

Moreton Bay Regional Council – Pine Rivers Shire

Planning Scheme Policy

PSP23 Development Contributions for Trunk
Infrastructure – Sewerage

Moreton Bay Regional Council – Pine Rivers Shire

PSP23 Development Contributions for Trunk Infrastructure – Sewerage

ADOPTION

Pine Rivers Shire Council adopted this planning scheme policy on 19 June 2006.

COMMENCEMENT

This planning scheme policy took effect from 15 December 2006.

Amendment 2/2008

ADOPTION OF AMENDMENT

Moreton Bay Regional Council adopted this amendment to the planning scheme policy on 19 August 2008.

COMMENCEMENT OF AMENDMENT

This amendment to the planning scheme policy took effect from 1 September 2008.

Amendment 1/2009

ADOPTION OF AMENDMENT

Moreton Bay Regional Council adopted this amendment to the planning scheme policy on 8 September 2009.

COMMENCEMENT OF AMENDMENT

This amendment to the planning scheme policy took effect from 29 October 2009.

I, Daryl Hitzman, A/Chief Executive Officer, of the Moreton Bay Regional Council, hereby certify that this document is a true copy of the original.



Daryl Hitzman
A/Chief Executive Officer

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PSP 23 – DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE – SEWERAGE

Head of Power

This document is a Planning Scheme Policy for the purposes of the *Integrated Planning Act 1997* (the Act) and is made in compliance with the process prescribed in Schedule 3 of the Act.

Objective

The objective of this policy is to apportion the cost of Sewerage Trunk Infrastructure over all benefiting development (existing and future) commensurate with the demand or load that existing and future development will place on existing and planned future infrastructure while ensuring a reasonable and equitable distribution of the costs of Sewerage Trunk Infrastructure between Council and developers of land in the former Pine Rivers Shire.

Definitions / Application

Application

This policy applies to all applications for development which have made assessable against the *PineRiversPlan* and which will utilise any part of the Sewerage Trunk Infrastructure Network. For the purposes of this policy, the extent of the Sewerage Trunk Infrastructure Network within the former Pine Rivers Shire is shown in Schedule D.

The policy outlines the basis of Council's Infrastructure Contributions Regime for the Sewerage Trunk Infrastructure Network in the former Pine Rivers Shire. It is to be read in conjunction with Planning Scheme Policy PSP21 Development Contributions for Trunk Infrastructure – Administration Policy.

Payment of the monetary contribution under this policy will in no way relieve the development proponent from any requirement under a condition of development approval to undertake non-trunk works or to connect the development to trunk infrastructure.

Nothing contained in this policy precludes Council and the development proponent from entering into an infrastructure agreement in regard to the matters dealt with by this policy.

Definitions

The definitions of applicable terms are contained in PSP21 Development Contributions for Trunk Infrastructure – Administration Policy and the 'study report' identified in Section 2 "Background Information". Where a term used in this policy is not defined in PSP21 or the 'study report', that term shall, unless the context indicates or requires otherwise, have the meaning assigned to it have the meaning assigned to it in the *PineRiversPlan* or in the *Integrated Planning Act 1997*.

Policy Statement

1 Scope

This policy sets out the basis for the determination of Development Contributions for Sewerage Trunk Infrastructure, which Council will impose as conditions of development approval. The provisions of this policy shall apply to applications for development within the Shire which will utilise Sewerage Trunk Infrastructure either immediately or at some time in the future. This policy:

- (1) is to be read in conjunction with Planning Scheme Policy PSP21 Development Contributions for Trunk Infrastructure – Administration Policy;
- (2) specifies the assumptions made in determining the rate of the contribution payable towards the cost of Sewerage Trunk Infrastructure within Council's Designated Infrastructure Service Area (DISA);
- (3) lists the land use, density and demand assumptions made for predicting demand and planning the Sewerage Trunk Infrastructure Network;
- (4) specifies the works, structures or equipment, which the Council determines to be Sewerage Trunk Infrastructure;
- (5) establishes the estimated cost of construction and any required augmentation of the Sewerage Trunk Infrastructure Network in respect of which contributions are to be made; and
- (6) lists the applicable Demand Factors and Schedules of Infrastructure Contribution Rates.

2 Background Information

The methodology used in establishing the amount of required Trunk Infrastructure Contributions under this policy is based on the report by John Wilson and Partners, "PINE WATER Priority Infrastructure Plan, Water Supply & Sewerage", September 2005 (the Study Report) which was formally adopted by the former Pine Rivers Shire Council on 26 September 2005. The Study Report comprises:-

- (1) Part 1 - Executive Summary (September 2005);
- (2) Part 2 - Main Report (September 2005);
- (3) Part 3 - Detailed Maps (September 2005); and
- (4) Part 4 - Calculations and Supporting Data (September 2005).

The policy methodology has also been informed by:-

- MWH, PIP Population Update Report, August 2007; and
- Moreton Bay Water, Hydraulic Solution and Capital Works Program 2008/09

3 Sewerage Methodology

3.1 Methodology

The methodology used for determining the rate of Infrastructure Contributions for Sewerage applied under this policy is based upon the approach set out in the Department of Local Government and Planning's IPA Guidelines 1/04 and 2/04 (dated 4 October 2004) and the Standard Infrastructure Charges Schedule Nov 2008.

In summary, Infrastructure Contribution Rates for the Sewerage Trunk Infrastructure Network have been derived in the following manner:-

- (a) determine the service catchments for Trunk Infrastructure Delivery;
- (b) estimate the amount of new development, or the planned / ultimate population and resulting demand on the network within each service catchment¹;
- (c) determine the Trunk Infrastructure likely to be needed to service the development or planned / ultimate population within the service catchment to deliver the Desired Standards of Service (DSS) outlined in Schedule E. Where sewerage trunk infrastructure is shared between service catchments, the cost of these infrastructure components has been apportioned in proportion to the relative demands;
- (d) determine the current replacement costs for existing Trunk Infrastructure, and the future establishment costs for required future Trunk Infrastructure in net present values for each service catchment; and
- (e) derive the applicable Infrastructure Contribution Rates by dividing the total network costs in net present values by the total discounted 'ultimate' demand on the network in the service catchment, thereby producing a rate per selected demand unit.

Trunk Infrastructure, for this policy, is utilised at two levels – local and regional (hence the system of Regional and Local Service catchments). Local Infrastructure generally services customers in a single sub-catchment while regional infrastructure services customers in more than one service area. Accordingly, this policy utilises a two tier system to equitably allocate the costs of sewerage trunk infrastructure.

The charge rate, for each particular service catchment, (local and regional), is calculated using the formula:-

$$CR_{\text{Catchment}} = (\text{AssetValues})/(\text{Demand})$$

Where:-

CR_{Catchment}	=	Contribution Rate for an individual service catchment (expressed in \$/EPS)
AssetValues	=	Value of Catchment's Assets (\$)
	=	Σ(Current Replacement Cost of Existing assets at 01-01-2009 x proportion of the asset utilised by the service catchment) + Σ net present value at 01-01-2009 of future assets x proportion of the asset utilised by the service catchment)
Demand	=	Σ(Existing Demand in the service catchment at 01-01-2009) + Σ (Net Present Value at 01-01-2009 of the Future Demand to Ultimate Development) (expressed in EPS)

¹ Note: For this network 'ultimate' demand represents demand at the end of the period to full development of the Shire assuming densities consistent with the Planning Scheme and the Dakabin, Mango Hill and Griffin Local Area Plans.

This methodology applies an equitable distribution of trunk infrastructure costs between Council (on behalf of the existing community), and entities proposing new development. Each development proponent will only be responsible for meeting the establishment costs of that proportion of the sewerage trunk infrastructure network planned to be consumed by that entity's development proposal.

3.2 Sewerage Service Catchments

The Designated Infrastructure Service Area (DISA) for the former Pine Rivers Shire has been divided into the following Regional Service Catchments:-

- (1) Murrumba Downs STP;
- (2) Brendale STP;
- (3) Dayboro STP; and
- (4) Kedron Brook

These regional service catchments have been further divided into the local service catchments identified in Table 3.2A:-

Table 3.2A – Sewerage Regional and Local Service Catchments

REGIONAL CATCHMENT	LOCAL SERVICE CATCHMENT	SHORT NAME
BRENDALE STP	BRENDALE A	BRA
	BRENDALE B	BRB
	CABBAGE TREE CREEK	CTC
	SAMFORD	SAM
MURRUMBA DOWNS STP	MURRUMBA DOWNS NTH A	MNA
	MURRUMBA DOWNS NTH B	MNB
	MURRUMBA DOWNS NTH C	MNC
	MURRUMBA DOWNS STH A	MSA
	MURRUMBA DOWNS STH B	MSB
	MURRUMBA DOWNS STH C	MSC
	SEW-01	S01
	SEW-02	S02
	SEW-03	S02
	SEW-04	S04
	SEW-05	S05
	SEW-06	S06
	SEW-07	S07
	NORTH LAKES	NL
DAYBORO STP	DAYBORO	DAY
KEDRON BROOK	KEDRON BROOK	KBR

The extent of each of the Service Catchments is shown graphically on the maps in Schedule C.

The Kedron Brook Sewerage Scheme services the Kedron Brook regional service catchment only. Wastewater from this catchment drains to sewerage infrastructure in the Brisbane City Council local authority area. No Brisbane City Council infrastructure has been included in the Infrastructure Charges calculations as the establishment cost of Brisbane City Council infrastructure is recovered through the tariff levied by that authority for transport and treatment of wastewater from the Kedron Brook service catchment.

Pine Rivers Shire Council has a written agreement with Brisbane City Council for treatment of wastewater from the Kedron Brook catchment which is renewed every five years and which states the methodology for calculation of charges, including recovery of establishment costs.

The greenfield development at North Lakes and the development of the former CSIRO land in the Samford Valley are subject to infrastructure agreements, and, as such, are specifically excluded from the scope of contributions levied under this policy.

While it is acknowledged that these catchments do impose a load on existing trunk infrastructure, and that load is likely to increase over time until the development in those areas is completed, appropriate mechanisms have been included in the contributions regime adopted under this policy to ensure that the costs associated with this load are not passed onto other development.

3.3 Sewerage Demand Assumptions

Approach to Demand and Load Modelling

The reports referred to in Section 2 of this policy document both assumed demand across the whole Shire and the most cost effective strategy for servicing those demand areas as well as providing a valuable input into aligning Council's Capital Works Programs with assumed growth rates. These reports cover the full anticipated extent of urban areas within the Shire up to the planning horizon of this policy.

As part of the revisions undertaken to produce this version of the policy, new Demand and Load Models for Water Supply, consistent with the Planning Assumptions documented in PSP21 Section 3 were built. The modelled demand for 2026 was compared to the changes in demand indicated in Council's previously adopted Water Master Plan from 2006 to full development of the Shire assuming densities consistent with the Planning Scheme and the Dakabin, Mango Hill and Griffin Local Area Plans – this being termed 'ultimate' development. Council's consultants advised that the differences were minor. The Hydraulics Models have been re-run to reflect Council's current Desired Standards of Service and the permanent water restrictions imposed for SEQ by the State.

The determination of demand and load for residential zoned land was based on population numbers assumed for the land. Demand and load for non-residential zoned land was derived from land use zoning and an assumed number of Equivalent Persons (Sewerage) per hectare per zone as outlined in Table 3.3A. The rate of growth of non-residential demand was linked directly to the growth in employment on the cadastral base.

Sewerage Demand Assumptions

The Demand Projections, Capacity Planning and Infrastructure Charge Rates developed for the Sewerage Network are expressed in the Standard Demand Units of 'Equivalent Person (Sewerage)' (EPS).

The Average Dry Weather Flow for the sewerage network under this policy is 185 litres / EPS / Day. I

Table 3.3A – Sewerage Demand Assumptions for Residential and Non-Residential Areas

Planning Scheme Zone	Assumed Development Density in EPS's/ha
RESIDENTIAL A	Population Forecast as per Planning Assumptions
RESIDENTIAL B	Population Forecast as per Planning Assumptions
SPECIAL RESIDENTIAL	0
PARK RESIDENTIAL	0
RURAL RESIDENTIAL	0
CENTRAL BUSINESS	45
COMMERCIAL	45
LOCAL BUSINESS	45
NEIGHBOURHOOD FACILITIES	45
URBAN VILLAGE	45
VILLAGE CENTRE	45
HOME INDUSTRY	15
SERVICE INDUSTRY	22.5
GENERAL INDUSTRY	45
EXTRACTIVE INDUSTRY	22.5
FUTURE URBAN	30
RURAL ZONE IN COAST AND RIVER LANDS LOCALITY	0
RURAL ZONE IN URBAN, MAJOR EMPLOYMENT CENTRE, CATCHMENT, RURAL LIVING, VILLAGE, MT SUMMIT AND FORESTS LOCALITIES	0
CONSERVATION ZONE	0
PARK AND OPEN SPACE	0
SPORTS AND RECREATION	15
SPECIAL FACILITIES	15
SPECIAL PURPOSES	15

Projected Sewerage Demand

Projected ultimate NPV demand for the sewerage trunk network is shown in Table 3.3B. To satisfy the discounted cash flow methodology requirements of calculating the infrastructure contribution rates, existing demand is added to the value of future demand which has been indexed for anticipated fluctuations in construction costs (generally increases) and discounted for cost of capital, resulting in NPV Demand.

Table 3.3B –NPV Demand in EPSs by Sewerage Service Catchment²

	Actual			NPV		
Service Catchment	RES ULTIMATE	NONRES ULTIMATE	TOTAL ULTIMATE	RES ULTIMATE	NONRES ULTIMATE	TOTAL ULTIMATE
Brendale A	20,771	1,617	22,387	23,577	3,085	26,662
Brendale B	2	11,901	11,903	502	12,449	12,951
Cabbage Tree Creek	10,446	2,073	12,520	11,471	2,585	14,056
Dayboro	1,266	380	1,646	1,732	664	2,396
Kedron Brook	11,137	610	11,747	12,946	1,110	14,056
Murrumba Downs Nth A	4,990	3,725	8,714	5,122	4,615	9,737
Murrumba Downs Nth B	28,874	2,407	31,281	26,068	3,036	29,104
Murrumba Downs Nth C	5,741	104	5,845	5,361	128	5,489
Murrumba Downs Sth A	9,570	3,559	13,129	11,012	4,549	15,561
Murrumba Downs Sth B	20,306	2,840	23,146	19,720	3,639	23,359
Murrumba Downs Sth C	18,896	7,929	26,825	22,969	10,108	33,077
SEW-01	11,777	198	11,974	11,588	322	11,910
SEW-02	12,415	225	12,639	9,265	1,098	10,363
SEW-03	8,597	1,239	9,836	8,833	1,939	10,772
SEW-04	3,988	0	3,988	3,130	2,704	5,834
SEW-05	1,816	3,124	4,940	2,582	4,749	7,331
SEW-06	2,858	762	3,620	5,233	1,210	6,443
SEW-07	1,214	1,026	2,241	1,507	1,544	3,051
Samford	818	249	1,067	716	534	1,250
TOTALS	175,482	43,968	219,448	183,334	60,068	243,402

² Differences between the total value and the sum of the column can occur due to values being displayed without cents. Background calculations including cents are correct.

4 Sewerage Plan for Trunk Infrastructure

4.1 Sewerage Trunk Infrastructure Network

The regional and local Infrastructure items as shown on the maps contained in Schedule D are deemed to be Trunk Infrastructure for the purpose of planning and funding of the Sewerage Trunk Infrastructure Network. Plans for the Recycled Water component were not sufficiently advanced at the time of preparation of this policy to be included.

- (1) **Regional infrastructure** in the form of:-
 - (a) sewerage treatment plants (STPs) including mechanical, electrical and control equipment; and
 - (b) flow measurement and telemetry/SCADA systems providing system monitoring and/or control.
- (2) **Local infrastructure** components in the form of:-
 - (a) trunk collection infrastructure (generally at least 300mm diameter gravity sewers and larger) which transports the sewage to a treatment plant or pump station; and
 - (b) pumping stations and associated pressure mains which transport sewage to a treatment plant or other pumping station.

Assets are also grouped into 'Active' and 'Passive' Assets:-

Active wastewater infrastructure assets consist mainly of above ground visible assets such as treatment plants and pumping stations.

Passive wastewater infrastructure assets consist of underground assets such as trunk gravity and pressure mains.

The various elements of this Trunk Infrastructure are shown on the maps in Schedule D.

4.2 Sewerage Trunk Infrastructure Valuations

Costing information for existing Passive Assets

Valuations of existing water and sewer mains and other passive assets listed in this policy are based on a report titled "Water and Sewerage Mains Unit Costs" dated March 2006 prepared by Consultant Cardno Limited. The unit rates provided therein only take into account pipe diameter and depth. Refinements such as type of soil, water table, acid sulphate soil, urban or rural etc are not considered but the rates do include 20% oncost for construction in sand in an urban residential area. The valuations shown in Tables 4.2A and 4.2B have been derived directly from the June 2006 asset valuations for Pine Water's assets and are higher than those calculated using the rates reported in Cardno's March 2006 report due to escalation from March 2006 to January 2009 based on the Rawlinson's Construction Index for Brisbane.

Costing information for existing Active Assets

Current replacement value of existing active assets was determined 'in house' using the criteria contained within the definition of 'establishment cost of trunk infrastructure' in IPA.

Costing information for Future Assets

Costs for Future Assets have been taken derived using estimates in the current Capital Works Program escalated to reflect values current at 1 January 2009.

Table 4.2A – Sewerage Trunk Infrastructure Establishment Cost ³

	Network Value (current at 01 January 2009)		
	Regional	Local	Total
Existing Assets	\$65,897,137	\$111,202,533	\$177,099,671
Future Infrastructure	\$80,695,854	\$58,052,880	\$138,748,733
TOTAL	\$146,592,991	\$169,255,413	\$315,848,404

³ Differences between the total value and the sum of the column can occur due to values being displayed without cents. Background calculations including cents are correct. The cost of assets allocated to the North Lakes catchment is excluded from this table.

Existing Sewerage Asset Schedule

Table 4.2B - Summary of Existing Active Trunk Sewerage Assets⁴

Existing Active Assets	Network Cost current 1 January 2009	ICS CONTRIBUTION ALLOCATION LEVEL
Biosolids Facility	\$658,940	REGIONAL
Brendale WPCW	\$26,010,064	REGIONAL
Dayboro WWTP	\$6,465,574	REGIONAL
Murrumba Downs WWTP	\$40,049,497	REGIONAL
PUMP STATIONS		
102	\$1,034,230	LOCAL
103	\$2,839,589	LOCAL
104	\$1,153,565	LOCAL
105	\$728,705	LOCAL
107	\$281,923	LOCAL
108	\$3,978,220	LOCAL
110	\$541,252	LOCAL
111	\$316,401	LOCAL
112	\$692,364	LOCAL
113	\$386,675	LOCAL
114	\$562,556	LOCAL
115	\$266,365	LOCAL
116	\$0	LOCAL
117	\$716,925	LOCAL
118	\$300,014	LOCAL
119	\$627,063	LOCAL
122	\$205,886	LOCAL
127	\$320,511	LOCAL
129	\$2,140,602	LOCAL
130	\$2,119,938	LOCAL
131	\$435,854	LOCAL
140	\$307,530	LOCAL
141	\$402,944	LOCAL
143	\$1,108,010	LOCAL
144	\$467,333	LOCAL
145	\$600,284	LOCAL
147	\$345,440	LOCAL
148	\$234,010	LOCAL
149	\$800,075	LOCAL
150	\$209,170	LOCAL
151	\$223,122	LOCAL
153	\$2,646,933	LOCAL
154	\$185,644	LOCAL
155	\$1,132,515	LOCAL
162	\$396,606	LOCAL
164	\$395,071	LOCAL
165	\$1,320,507	LOCAL
166	\$661,167	LOCAL
167	\$417,744	LOCAL
169	\$240,266	LOCAL
180	\$3,767,719	LOCAL
181	\$1,067,752	LOCAL
191	\$948,783	LOCAL
203	\$3,213,712	LOCAL
204	\$708,344	LOCAL
205	\$821,797	LOCAL
206	\$360,439	LOCAL
207	\$489,756	LOCAL
211	\$380,935	LOCAL
220	\$406,534	LOCAL
230	\$295,133	LOCAL
231	\$414,231	LOCAL
232	\$241,995	LOCAL
233	\$541,530	LOCAL
234	\$279,292	LOCAL
235	\$598,902	LOCAL

⁴ Differences between the total value and the sum of the column can occur due to values being displayed without cents. Background calculations including cents are correct.

