.26	\$3,252.00
Reuse - Mechanical	2006	2005/06	\$121,269.10	\$121,269.10	191	\$634.92	30	2.26	\$1,435.00
Reuse - Telemetry	2006	2005/06	\$24,253.82	\$24,253.82	191	\$126.98	30	2.26	\$287.00
Miscellaneous									
Forward Works									
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developent Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$13,468,919.29	\$12,986,532.14		\$59,467			\$109,474.00

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
 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 C4.: Capital Charge Calculation
Cobargo Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$82,792** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS AND RISING MAINS									
Pressure Sewer - Property Components	2006	2005/06	\$3,028,720.00	\$3,028,720.00	278	\$10,894.68	30	2.26	\$0.00
Pressure Sewer - Discharge Lines	2006	2005/06	\$649,276.89	\$649,276.89	278	\$2,335.53	30	2.26	\$5,277.00
Pressure Sewer - Main Components	2006	2005/06	\$71,000.00	\$71,000.00	278	\$255.40	30	2.26	\$577.00
Pressure Sewer - Main Pipes	2006	2005/06	\$997,410.00	\$997,410.00	278	\$3,587.81	30	2.26	\$8,106.00
Sewer Treatment Works									
Sewage Treatment Works-MBR - Civil	2005	2004/05	\$3,654,206.51	\$3,654,206.51	278	\$13,144.63	30	2.26	\$29,699.00
Sewage Treatment Works-MBR - Electrical	2005	2004/05	\$2,588,396.28	\$2,588,396.28	278	\$9,310.78	30	2.26	\$21,037.00
Sewage Treatment Works-MBR - Mechanical	2005	2004/05	\$1,141,939.53	\$1,141,939.53	278	\$4,107.70	30	2.26	\$9,281.00
Sewage Treatment Works-MBR - Telemetry	2005	2004/05	\$228,387.91	\$228,387.91	278	\$821.54	30	2.26	\$1,856.00
Reuse - Civil	2005	2004/05	\$406,579.41	\$406,579.41	278	\$1,462.52	30	2.26	\$3,304.00
Reuse - Electrical	2005	2004/05	\$287,993.75	\$287,993.75	278	\$1,035.95	30	2.26	\$2,341.00
Reuse - Mechanical	2005	2004/05	\$127,056.07	\$127,056.07	278	\$457.04	30	2.26	\$1,033.00
Reuse - Telemetry	2005	2004/05	\$25,411.21	\$25,411.21	278	\$91.41	30	2.26	\$207.00
Miscellaneous									
Forward Works									
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developent Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$15,331,377.55	\$14,848,990.41		\$47,580			\$82,792.00

