Pine Rivers Shire Council

Planning Scheme Policy

PSP22 Development Contributions for Trunk Infrastructure – Water Supply

Planning Scheme Policy for Pine Rivers Shire

PSP22 Development Contributions for Trunk Infrastructure – Water Supply

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.

I, John Rauber, Chief Executive Officer, of the Moreton Bay Regional Council, hereby certify that this document is a true copy of the original.

John Rauber
Chief Executive Officer

PSP22 PLANNING SCHEME POLICY ON DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

PSP 22 – DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE – WATER SUPPLY

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 establish a mechanism for funding of Water Supply Trunk Infrastructure, (existing and proposed), commensurate with the adverse impacts of development on that infrastructure and which ensures a reasonable and equitable distribution of the costs of Water Supply Trunk Infrastructure works between Council and developers of land in Council's Local Government area.

Definitions / Application

Application

This policy applies to all applications for development which have been made assessable by Council's Planning Scheme and which will utilise any part of the Water Supply Trunk Infrastructure Network. For the purposes of this policy, the extent of the Water Supply Trunk Infrastructure Network within the Shire is shown in Schedule C.

The policy outlines the basis of Council's Infrastructure Contributions Regime for the Water Supply Trunk Infrastructure Network in Pine Rivers Shire. It is to be read in conjunction with Planning Scheme Policy PSP21 on 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 in Council's Planning Scheme or in the *Integrated Planning Act 1997*.

Policy Statement

1 Scope

This policy sets out the basis for determining the amount of Development Contributions for Water Supply 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 Water Supply Trunk Infrastructure either immediately or at some time in the future. This policy:

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

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 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).

Pine Water, Update of Existing and Ultimate Demand Forecast in Water Supply Model and Provision of a 15 Year Capital Works Program, Final Report November 2006 (MWH).

MWH, PIP Population Update Report, August 2007.

3 Water Supply Methodology

3.1 Methodology

The methodology used for determining the rate of Infrastructure Contributions for Water Supply 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 4th October 2004) on infrastructure charges and subsequent advice from that Department in relation to the *Integrated Planning and Other Legislation Amendment Act 2003* (IPOLA 2003) amendments to Chapter 5 of the *Integrated Planning Act 1997* (IPA).

In summary, Infrastructure Contribution rates for the Water Supply 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 catchment[1];

(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 Standard of Service (DSS) outlined in Schedule E of this policy;

(d) Determine the current replacement costs for existing Trunk Infrastructure, and the future establishment costs for future Trunk Infrastructure in the service catchment expressed in base year dollars; and

(e) Derive the applicable Infrastructure Contribution Rates by dividing the total network costs by the total 'ultimate' demand on the network in the service catchment, thereby producing a rate per selected demand unit.

Trunk Infrastructure 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 or a single pressure zone while regional infrastructure services customers in more than one service catchment. Accordingly, a two tier system has been employed to equitably allocate the costs of infrastructure.

[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.

The contribution rate, for each particular service catchment, was determined by applying the formula:-

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

Where:-

$CR_{Catchment}$ = Contribution Rate for an individual service catchment (expressed in $/EPW)

AssetValues = Value of Catchment's Assets ($)

= Σ(Current Replacement Cost of Existing assets at 30-6-2006 x proportion of the asset utilised by the service catchment) + Σ (Cost of future assets expressed in 30-6-2006 dollars x proportion of the asset utilised by the service catchment)

Demand = Total Demand of Catchment's Projected Population (expressed in EPWs) to Ultimate Development

3.2 Water Supply Service Catchments

The Designated Infrastructure Service Area (DISA) has been divided into the following Water Supply Regional Service Catchments:-

- Dayboro – the Dayboro service catchment; and
- Pine Central – includes all water supply areas with the exception of Dayboro service catchment.

The Water Supply Regional Service Catchments are further divided into the Local Service Catchments identified in Table 3.2A:-

Table 3.2A - Water Supply, Regional and Local Service Catchments

REGIONAL CATCHMENT	LOCAL SERVICE CATCHMENT	SHORT NAME
DAYBORO	DAYBORO	DAY
PINE CENTRAL	ALBANY CREEK LLZ	ACL
	ALBANY CREEK HLZ	ALC
	CLEAR MOUNTAIN HLZ	CMH
	DAKABIN	DKB
	EATONS HILL HLZ	EAH
	GRIFFIN	GRF
	HILLS LLZ	HLA
	HILLS HLZ	HLH
	KALLANGUR	KAL
	MANGO HILL	MHL
	NORTH LAKES	NLK
	PETRIE	PET
	SAMFORD DOWNS	SAD
	SAMFORD VILLAGE	SAM
	STRATHPINE / LAWNTON LLZ	STR

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

The North Lakes development at Mango Hill 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 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 Water Supply Demand Assumptions

3.3.1 Approach to Demand and Load Modelling

The reports referred to in Section 2 of this policy documented assumed demand across the whole Shire, the most cost effective servicing strategy and Capital Works Programs aligning with assumed growth rates. These reports covered the proposed urban areas on both sides of the Bruce Highway.

As part of the preparation of this policy, new Demand and Load Models for Water Supply were built, consistent with the Planning Assumptions documented in PSP21 Section 3. The resulting demand for 2026 was compared to the demand derived in the Water Master Plan from 2006 to 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 being termed 'ultimate' development. Council's consultants advised that the differences were minor and a re-running of the Hydraulics Models would not be warranted in the short term. Council has therefore based the Water Network information used for this policy on the 2006 Water Master Plan.

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 (Water) 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 a cadastral base.

3.3.2 Water Supply Demand Assumptions

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

One EPW equates 340 litres per person per day.

For Non-Residential Demand, the assumptions for each zone expressed in EPWs per hectare are shown in Table 3.3A. They have been verified by averaging water billing data for the years 2004-2005 (Level 1 Water Restrictions only) by land use and site area and reflect the average or, if higher, allowable consumption.