Existing Active Assets	Network Cost current 1 January 2009	ICS CONTRIBUTION ALLOCATION LEVEL
241	\$392,960	LOCAL
259	\$608,391	LOCAL
260	\$1,564,178	LOCAL
261	\$2,017,335	LOCAL
270	\$696,678	LOCAL
271	\$109,571	LOCAL
302	\$355,678	LOCAL
340	\$834,407	LOCAL
341	\$446,846	LOCAL
342	\$199,663	LOCAL
343	\$494,590	LOCAL
344	\$295,894	LOCAL
345	\$608,102	LOCAL
346	\$181,473	LOCAL
402	\$949,232	LOCAL
602	\$570,949	LOCAL
603	\$369,372	LOCAL
604	\$245,629	LOCAL
STUDIES		
PRSC Scoping Study for Wastewater	\$67,051	REGIONAL
PRSC Sewer Modelling Update	\$48,363	REGIONAL
PRSC WWTP Planning	\$50,288	REGIONAL
Pine Water Contributions Policy Planning	\$84,131	REGIONAL
Murrumba Downs Odour Study	\$25,433	REGIONAL
Brendale Odour Study	\$13,873	REGIONAL
	\$127,455,451	

Future Sewerage Trunk Infrastructure

Table 4.2C - Future Asset Schedule to 2026⁵

Project ID	Project Name	Anticipated Commencement of Construction	Type	NPV as at January 2009
BRENDALE WWTP AUGMENTATION				
PIPWW70112	Stage 3 Augmentation	2009/2012	REGIONAL	\$11,202,746
PIPWW70001	VEMP -Flow Balancing	2009	REGIONAL	\$600,000
PIPWW70002	Duplication of Existing Outfall	2009	REGIONAL	\$25,000
MURRUMBA DOWNS WWTP AUGMENTATION				
PIPWW70003	Stage 2 Augmentation (Capacity Upgrade)	2009/2010	REGIONAL	\$68,151,455
PIPWW70113	Stage 3 Augmentation	2012/2016	REGIONAL	\$16,427,945
PUMPING STATIONS				
PIPWW70005	FPS-E (PS135), Construct (89 L/s; 6,839EP)	2009	LOCAL	\$1,700,000
PIPWW70006	FPS-G (PS136), Construct (63 L/s; 4,865EP)	2009	LOCAL	\$1,250,000
PIPWW70007	FPS-A (PS170), Construct 95 L/s; 7,269EP)	2009/2010	LOCAL	\$1,744,354
PIPWW70008	FPS-B (PS175), Construct (285 L/s; 21,924EP)	2010	LOCAL	\$2,168,278
PIPWW70009	FPS-C (PS174), Construct (156 L/s; 12,025EP)	2009/2010	LOCAL	\$1,535,483
PIPWW70010	FPS-D (PS179), Construct (79 L/s; 7,445EP)	2009/2010	LOCAL	\$1,395,699
PIPWW70011	FPS-F, Construct (18 L/s; 1,377EP)	2009/2013	LOCAL	\$818,980
PIPWW70012	FPS-H, Construct (25 L/s; 1,927EP)	2009/2013	LOCAL	\$847,942
PIPWW70013	PS108A, construct (364 L/s; 31,261EP)	2009/2010	LOCAL	\$2,849,999
PIPWW70014	PS118, Upgrade pumps for diversion of flow to FPS-A	2010	LOCAL	\$ 49,731
PIPWW70015	PS181, Pump Upgrade to suite new rising main	2009	LOCAL	\$550,000
PIPWW70034	PS107 Bypass and Decommission	2010	LOCAL	\$149,193
PIPWW70016	PS117, Bypass and Decommission	2010	LOCAL	\$24,866
PIPWW70017	PS113, Bypass and Decommission	2010	LOCAL	\$24,866
PIPWW70116	PS159 Bypass and Decommission	2014	LOCAL	\$48,670
PIPWW70117	Upgrade PS260 (Diversion to BCC sewer network)	2010	LOCAL	\$248,656
PIPWW70088	PS203, New Pump Station (455 L/s)	2009/2010	LOCAL	\$2,491,935
PIPWW70089	PS231, Upgrade Pumps (118 L/s)	2009/2010	LOCAL	\$29,946
PIPWW70090	PS234, Upgrade Pumps (28 L/s)	2014	LOCAL	\$ 19,468
PIPWW70091	PS230, Upgrade Pumps (165 L/s)	2010	LOCAL	\$ 49,731
PIPWW70092	PS402, Upgrade Pumps (27 L/s)	2011	LOCAL	\$ 19,786
PIPWW70093	PS166, Upgrade Pumps (29 L/s)	2010	LOCAL	\$ 19,892

⁵ Differences between the total value and the sum of the column can occur due to values being displayed without cents. Background calculations including cents are correct. This table includes works to be undertaken to service the North Lakes Infrastructure Agreement Area. The costs relevant to the North Lakes catchment have been excluded from the charge calculations.

Project ID	Project Name	Anticipated Commencement of Construction	Type	NPV as at January 2009
PIPWW70094	PS102, Upgrade pumps (357 L/s)	2024	LOCAL	\$138,347
PIPWW70095	PS103, Upgrade pumps (535 L/s)	2023	LOCAL	\$139,095
PIPWW70096	PS104, Upgrade pumps (106 L/s)	2010	LOCAL	\$99,462
PIPWW70097	PS127, Upgrade pumps (5 L/s)	2010	LOCAL	\$4,973
PIPWW70098	PS143, Upgrade pumps (696 L/s)	2010	LOCAL	\$308,333
PIPWW70099	PS167, Upgrade pumps (75 L/s)	2011	LOCAL	\$49,464
PIPWW70100	PS180, Upgrade pumps (201 L/s)	2016	LOCAL	\$48,148
EMERGENCY STORAGE				
PIPWW70019	ES - A PS170 (185 KL)	2009/2010	LOCAL	\$497,849
PIPWW70020	ES - B PS175 (460 KL)	2010	LOCAL	\$895,161
PIPWW70021	ES - C PS174 (215 KL)	2009/2011	LOCAL	\$997,790
PIPWW70022	ES - D PS179 (290 KL)	2010	LOCAL	\$723,588
PIPWW70023	ES - F (55 KL)	2010/2014	LOCAL	\$800,798
PIPWW70024	ES - H (75 KL)	2014	LOCAL	\$244,666
PIPWW70025	ES - E PS135 (267 KL)	2009	LOCAL	\$400,000
PIPWW70026	ES - G PS136 (189 KL)	2009	LOCAL	\$750,000
PIPWW70027	PS108A (700 KL)	2009/2010	LOCAL	\$1,074,301
PIPWW70101	PS205 Emergency Storage	2009	LOCAL	-
PIPWW70102	PS220 Emergency Storage	2009	LOCAL	-
PIPWW70103	PS149 Emergency Storage	2009/2010	LOCAL	-
PIPWW70119	PS241 Emergency Storage	2009/2010	LOCAL	-
PIPWW70105	PS345 Emergency Storage	2009	LOCAL	-
PIPWW70120	PS-181	2010	LOCAL	\$711,156
GRAVITY SEWERS				
PIPWW70031	EOH-BA2 (300 mm x 927 m)	2009/2011	LOCAL	\$870,438
PIPWW70033	EOH-BB2 (300 mm x 560 m)	2010	LOCAL	\$282,117
PIPWW70035	EOH-CA1 (300 mm x 194 m)	2009/2012	LOCAL	\$190,714
PIPWW70036	EOH-CA2 (375 mm x 1043)	2009/2011	LOCAL	\$673,010
PIPWW70037	EOH-CB2 (300 mm x 580 m)	2009/2010	LOCAL	\$345,946
PIPWW70029	EOH-CD (450mm x 90m)	2010	LOCAL	\$89,516
PIPWW70040	EOH-DB2 (300 mm x 672 m)	2009/2010	LOCAL	\$657,227
PIPWW70043	EOH-EB2 (300 mm x 543 m)	2011/2011	LOCAL	\$364,078
PIPWW70046	WOH-AA1 (300 mm x 500 m)	2014/2015	LOCAL	\$329,802
PIPWW70047	WOH-AA2 (300 mm x 600 m)	2013/2014	LOCAL	\$243,614
PIPWW70048	WOH-AA3 (300 mm x 131 m)	2012/2013	LOCAL	\$244,931
PIPWW70049	WOH-BA (300 mm x 1190 m)	2009	LOCAL	\$2,300,000
PIPWW70050	WOH-EA (300 mm x 284 m)	2009	LOCAL	\$240,000
PIPWW70052	MDN-A (525 mm x 2,770 m)	2009/2011	LOCAL	\$5,237,072
PIPWW70054	MDN-A3 (750 mm x 191 m)	-	LOCAL	-
PIPWW70055	MDN-B (375 mm x 1214 m)	2019/2020	LOCAL	\$716,544
PIPWW70125	MDN-C (750 mm x 596 m)	2016	LOCAL	\$312,963
PIPWW70059	MDN-J (375 mm x 754 m)	2023/2024	LOCAL	\$815,542
PIPWW70109	MDN-K (300 mm x 407 m)	20011	LOCAL	\$247,319
PIPWW70110	GTY-175, Gravity main from PS175 rising main (525 mm x 920 m)	2010/2011	LOCAL	\$6,091,778
PIPWW70111	GTY-174, Gravity main from PS174 rising main (375 mm x 540 m)	2009	LOCAL	\$642
PIPWW70078	NLK-EA (300mm x 900m) EA1	2013	LOCAL	\$528,479
PIPWW70126	NLK-EA (375mm x 1000m) EA2	2011	LOCAL	\$643,029
PIPWW70127	NLK-EA (450mm x 1100m) EA3	-	LOCAL	-
PIPWW70081	NLK-EA (600mm x 500m) (Note 1450m built, 500m remaining) EA4	-	LOCAL	-
PIPWW70128	NLK-EB (300mm x 1000m)	2009	LOCAL	\$600,000
PIPWW70083	NLK-ED (300mm x 1200m)	2011	LOCAL	\$712,278
PIPWW70129	NLK-ED (450mm x 1150m)	2010	LOCAL	\$800,672
PRESSURE MAINS				
PIPWW70066	RMN-108A (500mm x 2795m)	2009/2011	LOCAL	\$5,140,339
PIPWW70067	RMN-135 (RM-E (250mm x 929m)	2009	LOCAL	\$550,000
PIPWW70068	RMN-136 (RM-G) (225mm x 1515m)	2009	LOCAL	\$1,050,000
PIPWW70069	RMN-170 (RM-A1) (300mm x 1,380m) FPS-A to Goodrich Rd	2009/2010	LOCAL	\$1,758,333
PIPWW70070	RMN-170 (RM-A2) (300mm x 1,165m) McClintock Drv to Ogg Rd	2009	LOCAL	\$307,863
PIPWW70071	RMN-175 (RM-B) (2X375mm x 1,060m)	2010	LOCAL	\$1,725,050
PIPWW70130	RMN-174 (RM-C) (2X250mm x 2,000m) Barry Road to FPS-C	2009/2010	LOCAL	\$2,157,752
PIPWW70074	RMN-179 (RM-D) (225mm x 450m)	2009/2011	LOCAL	\$283,587
PIPWW70075	RMN-F (150mm x 770m)	2013	LOCAL	\$103,350
PIPWW70076	RMN-H (150mm x 1234m)	2013	LOCAL	\$127,227
PIPWW70077	RMN-181 (525mm x 7350m)	2009/2010	LOCAL	\$7,965,050
PIPWW70131	RMN-204, (225mm x 700m)	2009	LOCAL	\$12,015

Project ID	Project Name	Anticipated Commencement of Construction	Type	NPV as at January 2009
PIPWW70132	RMN260 (375mm) (Diversion of catchment to BCC sewer network.)	2010/2011	LOCAL	\$993,019
	TOTAL PROGRAMME - WASTEWATER			\$170,181,678⁶
	REGIONAL			\$96,407,145
	LOCAL			\$71,599,462

⁶ The figures in this table include subsidies which would have been expected prior to the 2009-10 State Budget. The deletion of some of these subsidies as a result of that Budget has not been factored in, as it was not fully known at the time of adoption of this policy. It is likely the figure is of the order of \$83m over a 15 year period. Factoring in the subsidy loss would increase the base rate of contribution for the affected networks (mainly water and sewerage), before the capping policy is applied

Table 4.2E - Asset Costs Allocated to Service Catchments⁷

	BRA (Brendale A)	BRB (Brendale B)	CTC (Cabbage Tree Creek)	DAY (Dayboro)	KBR (Kedron Brook)	MNA (Murrumba Downs Nth A)	MNB (Murrumba Downs Nth B)	MNC (Murrumba Downs Nth C)	MSA (Murrumba Downs Sth A)	MSB (Murrumba Downs Sth B)	MSC (Murrumba Downs Sth C)	SAM (Samford)	SEW-01 (New Area 1)	SEW-02 (New Area 2)	SEW-03 (New Area 3)	SEW-04 (New Area 4)	SEW-05 (New Area 5)	SEW-06 (New Area 6)	SEW-07 (New Area 7)
Total Costs:																			
Local Service Catchment-Active-Existing (Jan 2009)	\$5,602,415	\$2,371,083	\$5,944,753	\$949,232	\$3,416,652	\$134,397	\$6,642,056	\$3,034,795	\$5,788,300	\$8,395,229	\$5,750,242	\$1,409,412	\$0	\$898,067	\$0	\$118,854	\$149,352	\$558,216	\$271,776
Local Service Catchment-Passive-Existing (Jan 2009)	\$8,960,563	\$1,735,207	\$4,232,886	\$1,077,915	\$1,559,322	\$1,111,557	\$10,298,994	\$338,594	\$5,606,346	\$10,401,180	\$11,498,344	\$1,506,900	\$0	\$575,769	\$409,252	\$72,302	\$252,125	\$0	\$130,445
Local Service Catchment-Future (Jan 2009)	\$3,181,301	\$280,862	\$304,826	\$19,786	\$50,672	\$0	\$7,761,789	\$78,016	\$47,673	\$421,899	\$1,202,302	\$27,108	\$7,251,362	\$7,686,962	\$15,249,055	\$1,050,463	\$6,566,420	\$6,749,094	\$123,289
Local Service Catchment-Total (Jan 2009)	\$17,744,279	\$4,387,153	\$10,482,465	\$2,046,932	\$5,026,646	\$1,245,955	\$24,702,839	\$3,451,405	\$11,442,319	\$19,218,308	\$18,450,887	\$2,943,419	\$7,251,362	\$9,160,798	\$15,658,3079	\$1,126,619	\$6,967,898	\$7,307,309	\$525,510
Regional Catchment-Active-Existing (Jan 2009)	\$12,725,947	\$6,181,597	\$6,704,249	\$6,467,691	\$12,424	\$1,879,637	\$5,618,256	\$1,059,407	\$3,003,713	\$4,509,237	\$6,385,207	\$596,633	\$2,299,115	\$2,000,674	\$2,079,434	\$1,126,199	\$1,415,181	\$1,243,568	\$588,967
Regional Catchment-Passive-Existing (Jan 2009)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Regional Catchment-Future (Jan 2009)	\$4,571,966	\$2,220,821	\$2,410,305	\$0	\$2,410,305	\$3,897,998	\$11,651,160	\$2,197,003	\$6,229,111	\$9,351,273	\$13,241,665	\$214,348	\$4,767,912	\$4,149,004	\$4,312,338	\$2,335,516	\$2,934,808	\$2,578,916	\$1,221,402
Regional Catchment-Total (Jan 2009)	\$17,297,913	\$8,402,418	\$9,114,554	\$6,467,691	\$2,422,729	\$5,777,636	\$17,269,416	\$3,256,410	\$9,232,824	\$13,860,510	\$19,626,872	\$810,982	\$7,067,027	\$6,149,678	\$6,391,773	\$3,461,716	\$4,349,989	\$3,822,484	\$1,810,369
Total Service Catchment (Jan 2009)	\$35,042,193	\$12,789,571	\$19,597,020	\$8,514,624	\$7,449,376	\$7,023,590	\$41,972,255	\$6,707,815	\$20,675,143	\$33,078,819	\$38,077,759	\$3,754,401	\$14,318,388	\$15,310,476	\$22,050,080	\$4,703,335	\$11,317,887	\$11,129,794	\$2,335,879
Ultimate NPV EPS's	26,662	12,951	14,056	2,396	14,056	9,737	29,104	5,489	15,561	23,359	33,077	1,250	11,910	10,363	10,772	5,834	7,331	6,443	3,051
Contributions (\$/EPS)																			
Local Service Catchment-Active-Existing (Jan 2009)	\$210	\$183	\$423	\$396	\$243	\$14	\$228	\$553	\$372	\$359	\$174	\$1,128	\$0	\$87	\$0	\$20	\$20	\$87	\$89
Local Service Catchment-Passive-Existing (Jan 2009)	\$336	\$134	\$301	\$450	\$111	\$114	\$354	\$62	\$360	\$445	\$348	\$1,206	\$0	\$56	\$38	\$12	\$34	\$0	\$43
Local Service Catchment-Future (Jan 2009)	\$119	\$22	\$22	\$8	\$4	\$0	\$267	\$14	\$3	\$18	\$36	\$22	\$609	\$742	\$1,416	\$180	\$896	\$1,048	\$40
Local Service Catchment-Total (Jan 2009)	\$666	\$339	\$746	\$854	\$358	\$128	\$849	\$629	\$735	\$823	\$558	\$2,355	\$609	\$884	\$1,454	\$213	\$950	\$1,134	\$172
Regional Catchment-Active-Existing (Jan 2009)	\$477	\$477	\$477	\$2,699	\$1	\$193	\$193	\$193	\$193	\$193	\$193	\$477	\$193	\$193	\$193	\$193	\$193	\$193	\$193
Regional Catchment-Passive-Existing (Jan 2009)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Regional Catchment-Future (Jan 2009)	\$171	\$171	\$171	\$0	\$171	\$400	\$400	\$400	\$400	\$400	\$400	\$171	\$400	\$400	\$400	\$400	\$400	\$400	\$400
Regional Catchment-Total (Jan 2009)	\$649	\$649	\$648	\$2,699	\$172	\$593	\$593	\$593	\$593	\$593	\$593	\$649	\$593	\$593	\$593	\$593	\$593	\$593	\$593
Total Service Catchment (Jan 2009)	\$1,314	\$988	\$1,394	\$3,554	\$530	\$721	\$1,442	\$1,222	\$1,329	\$1,416	\$1,151	\$3,004	\$1,202	\$1,477	\$2,047	\$806	\$1,544	\$1,728	\$766

⁷ Differences between the total value and the sum of the column can occur due to values being displayed without cents. Background calculations including cents are correct. Cost allocation to the North Lakes catchment is excluded from this table.

Schedule A: Demand Factors

Demand factors are calculated based on defined uses within the jurisdiction of each relevant planning scheme, and are therefore unique to each district within the Moreton Bay Regional Council shire area.