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

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 C5: Capital Charge Calculation
Eden Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$23,679** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewer Mains - Rising	1988	1995/96	\$5,320,349.12	\$5,320,349.12	2,470	\$2,153.99	30	1.49	\$3,201.00
Sewage Pumping Stations - Civil	1986	1995/96	\$4,815,122.53	\$4,815,122.53	2,470	\$1,949.44	30	1.49	\$2,897.00
Sewage Pumping Stations - Telemetry	1995	1995/96	\$280,000.00	\$280,000.00	2,470	\$113.36	30	1.49	\$168.00
LAKESIDE DRIVE	1971	1995/96	\$404,925.64	\$404,925.64	2,470	\$163.94	30	1.49	\$244.00
CATTLE BAY ROAD	1971	1995/96	\$142,271.17	\$142,271.17	2,470	\$57.60	30	1.49	\$86.00
FISHERMEN'S COURT	1979	1995/96	\$3,654.68	\$3,654.68	2,470	\$1.48	30	1.49	\$0.00
MUSEUM/CALLE CALLE ST	1986	1995/96	\$183,614.93	\$183,614.93	2,470	\$74.34	30	1.49	\$110.00
NICHOLSON/WEST	1986	1995/96	\$1,017,946.04	\$1,017,946.04	2,470	\$412.12	30	1.49	\$612.00
RESERVOIR STREET	1986	1995/96	\$910,691.52	\$910,691.52	2,470	\$368.70	30	1.49	\$548.00
IDA RODD DR/PHILLIPPS ST	1987	1995/96	\$11,756.83	\$11,756.83	2,470	\$4.76	30	1.49	\$7.00
IDA RODD DR/PHILLIPPS ST	1987	1995/96	\$79,529.29	\$79,529.29	2,470	\$32.20	30	1.49	\$48.00
Sewer Treatment Works									
Sewage Treatment Works-Conventional - Civil	1989	1995/96	\$4,668,500.00	\$4,668,500.00	2,470	\$1,890.08	30	1.49	\$2,809.00
Sewage Treatment Works-Conventional - Electrical	1992	1995/96	\$1,600,000.00	\$1,600,000.00	2,470	\$647.77	30	1.49	\$963.00
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
Vents	2003	2002/03	\$81,474.34	\$81,474.34	2,470	\$32.99	30	2.26	\$75.00
PUMP STATIONS AND RISING MAINS									
Sewage Pumping Stations - Electrical	1998	1997/98	\$2,286,900.00	\$2,286,900.00	2,470	\$925.87	30	2.26	\$2,092.00
Sewage Pumping Stations - Mechanical	2000	1999/00	\$1,289,310.00	\$1,289,310.00	2,470	\$521.99	30	2.26	\$1,179.00
KB TIMMS DR	2002	2001/02	\$95,628.05	\$95,628.05	2,470	\$38.72	30	2.26	\$87.00
GOVERNMENT RD	2002	2001/02	\$276,623.08	\$276,623.08	2,470	\$111.99	30	2.26	\$253.00
GOVERNMENT RD	2005	2004/05	\$152,654.80	\$152,654.80	2,470	\$61.80	30	2.26	\$140.00
GOVERNMENT RD	2005	2004/05	\$233,089.15	\$233,089.15	2,470	\$94.37	30	2.26	\$213.00
ALBERT TERR/MUSEUM ST	2006	2005/06	\$7,768.10	\$7,768.10	2,470	\$3.14	30	2.26	\$7.00
IMLAY ST/ALBERT TERR	2006	2005/06	\$171,075.79	\$171,075.79	2,470	\$69.26	30	2.26	\$156.00
IMLAY ST/ALBERT TERRACE	2006	2005/06	\$140,523.18	\$140,523.18	2,470	\$56.89	30	2.26	\$129.00
MUSEUM ST	2008	2007/08	\$548.20	\$548.20	2,470	\$0.22	30	2.26	\$1.00
BARCLAY STREET	2008	2007/08	\$5,114.32	\$5,114.32	2,470	\$2.07	30	2.26	\$5.00
MUSEUM ST/CALLE CALLE ST	2008	2007/08	\$274,310.90	\$274,310.90	2,470	\$111.06	30	2.26	\$251.00
IDA RODD DR/ANDREA ST	2010	2009/10	\$117,315.38	\$117,315.38	2,470	\$47.50	30	2.26	\$107.00
Sewer Treatment Works									
Sewage Treatment Works-Conventional - Mechanical	2005	2004/05	\$2,634,375.00	\$2,634,375.00	2,470	\$1,066.55	30	2.26	\$2,410.00
Miscellaneous									
Mobile Plant and Equipment	2003	2002/03	\$185,768.28	\$185,768.28	2,470	\$75.21	30	2.26	\$170.00
Forward Works									
Eden - Effluent disinfection	2012/13	2012/13	\$1,500,000.00	\$1,500,000.00	2,470	\$607.29	30	2.26	\$1,372.00
Eden - Effluent disinfection	2013/14	2013/14	\$500,000.00	\$467,289.72	2,470	\$189.19	30	2.26	\$427.00
Retic Mains Rehabilitation (MWH Report)	2014/15	2014/15	\$153,750.00	\$134,291.20	2,470	\$54.37	30	2.26	\$123.00
Retic Mains Rehabilitation (MWH Report)	2014/15	2014/15	\$153,750.00	\$134,291.20	2,470	\$54.37	30	2.26	\$123.00
Retic Mains Rehabilitation (MWH Report)	2015/16	2015/16	\$153,750.00	\$125,505.80	2,470	\$50.81	30	2.26	\$115.00