Table 3.3A - Water Demand Assumptions in Residential and Non-Residential Areas

Land Use Zone	EPW's/ha -2007 Demand Model
RESIDENTIAL A	Population Forecast as per Planning Assumptions
RESIDENTIAL B	Population Forecast as per Planning Assumptions
SPECIAL RESIDENTIAL	Population Forecast as per Planning Assumptions
PARK RESIDENTIAL	Population Forecast as per Planning Assumptions
RURAL RESIDENTIAL	Population Forecast as per Planning Assumptions
CENTRAL BUSINESS	30
COMMERCIAL	30
LOCAL BUSINESS	30
NEIGHBOURHOOD FACILITIES	30
URBAN VILLAGE	30
VILLAGE CENTRE	30
HOME INDUSTRY	10
SERVICE INDUSTRY	15
GENERAL INDUSTRY	30
EXTRACTIVE INDUSTRY	15
FUTURE URBAN	30
RURAL ZONE (COAST AND RIVER LANDS LOCALITY)	7.5
RURAL ZONE (URBAN, MAJOR EMPLOYMENT CENTRE, CATCHMENT, RURAL LIVING, VILLAGE, MT SUMMIT AND FOREST LOCALITIES)	7.5
CONSERVATION ZONE	0
PARK AND OPEN SPACE ZONE	5
SPORTS AND RECREATION ZONE	15
SPECIAL FACILITIES ZONE	15
SPECIAL PURPOSES ZONE	15

3.3.3 Projected Water Supply Demand

Table 3.3B – 'Ultimate' EPWs by Local Service Catchments

Local Service Catchment	RES ULTIMATE	NONRES ULTIMATE	TOTAL ULTIMATE
ALBANY CREEK HLZ	5,727	5,765	11,492
ALBANY CREEK LLZ	10,633	1,667	12,300
CLEAR MOUNTAIN HLZ	11,744	3,227	14,971
DAYBORO	2,653	926	3,579
EATONS HILL HLZ	3,702	107	3,809
HILLS HLZ	3,071	250	3,321
HILLS LLZ	19,829	4,489	24,318
KALLANGUR	36,020	13,672	49,692
NORTH LAKES	17,612	13,016	30,628
PETRIE	8,112	4,606	12,718
SAMFORD VILLAGE	2,667	393	3,060
SAMFORD DOWNS	3,520	634	4,154
STRATHPINE / LAWNTON LLZ	38,097	33,270	71,367
DAKABIN	9,848	3,049	12,897
GRIFFIN	21,632	404	22,036
MANGO HILL	15,470	1,018	16,488
TOTAL	**210336.41**	**86493.388**	**296829**

4 Water Supply Plan For Trunk Infrastructure

4.1 Water Supply Trunk Infrastructure Network

The following Infrastructure items as shown on the maps contained in Schedule D of this policy, and divided into regional and local components, are deemed to be Trunk Infrastructure for the purpose of planning and funding of the Trunk Water Supply Network:-

(1) **Regional Infrastructure**:-

(a) Raw water sources including storage dams, intake structures, bores, pumps, balance tanks and mains to deliver the raw water to the treatment plant (WTP). In the case of Pine Rivers Shire, this includes Lake Kurwongbah, Sideling Creek Dam, intake and raw water supply to the Petrie WTP as well as the Dayboro raw water wells and the raw water supply mains to the Dayboro WTP;

(b) WTPs, including clear water storage reservoirs and mechanical electrical control equipment; and

(c) Bulk water meters, pressure and flow control valves and telemetry/SCADA systems to provide system monitoring and/or control.

(2) **Local Infrastructure** components include the following:-

(a) Pumping stations and trunk mains to transport the treated water to distribution or storage reservoirs or elevated tanks;

(b) Distribution or non-regional storage reservoirs and elevated tanks;

(c) Chlorination and rechlorination equipment;

(d) Trunk delivery and distribution infrastructure (generally 300mm diameter mains and larger) to transport the water from distribution or storage reservoirs to the reticulation system, or for the general benefit of the water supply scheme;

(e) Local control and monitoring systems;

(f) The following specific items of Infrastructure within the rural residential areas:-

- The 250mm diameter main which traverses Bunya Road and thence runs northwards to supply the Bergin and Wongam Creek area;
- The 200mm and 220mm diameter mains supplying reservoirs in Samford Village and Samford Downs; and

(g) The 100mm and 150mm diameter rising mains at Dayboro from:-

- The intake wells to the treatment plants;
- The treatment plants to the Low Level Zone reservoir; and

- The Low Level Zone No. 1 (Roderick St) reservoirs to the High Level Zone reservoir at Sellin Road.

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

Active water infrastructure assets consist mainly of above ground visible assets such as treatment plants, pumping stations, reservoirs and dams.

Passive water infrastructure assets consist of underground assets such as trunk mains, reticulation mains, pipe fittings and property connections.

The various elements of this Trunk Infrastructure are shown on the maps in Schedule D and are tabulated in Section 4.2.

Specific Exclusions

The North Pine Dam WTP is situated in the Pine Rivers Shire but it is neither owned nor operated by Council. Treated water from this facility is supplied to Council under a Bulk Supply Agreement. Hence, this facility has been excluded from infrastructure contribution calculations on the grounds that establishment costs are recovered by the current owner/operator through the water tariff detailed in the Bulk Supply Agreement.

4.2 Water Supply Trunk Infrastructure Valuations

Costing information for existing Passive Assets

Valuations of existing water mains and other passive assets contained 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. Valuations of water mains include an allowance for connections, valves and hydrants. Valuations for this policy have been taken directly from the June 2006 asset valuations for Pine Water's assets. The valuations shown in Tables 4.2A and 4.2B are slightly higher than those calculated using the rates reported in Cardno's March 2006 report due to 3 months escalation from March to June 2006.

Costing information for existing Active Assets

Information on the current replacement value of existing active assets was derived 'in house' using the criteria contained within the definition of the 'establishment cost of trunk infrastructure' in IPA.

Costing information for Future Assets

Costs for Future Assets have been taken from the estimates in the Capital Works Program valued for, and current at, 30 June 2007, and were then converted back to the 30 June 2006 base date of this policy by using Rawlinson's Construction.