Table A – Demand Factors for Sewerage Infrastructure Contributions

	DEMAND FACTORS FOR MCUS - <i>PineRiversPlan</i> Land use	DEMAND FACTOR	COMMENT
1	Accommodation Units		Assess Impact on Application
2	Adult Product Shop		Refer Shop
3	Agriculture		Assess Impact on Application
4	Airstrip		Assess Impact on Application
5	Animal Accommodation		Assess Impact on Application
6	Aquaculture		Assess Impact on Application
7	Associated Unit	2.07 EPS/du	
8	Bed and Breakfast Accommodation		Assess Impact on Application
9	Bulk Garden Supplies	15 EPS/ha	
10	Camping Grounds		Assess Impact on Application
11	Car Depot	0	Assess Impact on Application
12	Car Park	0	Assess Impact on Application
13	Caravan/Transportable Home Park	75 EP/ha	1.5 EPW
14	Caretaker's Residence	2.9 EPS/du	Refer Detached House
15	Cattery		Assess Impact on Application
16	Cemetery	3.5 EPS/ha	
17	Child Care Centre	0.15 EPS/licensed child & each staff member at planned capacity	1.5 x EPW
18	Commercial Services		Assess Impact on Application
	Video Store		Assess Impact on Application
19	Community Facilities		Assess Impact on Application
20	Concrete Batching Plant		Assess Impact on Application
21	Contractor's Depot	7.5 EPS/ha	1.5 EPW
22	Crematorium		Assess Impact on Application
23	Dairy		Assess Impact on Application
24	Detached House	2.9 EPS/du	
25	Display Home	2.9 EPS/du	
26	Domestic Storage	3 EPS/Conn	
27	Duplex Dwelling	5.8 EPS / Duplex	
28	Educational Establishment	0.225 EPS/ student and staff at planned capacity	Includes Kindergarten, 1.5 x EPW
29	Environmental Park	N/A	
30	Estate Sales Office		Refer Office
31	Extractive Industry		Assess Impact on Application
32	Farm Forestry		Assess Impact on Application
33	Fast Food Delivery Service		Assess Impact on Application
34	Food Outlet - Restaurant	0.06 EPS / m2GFA	1.5 x EPW
	Drive Through	0.075 EPS / m2GFA	1.5 x EPW
35	Funeral Parlour		Assess Impact on Application
36	General Industry		Assess Impact on Application
37	Hardware Shop	0.045 EPS / m2GFA	1.5 x EPW
38	Hazardous and Offensive Industry (other than below)		Assess Impact on Application
	Oil Depot & Refinery	7.5 EPS/ha	1.5 x EPW
39	High Density Multiple Dwelling Units (0.8 floor area ratio)	2.07 EPS/du	
40	Home Business		Assess Impact on Application

		DEMAND FACTOR	COMMENT
	DEMAND FACTORS FOR MCUS - <i>PineRiversPlan</i> Land use		
41	Hospital	0.075 EPS / m ² GFA	1.5 x EPW
42	Hotel	0.06 EPS / m ² GFA	1.5 x EPW
43	Indoor Entertainment and Sport		Assess Impact on Application
44	Infill Housing	2.9 EPS/du	
45	Institution		Assess Impact on Application
46	Intensive Animal Husbandry		Assess Impact on Application
47	Kennels		Assess Impact on Application
48	Local Utilities	N/A	
49	Low Density Multiple Dwelling Units	2.9 EPS/du	
50	Major Telecommunication Facility		Assess Impact on Application
51	Market		Assess Impact on Application
52	Medium Density Multiple Dwelling Units (0.5 floor area ratio)	2.07 EPS/du	
53	Motel		Assess Impact on Application
54	Motor Sport		Assess Impact on Application
55	Night Club		Refer Restaurant
56	Non-Intensive Animal Husbandry		Assess Impact on Application
57	Office (other than below)	0.0225 EPS / m ² GFA	1.5 x EPW
	Bank	0.0225 EPS / m ² GFA	1.5 x EPW
	Doctor / Dentist Surgery	0.035 EPS / m ² GFA	1.5 x EPW
	Medical Centre	0.0375 EPS / m ² GFA	1.5 x EPW
58	Outdoor Recreation		
	Sports Club / Facilities	15 EPS/ha	1.5 x EPW
	Sportsground and Racecourse	7.5 EPS/ha	1.5 x EPW
	Tennis Courts or other		Assess Impact on Application
59	Outdoor Sales		Assess Impact on Application
60	Park	N/A	
61	Passenger Terminal		Assess Impact on Application
62	Pensioner Units	1.65 EPS/du	
63	Place of Worship		Assess Impact on Application
64	Public Utilities		Assess Impact on Application
65	Radio Station		Refer Office
66	Recycling Depot	N/A	
67	Retail Nursery		Assess Impact on Application
68	Retirement Village		Assess Impact on Application
69	Road Purposes	N/A	
70	Rural Industry		Assess Impact on Application
71	Salvage Yard		Assess Impact on Application
72	Service Industry		Assess Impact on Application
73	Service Station	0.035 EPS / m ² GFA	1.5 x EPW
74	Shooting		Assess Impact on Application
75	Shop		
a	Standalone Retail Shop / Convenience Store	0.035 EPS / m ² GFA	1.5 x EPW
b	Local Shopping Centre (Convenience Shopping Centre)	0.035 EPS / m ² GFA	1.5 x EPW
c	Central Business Shopping Centre (incl Supermarket)	0.035 EPS / m ² GFA	1.5 x EPW
d	Major Shopping Centre	0.035 EPS / m ² GFA	1.5 x EPW
76	Showroom (other than below)	0.015 EPS / m ² GFA	1.5 x EPW
	Fruit and Vegetable store >300m ²	0.0375 EPS / m ² GFA	1.5 x EPW

		DEMAND FACTOR	COMMENT
	DEMAND FACTORS FOR MCUS - PineRiversPlan Land use		
77	Simulated Conflict		Assess Impact on Application
78	Special Use		Assess Impact on Application
79	Stock Sales Yard		Assess Impact on Application
80	Tourist Cabins		
81	Vehicle Sales	15 EPS/ha	1.5 x EPW
82	Veterinary Clinic	0.0375 EPS / m2GFA	1.5 x EPW
83	Veterinary Hospital	0.0375 EPS / m2GFA	
84	Warehouse	15 EPS/ha	1.5 x EPW
	DEMAND FACTOR FOR RALS		
	Residential A & Future Urban		
	Lot Size ≤1200m ² –(can accommodate Duplex)	5.8 EPS/lot	15 du/ha developable area
	Lot Size < 1200m ² - to accommodate Associated Unit	4.97 EPS/lot	15 du/ha developable area
	Lot Size < 1200m ² - single dwelling	2.9 EPS/lot	15 du/ha developable area
	Residential B & Future Urban		
	Residential B ≤600m ²	5.8 EPS/lot	35 du/ha developable area
	Residential B lots >600m ²	152.25 EPS/ha developable area	35 du/ha developable area
	Special Residential Urban (1250m ²)	4.97 EPS/lot	6 du/ha developable area
	Park Residential	N/A	N/A
	Rural Residential	N/A	N/A
	Central Business	45 EPS/ha site area	Sewerage Planning Assumptions
	Commercial	45 EPS/ha site area	Sewerage Planning Assumptions
	Local Business	45 EPS/ha site area	Sewerage Planning Assumptions
	Neighbourhood Facilities	45 EPS/ha site area	Sewerage Planning Assumptions
	Urban Village	45 EPS/ha site area	Sewerage Planning Assumptions
	Village Centre	45 EPS/ha site area	Sewerage Planning Assumptions
	Home Industry	15 EPS/ha site area	Sewerage Planning Assumptions
	Service Industry	22.5 EPS/ha site area	Sewerage Planning Assumptions
	General Industry	22.5 EPS/ha site area	Sewerage Planning Assumptions
	Extractive Industry	45 EPS/ha site area	Sewerage Planning Assumptions
	Rural (Coast & Riverlands Locality)	30 EPS/ha site area	Sewerage Planning Assumptions
	Rural (Urban, Major Employment Centre, Catchment, Rural Living, Village, Mt Summit and Forest Localities)	N/A	N/A
	Conservation	N/A	N/A
	Park & Open Space	N/A	N/A
	Sports & Recreation	0 EPS/ha site area	Sewerage Planning Assumptions
	Special Purposes	15 EPS/ha site area	Sewerage Planning Assumptions

Schedule B: Infrastructure Contribution Rates

Table B shows the Infrastructure Contribution Rates for the network.

Table B – Sewerage - Infrastructure Contribution Rates (ICR's)

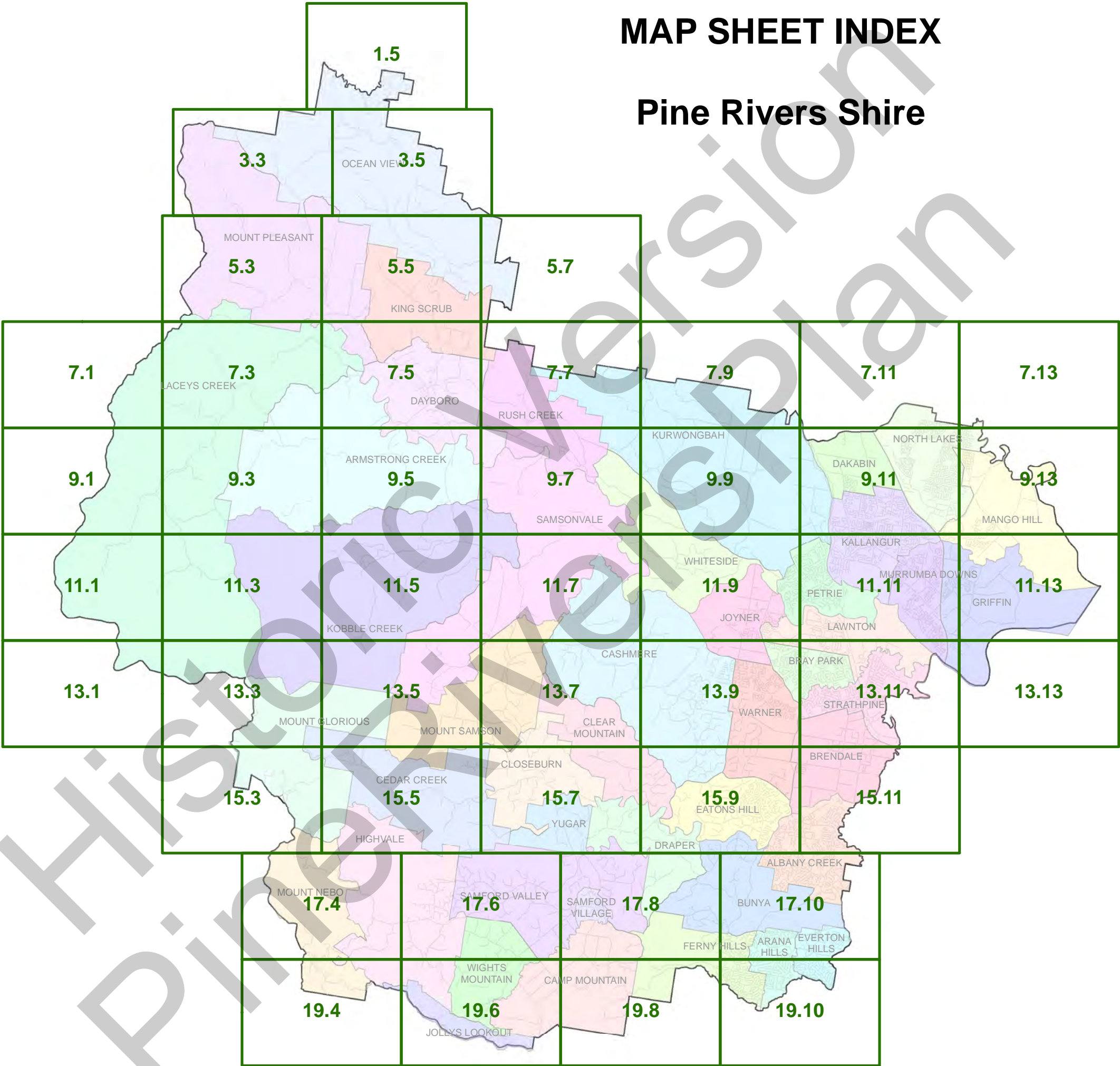
REGIONAL CATCHMENT	LOCAL SERVICE CATCHMENT		LOCAL SERVICE CATCHMENT (\$/EP)	REGIONAL CATCHMENT (\$/EP)	TOTAL SERVICE CATCHMENT (\$/EP)
DAYBORO STP	DAY (Dayboro)	DAY	\$854	\$2,699	\$3,553
BRENDALE STP	BRA (Brendale A)	BRA	\$665	\$649	\$1,314
	BRB (Brendale B)	BRB	\$339	\$649	\$988
	CTC (Cabbage Tree Creek)	CTC	\$746	\$648	\$1,394
	SAM (Samford)	SAM	\$2,355	\$649	\$3,004
KEDRON BROOK	KBR (Kedron Brook)	KBR	\$358	\$172	\$530
MURRUMBA DOWNS STP	MNA (Murrumba Downs Nth A)	MNA	\$128	\$593	\$721
	MNB (Murrumba Downs Nth B)	MNB	\$849	\$593	\$1,442
	MNC (Murrumba Downs Nth C)	MNC	\$629	\$593	\$1,222
	MSA (Murrumba Downs Sth A)	MSA	\$735	\$593	\$1,329
	MSB (Murrumba Downs Sth B)	MSB	\$823	\$593	\$1,416
	MSC (Murrumba Downs Sth C)	MSC	\$558	\$593	\$1,151
	SEW-01 (New Area 1)	SEW01	\$609	\$593	\$1,202
	SEW-02 (New Area 2)	SEW02	\$884	\$593	\$1,477
	SEW-03 (New Area 3)	SEW03	\$1,454	\$593	\$2,047
	SEW-04 (New Area 4)	SEW04	\$213	\$593	\$806
	SEW-05 (New Area 5)	SEW05	\$950	\$593	\$1,543
	SEW-06 (New Area 6)	SEW06	\$1,134	\$593	\$1,727
	SEW-07 (New Area 7)	SEW07	\$172	\$593	\$765

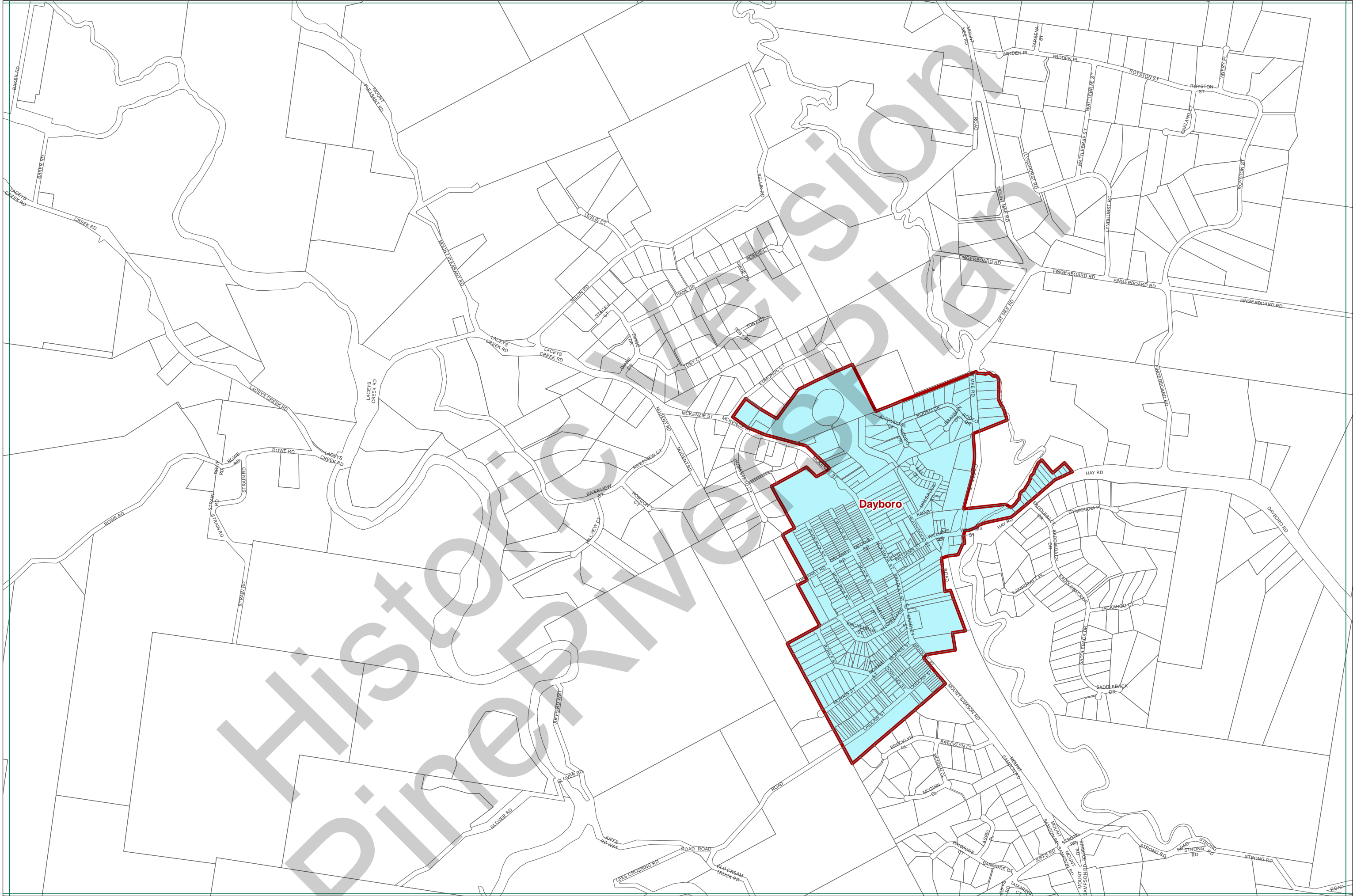
Schedule C: Service Catchments

Historic Version
PineRiversPlan

MAP SHEET INDEX

Pine Rivers Shire

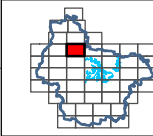




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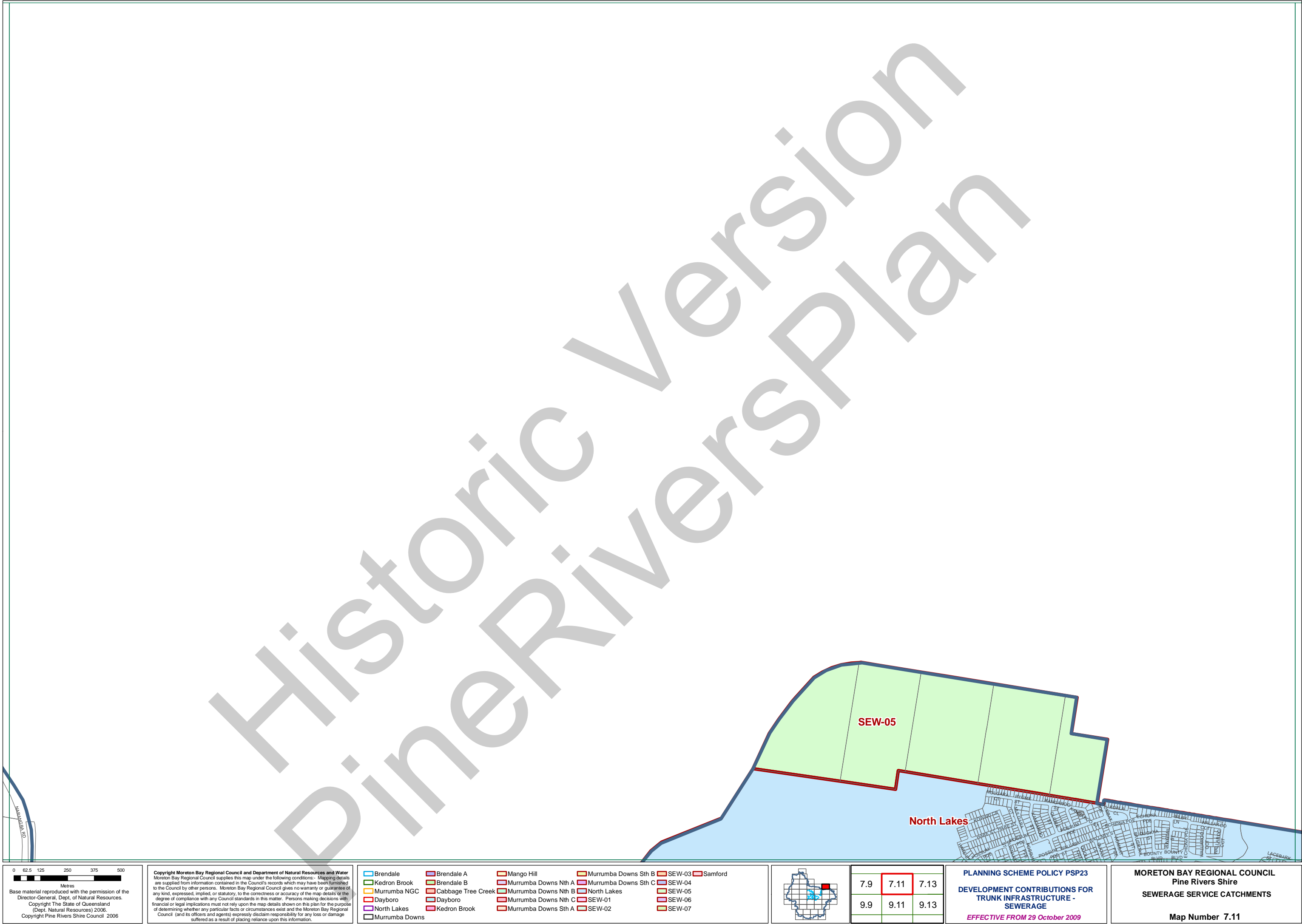
- | | | | | | |
|----------------|--------------------|----------------------|----------------------|--------|---------|
| Brendale | Brendale A | Mango Hill | Murrumba Downs Sth B | SEW-03 | Samford |
| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



5.3	5.5	5.7
7.3	7.5	7.7
9.3	9.5	9.7

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

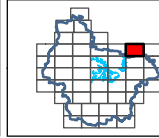
MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 7.5



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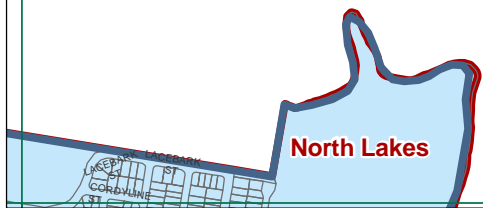
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|----------------|--------------------|----------------------|----------------------|--------|---------|
| Brendale | Brendale A | Mango Hill | Murrumba Downs Sth B | SEW-03 | Samford |
| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | Murrumba Downs Nth C | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



7.9	7.11	7.13
9.9	9.11	9.13

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - SEWERAGE
EFFECTIVE FROM 29 October 2009

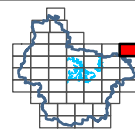
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Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 7.11