Not less than 30 years old

Table C5: Capital Charge Calculation
Eden Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$23,679** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Retic Mains Rehabilitation (MWH Report)	2016/17	2016/17	\$153,750.00	\$117,295.14	2,470	\$47.49	30	2.26	\$107.00
Retic Mains Rehabilitation (MWH Report)	2017/18	2017/18	\$153,750.00	\$109,621.63	2,470	\$44.38	30	2.26	\$100.00
Retic Mains Rehabilitation (MWH Report)	2018/19	2018/19	\$153,750.00	\$102,450.12	2,470	\$41.48	30	2.26	\$94.00
Retic Mains Rehabilitation (MWH Report)	2019/20	2019/20	\$153,750.00	\$95,747.77	2,470	\$38.76	30	2.26	\$88.00
Retic Mains Rehabilitation (MWH Report)	2020/21	2020/21	\$153,750.00	\$89,483.90	2,470	\$36.23	30	2.26	\$82.00
Retic Mains Rehabilitation (MWH Report)	2021/22	2021/22	\$153,750.00	\$83,629.81	2,470	\$33.86	30	2.26	\$77.00
Retic Mains Rehabilitation (MWH Report)	2022/23	2022/23	\$153,750.00	\$78,158.70	2,470	\$31.64	30	2.26	\$71.00
2.1ML Storage at SPS 2 and related works	2014/15	2014/15	\$1,795,000.00	\$1,567,822.52	2,470	\$634.75	30	2.26	\$1,434.00
Renewals component				\$463,000.00	2,470	\$187.45	30	2.26	\$424.00
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$34,848,340.34	\$34,102,040.71		\$11,886			\$23,679.00

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 C6: Capital Charge Calculation
Kalaru Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$58,378** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS AND RISING MAINS									
Sewer Mains - Rising	2008	2007/08	\$968,235.59	\$968,235.59	300	\$3,227.45	30	2.26	\$7,292.00
Sewage Pumping Stations - Civil	2009	2008/09	\$419,089.44	\$419,089.44	300	\$1,396.96	30	2.26	\$3,156.00
Sewage Pumping Stations - Electrical	2009	2008/09	\$239,250.00	\$239,250.00	300	\$797.50	30	2.26	\$1,802.00
Sewage Pumping Stations - Mechanical	2009	2008/09	\$124,410.00	\$124,410.00	300	\$414.70	30	2.26	\$937.00
Sewage Pumping Stations - Telemetry	2009	2008/09	\$30,000.00	\$30,000.00	300	\$100.00	30	2.26	\$226.00
Sewer Treatment Works									
Pressure Sewer - Property Components	2008	2007/08	\$939,360.00	\$939,360.00	300	\$3,131.20	30	2.26	\$0.00
Pressure Sewer - Discharge Lines	2008	2007/08	\$225,438.11	\$225,438.11	300	\$751.46	30	2.26	\$1,698.00
Pressure Sewer - Main Components	2008	2007/08	\$33,600.00	\$33,600.00	300	\$112.00	30	2.26	\$253.00
Pressure Sewer - Main Pipes	2008	2007/08	\$358,890.77	\$358,890.77	300	\$1,196.30	30	2.26	\$2,703.00
Sewage Treatment Works-MBR - Civil	2006	2005/06	\$2,262,297.84	\$2,262,297.84	300	\$7,540.99	30	2.26	\$17,038.00
Sewage Treatment Works-MBR - Electrical	2006	2005/06	\$1,602,460.97	\$1,602,460.97	300	\$5,341.54	30	2.26	\$12,069.00
Sewage Treatment Works-MBR - Mechanical	2006	2005/06	\$706,968.07	\$706,968.07	300	\$2,356.56	30	2.26	\$5,324.00
Sewage Treatment Works-MBR - Telemetry	2006	2005/06	\$141,393.61	\$141,393.61	300	\$471.31	30	2.26	\$1,065.00
Reuse - Civil	2006	2005/06	\$302,223.39	\$302,223.39	300	\$1,007.41	30	2.26	\$2,276.00
Reuse - Electrical	2006	2005/06	\$214,074.90	\$214,074.90	300	\$713.58	30	2.26	\$1,612.00
Reuse - Mechanical	2006	2005/06	\$94,444.81	\$94,444.81	300	\$314.82	30	2.26	\$711.00
Reuse - Telemetry	2006	2005/06	\$18,888.96	\$18,888.96	300	\$62.96	30	2.26	\$142.00
Miscellaneous									
Forward Works									
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$10,806,026.48	\$10,323,639.33		\$29,011			\$58,378.00