Table 4.2A – Water Supply Infrastructure Establishment Cost

	Network Value		
	Regional	**Local**	**Total**
Existing Assets	$43,199,317	$114,524,938	$157,724,255
Future Infrastructure	$0.00	$41,351,656	$41,351,656
TOTAL	$43,199,317	$155,876,594	$199,075,911

4.2.1 Existing Water Supply Asset Schedule

Table 4.2B - Summary of Existing Active Water Supply Assets

Existing Water Active	Network Cost	ICS CONTRIBUTION ALLOCATION
MAJOR ASSETS		
Bulk Water Meters	$254,709	REGIONAL
Dayboro WTP	$2,755,254	REGIONAL
Lake Kurwongbah	$15,946,500	REGIONAL
Petrie WTP	$24,242,854	REGIONAL
RESERVOIRS & TANKS		
Albany Creek High Level Reservoir - 6.8ML	$1,711,490	LOCAL

Albany Creek Low Level Reservoir No. 1 - 2.25ML	$1,028,131	LOCAL
Albany Creek Low Level Reservoir No. 2 - 9ML	$2,011,924	LOCAL
Barber Road H. L. Reservoir (New) - 4.6ML	$1,469,216	LOCAL
Barber Road L. L Reservoir - 4.5ML	$1,333,805	LOCAL
Boundary Rd Reservoir No 2 - 32ML	$4,749,769	LOCAL
Boundary Road Reservoir No 1- 18.2ML	$3,001,051	LOCAL
Clear Mountain Reservoir No. 1 - 2ML	$890,218	LOCAL
Clear Mountain Reservoir No. 2 - 5ML	$1,366,638	LOCAL
Clear Mountain Res No 1 - 9ML	$195,373	LOCAL
Dayboro High Level	$201,336	LOCAL
Dayboro High Level Reservoir - 1.25ML	$490,300	LOCAL
Dayboro Low Level	$391,835	LOCAL
Eatons Hill Reservoir - 8.4ML	$1,991,913	LOCAL
Eatons Hill Tower - 0.45ML	$1,194,474	LOCAL
Hutton Road Reservoir No. 2 - 15.5ML	$2,865,742	LOCAL
Hutton Road Reservoir, No. 1 - 9ML	$2,028,958	LOCAL
Ira Buckby - Reservoir No 1- 24ML	$3,461,701	LOCAL
Ira Buckby 60ML Reservoir	$8,070,637	LOCAL
Kallangur Tower - 0.25ML	$397,291	LOCAL
Mt Mee Reservoir -1.8ML	$61,777	LOCAL
Petrie Tower Water Station - 0.45 ML	$1,194,255	LOCAL
Samford Downs Reservoir No. 1 - 1ML	$656,648	LOCAL
Samford Downs Reservoir No. 2 - 2.40ML	$1,011,669	LOCAL
Samford Downs Reservoir No. 3 (Bygott's Rd)- 4.2ML	$1,343,775	LOCAL
Torrens Road Tower- 0.15ML	$268,816	LOCAL
WATER PUMP STNS		
W640 Pressure Valves	$ 14,041	LOCAL
WP5230 - Dayboro Rd - below dam	$ 2,121,307	LOCAL
WP6140 - Kallangur	$1,063,820	LOCAL
WP6190 - Kallangur High Level	$310,884	LOCAL
WP6280 - Torrens Rd, Petrie	$182,949	LOCAL
WP6300 - James Cash Park, Eatons Hill	$597,612	LOCAL
WP6310 - Eatons Hill	$125,976	LOCAL
WP6400 - Albany Creek High Level WP	$ 836,387	LOCAL
WP6500 - Albany Creek, Low Level	$1,472,081	LOCAL
WP6510 - Ira Buckby Rd	$740,588	LOCAL
WP6630 - Barber Rd	$497,392	LOCAL
WP6700 - Strathpine Booster WP	$2,293,131	LOCAL
WP6810 - Dayboro LL Res PS	$174,635	LOCAL
WP7100 - Regent St	$1,047,682	LOCAL
WP7600 - Gibbons Rd, Samford	$451,185	LOCAL
	$98,517,730	