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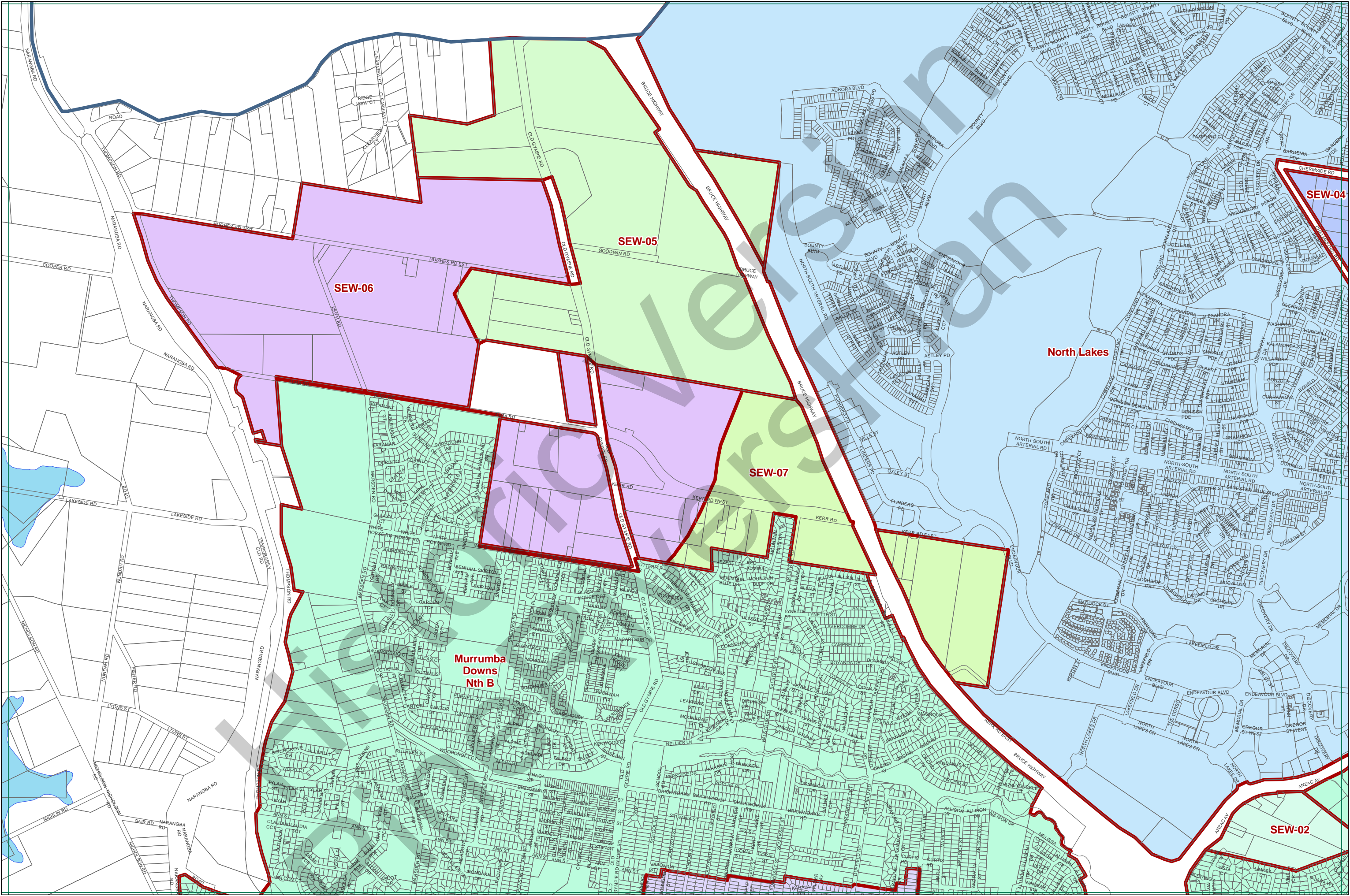
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| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



7.11	7.13
9.11	9.13

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
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Brendale

Kedron Brook

Murrumba NGC

Dayboro

North Lakes

Murrumba Downs

Brendale A

Brendale B

Cabbage Tree Creek

Dayboro

Kedron Brook

Mango Hill

Murrumba Downs Nth A

Murrumba Downs Nth B

Murrumba Downs Nth C

Murrumba Downs Sth A

Murrumba Downs Sth B

Murrumba Downs Sth C

North Lakes

SEW-01

SEW-02

SEW-03

SEW-04

SEW-05

SEW-06

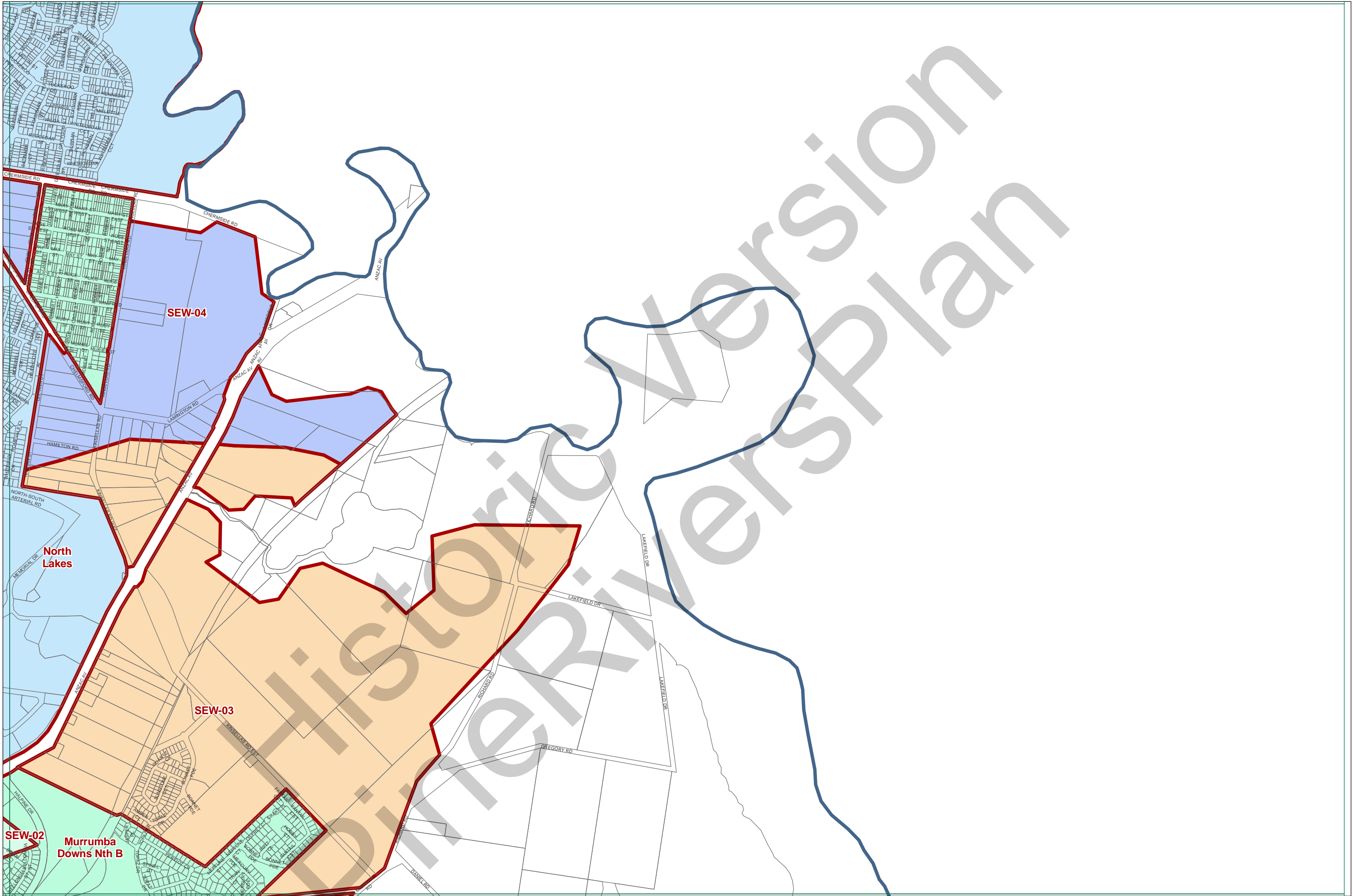
SEW-07

Samford

7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

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Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
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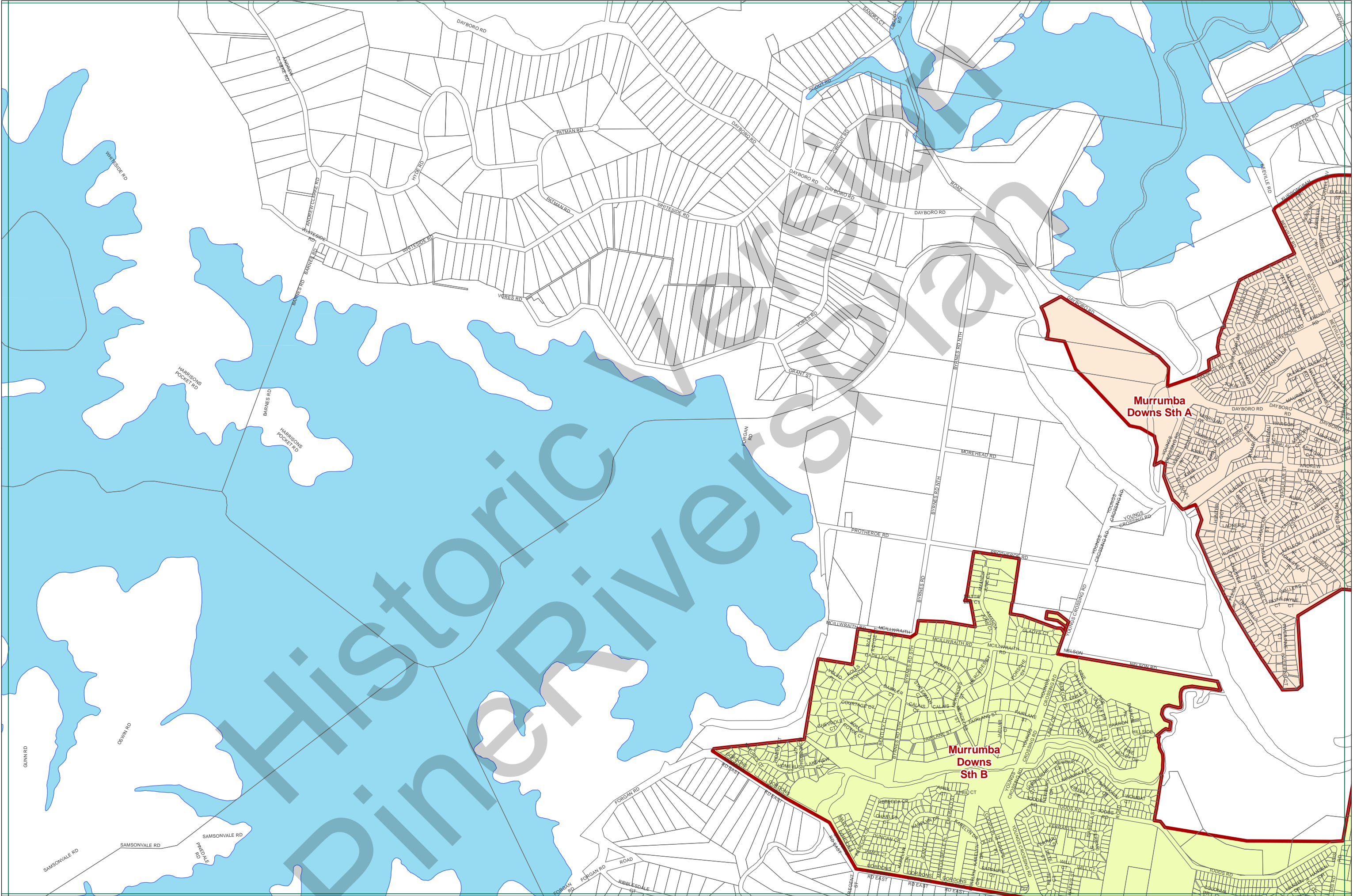
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Brendale	Brendale A	Mango Hill	Murrumba Downs Sth B	SEW-03	Samford
Kedron Brook	Brendale B	Murrumba Downs Nth A	Murrumba Downs Sth C	SEW-04	
Murrumba NGC	Cabbage Tree Creek	Murrumba Downs Nth B	North Lakes	SEW-05	
Dayboro	Dayboro	Murrumba Downs Nth C	SEW-01	SEW-06	
North Lakes	Kedron Brook	Murrumba Downs Sth A	SEW-02	SEW-07	
Murrumba Downs					

	7.9	7.11	7.13
	9.9	9.11	9.13
	11.9	11.11	11.13

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

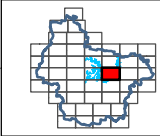
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Pine Rivers Shire
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Map Number 9.13



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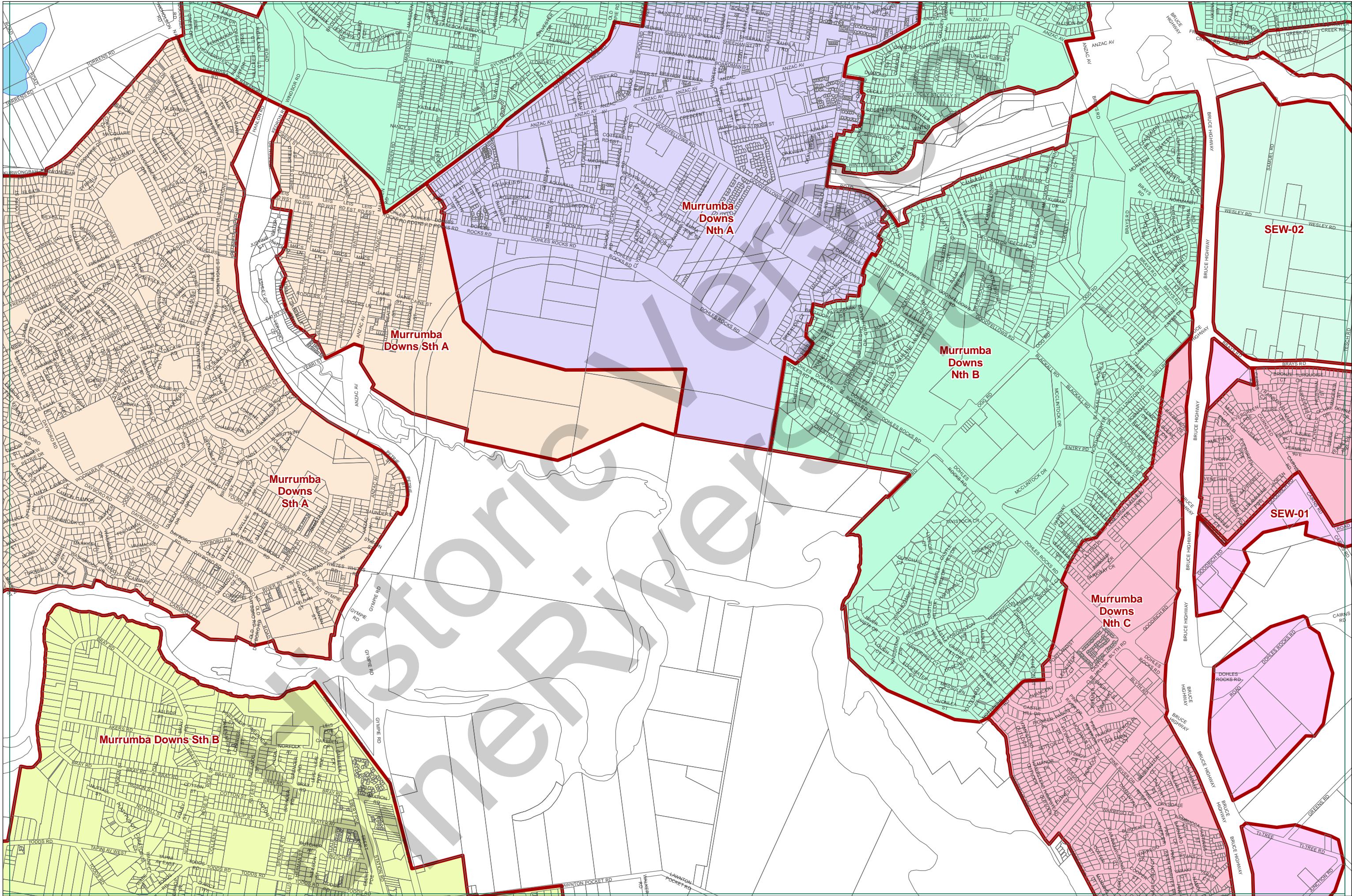
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| Kedron Brook | Brendale B | Murrumbidgee Nth A | Murrumbidgee Sth C | SEW-04 | |
| Murrumbidgee NGC | Cabbage Tree Creek | Murrumbidgee Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumbidgee Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumbidgee Sth A | SEW-02 | SEW-07 | |
| Murrumbidgee | | | | | |



9.7	9.9	9.11
11.7	11.9	11.11
13.7	13.9	13.11

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

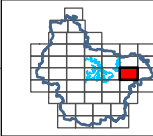
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Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 11.9



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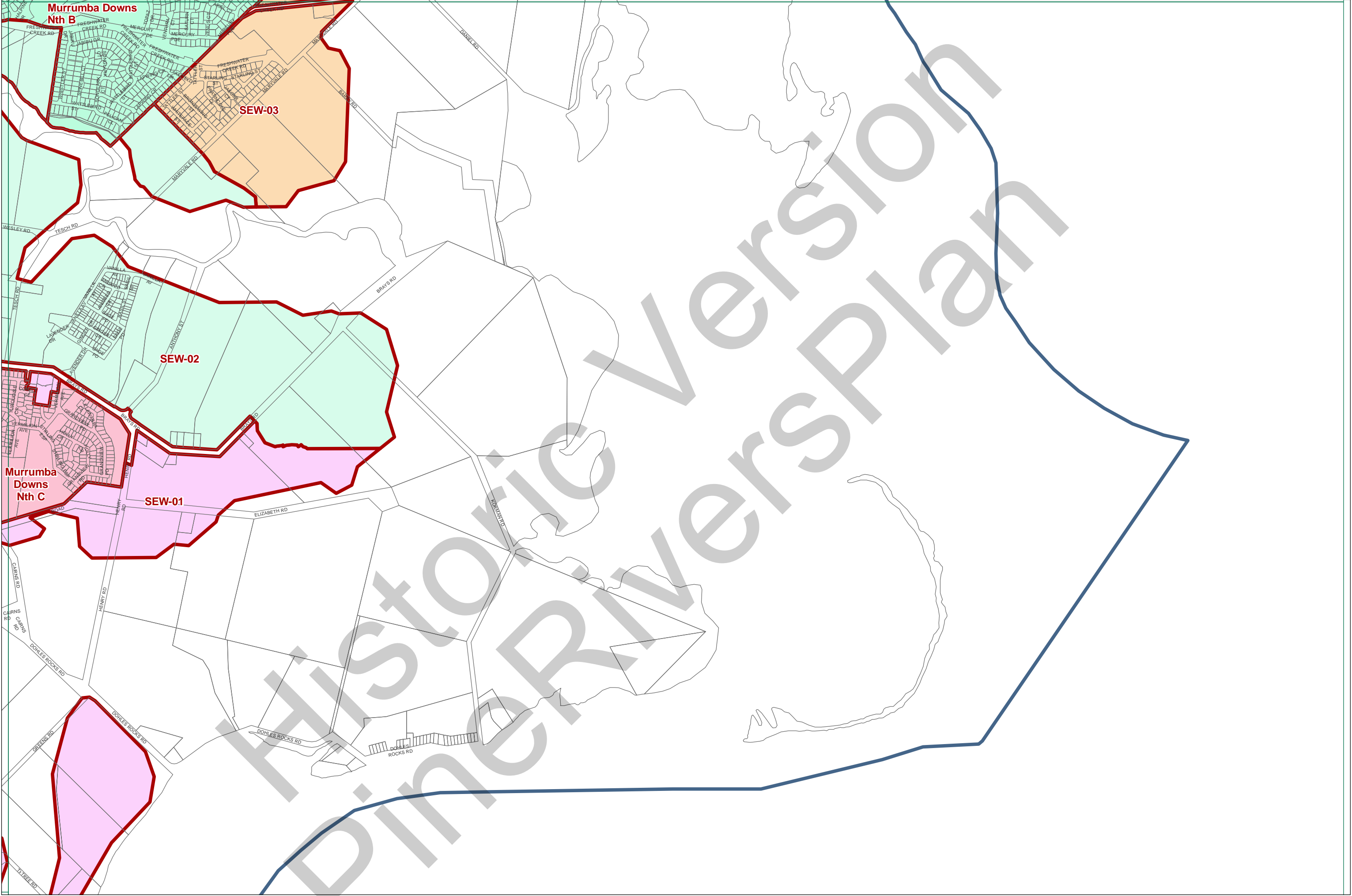
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| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |

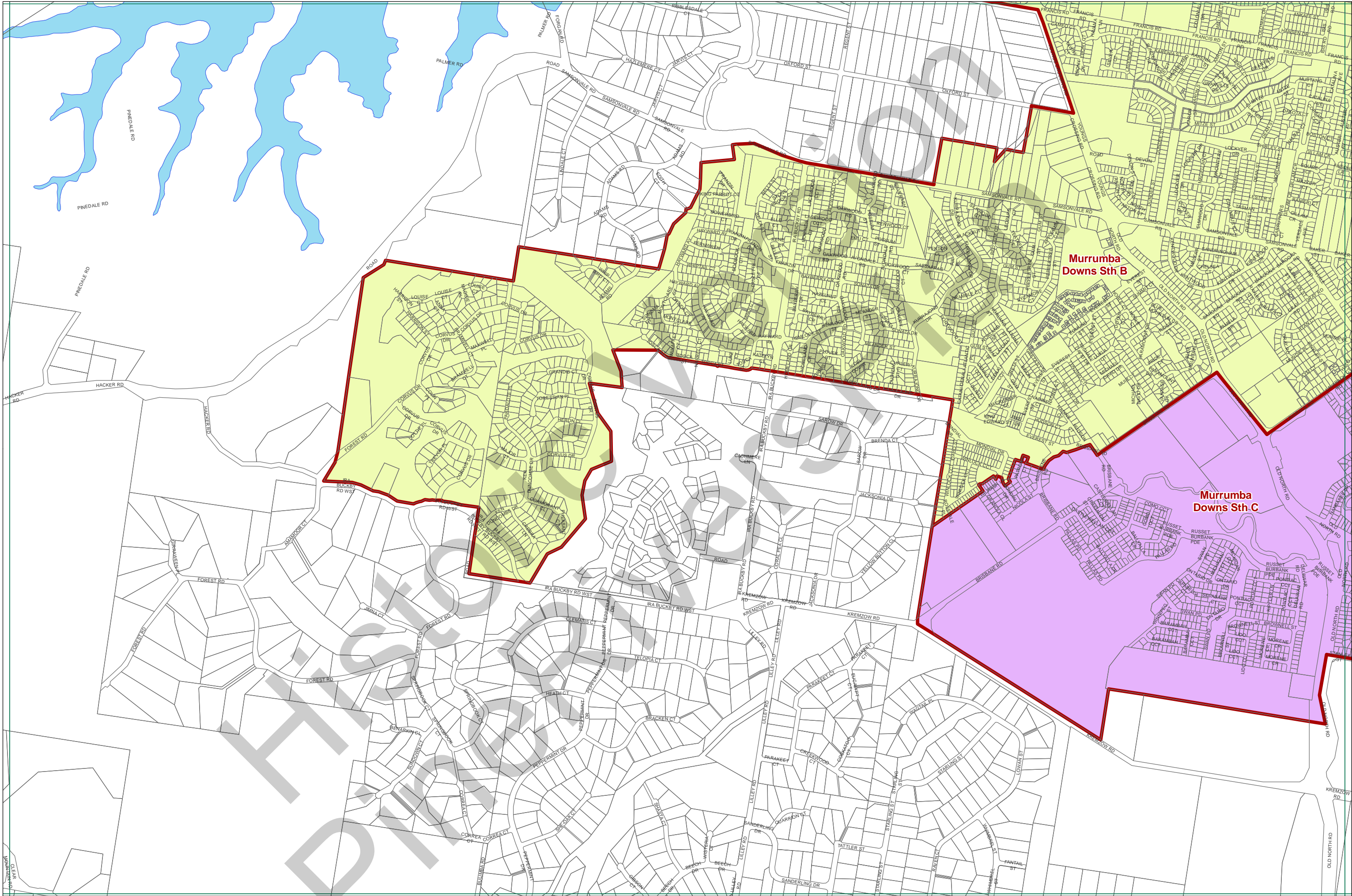


9.9	9.11	9.13
11.9	11.11	11.13
13.9	13.11	13.13

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 11.11

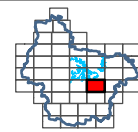




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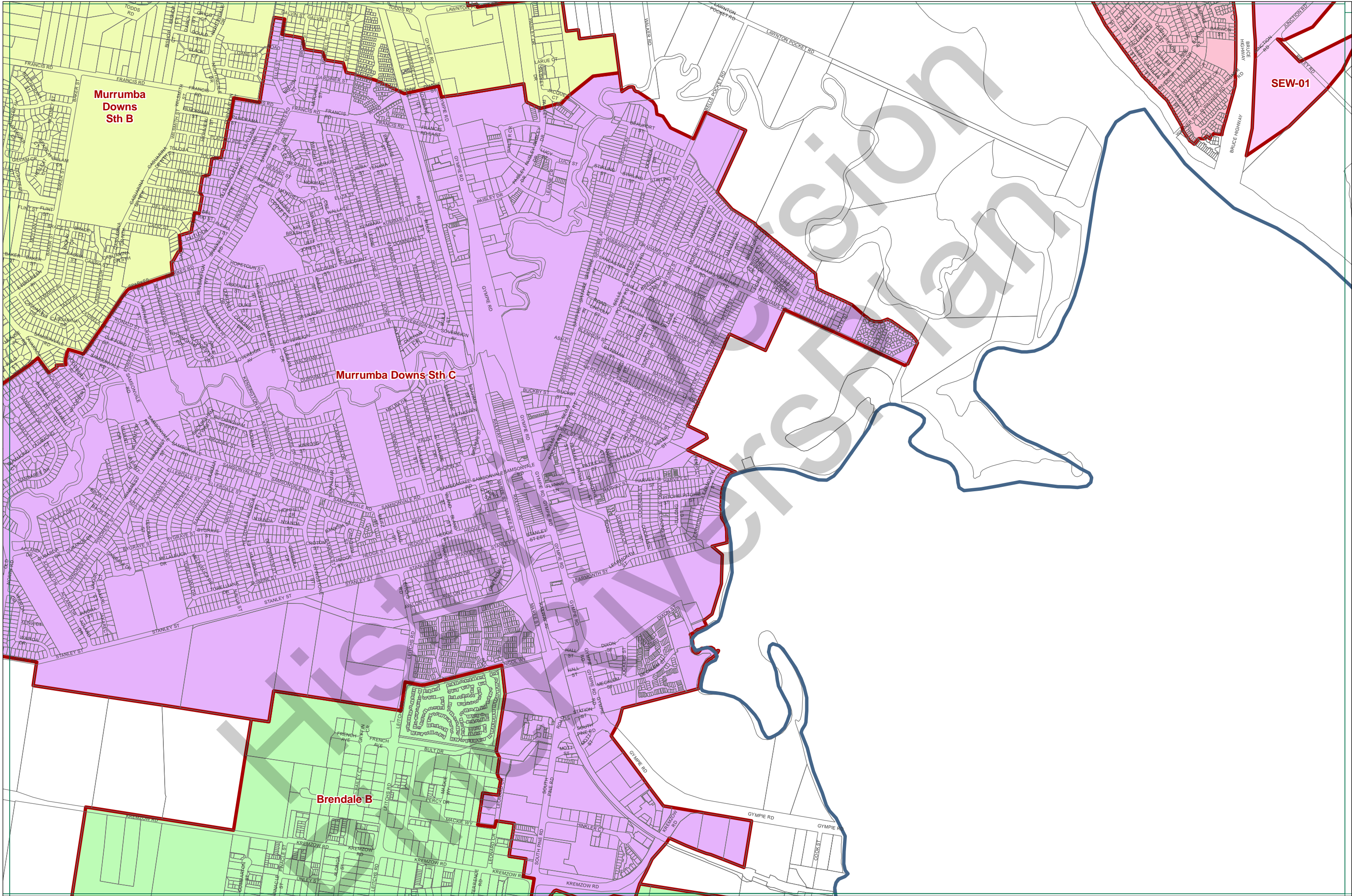
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| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



11.7	11.9	11.11
13.7	13.9	13.11
15.7	15.9	15.11

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

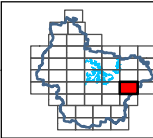
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Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 13.9



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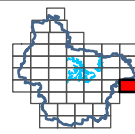
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| Murrumbidgee NGC | Cabbage Tree Creek | Murrumbidgee Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumbidgee Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumbidgee Downs Sth A | SEW-02 | SEW-07 | |
| Murrumbidgee Downs | | | | | |



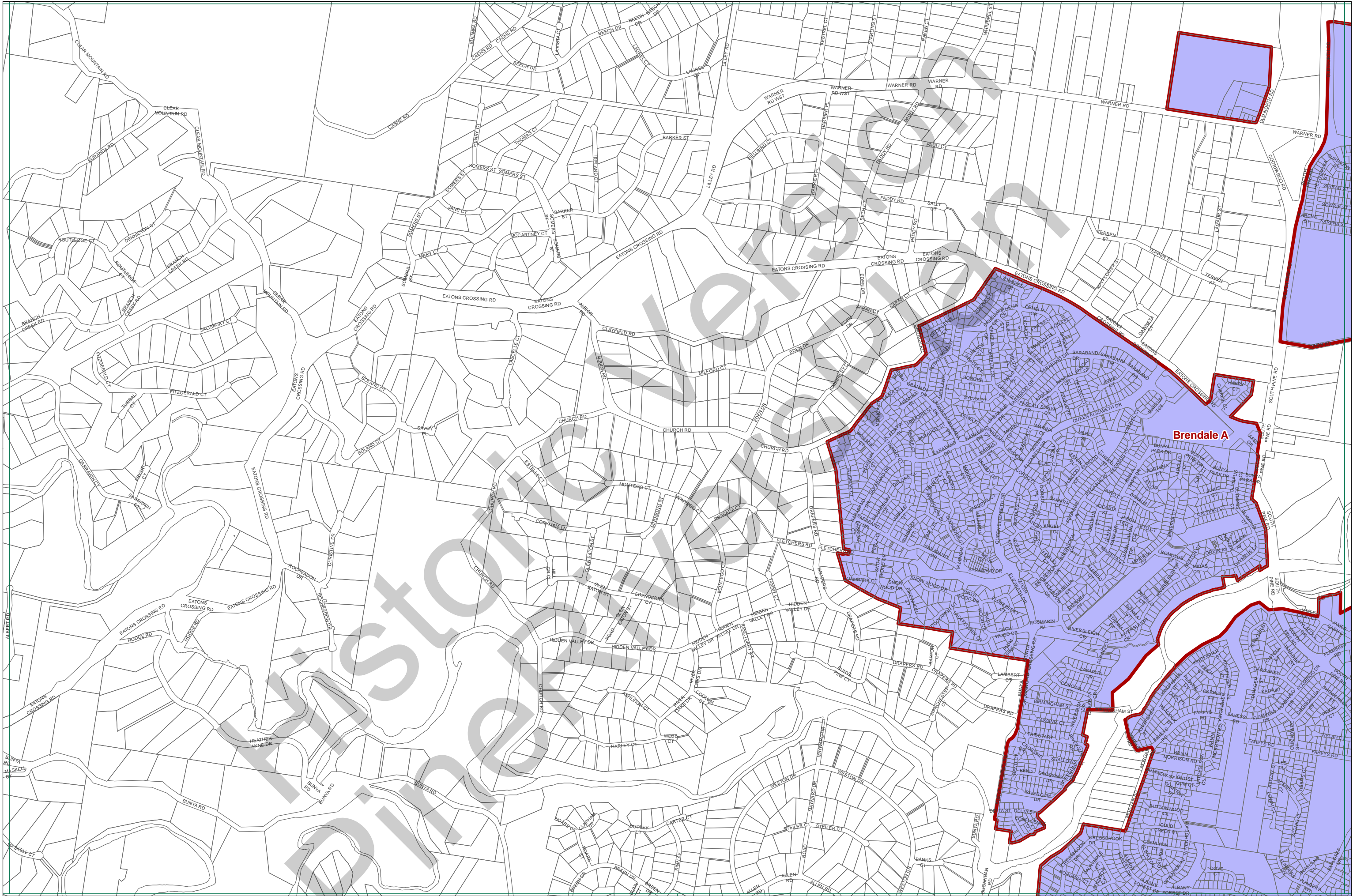
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13.9	13.11	13.13
15.9	15.11	

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 13.11



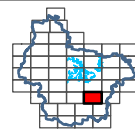
11.11	11.13
13.11	13.13



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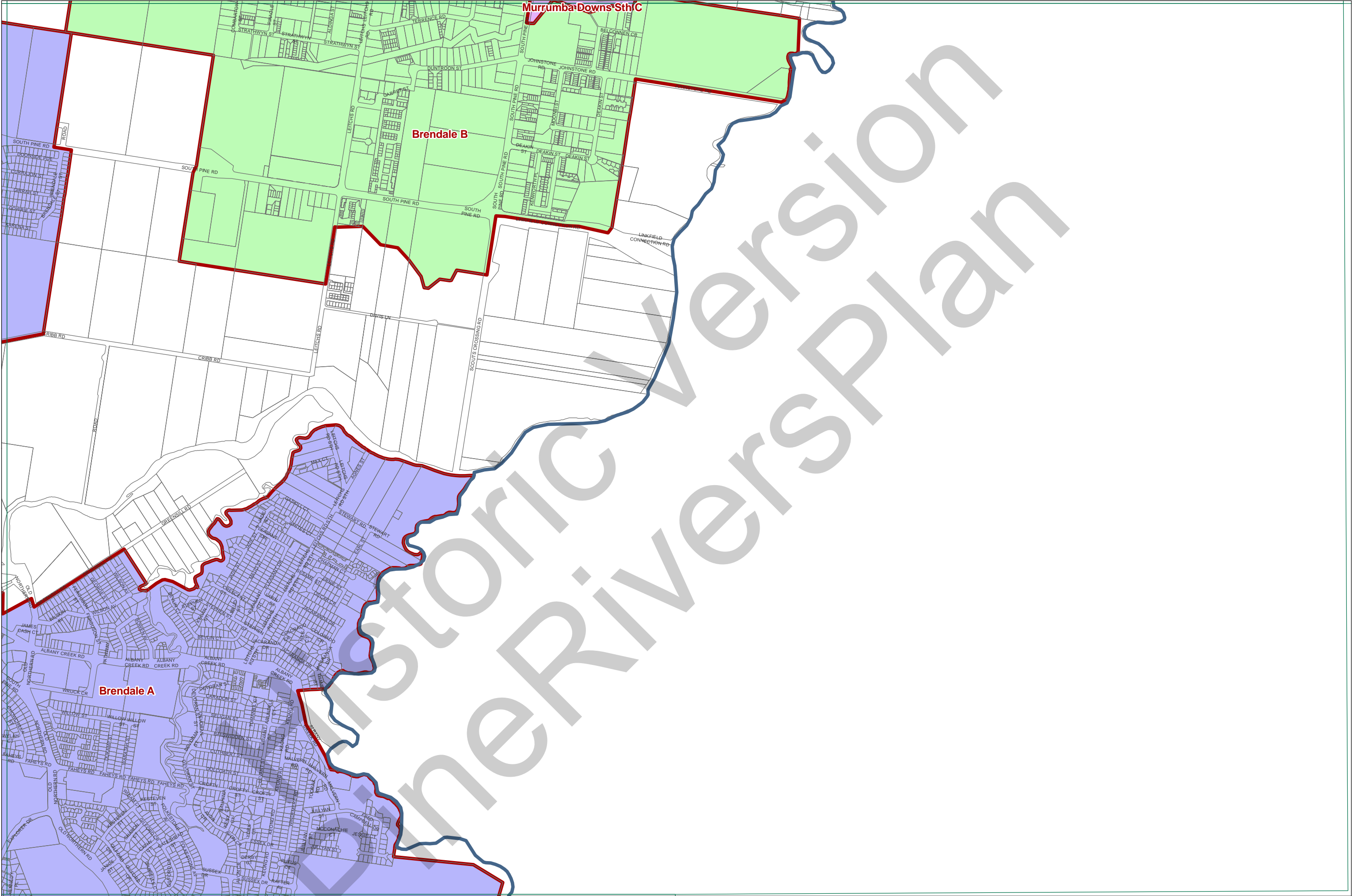
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| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



13.7	13.9	13.11
15.7	15.9	15.11
17.8	17.10	

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

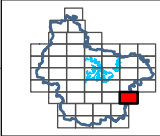
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Map Number 15.9



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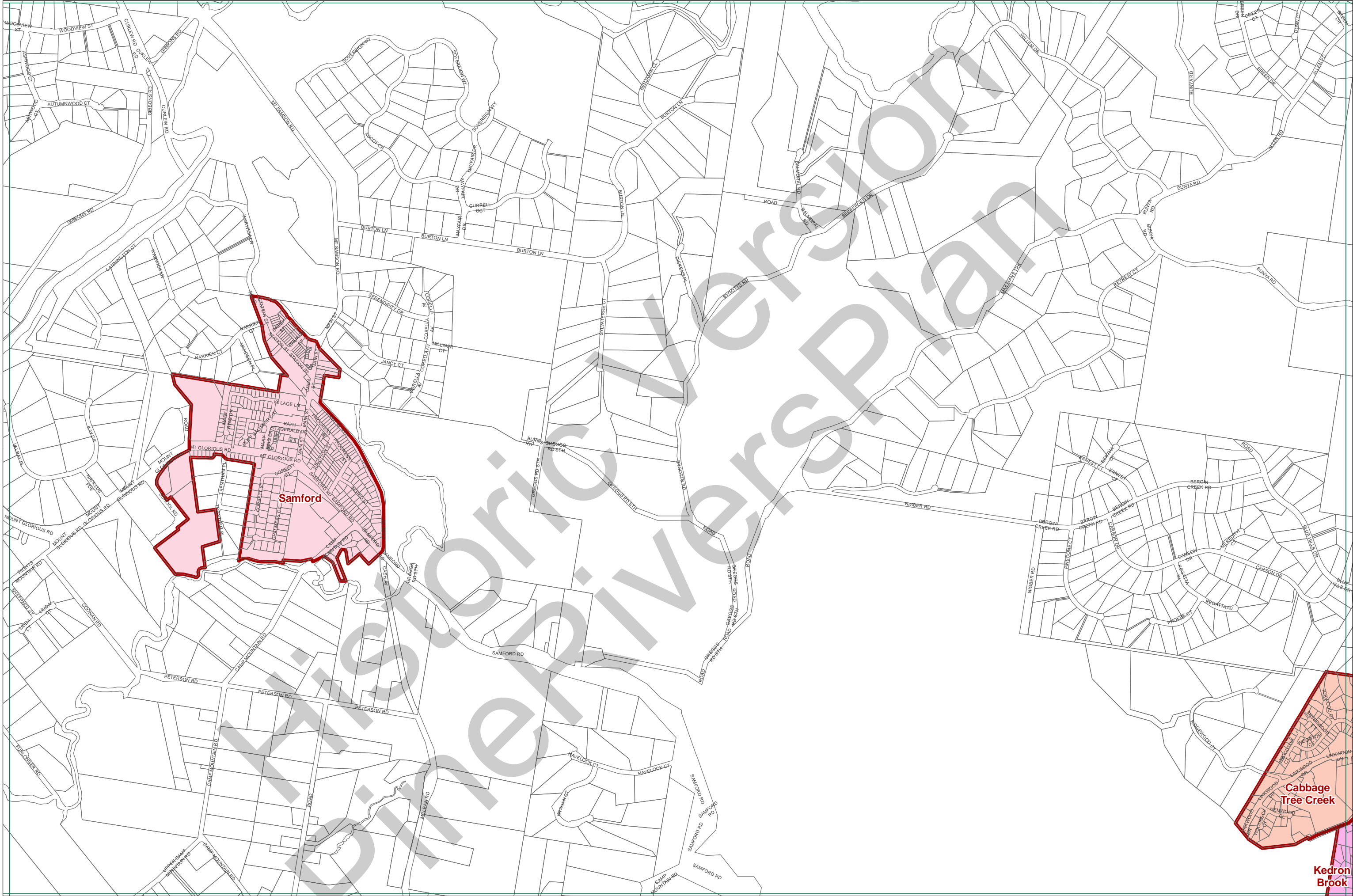
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|---|---|--|--|--|---|
| <ul style="list-style-type: none">BrendaleKedron BrookMurrumba NGCDayboroNorth LakesMurrumba Downs | <ul style="list-style-type: none">Brendale ABrendale BCabbage Tree CreekDayboroKedron Brook | <ul style="list-style-type: none">Mango HillMurrumba Downs Nth AMurrumba Downs Nth BMurrumba Downs Nth CMurrumba Downs Sth A | <ul style="list-style-type: none">Murrumba Downs Sth BMurrumba Downs Sth CMurrumba Downs Nth BMurrumba Downs Nth CMurrumba Downs Sth A | <ul style="list-style-type: none">SEW-03SEW-04SEW-05SEW-06SEW-07 | <ul style="list-style-type: none">Samford |
|---|---|--|--|--|---|