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

Table C6: Capital Charge Calculation

Kalaru Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$58,378** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
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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 C7: Capital Charge Calculation
Merimbula-Pambula Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$21,009** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewage Pumping Stations - Civil	1983	1995/96	\$10,149,568.74	\$10,149,568.74	4,439	\$2,286.45	30	1.49	\$3,398.00
Sewage Pumping Stations - Electrical	1995	1995/96	\$4,266,900.00	\$4,266,900.00	4,439	\$961.23	30	1.49	\$1,428.00
Sewage Pumping Stations - Mechanical	1995	1995/96	\$2,688,880.00	\$2,688,880.00	4,439	\$605.74	30	1.49	\$900.00
Sewage Pumping Stations - Telemetry	1995	1995/96	\$535,000.00	\$535,000.00	4,439	\$120.52	30	1.49	\$179.00
UPPER STREET	1975	1995/96	\$320,136.96	\$320,136.96	4,439	\$72.12	30	1.49	\$107.00
Sir WILLIAM McKELL DRI	1982	1995/96	\$130,585.12	\$130,585.12	4,439	\$29.42	30	1.49	\$44.00
MERIMBULA BRIDGE	1983	1995/96	\$166,006.28	\$166,006.28	4,439	\$37.40	30	1.49	\$56.00
REID STREET	1972	1995/96	\$63,832.18	\$63,832.18	4,439	\$14.38	30	1.49	\$21.00
LAKE STREET	1982	1995/96	\$7,693.09	\$7,693.09	4,439	\$1.73	30	1.49	\$3.00
INTSN ARTHUR KAINE/MARKET	1983	1995/96	\$11,902.13	\$11,902.13	4,439	\$2.68	30	1.49	\$4.00
Berrambool	1984	1995/96	\$144,058.76	\$144,058.76	4,439	\$32.45	30	1.49	\$48.00
Berrambool	1984	1995/96	\$117,096.69	\$117,096.69	4,439	\$26.38	30	1.49	\$39.00
BEACH STREET	1989	1995/96	\$391,565.37	\$391,565.37	4,439	\$88.21	30	1.49	\$131.00
BULLARA STREET	1989	1995/96	\$899,379.88	\$899,379.88	4,439	\$202.61	30	1.49	\$301.00
RESERVE	1989	1995/96	\$961,242.40	\$961,242.40	4,439	\$216.54	30	1.49	\$322.00
TREATMENT WORKS	1990	1995/96	\$69,804.48	\$69,804.48	4,439	\$15.73	30	1.49	\$23.00
ILLAWONG HEIGHT	1990	1995/96	\$40,683.42	\$40,683.42	4,439	\$9.16	30	1.49	\$14.00
PRINCES HIGHWAY	1990	1995/96	\$520,865.20	\$520,865.20	4,439	\$117.34	30	1.49	\$174.00
NORTHVIEW DRIVE	1991	1995/96	\$56,208.38	\$56,208.38	4,439	\$12.66	30	1.49	\$19.00
FURNER ROAD	1991	1995/96	\$484,269.18	\$484,269.18	4,439	\$109.09	30	1.49	\$162.00
DOLPHIN COVE DR	1996	1995/96	\$21,197.17	\$21,197.17	4,439	\$4.78	30	1.49	\$7.00
<u>Sewer Treatment Works</u>									
Sewage Treatment Works-Conventional - Civil	1992	1995/96	\$7,381,250.00	\$7,381,250.00	4,439	\$1,662.82	30	1.49	\$2,471.00
Sewage Treatment Works-Conventional - Electrical	1992	1995/96	\$1,812,500.00	\$1,812,500.00	4,439	\$408.31	30	1.49	\$607.00
Sewage Treatment Works-Conventional - Mechanical	1993	1995/96	\$3,662,500.00	\$3,662,500.00	4,439	\$825.07	30	1.49	\$1,226.00
Post 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
Vents	2003	2002/03	\$201,065.88	\$201,065.88	4,439	\$45.30	30	2.26	\$102.00
PUMP STATIONS AND RISING MAINS									
Reuse - Civil	2007	2006/07	\$1,538,750.00	\$1,538,750.00	4,439	\$346.64	30	2.26	\$783.00
Reuse - Electrical	2007	2006/07	\$37,500.00	\$37,500.00	4,439	\$8.45	30	2.26	\$19.00
Reuse - Mechanical	2007	2006/07	\$62,500.00	\$62,500.00	4,439	\$14.08	30	2.26	\$32.00
TOP LAKE	2002	2001/02	\$28,231.06	\$28,231.06	4,439	\$6.36	30	2.26	\$14.00
SAPPHIRE COAST DR	2004	2003/04	\$107,572.90	\$107,572.90	4,439	\$24.23	30	2.26	\$55.00
Mirador	2008	2007/08	\$18,585.14	\$18,585.14	4,439	\$4.19	30	2.26	\$9.00
PRINCES HWY/ARTHUR KAINE DR	2011	2010/11	\$1,336,055.46	\$1,336,055.46	4,439	\$300.98	30	2.26	\$680.00
<u>Sewer Treatment Works</u>									
Miscellaneous									
Mobile Plant and Equipment	1999	1998/99	\$230,450.43	\$230,450.43	4,439	\$51.91	30	2.26	\$117.00
Forward Works									
STP Upgrade and Effluent disposal - Dunal Exfiltration	2016/17	2016/17	\$7,000,000.00	\$5,340,266.48	4,439	\$1,203.03	30	2.26	\$2,718.00
STP Upgrade and Effluent disposal - Dunal Exfiltration	2017/18	2017/18	\$4,500,000.00	\$3,208,437.81	4,439	\$722.78	30	2.26	\$1,633.00
Effluent reuse - Golf course and Millingandi	2019/20	2019/20	\$4,200,000.00	\$2,615,548.92	4,439	\$589.22	30	2.26	\$1,331.00
Effluent reuse - Golf course and Millingandi	2020/21	2020/21	\$3,500,000.00	\$2,037,031.87	4,439	\$458.89	30	2.26	\$1,037.00