4.2.2 Future Water Supply Trunk infrastructure

Table 4.2C Future Asset Schedule to 2013

Project ID		TOTAL 2006 PRICES	TOTAL 2006 AFTER SUBSIDY	TOTAL 2007 PRICES	2007/08		2008/09		2009/10		2010/11		2011/12		2012/13	
	BULK WATER SUPPLY															
PIPWS70029	Dayboro Source Augmentation	**$4,627,857**	**$4,627,857**	$5,000,000			$700,000		$500,000		$3,800,000					
PIPWS70030	Flow Increase North Pine Dam Outlet	**$134,208**	**$134,208**	$145,000			$145,000									
	NEW RESERVOIRS															
PIPWS70001	RES-01, Boundary Rd Res. No 1 (32Ml)	**$3,702,286**	**$3,702,286**	$4,000,000											$1,000,000	PIP
		$416,507	**$416,507**	$450,000												
		$277,671	**$277,671**	$300,000												
PIPWS70002	RES-03, Dayboro LLZ Res No 2 near the existing reservoir site (0.45Ml)	**$621,984**	**$621,984**	$672,000	$50,000	PIP	$200,000	PIP	$450,000	PIP						
PIPWS70003	RES-04, Boundary Road Reservoir No 2 (24Ml)	**$3,202,477**	**$3,202,477**	$3,460,000												
	MAINS															
	STRATHPINE, ALBANY CK, EATONS HILL ZONE															
	PETRIE, KALLANGUR ZONE															
PIPWS70004	WM-PK01, (750mm x 4083m) PS Main (Byrnes Rd to Kallangur Elevated Tank)	**$6,995,777**	**$6,995,777**	$7,558,333	$100,000		$3,375,476	PIP	$4,082,857	PIP						
PIPWS70005	Flow Modulated Valve - RCC Main Protheroe Rd	**$267,490**	**$267,490**	$289,000			$50,000	PIP	$239,000	PIP						
PIPWS70006	WM-BA01, (750mm x 2600m) Hughes Road Main (Boundary Rd Reservoir to Old Gympie Rd)	**$4,871,190**	**$4,871,190**	$5,262,900			$3,000,000	IAPW	$2,262,900	IAPW						
		$1,650,121	**$1,650,121**	$1,782,813			$1,000,000	PIP	$782,813	PIP						
PIPWS70007	WM-KW01, (750mm x 1300m) Old Gympie Road Main (Hughes Road to White Horse Road)	**$1,910,653**	**$1,910,653**	$2,064,296			$1,500,000	PIP	$564,296	PIP						
PIPWS70008	WM-WA01, (750mm x 2300m) Old Gympie Road Main (White Horse Road to Anzac Av)	**$4,919,814**	**$4,919,814**	$5,315,434			$3,000,000	IAPW	$1,032,950	IAPW						
		$1,650,121	**$1,650,121**	$1,782,813			$1,000,000	PIP	$718,191	PIP						
PIPWS70009	WM-KN02, (600mm x 180m) - Hughes Rd (Old Gympie Road to Goodwin Road)	**$139,946**	**$139,946**	$151,200					$151,200	PIP						
PIPWS70010	WM-OB01, (750 mm x 864m) Kerr Road Main (Old Gympie Rd-Balstrup Rd)	**$1,808,107**	**$1,808,107**	$1,953,504			$1,000,000	PIP	$953,504	PIP						
PIPWS70011	WM-BR01, (750mm x 62m) Boundary Road Reservoir intake Main	**$133,019**	**$133,019**	$143,716												
PIPWS70012	WM-KA01, (450mm x 122m) Leis Road East (Kallangur Elevated Tower)	**$209,034**	**$209,034**	$225,843			$225,843	PIP								
PIPWS70014	WM-BK01, (225 mm x 2542m) Freshwater Creek (Anzac Av to Kinsellas Rd East)	**$1,175,376**	**$1,175,376**	$1,269,892					$400,000	IAPW	$869,892	IAPW				
PIPWS70015	WM-NS02, (300mm x 1505m) Kinsellas Rd East to North South Arterial Rd	**$793,307**	**$793,307**	$857,100			$50,000	IAPW	$807,100	IAPW						
PIPWS70016	WM-DG01, (300mm x 408m) Dohles Rocks Road (across Bruce Hwy)	**$261,685**	**$261,685**	$282,728			$282,728	IAD								
PIPWS70017	WM-DG02, (225mm x 1053m) Dohles Rocks Road East of Hwy to junction road	**$772,321**	**$772,321**	$834,426												
PIPWS70018	WM-BT01, (300mm x 368m) Brays Road and Tesch Road	**$236,029**	**$236,029**	$255,009					$255,009	IAD						
PIPWS70027	WM-BA02 (150mm x 315mm) Fire flow main from Brittainy Street to Anzac Ave	**$69,418**	**$69,418**	$75,000					$75,000	PIP						
	HILLS ZONE															
	CLEAR MTN, SAMFORD ZONE															
PIPWS70019	WM-BR02, 150mm - Buranda Rd Loop	**$572,807**	**$572,807**	$618,869			$218,869	PIP	$400,000	PIP						
PIPWS70020	WM-BR03, 225mm - Buranda Rd Loop	**$173,574**	**$173,574**	$187,532			$87,532	PIP	$100,000	PIP						
PIPWS70028	VM-JM01, 100mm - Fire Flow defiency Jancy Ct	**$27,767**	**$27,767**	$30,000					$30,000	PIP						
	DAYBORO ZONE															
PIPWS70021	HL-LL isolation valves zone modification	**$9,256**	**$9,256**	$10,000					$10,000	R						
PIPWS70022	WM-LR01, (150mm x 1030m) Extension of supply main to reservoir site	**$488,702**	**$488,702**	$528,000			$28,000	PIP	$500,000	PIP						
PIPWS70023	WM-MR01, (150mm x 590m) Edmonds Court to Appaloosa Court	**$139,113**	**$139,113**	$150,300			$30,000	PIP	$120,300	PIP						
	SHIRE WIDE															
PIPWS70024	Disinfection booster system	**$919,092**	**$919,092**	$993,000	$125,000	PIP										
PIPWS70025	NGC Pipe and Fitting Storage Facility	**$46,279**	**$46,279**	$50,000	$50,000	PIP										
PIPWS70026	Investigations - Kremzow Road main, Petrie Pumps, Torrens St Tower Capacity	**$46,279**	**$46,279**	$50,000			$50,000	PIP								

Note: The scheduled expenditure for each financial year is expressed in 30 June 2007 dollar value. The total was then discounted back to 30 June 2006 prior to the calculation of the charges to align study with 30 June 2006 base year. Items shown as 'IAPW' are covered in an Infrastructure Agreement and will be built by Pine Water. Items shown as 'IAD' are covered in an Infrastructure Agreement and will be built by a Developer for a Credit.