13.11	13.13
15.11	

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

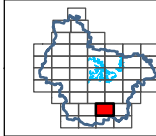
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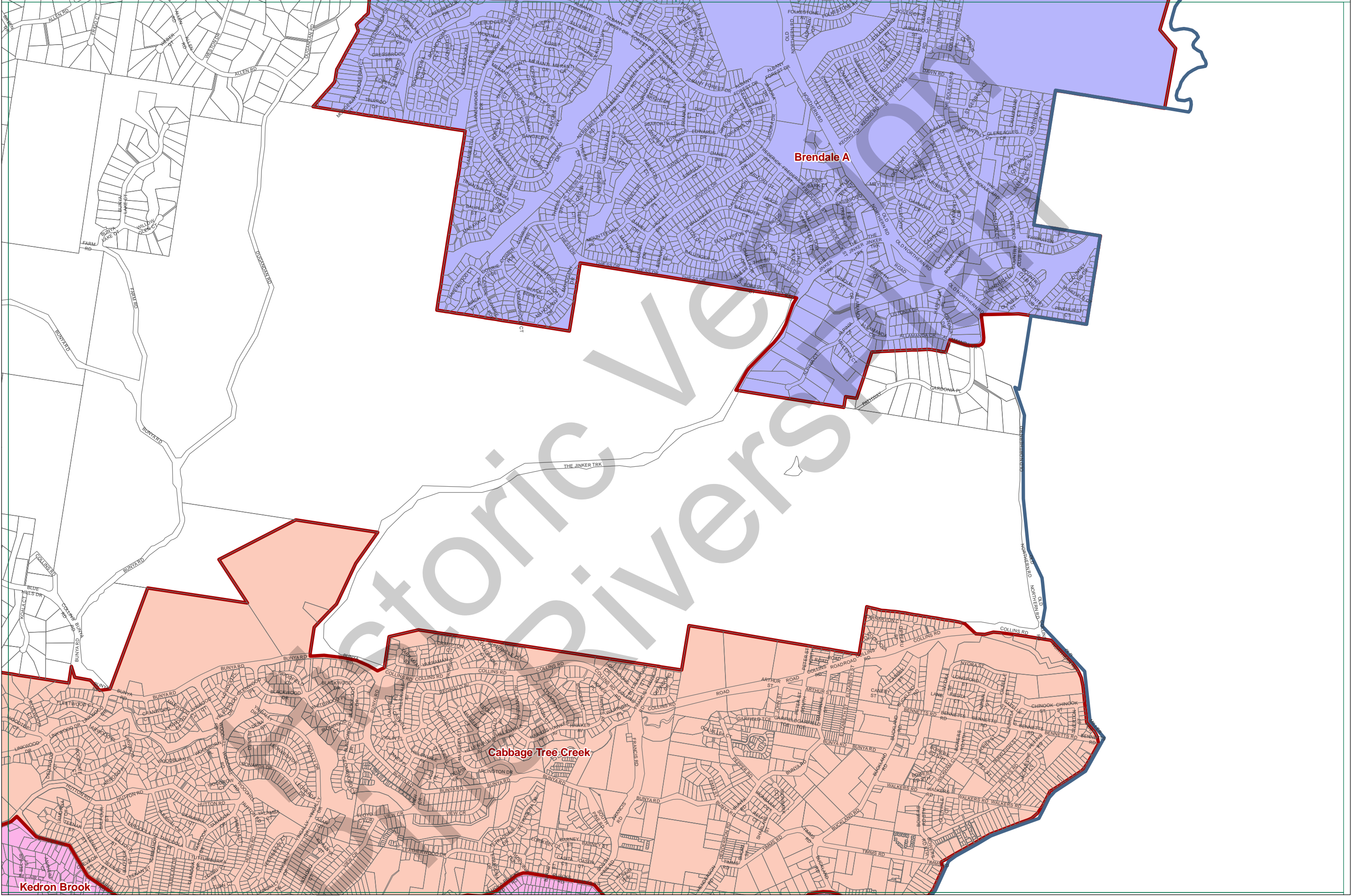
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| Kedron Brook | Brendale B | Murrumba Downs Nth A | Murrumba Downs Sth C | SEW-04 | |
| Murrumba NGC | Cabbage Tree Creek | Murrumba Downs Nth B | North Lakes | SEW-05 | |
| Dayboro | Dayboro | Murrumba Downs Nth C | SEW-01 | SEW-06 | |
| North Lakes | Kedron Brook | Murrumba Downs Sth A | SEW-02 | SEW-07 | |
| Murrumba Downs | | | | | |



15.7	15.9
17.6	17.8
19.6	19.8

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE SERVICE CATCHMENTS
Map Number 17.8





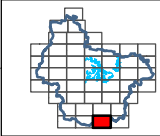
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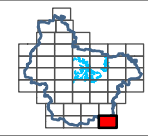
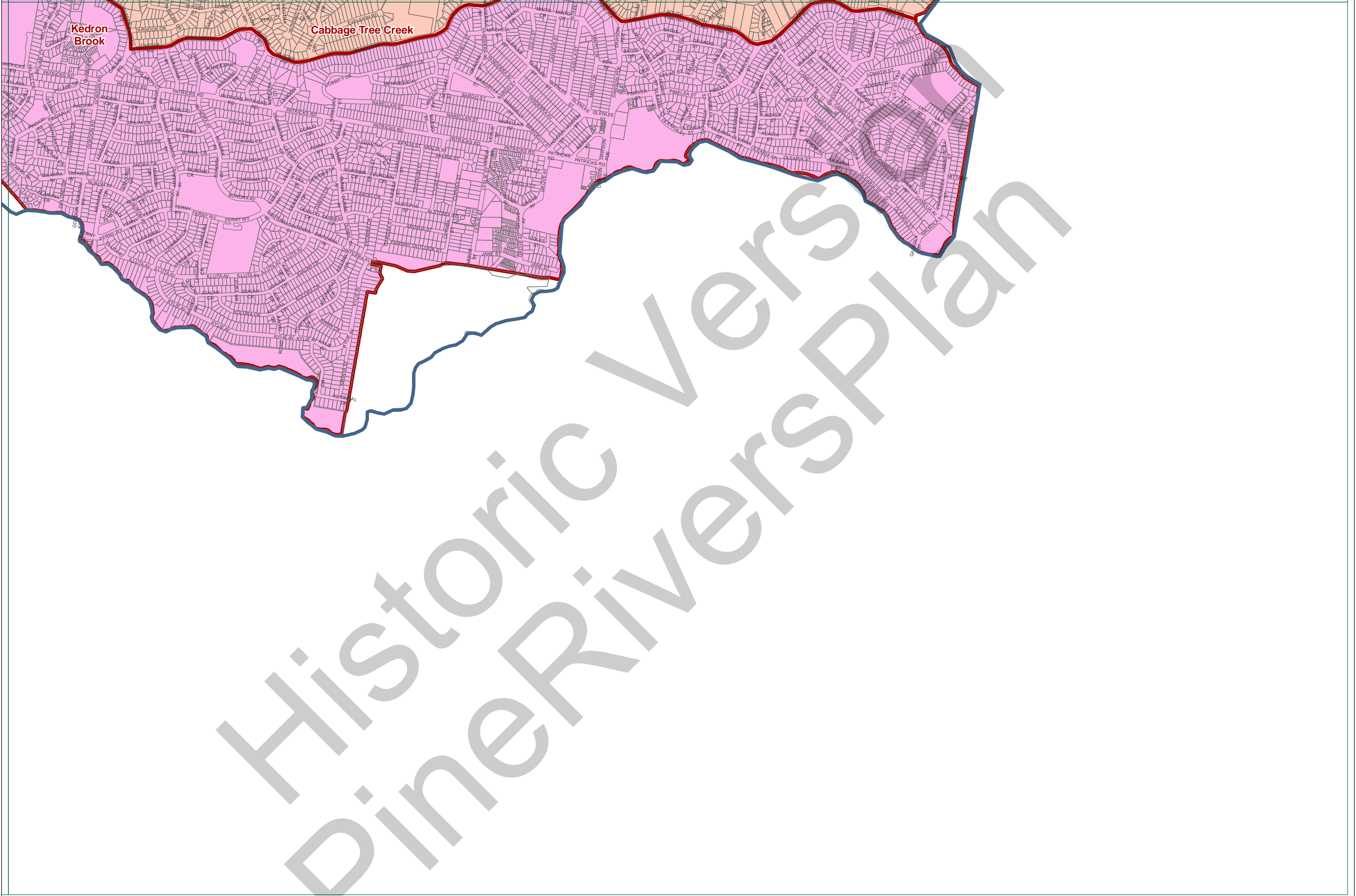
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|---------------------------|-------------------------------|---------------------------------|---------------------------------|-------------------|--------------------|
| <div>Brendale</div> | <div>Brendale A</div> | <div>Mango Hill</div> | <div>Murrumba Downs Sth B</div> | <div>SEW-03</div> | <div>Samford</div> |
| <div>Kedron Brook</div> | <div>Brendale B</div> | <div>Murrumba Downs Nth A</div> | <div>Murrumba Downs Sth C</div> | <div>SEW-04</div> | |
| <div>Murrumba NGC</div> | <div>Cabbage Tree Creek</div> | <div>Murrumba Downs Nth B</div> | <div>North Lakes</div> | <div>SEW-05</div> | |
| <div>Dayboro</div> | <div>Dayboro</div> | <div>Murrumba Downs Nth C</div> | <div>SEW-01</div> | <div>SEW-06</div> | |
| <div>North Lakes</div> | <div>Kedron Brook</div> | <div>Murrumba Downs Sth A</div> | <div>SEW-02</div> | <div>SEW-07</div> | |
| <div>Murrumba Downs</div> | | | | | |



17.6	17.8	17.10
19.6	19.8	19.10

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR
TRUNK INFRASTRUCTURE -
SEWERAGE
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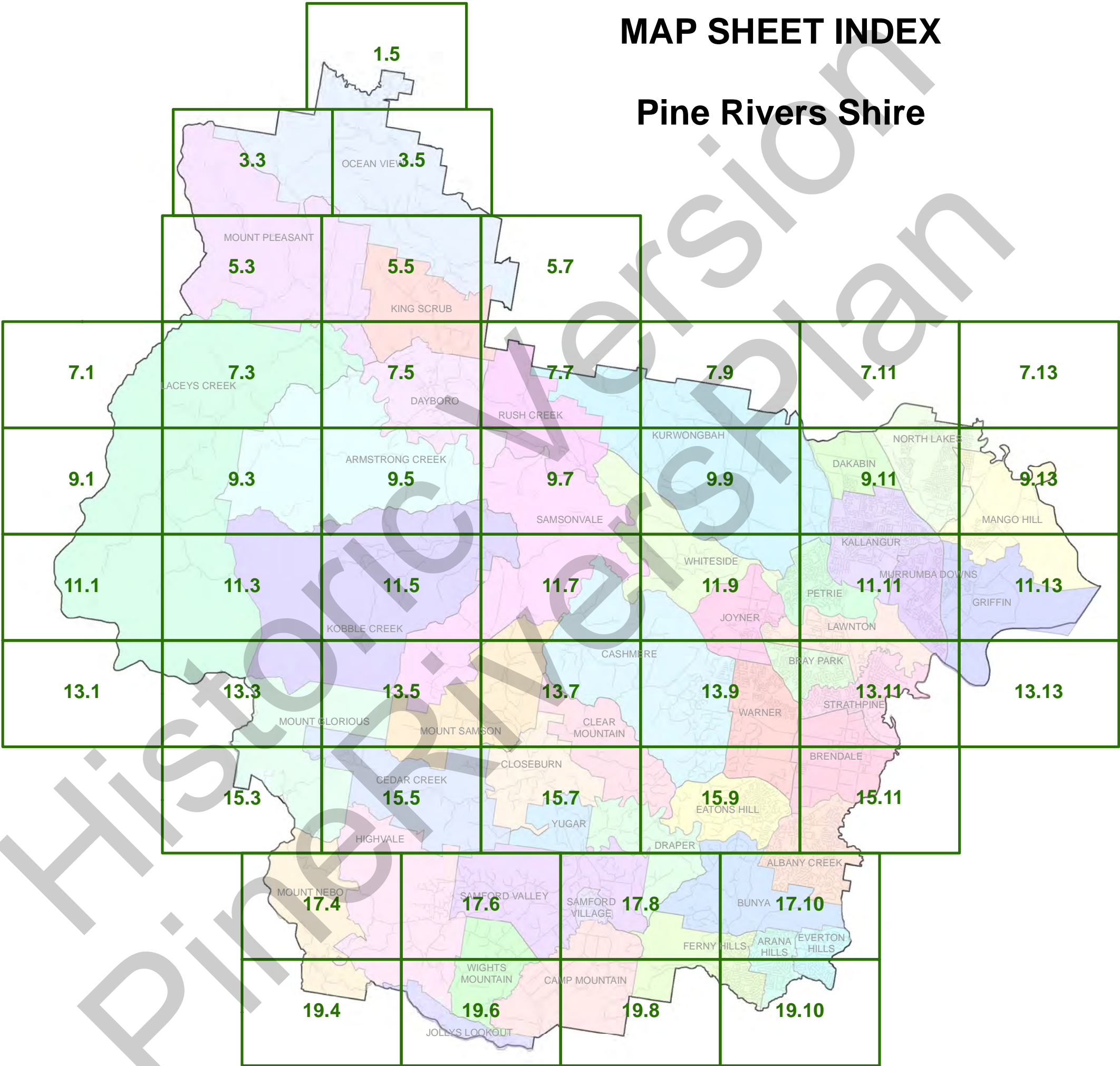


Schedule D: Network Assets

Historic Version
PineRiversPlan

MAP SHEET INDEX

Pine Rivers Shire

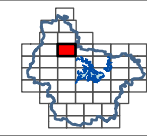




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● Existing Pump Stations	● Future Pump Station	■ Future Storage Points
— Existing Minor Sewer Trunk Mains	● Pump Station Upgrade	— Future Gravity Mains
— Existing Sewer Trunk Mains - Gravity	● Pump Stations to Decommission	— Future Rising Mains
— Existing Sewer Trunk Mains - Rising		



5.3	5.5	5.7
7.3	7.5	7.7
9.3	9.5	9.7

PLANNING SCHEME POLICY PSP23
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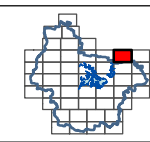
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Pine Rivers Shire
SEWERAGE NETWORK ASSETS
Map Number 7.5



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— Existing Sewer Trunk Mains - Rising		



7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

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● Existing Pump Stations

— Existing Minor Sewer Trunk Mains

— Existing Sewer Trunk Mains - Gravity

— Existing Sewer Trunk Mains - Rising

● Future Pump Station

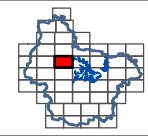
● Pump Station Upgrade

● Pump Stations to Decommission

■ Future Storage Points

— Future Gravity Mains

— Future Rising Mains



7.3	7.5	7.7
9.3	9.5	9.7
11.3	11.5	11.7

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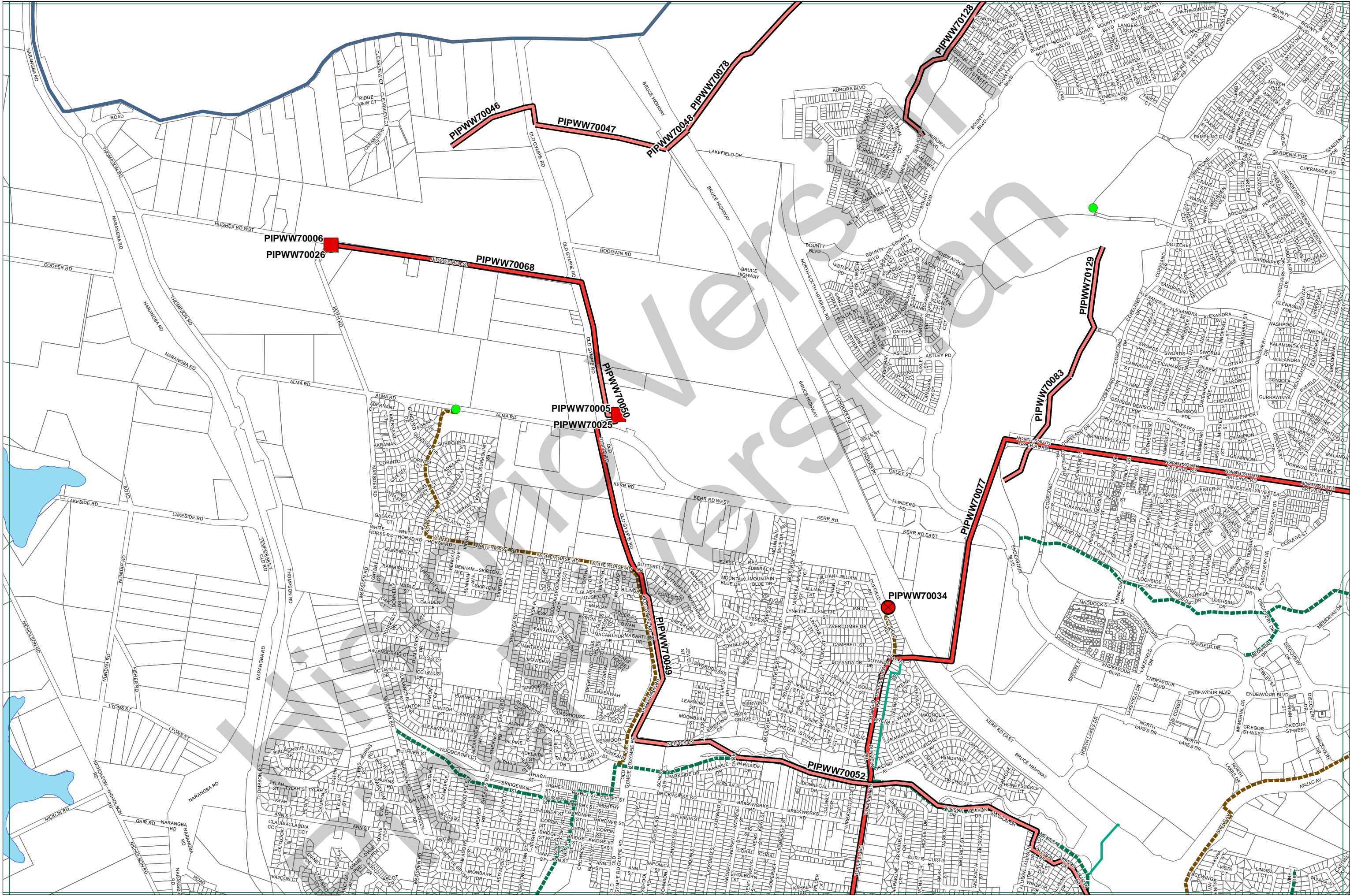
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MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire

SEWERAGE NETWORK ASSETS

Map Number 9.5

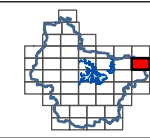




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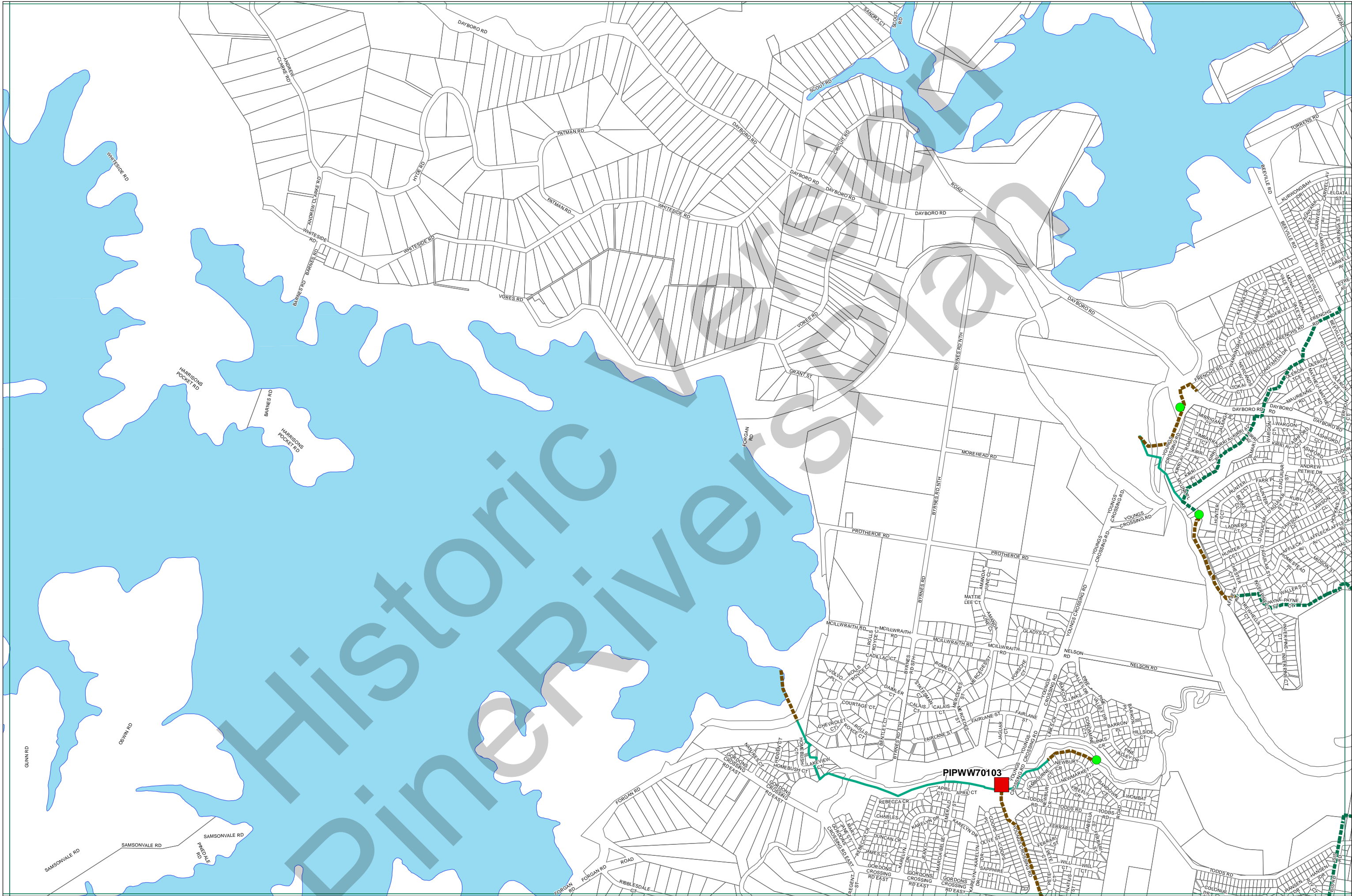
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- Existing Minor Sewer Trunk Mains
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- Existing Sewer Trunk Mains - Rising
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- Pump Station Upgrade
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- Future Rising Mains