Table C7: Capital Charge Calculation
Merimbula-Pambula Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$21,009** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
West Pambula SPS	2013/14	2013/14	\$250,000.00	\$233,644.86	4,439	\$52.63	30	2.26	\$119.00
West Pambula SPS	2014/15	2014/15	\$125,000.00	\$109,179.84	4,439	\$24.60	30	2.26	\$56.00
Renewals components				\$887,000.00	4,439	\$199.82	30	2.26	\$451.00
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	2.26	\$157.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	2.26	\$12.00
Total			\$60,163,836.32	\$54,537,558.95		\$11.991			\$21,009.00

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 C8: Capital Charge Calculation
Tathra Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$26,140** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewage Pumping Stations - Civil	1984	1995/96	\$1,845,690.62	\$1,845,690.62	1,157	\$1,595.24	30	1.49	\$2,371.00
TATHRA BERMAGUI RD	1976	1995/96	\$605,329.40	\$605,329.40	1,157	\$523.19	30	1.49	\$777.00
CLIFF PLACE	1976	1995/96	\$51,199.11	\$51,199.11	1,157	\$44.25	30	1.49	\$66.00
ILLOURA STREET	1976	1995/96	\$208,682.49	\$208,682.49	1,157	\$180.37	30	1.49	\$268.00
HAVEN PLACE	1985	1995/96	\$22,039.87	\$22,039.87	1,157	\$19.05	30	1.49	\$28.00
GOLF COURSE	1987	1995/96	\$253,202.58	\$253,202.58	1,157	\$218.84	30	1.49	\$325.00
PACIFIC WAY	1987	1995/96	\$234,508.93	\$234,508.93	1,157	\$202.69	30	1.49	\$301.00
BOURNDA CIRCUIT	1995	1995/96	\$208,682.49	\$208,682.49	1,157	\$180.37	30	1.49	\$268.00
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
Vents	2003	2002/03	\$27,690.62	\$27,690.62	1,157	\$23.93	30	2.26	\$54.00
PUMP STATIONS AND RISING MAINS									
Sewage Pumping Stations - Electrical	2004	2003/04	\$866,250.00	\$866,250.00	1,157	\$748.70	30	2.26	\$1,692.00
Sewage Pumping Stations - Mechanical	2004	2003/04	\$373,560.00	\$373,560.00	1,157	\$322.87	30	2.26	\$730.00
Sewage Pumping Stations - Telemetry	2001	2000/01	\$120,000.00	\$120,000.00	1,157	\$103.72	30	2.26	\$234.00
RESERVOIR STREET	2006	2005/06	\$49,283.48	\$49,283.48	1,157	\$42.60	30	2.26	\$96.00
IMLAY STREET	2006	2005/06	\$63,445.32	\$63,445.32	1,157	\$54.84	30	2.26	\$124.00
OLD WALLAGOOT RD	2008	2007/08	\$968,235.59	\$968,235.59	1,157	\$836.85	30	2.26	\$1,891.00
Sewer Treatment Works									
Sewage Treatment Works-Conventional - Civil	1998	1997/98	\$4,789,950.00	\$4,789,950.00	1,157	\$4,139.97	30	2.26	\$9,354.00
Sewage Treatment Works-Conventional - Electrical	2004	2003/04	\$1,300,000.00	\$1,300,000.00	1,157	\$1,123.60	30	2.26	\$2,539.00
Sewage Treatment Works-Conventional - Mechanical	2004	2003/04	\$1,432,500.00	\$1,432,500.00	1,157	\$1,238.12	30	2.26	\$2,797.00
Reuse - Civil	2008	2007/08	\$593,750.00	\$593,750.00	1,157	\$513.18	30	2.26	\$1,159.00
Reuse - Electrical	2008	2007/08	\$156,250.00	\$156,250.00	1,157	\$135.05	30	2.26	\$305.00
Reuse - Mechanical	2008	2007/08	\$137,500.00	\$137,500.00	1,157	\$118.84	30	2.26	\$269.00
Miscellaneous									
Forward Works									
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developemt Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Renewals component				\$214,000.00	1,157	\$184.96	30	2.26	\$418.00
Total			\$16,432,750.51	\$16,164,363.36		\$12,626			\$26,140.00