Table 4.2D Future Asset Schedule to 2021

Project ID		TOTAL 2006 PRICES	TOTAL AFTER SUBSIDY	TOTAL 2007 PRICES		2013/14		2014/15		2015/16		2016/17		2017/18		2018/19		2019/20		2020/21		2021/22	
	BULK WATER SUPPLY																						
PIPWS70029	Dayboro Source Augmentation	**$4,627,857**	**$4,627,857**	$5,000,000	$5,000,000																		
PIPWS70030	Flow Increase North Pine Dam Outlet	**$134,208**	**$134,208**	$145,000	$145,000																		
	NEW RESERVOIRS																						
PIPWS70001	RES-01, Boundary Rd Res. No 1 (32Ml)	**$3,702,286**	**$3,702,286**	$4,000,000		$3,000,000	PIP																
		$416,507	**$416,507**	$450,000		$450,000	R																
		$277,671	**$277,671**	$300,000		$300,000	S																
PIPWS70002	RES-03, Dayboro LLZ Res No 2 near the existing reservoir site (0.45Ml)	**$621,984**	**$621,984**	$672,000																			
PIPWS70003	RES-04, Boundary Road Reservoir No 2 (24Ml)	**$3,202,477**	**$3,202,477**	$3,460,000										$460,000	PIP	$3,000,000	PIP						
	MAINS																						
	STRATHPINE, ALBANY CK, EATONS HILL ZONE																						
	PETRIE, KALLANGUR ZONE																						
PIPWS70004	WM-PK01, (750mm x 4083m) PS Main (Byrnes Rd to Kallangur Elevated Tank)	**$6,995,777**	**$6,995,777**	$7,558,333																			
PIPWS70005	Flow Modulated Valve - RCC Main Protheroe Rd	**$267,490**	**$267,490**	$289,000																			
PIPWS70006	WM-BA01, (750mm x 2600m) Hughes Road Main (Boundary Rd Reservoir to Old Gympie Rd)	**$4,871,190**	**$4,871,190**	$5,262,900																			
		$1,650,121	**$1,650,121**	$1,782,813																			
PIPWS70007	WM-KW01, (750mm x 1300m) Old Gympie Road Main (Hughes Road to White Horse Road)	**$1,910,653**	**$1,910,653**	$2,064,296																			
PIPWS70008	WM-WA01, (750mm x 2300m) Old Gympie Road Main (White Horse Road to Anzac Av)	**$4,919,814**	**$4,919,814**	$5,315,434																			
		$1,650,121	**$1,650,121**	$1,782,813																			
PIPWS70009	WM-KN02, (600mm x 180m) - Hughes Rd (Old Gympie Road to Goodwin Road)	**$139,946**	**$139,946**	$151,200																			
PIPWS70010	WM-OB01, (750 mm x 864m) Kerr Road Main (Old Gympie Rd-Balstrup Rd)	**$1,808,107**	**$1,808,107**	$1,953,504																			
PIPWS70011	WM-BR01, (750mm x 62m) Boundary Road Reservoir intake Main	**$133,019**	**$133,019**	$143,716				$143,716	PIP														
PIPWS70012	WM-KA01, (450mm x 122m) Leis Road East (Kallangur Elevated Tower)	**$209,034**	**$209,034**	$225,843																			
PIPWS70014	WM-BK01, (225 mm x 2542m) Freshwater Creek (Anzac Av to Kinsellas Rd East)	**$1,175,376**	**$1,175,376**	$1,269,892																			
PIPWS70015	WM-NS02, (300mm x 1505m) Kinsellas Rd East to North South Arterial Rd	**$793,307**	**$793,307**	$857,100																			
PIPWS70016	WM-DG01, (300mm x 408m) Dohles Rocks Road (across Bruce Hwy)	**$261,685**	**$261,685**	$282,728																			
PIPWS70017	WM-DG02, (225mm x 1053m) Dohles Rocks Road East of Hwy to junction road	**$772,321**	**$772,321**	$834,426																		$834,426	IAD
PIPWS70018	WM-BT01, (300mm x 368m) Brays Road and Tesch Road	**$236,029**	**$236,029**	$255,009																			
PIPWS70027	WM-BA02 (150mm x 315mm) Fire flow main from Brittainy Street to Anzac Ave	**$69,418**	**$69,418**	$75,000																			
	HILLS ZONE																						
	CLEAR MTN, SAMFORD ZONE																						
PIPWS70019	WM-BR02, 150mm - Buranda Rd Loop	**$572,807**	**$572,807**	$618,869																			
PIPWS70020	WM-BR03, 225mm - Buranda Rd Loop	**$173,574**	**$173,574**	$187,532																			
PIPWS70028	VM-JM01, 100mm - Fire Flow defiency Jancy Ct	**$27,767**	**$27,767**	$30,000																			
	DAYBORO ZONE																						
PIPWS70021	HL-LL isolation valves zone modification	**$9,256**	**$9,256**	$10,000																			
PIPWS70022	WM-LR01, (150mm x 1030m) Extension of supply main to reservoir site	**$488,702**	**$488,702**	$528,000																			
PIPWS70023	WM-MR01, (150mm x 590m) Edmonds Court to Appaloosa Court	**$139,113**	**$139,113**	$150,300																			
	SHIRE WIDE																						
PIPWS70024	Disinfection booster system	**$919,092**	**$919,092**	$993,000																			
PIPWS70025	NGC Pipe and Fitting Storage Facility	**$46,279**	**$46,279**	$50,000																			
PIPWS70026	Investigations - Kremzow Road main, Petrie Pumps, Torrens St Tower Capacity	**$46,279**	**$46,279**	$50,000																			

Note: The Expenditure in Years is shown in dollars valid 30 June 2007. The total was then discounted back to 30 June 2006 prior to the calculation of the charges to align study with 30 June 2006 base year.

Table 4.2E Asset Costs allocated to Service Catchments

	ALBANY CREEK LLZ	ALBANY CREEK HLZ	CLEAR MTN HLZ	DAYBORO	EATONS HILL HLZ	HILLS HLZ	HILLS LLZ	KALLANGUR	NORTH LAKES	PETRIE	SAMFORD VILLAGE	SAMFORD DOWNS	STRATHPINE LAWNTON LLZ	DAKABIN	GRIFFIN	MANGO HILL
TOTAL COSTS:																
LOCAL SERVICE CATCHMENT-ACTIVE-EXISTING(June 2006)	$4,107,459	$4,942,014	$4,272,760	$1,319,883	$4,004,870	$2,049,320	$6,834,254	$4,575,173	$2,297,927	$1,578,617	$166,771	$3,689,695	$11,710,647	$967,646	$1,564,420	$1,236,957
LOCAL SERVICE CATCHMENT-PASSIVE-EXISTING(June 2006)	$1,996,501	$4,066,134	$2,573,853	$0	$643,304	$1,160,430	$6,901,121	$9,162,362	$6,343,822	$2,972,036	$1,448,600	$2,059,727	$12,777,186	$1,223,473	$1,455,368	$4,422,606
LOCAL SERVICE CATCHMENT-FUTURE (June 2006)	$240,601	$224,799	$753,233	$5,264,928	$1,743	$1,520	$475,710	$11,454,881	$7,576,194	$717,682	$29,167	$1,901	$32,662	$2,973,138	$6,349,914	$5,253,583
LOCAL SERVICE CATCHMENT-TOTAL (June 2006)	**$6,344,561**	**$9,232,947**	**$7,599,846**	**$6,584,811**	**$4,649,918**	**$3,211,270**	**$14,211,085**	**$25,192,416**	**$16,217,944**	**$5,268,334**	**$1,644,538**	**$5,751,323**	**$24,520,495**	**$5,164,257**	**$9,369,703**	**$10,913,146**
REGIONAL CATCHMENT-ACTIVE-EXISTING (June 2006)	$1,696,161	$1,584,760	$2,064,604	$2,758,325	$525,367	$457,917	$3,353,598	$6,852,780	$4,223,874	$1,753,874	$421,937	$572,848	$9,841,949	$1,778,653	$3,038,992	$2,273,679
REGIONAL CATCHMENT-PASSIVE-EXISTING (June 2006)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
REGIONAL CATCHMENT-FUTURE (June 2006)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
REGIONAL CATCHMENT-TOTAL (June 2006)	**$1,696,161**	**$1,584,760**	**$2,064,604**	**$2,758,325**	**$525,367**	**$457,917**	**$3,353,598**	**$6,852,780**	**$4,223,874**	**$1,753,874**	**$421,937**	**$572,848**	**$9,841,949**	**$1,778,653**	**$3,038,992**	**$2,273,679**
TOTAL SERVICE CATCHMENT (June 2006)	**$8,040,722**	**$10,817,707**	**$9,664,450**	**$9,343,136**	**$5,175,284**	**$3,669,187**	**$17,564,684**	**$32,045,196**	**$20,441,818**	**$7,022,209**	**$2,066,475**	**$6,324,171**	**$34,362,444**	**$6,942,910**	**$12,408,695**	**$13,186,825**
EQUIVALENT TENEMENTS (ET's)																
ULTIMATE EP's	12,299	11,492	14,971	3,579	3,810	3,321	24,318	49,692	30,629	12,718	3,060	4,154	71,367	12,898	22,037	16,487
CHARGES																
LOCAL SERVICE CATCHMENT-ACTIVE-EXISTING(June 2006)	$334	$430	$285	$369	$1,051	$617	$281	$92	$75	$124	$55	$888	$164	$75	$71	$75
LOCAL SERVICE CATCHMENT-PASSIVE-EXISTING(June 2006)	$162	$354	$172	$0	$169	$349	$284	$184	$207	$234	$473	$496	$179	$95	$66	$268
LOCAL SERVICE CATCHMENT-FUTURE (June 2006)	$20	$20	$50	$1,471	$0	$0	$20	$231	$247	$56	$10	$0	$0	$231	$288	$319
LOCAL SERVICE CATCHMENT-TOTAL (June 2006)	**$516**	**$803**	**$508**	**$1,840**	**$1,221**	**$967**	**$584**	**$507**	**$530**	**$414**	**$538**	**$1,385**	**$344**	**$400**	**$425**	**$662**
REGIONAL CATCHMENT-ACTIVE-EXISTING (June 2006)	$138	$138	$138	$771	$138	$138	$138	$138	$138	$138	$138	$138	$138	$138	$138	$138
REGIONAL CATCHMENT-PASSIVE-EXISTING (June 2006)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
REGIONAL CATCHMENT-FUTURE (June 2006)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
REGIONAL CATCHMENT-TOTAL (June 2006)	**$138**	**$138**	**$138**	**$771**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**	**$138**
TOTAL SERVICE CATCHMENT (June 2006)	**$654**	**$941**	**$646**	**$2,610**	**$1,358**	**$1,105**	**$722**	**$645**	**$667**	**$552**	**$675**	**$1,522**	**$481**	**$538**	**$563**	**$800**