7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

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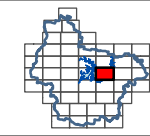
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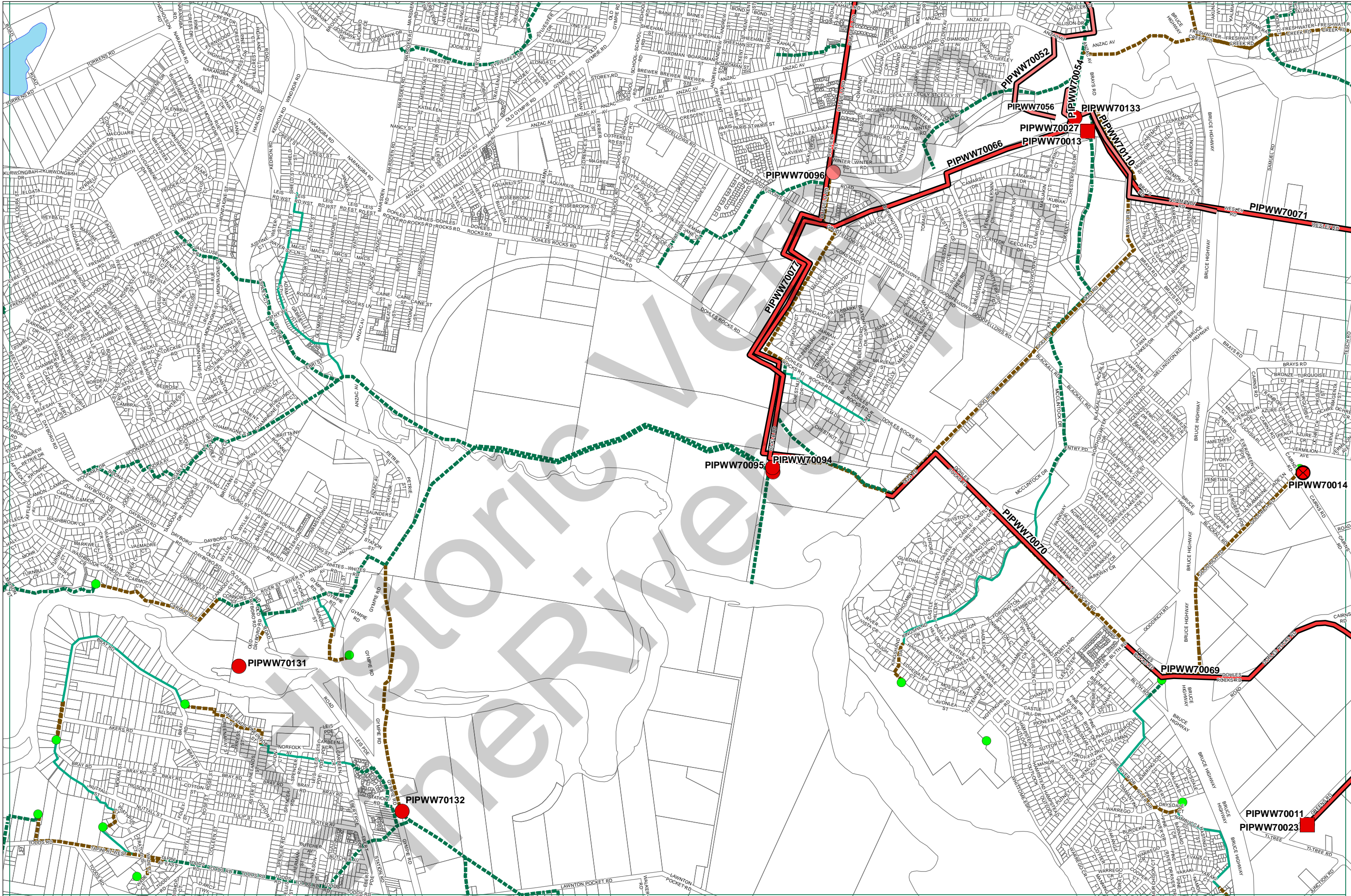
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| ● Existing Pump Stations | ● Future Pump Station | ■ Future Storage Points |
| — Existing Minor Sewer Trunk Mains | ● Pump Station Upgrade | — Future Gravity Mains |
| — Existing Sewer Trunk Mains - Gravity | ● Pump Stations to Decommission | — Future Rising Mains |
| — Existing Sewer Trunk Mains - Rising | | |



9.7	9.9	9.11
11.7	11.9	11.11
13.7	13.9	13.11

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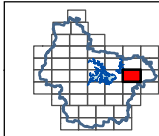
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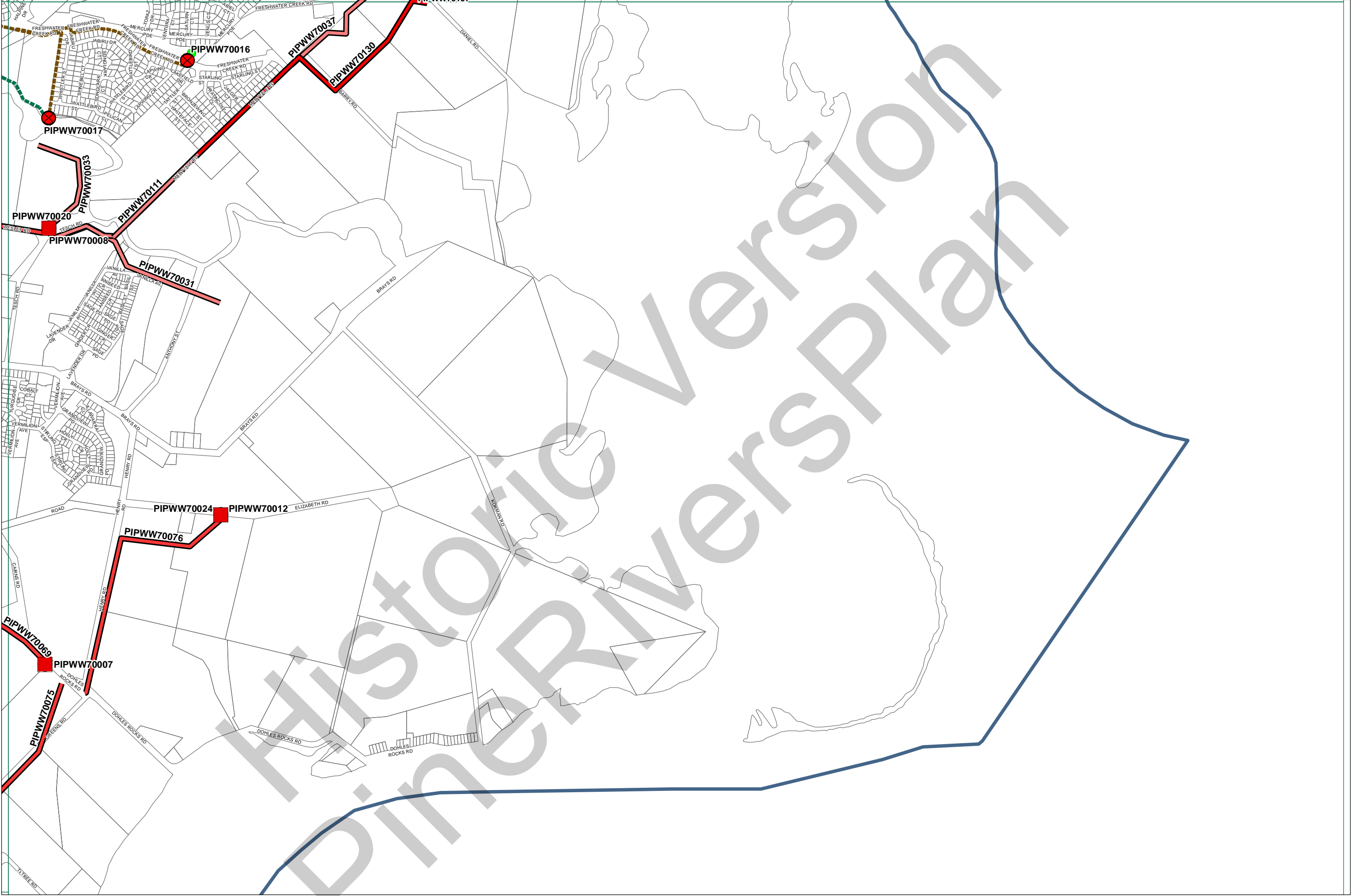
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- Pump Station Upgrade
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- Future Storage Points
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- Future Rising Mains



9.9	9.11	9.13
11.9	11.11	11.13
13.9	13.11	13.13

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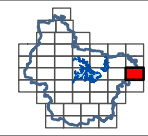
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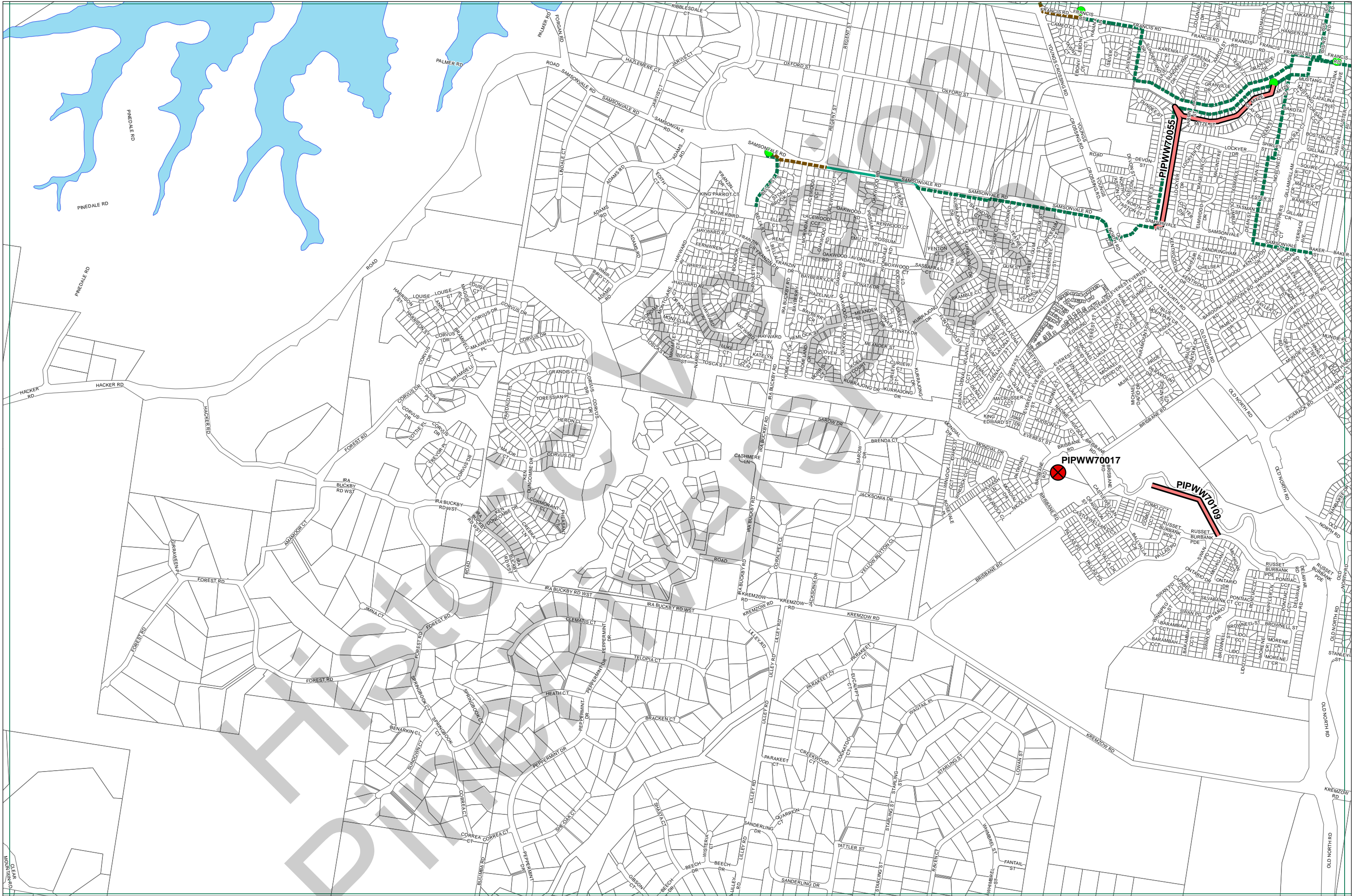
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| --- Existing Sewer Trunk Mains - Rising | | |



11.11	11.13
13.11	13.13

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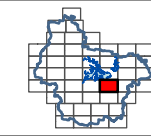
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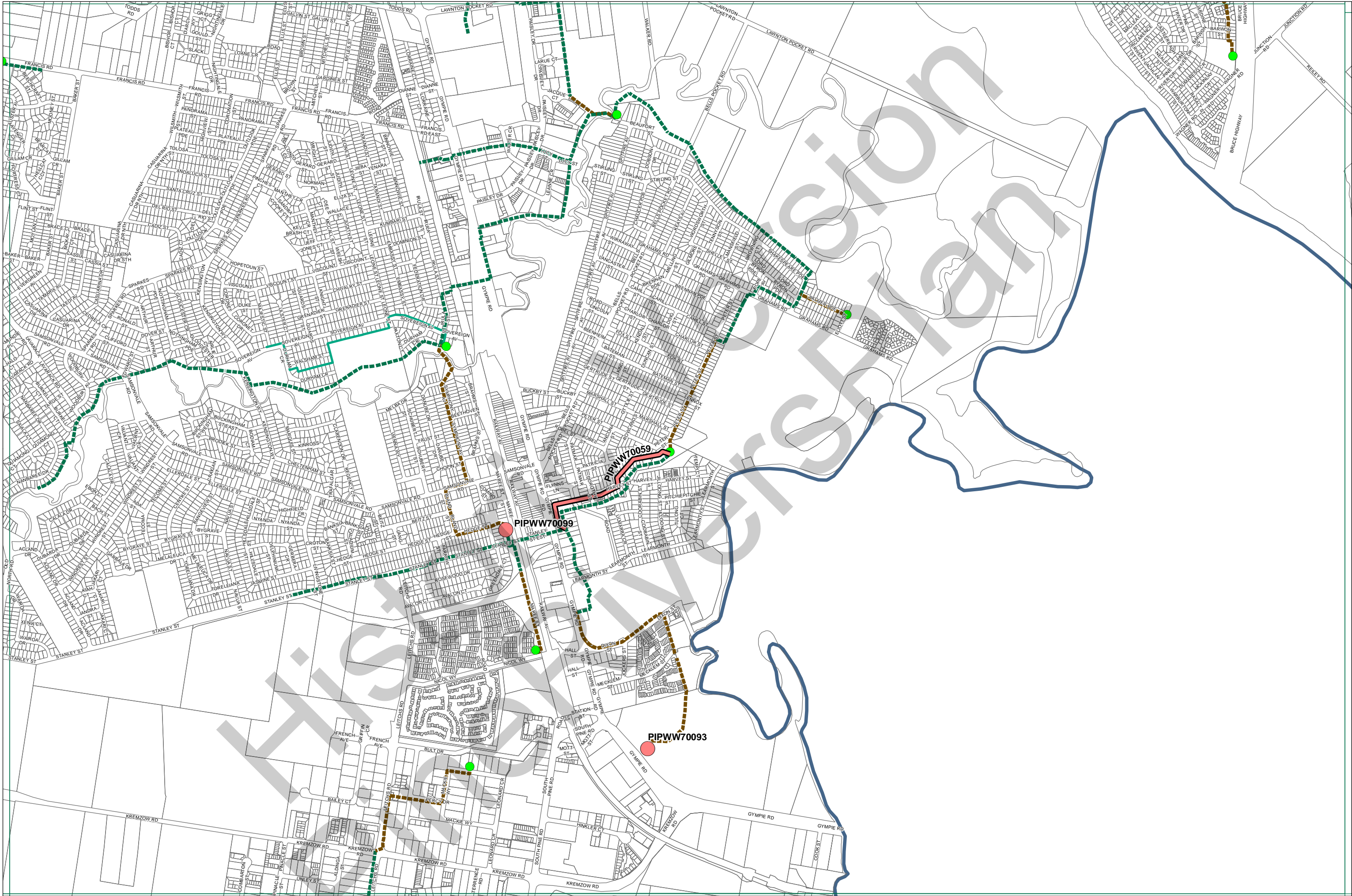
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11.7	11.9	11.11
13.7	13.9	13.11
15.7	15.9	15.11

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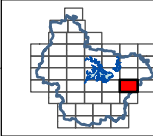
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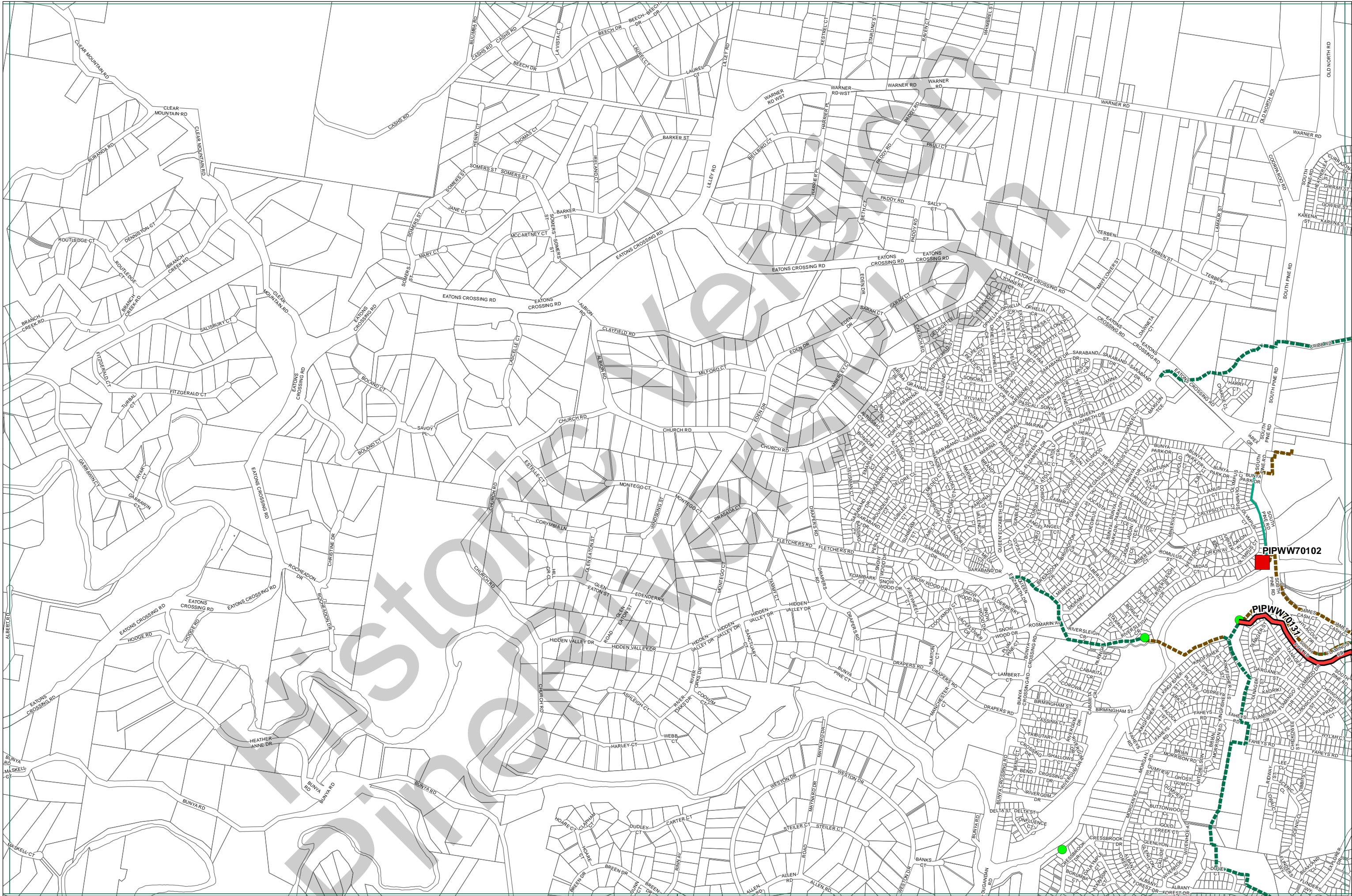
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11.9	11.11	11.13
13.9	13.11	13.13
15.9	15.11	