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 C9: Capital Charge Calculation
Tura Beach Sewerage Scheme

Pre 1996 discount rate 3%
Post 1996 discount rate 7%

Summary
per ET
Capital Charge **\$17,247** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewage Pumping Stations - Civil	1989	1995/96	\$2,637,936.43	\$2,637,936.43	1,468	\$1,796.96	30	1.49	\$2,670.00
Sewage Pumping Stations - Electrical	1989	1995/96	\$1,221,000.00	\$1,221,000.00	1,468	\$831.74	30	1.49	\$1,236.00
PACIFIC WAY	1985	1995/96	\$36,575.16	\$36,575.16	1,468	\$24.91	30	1.49	\$37.00
OUTFALL	1987	1995/96	\$25,916.46	\$25,916.46	1,468	\$17.65	30	1.49	\$26.00
GOLF COURSE	1987	1995/96	\$58,650.42	\$58,650.42	1,468	\$39.95	30	1.49	\$59.00
<u>Sewer Treatment Works</u>									
Sewage Treatment Works-Conventional - Civil	1994	1995/96	\$4,267,500.00	\$4,267,500.00	1,468	\$2,907.02	30	1.49	\$4,320.00
Post 1996 Works									
<u>Collection/Transport System</u>									
GRAVITY MAINS									
Sewer Mains - Trunk	2012	2011/12	\$99,161.54	\$99,161.54	1,468	\$67.55	30	2.26	\$153.00
Vents	2003	2002/03	\$41,866.09	\$41,866.09	1,468	\$28.52	30	2.26	\$64.00
PUMP STATIONS AND RISING MAINS									
Sewage Pumping Stations - Mechanical	2003	2002/03	\$490,380.00	\$490,380.00	1,468	\$334.05	30	2.26	\$755.00
Sewage Pumping Stations - Telemetry	2005	2004/05	\$160,000.00	\$160,000.00	1,468	\$108.99	30	2.26	\$246.00
GOLF COURSE	2003	2002/03	\$131,170.77	\$131,170.77	1,468	\$89.35	30	2.26	\$202.00
PACIFIC WAY	2011	2010/11	\$2,150.34	\$2,150.34	1,468	\$1.46	30	2.26	\$3.00
PACIFIC WAY	2011	2010/11	\$2,150.34	\$2,150.34	1,468	\$1.46	30	2.26	\$3.00
<u>Sewer Treatment Works</u>									
Sewage Treatment Works-Conventional - Electrical	2005	2004/05	\$1,125,000.00	\$1,125,000.00	1,468	\$766.35	30	2.26	\$1,732.00
Sewage Treatment Works-Conventional - Mechanical	2005	2004/05	\$1,362,500.00	\$1,362,500.00	1,468	\$928.13	30	2.26	\$2,097.00
Miscellaneous									
Forward Works									
Tura - Effluent Disinfection	2012/13	2012/13	\$1,500,000.00	\$1,500,000.00	1,468	\$1,021.80	30	2.26	\$2,309.00
Tura - Effluent Disinfection	2013/14	2013/14	\$500,000.00	\$467,289.72	1,468	\$318.32	30	2.26	\$719.00
Renewals component				\$344,000.00	1,468	\$234.33	31	2.31	\$542.00
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Developem Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$15,786,957.56	\$15,615,860.13		\$9,588			\$17,247.00