Schedule A: Demand Factors

Table A - Demand Factors for Water Supply Infrastructure Contributions

		DEMAND FACTOR	COMMENT
	DEMAND FACTORS FOR MCUs - *PineRiversPlan* Landuse		
1	Accommodation Units		Refer Motel
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	1.65 EPW/du	JWP 1995 - Multiunit Dwellings (single level, semi-detached)
8	Bed and Breakfast Accommodation		Assess Impact on Application
9	Bulk Garden Supplies	10 EPW/ha	JWP 1995 - Warehouses and Bulk Stores
10	Camping Grounds		Assess Impact on Application
11	Car Depot		Assess Impact on Application
12	Car Park		Assess Impact on Application
13	Caravan/Transportable Home Park	50 EPW/ha	JWP 1995
14	Caretaker's Residence	2.9 EPW/du	Refer Detached House
15	Cattery		Assess Impact on Application
16	Cemetery	2 EPW/ha	JWP 1995
17	Child Care Centre	0.10 EPW/licensed child & staff member	JWP 1995 - Child Care Excluding Kindergartens
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	5 EPW/ha	JWP 1995 - Builders Yard and Contractors Yard
22	Crematorium		Assess Impact on Application
23	Dairy		Assess Impact on Application
24	Detached House	2.9 EPW/du	
25	Display Home	2.9 EPW/du	
26	Domestic Storage	2 EPW/Domestic Storage Building	JWP 1995 - Outbuildings
27	Duplex Dwelling	5.8 EPW/duplex	
28	Educational Establishment	0.15 EPW / student and staff member at planned capacity	Includes Kindergarten
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	0.04 EPW / m^2GFA	
	Drive Through	0.05 EPW / m^2GFA	
35	Funeral Parlour		Assess Impact on Application
36	General Industry		Assess Impact on Application
37	Hardware Shop	0.03 EPW / m^2GFA	
38	Hazardous and Offensive Industry		Assess Impact on Application
	Oil Depot & Refinery	5 EPW/ha	JWP 1995 - Oil Depot & Refinery
39	High Density Multiple Dwelling Units (0.8 floor area ratio)	1.65 EPW/du	JWP 1995 - Multiunit Dwelling (Flats, multilevel)
40	Home Business		Assess Impact on Application
41	Hospital	0.05 EPW / m^2GFA	

		DEMAND FACTOR	COMMENT
	DEMAND FACTORS FOR MCUs - *PineRiversPlan* Landuse		
42	Hotel	0.04 EPW / m^2GFA	
43	Indoor Entertainment and Sport		Assess Impact on Application
	Squash Courts		Assess Impact on Application
	Tennis Courts		Assess Impact on Application
	Gymnasiums & Other		Assess Impact on Application
44	Infill Housing	2.9 EPW/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 EPW/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)	1.65 EPW/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	0.015 EPW / m^2GFA	
	Bank	0.015 EPW / m^2GFA	
	Doctor / Dentist Surgery	0.02 EPW / m^2GFA	
	Medical Centre	0.025 EPW / m^2GFA	
58	Outdoor Recreation (other than below)		Assess Impact on Application
	Sports Club / Facilities	10 EPW/ha	JWP 1995 - Sports Club / Facilities
	Sportsground and Racecourse	5 EPW/ha	JWP 1995 - Sportsground and Racecourse
	Tennis Courts		Assess Impact on Application
59	Outdoor Sales		Assess Impact on Application
	Car Yards / Motor Show Rooms		Assess Impact on Application
60	Park	N/A	
61	Passenger Terminal		Assess Impact on Application
62	Pensioner Units	1.35 EPW/du	JWP 1995 - Multiunit Dwelling (Flats, multilevel)
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, 70-100 EPW/ha would seem reasonable based on real world examples
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	0.02 EPW / m^2GFA	
74	Shooting		Assess Impact on Application
75	Shop		
a	Standalone Retail Shop / Convenience Store	0.02 EPW / m^2GFA	
b	Local Shopping Centre (Convenience Shopping Centre)	0.02 EPW / m^2GFA	
c	Central Business Shopping Centre (incl Supermarket)	0.02 EPW / m^2GFA	
d	Major Shopping Centre	0.02 EPW / m^2GFA	