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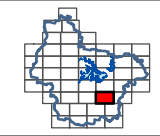
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13.7	13.9	13.11
15.7	15.9	15.11
17.6	17.8	17.10

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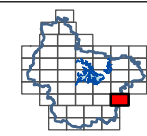
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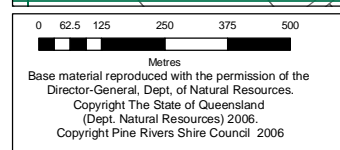
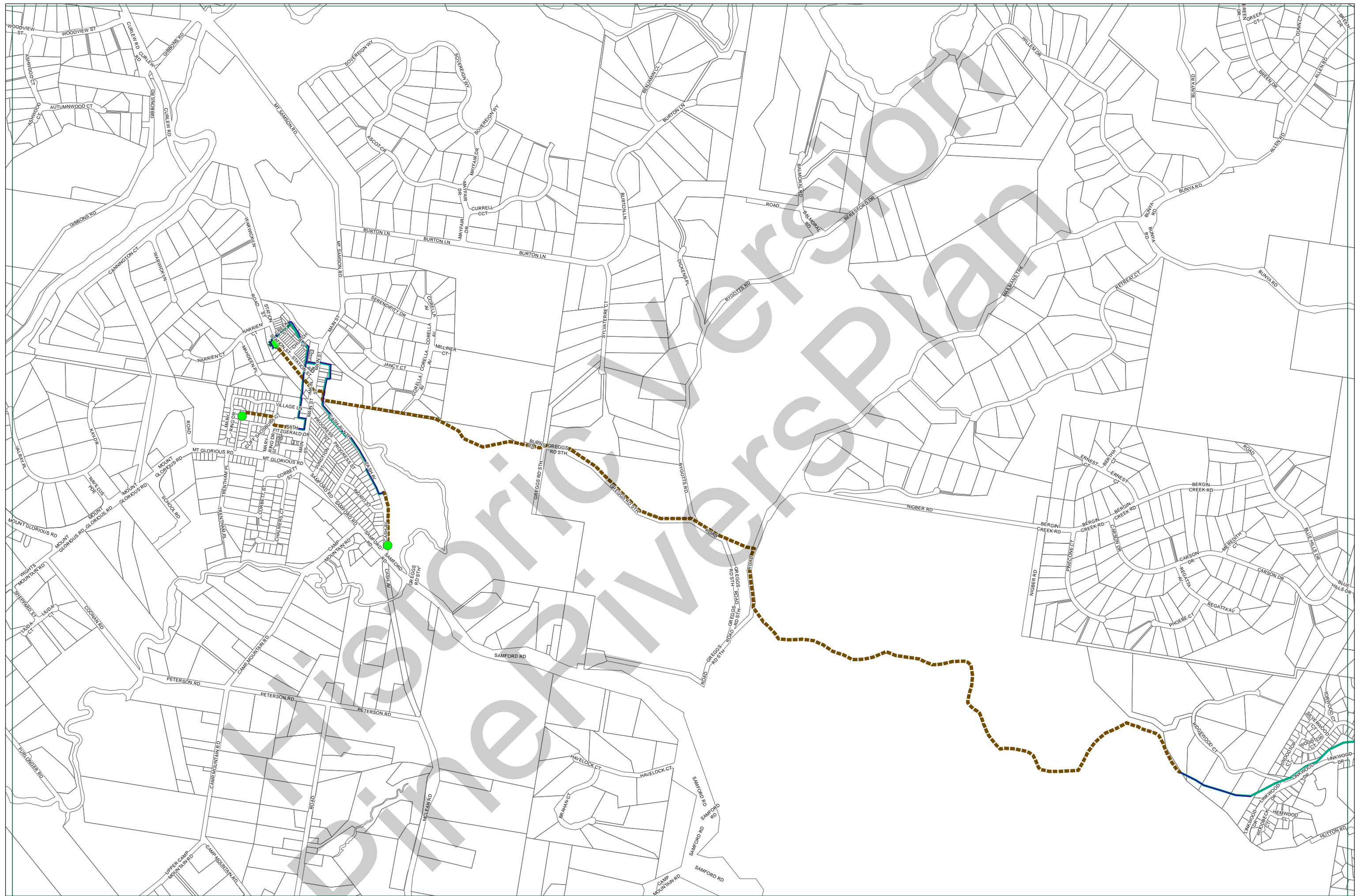
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13.9	13.11	13.13
15.9	15.11	

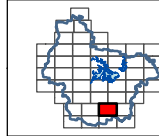
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  Future Storage Points
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  Pump Station Upgrade
  Future Gravity Mains
-  Existing Sewer Trunk Mains - Gravity
  Pump Stations to Decommission
  Future Rising Mains
-  Existing Sewer Trunk Mains - Rising



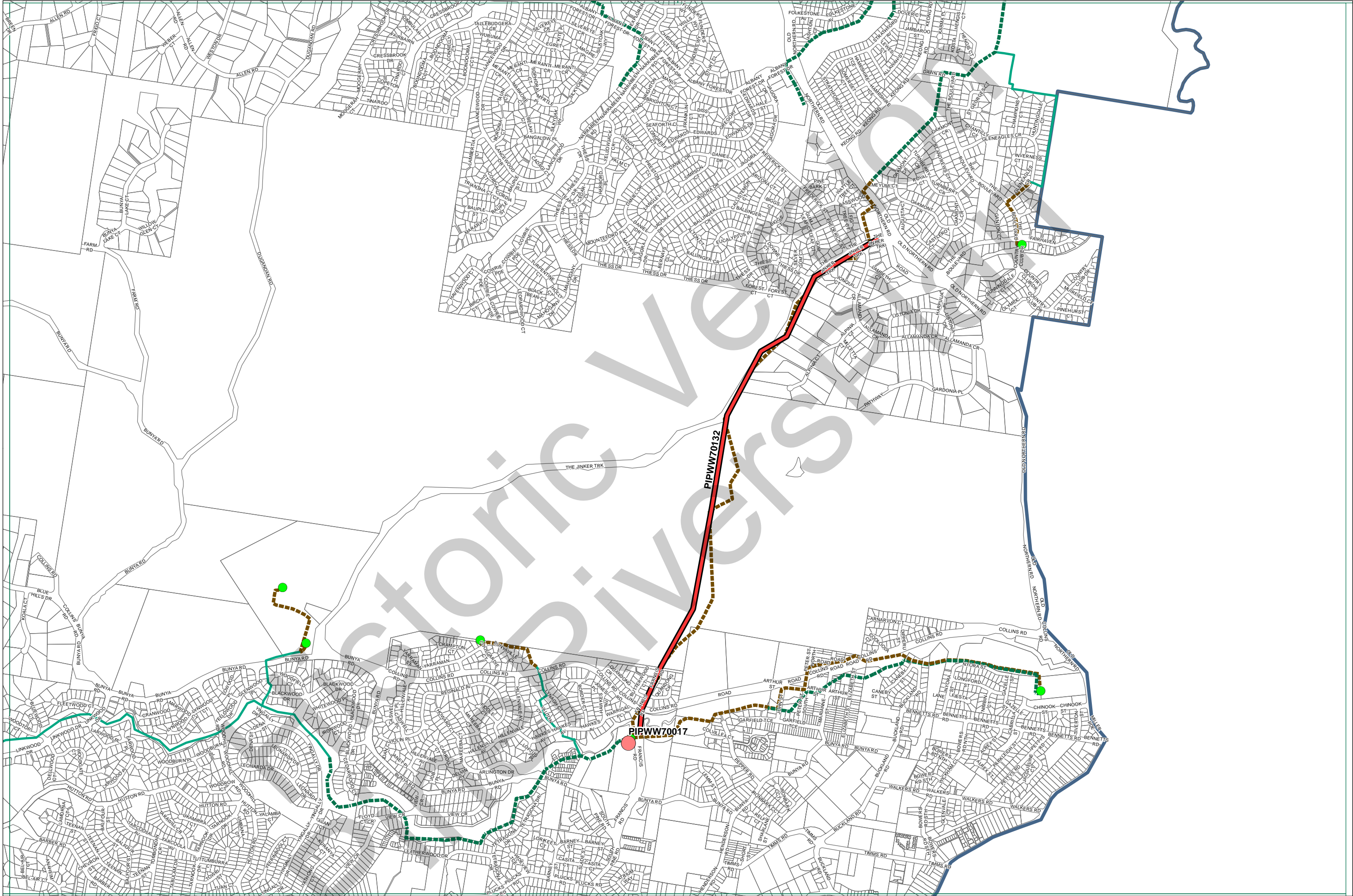
15.5	15.7	15.9	15.11
17.6	17.8	17.10	
19.6	19.8	19.10	

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MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire

SEWERAGE NETWORK ASSETS

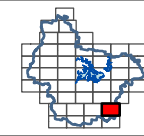
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15.7	15.9	15.11
17.6	17.8	17.10
19.6	19.8	19.10

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TRUNK INFRASTRUCTURE -
SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE NETWORK ASSETS
Map Number 17.10

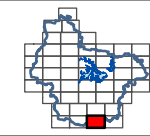


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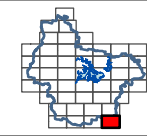
● Existing Pump Stations	● Future Pump Station	■ Future Storage Points
— Existing Minor Sewer Trunk Mains	● Pump Station Upgrade	— Future Gravity Mains
— Existing Sewer Trunk Mains - Gravity	● Pump Stations to Decommission	— Future Rising Mains
— Existing Sewer Trunk Mains - Rising		



15.5	15.7	15.9	15.11
17.6	17.8	17.10	
19.6	19.8	19.10	

PLANNING SCHEME POLICY PSP23
DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - SEWERAGE
EFFECTIVE FROM 29 October 2009

MORETON BAY REGIONAL COUNCIL
Pine Rivers Shire
SEWERAGE NETWORK ASSETS
Map Number 19.8



Schedule E: Desired Standards of Service

Operational Objectives for Sewerage

The desired standards of service for sewerage trunk infrastructure under this policy are expressed in terms of “operational objectives” and “detailed design parameters”.

Each of the ‘Operational Objectives’ for the provision of sewerage services in Pine Rivers Shire is examined in the context of corresponding user benefits and environmental effects. The primary objectives adopted for sewerage trunk infrastructure are set out in Table E1.

Table E1 - Sewerage Operational Objectives

Objective	User Benefit	Environmental Effect
	•	•
To satisfy the requirements of Council's Integrated Environmental Management System as approved by the Environmental Protection Agency from time to time.	<ul style="list-style-type: none"> Optimised community amenity in terms of minimisation of the adverse impacts of odour, noise and adverse visual impact. Remove the potential health impacts of uncontrolled wastes. 	<ul style="list-style-type: none"> Mitigation of adverse noise and odour impacts. Protect the quality of natural waterways and groundwater.
Designs comply with State Government Guidelines, and Council's <i>Planning Scheme Policy PSP28 "Civil Infrastructure Design"</i> .	<ul style="list-style-type: none"> System is adequate in terms of: <ul style="list-style-type: none"> day-to-day reliability; long term continuity of service; standard of effluent; minimum life cycle cost (i.e., optimum maintenance, replacement and operation costs). Cost effective service for community. 	<ul style="list-style-type: none"> Protects the quality of natural waterways. Chemicals are stored and handled in accordance with relevant legislation to ensure safety of workers, public safety and to protect the environment. Minimisation of Greenhouse gas emissions. Optimum use of resources.
System is so designed as to minimise energy consumption and use of chemicals.	<ul style="list-style-type: none"> Reduced cost of energy and chemicals Cost effective service for community 	<ul style="list-style-type: none"> Minimisation of Greenhouse gas emissions. Minimisation of production of treatment process by-products that are contaminated with chemicals that are harmful to the environment.
System is so designed as to minimise wet weather overflow events by reducing infiltration and inflow	<ul style="list-style-type: none"> Reduced cost of energy for transport, treatment and disposal Minimise overflow issues Maximise life of system 	<ul style="list-style-type: none"> Protect quality of waterways by reduction of the risk of overflow to local waterways.
To maximise the use of biosolids, where there is a demonstrated benefit to the community and/or the environment	<ul style="list-style-type: none"> To utilise biosolids as a resource. 	<ul style="list-style-type: none"> Reduction in uncontrolled release of nitrogen and phosphorous to the environment. Containment of heavy metals.
Infrastructure is designed, constructed and operated in accordance with Workplace Health and Safety Legislation.	<ul style="list-style-type: none"> Minimisation of risk to workers and community (reduction in accidents and insurance premiums). 	<ul style="list-style-type: none"> Minimise risk of pollution events. Safer work environment for staff and public.

Detailed Design Parameters for Sewerage

Following an examination of the QDNRM&E Guidelines and a survey of current practice of local governments in South East Queensland, Pine Rivers Shire Council has adopted the parameters summarised in table E2 for design and assessment of sewerage systems.

The summary outlined in Table E2 must be interpreted in conjunction with the Council's design and construction standards for sewerage set in *Planning Scheme Policy PSP28 "Civil Infrastructure Design"*.

Table E2 - Sewerage Design Parameters

Item	Description	Adopted Design Parameter
Occupancy Ratio		
1	Equivalent Person/Equivalent Tenement (EP/ET).	<ul style="list-style-type: none"> 2003 to 2008 – 3.0 EPS/ET 2008 – to 2013 2.9 EPS/ET 2013 and beyond – 2.8 EPS/ET
Sewage Loading		
3	Average Dry Weather Flow (ADWF).	185 L/EP/d.
4	Peak Wet Weather Flow (PWWF).	6 x ADWF
5	Peak Dry Weather Flow (PDWF).	$C_2 \times \text{ADWF}$ where C_2 = Peaking factor shown on dgr no A3-99480 of the QDNRM&E Guidelines
Gravity Sewer Design		
6	Flow calculation method.	Manning's Equation
7	Manning's 'n'.	0.013
8	Minimum velocity at PWWF.	0.6 m/s
9	Minimum velocity at PDWF.	0.3 m/s
10	Depth of Flow at PWWF – Existing system.	Maximum hydraulic grade level = 1.0 m below MH cover level and no spillage through overflow structures.
11	Depth of Flow @ PWWF – Proposed sewers.	Water surface level must not exceed obvert level of pipe.
Pumping Station Design		
12	Pump Motor Drives.	<ul style="list-style-type: none"> Fixed speed drives; or Variable speed drives when approved by Pine Water's Manager Networks Operation.
13	Number of Pumps.	Two pumps; or A single pump if specifically approved by Pine Water's Manager Networks Operation
14	For Fixed Speed Pumps: Wet Well Operating Volume (kL).	$\frac{0.9 \times Q}{N}$ Where Q is the flow rate (L/s) of a single pump operating and N is the allowable number of pump starts (as per QDNRM&E Guidelines). The number of pump starts (N) should be not more than 10 for pumps less than 50 kW rating. For pumps greater than 50 kW rating, pumps start limits are to be in accordance with to manufacturer's recommendations
15	For Variable Speed Pumps: Wet Well Operating Volume (kL).	$\frac{0.9 \times Q}{N}$ Where Q = discharge of a single pump (L/s) at 50 Hz N = maximum number of starts per hour recommended by the motor manufacturer.
16	Bottom Water Level (BWL).	a) For Fixed Speed Pumps- in accordance with standard drawing 8 50015 in <i>Planning Scheme Policy PSP28 "Civil Infrastructure Design"</i> . b) For Variable Speed Pumps -minimum of 100 mm above top of motor casing.
17	Well Diameter	Minimum internal well diameter = 2000 mm Internal well diameter may be increased in increments of 500 mm depending upon considerations such as: c) Clearance around pumps and pipework; d) Depth of pump station; and e) Geotechnical conditions.
18	Top Water Level (TWL).	Must be set 300 mm below invert level of inlet sewer.
19	Operating Range (i.e., BWL to TWL).	Generally this range should be between 600 mm and 2800 mm subject to maximum and minimum depths shown on standard drawing 8 50015 in <i>Planning Scheme Policy PSP28 "Civil Infrastructure Design"</i> .
20	Duty Point.	Duty Point 1 - Single Pump Operation: $(C_1 \times \text{ADWF}) \text{ (L/s)} \vee (\text{Static head} + \text{Friction Head}) \text{ (m)}$ Duty Point 2 - Duty Pump Operating in Parallel With Standby Pump $(5 \times \text{ADWF}) \text{ (L/s)} \vee (\text{Static head} + \text{Friction Head}) \text{ (m)}$ where: <ul style="list-style-type: none"> Static Head = (Highest Point in Rising Main –Water Level in Wet Well) Friction Head is derived from the Hazen Williams formula and includes losses due to bends and fittings: <ul style="list-style-type: none"> Hazen Williams C = 100 (dia. ≤ 300) Hazen Williams C = 120 (dia > 300)

Item	Description	Adopted Design Parameter
		C1 = Peaking Factor shown on dgr A3-99480 of the QDNRM&E guidelines
21	Pump Selection.	<p>The pump capable of operating at both duty points described in item 20 and which operates within the range of the system resistance curves that are determined by Conditions 1, 2 and 3 detailed below:</p> <p>Condition 1- Normal Operating Condition, Lower Limit System Resistance Curve: Static Head corresponding to Top Water Level with rising main friction factors as follows:</p> <ul style="list-style-type: none"> C = 120 (dia. ≤ 300) C = 140 (dia > 300) <p>Condition 2 – Normal Operating Condition, Upper Limit System Resistance Curve: Static Head corresponding to Bottom Water Level with rising main friction factors as follows:</p> <ul style="list-style-type: none"> C = 100 (dia. ≤ 300) C = 120 (dia > 300) <p>Condition 3 – System Overflow, Low Limit System Resistance Curve: At an overflow flow condition both pumps will operate in parallel. The pumps are to operate (as determined from the manufacturers design curves) for the static head corresponding to the system overflow level and with friction factors for the rising main as follows:</p> <ul style="list-style-type: none"> C = 120 (dia. ≤ 300) C = 140 (dia > 300)
22	Emergency Storage.	6 hours of ADWF (Emergency storage may include gravity sewers, manholes and pump station wet well volume above TWL)
23	Duty Pump Capacity.	Not less than C1 x ADWF (C1 is interpreted from drawing A3-99480 of the QDNRM&E Guidelines where the contributing population is the sum of the population contributing to all upstream pump stations plus the population of subject pump station's catchment).
24	Standby Pump Capacity.	Equivalent to capacity of the duty pump.
25	Total Pump Station Capacity.	Not less than 5 x ADWF
Rising Main Design		
26	Flow Equation.	Hazen Williams.
27	Minimum Diameter.	<ul style="list-style-type: none"> 100 mm; or other if specifically approved by Pine Water's Manager Electrical Mechanical Services.
28	Friction Factors.	See Item 21 above.
29	Minimum Velocity (on a Daily Basis).	0.75 m/s
30	Preferred Minimum Velocity.	1.5 m/s
31	Maximum Velocity.	2.5 m/s
32	Configuration.	<p>Rising mains are sized to optimise the balance between reduction of detention times and life cycle cost. Factors to be considered should include but not be limited to:</p> <ul style="list-style-type: none"> Population growth; Staging; Operational features to provide for maintenance and replacement activities; Minimisation of energy costs; <p>Detention times (reduction of odours).</p>
33	Interconnection of Rising Mains from Different Pump Stations.	Only with the approval of the General Manager of Pine Water and only where that interconnection has substantiated economic and operational benefits.

Review Triggers

This policy is reviewed internally for applicability, continuing effect and consistency with related documents and other legislative provisions when any of the following occurs:

- (1) The related documents are amended;
- (2) The related documents are replaced by new documents;
- (3) Amendments which affect the allowable scope and effect of a policy of this nature are made to the head of power; and
- (4) Other circumstances as determined from time to time by a resolution of Council.

Responsibility

This policy is to be:

- (1) implemented by the Senior Manager Development Services; and
- (2) reviewed and amended in accordance with the "Review Triggers" by the Senior Manager Strategic Direction and Sustainability, the Senior Manager Regional and Environmental Planning and Strategic Asset Management in consultation with the Senior Manager Development Services.

Version Control

CEO Approval Date

15/09/2009

Related Links:

ENDNOTES

Amendment No – 2/2008	Date Adopted – 19 August 2008	Effective Date – 1 September 2008
Planning Scheme Policy Reference	Description of Amendment	
PSP 23	<ul style="list-style-type: none"> ▪ To reflect updated network planning ▪ Update infrastructure contribution rates ▪ Incorporate additional material, for example, desired standards of service ▪ Re-wording and restructuring of the document to improve readability ▪ Revised demand factors 	

Amendment No – 1/2009	Date Adopted – 8 September 2009	Effective Date – 29 October 2009
Planning Scheme Policy Reference	Description of Amendment	
PSP 23	<ul style="list-style-type: none"> ▪ To reflect updated network planning ▪ Update infrastructure cost estimates ▪ Update infrastructure mapping ▪ Incorporate discounted cash flow methodology for the calculation of contribution rates 	