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 C10: Capital Charge Calculation
Wolumla Sewerage Scheme

Pre 1996 discount rate 3%
 Post 1996 discount rate 7%

Summary
 per ET
 Capital Charge **\$80,302** \$2012/13 per ET

Component	Year Commissioned	Effective year of commissioning for ROI 1	Capital Cost* (2012/13\$)	PV of Capital Cost (2012/13\$)	Capacity (ETs) 3	Cost per ET (\$ per ET)	Take-up Period (Years)	Return on Investment Factor 4,5	Capital Charge per ET (2012/13\$)
Pre 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS and RISING MAINS									
Sewer Treatment Works									
Post 1996 Works									
Collection/Transport System									
GRAVITY MAINS									
PUMP STATIONS AND RISING MAINS									
Pressure Sewer - Property Components	2007	2006/07	\$2,288,880.00	\$2,288,880.00	217	\$10,547.83	30	2.26	\$0.00
Pressure Sewer - Discharge Lines	2007	2006/07	\$453,803.30	\$453,803.30	217	\$2,091.26	30	2.26	\$4,725.00
Pressure Sewer - Main Components	2008	2007/08	\$58,000.00	\$58,000.00	217	\$267.28	30	2.26	\$604.00
Pressure Sewer - Main Pipes	2007	2006/07	\$778,040.81	\$778,040.81	217	\$3,585.44	30	2.26	\$8,101.00
Sewer Treatment Works									
Sewage Treatment Works-MBR - Civil	2005	2004/05	\$2,845,684.03	\$2,845,684.03	217	\$13,113.75	30	2.26	\$29,630.00
Sewage Treatment Works-MBR - Electrical	2005	2004/05	\$2,015,692.85	\$2,015,692.85	217	\$9,288.91	30	2.26	\$20,988.00
Sewage Treatment Works-MBR - Mechanical	2005	2004/05	\$889,276.26	\$889,276.26	217	\$4,098.05	30	2.26	\$9,259.00
Sewage Treatment Works-MBR - Telemetry	2005	2004/05	\$177,855.25	\$177,855.25	217	\$819.61	30	2.26	\$1,852.00
Reuse - Civil	2005	2004/05	\$204,341.11	\$204,341.11	217	\$941.66	30	2.26	\$2,128.00
Reuse - Electrical	2005	2004/05	\$144,741.62	\$144,741.62	217	\$667.01	30	2.26	\$1,507.00
Reuse - Mechanical	2005	2004/05	\$63,856.60	\$63,856.60	217	\$294.27	30	2.26	\$665.00
Reuse - Telemetry	2005	2004/05	\$12,771.32	\$12,771.32	217	\$58.85	30	2.26	\$133.00
Miscellaneous									
Mobile Plant and Equipment	2005	2004/05	\$61,116.34	\$61,116.34	217	\$281.64	30	2.26	\$636.00
Forward Works									
Sludge Management - All Schemes	2016/17	2016/17	\$2,000,000.00	\$1,525,790.42	22,000	\$69.35	30	1.00	\$69.00
Development Servicing Strategy, DSP & SBP	2013/14	2013/14	\$125,000.00	\$116,822.43	22,000	\$5.31	30	1.00	\$5.00
Total			\$12,119,059.49	\$11,636,672.34		\$46.130			\$80,302.00

Assume exclude

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 C11 - Calculation of Developer Charges using the NPV of Annual Charges Method Based on Input Reduction Amounts of \$3,149 /ET (3rd iteration)

Bega Valley Shire Council - Sewerage

Table with multiple columns representing years (1-31) and rows for Developer Charges, Assessments & ETs, and Revenue and Expenditure. Includes sub-tables for Year 1 and Base Year values.

Difference Less Than 2%, Calculation Complete
Developer Charges for the first 5 years = \$20920 per ET in year 2012/13 \$

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



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