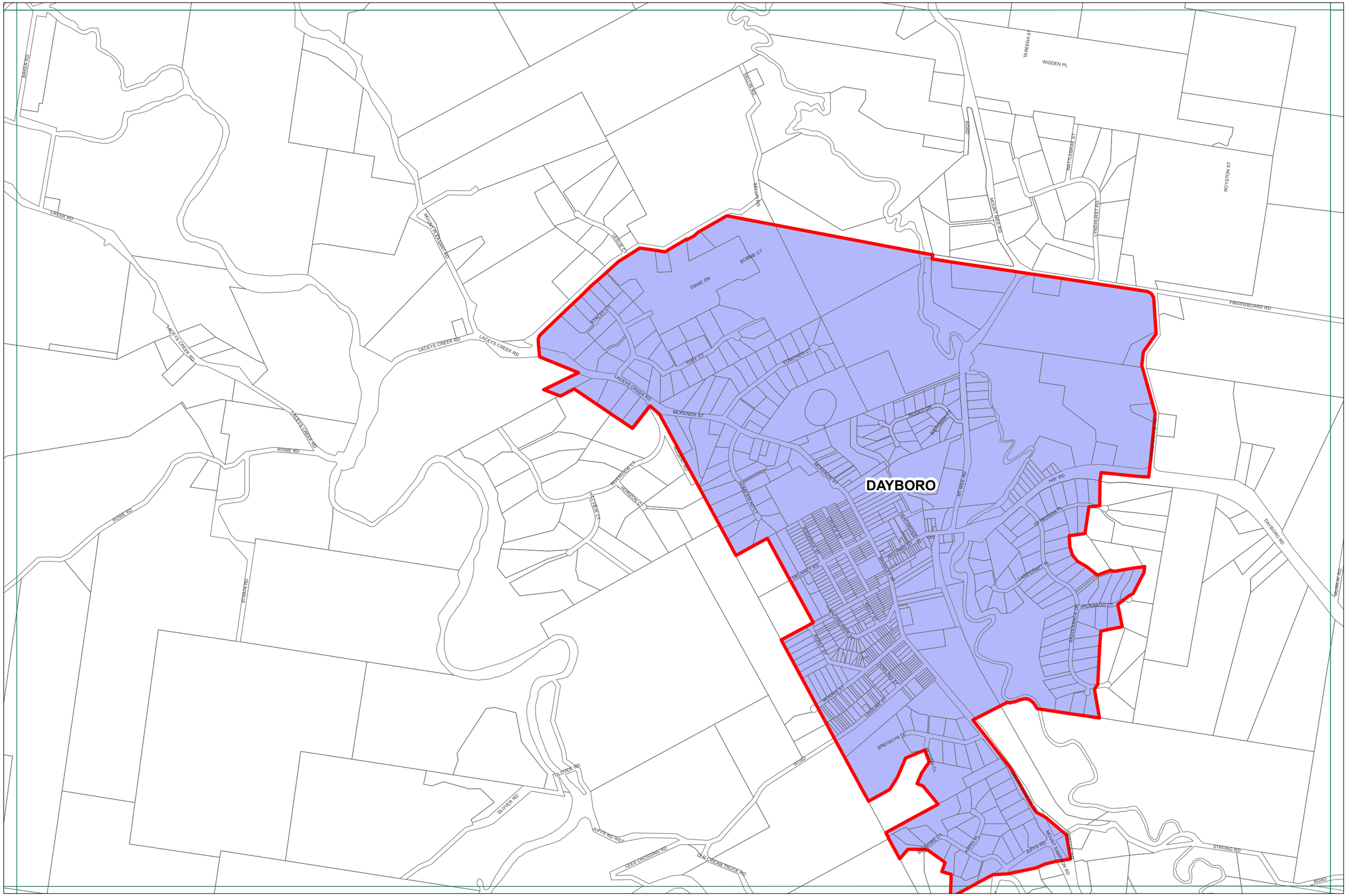
		DEMAND FACTOR	COMMENT
	DEMAND FACTORS FOR MCUs - *PineRiversPlan* Landuse		
76	Showroom	0.01 EPW / m^2GFA	
	Fruit and Vegetable store >300m2	0.025 EPW / m^2GFA	
77	Simulated Conflict		Assess Impact on Application
78	Special Use		Assess Impact on Application
79	Stock Sales Yard		Assess Impact on Application
80	Tourist Cabins		Refer Accommodation Units
81	Vehicle Sales	10 EPW/ha	JWP 1995 - Sales Area Outdoors (Dealers and Car and Boats etc)
82	Veterinary Clinic	0.025 EPW / m^2GFA	
83	Veterinary Hospital	0.025 EPW / m^2GFA	
84	Warehouse	10 EPW/ha	JWP 1995 - Warehouses & Bulk Stores
	DEMAND FACTOR FOR RALs		
	Residential A & Future Urban		
	Lot Size >1200m2 - per lot - can accommodate Duplex	5.8 EPW/lot	15 du/ha developable area
	Lot Size < 1200m2 - to accommodate Associated Unit	4.55 EPW/lot	15 du/ha developable area
	Lot Size < 1200m2 - single dwelling	2.9 EPW/lot	15 du/ha developable area
	Residential B & Future Urban		
	Residential B <600m2	4.55 EPW/lot	35 du/ha developable area
	Residential B lots >600m2	101.5 EPW/ha developable area	35 du/ha developable area
	Special Residential Urban (1250m2)	4.55 EPW/lot	6 du/ha developable area
	Special Residential Non-Urban	4.55 EPW/lot	1.25 du/ha developable area
	Park Residential	4.55 EPW/lot	1.25 du/ha developable area
	Rural Residential	N/A	N/A
	Future Urban		Refer Residential A & B
	Central Business	30 EPW/ha site area	Water Planning Assumptions
	Commercial	30 EPW/ha site area	Water Planning Assumptions
	Local Business	30 EPW/ha site area	Water Planning Assumptions
	Neighbourhood Facilities	30 EPW/ha site area	Water Planning Assumptions
	Urban Village	30 EPW/ha site area	Water Planning Assumptions
	Village Centre	30 EPW/ha site area	Water Planning Assumptions
	Home Industry	10 EPW/ha site area	Water Planning Assumptions
	Service Industry	15 EPW/ha site area	Water Planning Assumptions
	General Industry	30 EPW/ha site area	Water Planning Assumptions
	Extractive Industry	15 EPW/ha site area	Water Planning Assumptions
	Rural (Coast & Riverlands Locality.)	7.5 EPW/ha site area	Water Planning Assumptions
	Rural (Urban, Major Employment Centre, Catchment, Rural Living, Village, Mt Summit and Forest Localities)	7.5 EPW/ha site area	Water Planning Assumptions
	Conservation	0 EPW/ha site area	Water Planning Assumptions
	Park & Open Space	N/A	Water Planning Assumptions
	Sports & Recreation	15 EPW/ha site area	Water Planning Assumptions
	Special Purposes	15 EPW/ha site area	Water Planning Assumptions

Schedule B: Infrastructure Contribution Rates

Table B - Water Supply Infrastructure Charge Rates

REGIONAL CATCHMENT	LOCAL SERVICE CATCHMENT		LOCAL SERVICE CATCHMENT ($/EP)	REGIONAL CATCHMENT ($/EP)	TOTAL SERVICE CATCHMENT ($EP)
DAYBORO	DAYBORO	DAY	**$1,840**	**$771**	**$2,611**
PINE CENTRAL	ALBANY CREEK LLZ	ACL	**$516**	**$138**	**$654**
	ALBANY CREEK HLZ	ALC	**$803**	**$138**	**$941**
	CLEAR MTN HLZ	CMH	**$508**	**$138**	**$646**
	EATONS HILL HLZ	EAH	**$1,221**	**$138**	**$1,359**
	HILLS HLZ	HLA	**$967**	**$138**	**$1,105**
	HILLS LLZ	HLH	**$584**	**$138**	**$722**
	KALLLANGUR	KAL	**$507**	**$138**	**$645**
	NORTH LAKES	NL	**$530**	**$138**	**$668**
	PETRIE	PET	**$414**	**$138**	**$552**
	SAMFORD VILLAGE	SAM	**$538**	**$138**	**$676**
	SAMFORD DOWNS	SAD	**$1,385**	**$138**	**$1,523**
	STRATHPINE LAWNTON LLZ	STR	**$344**	**$138**	**$482**
	DAKABIN	DAK	**$400**	**$138**	**$538**
	GRIFFIN	GRN	**$425**	**$138**	**$563**
	MANGO HILL	MGH	**$662**	**$138**	**$800**

Schedule C: Service Catchments



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

5.3	5.5	5.7
7.3	7.5	7.7
9.3	9.5	9.7

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 7.5

DAYBORO

BAXTERS CREEK RD
LEES CROSSING RD
WOODYARD RD
OAKLEE CL
CREEK LN
JUFFS RD
MOUNT SAMPSON RD
STRONG RD
TEMPORARILY CLD RD
ARMSTRONG CREEK RD
MIMBURI PL
RAY BOOKER CT
WATSON RD
KOBBLE CREEK RD
WHITESIDE RD
POSTMANS TRK
MOUNT SAMSON RD

0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

7.3	7.5	7.7
9.3	9.5	9.7
11.3	11.5	11.7

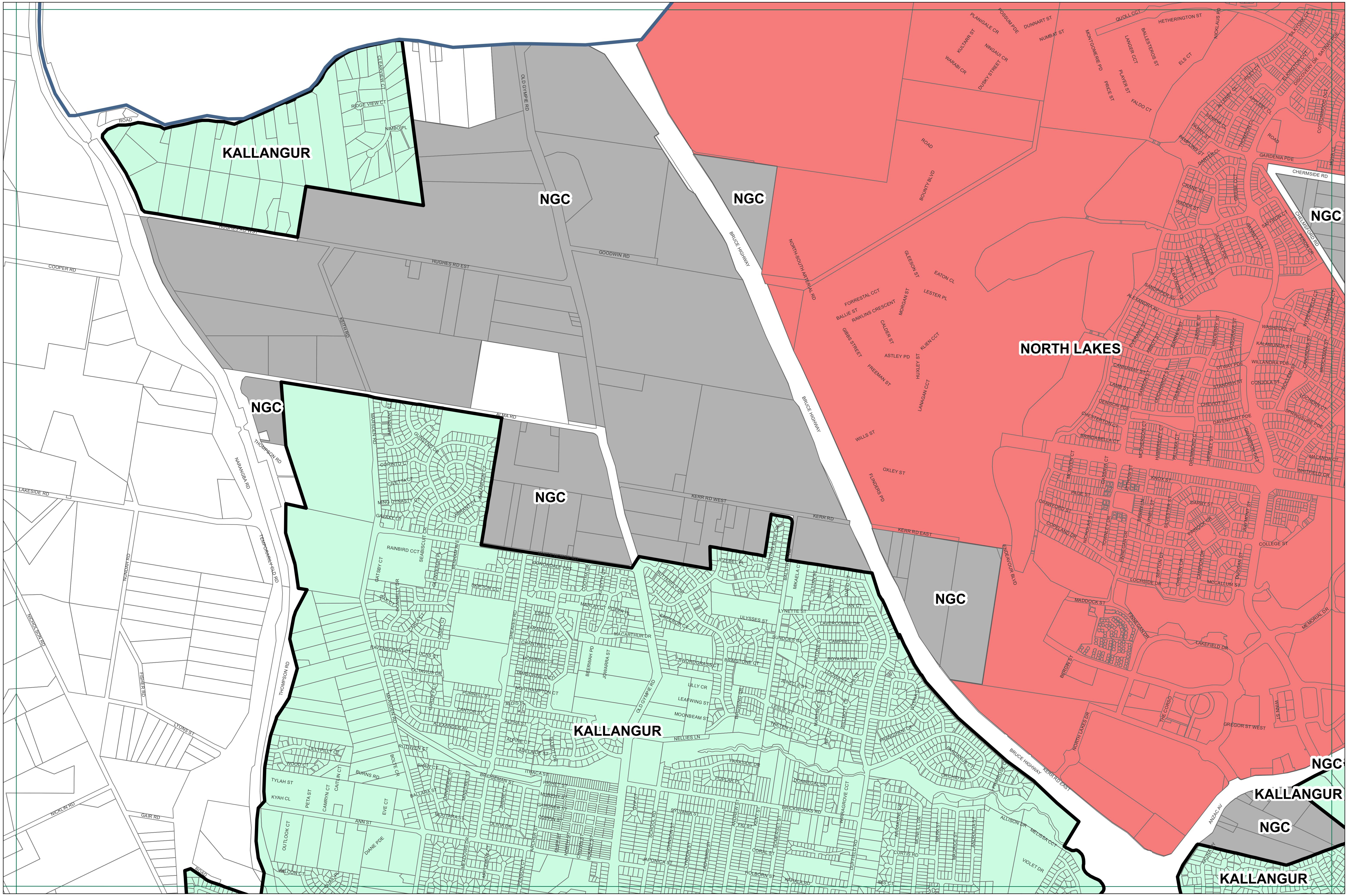
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 9.5



0 95 190 380 570 760

Metres

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Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

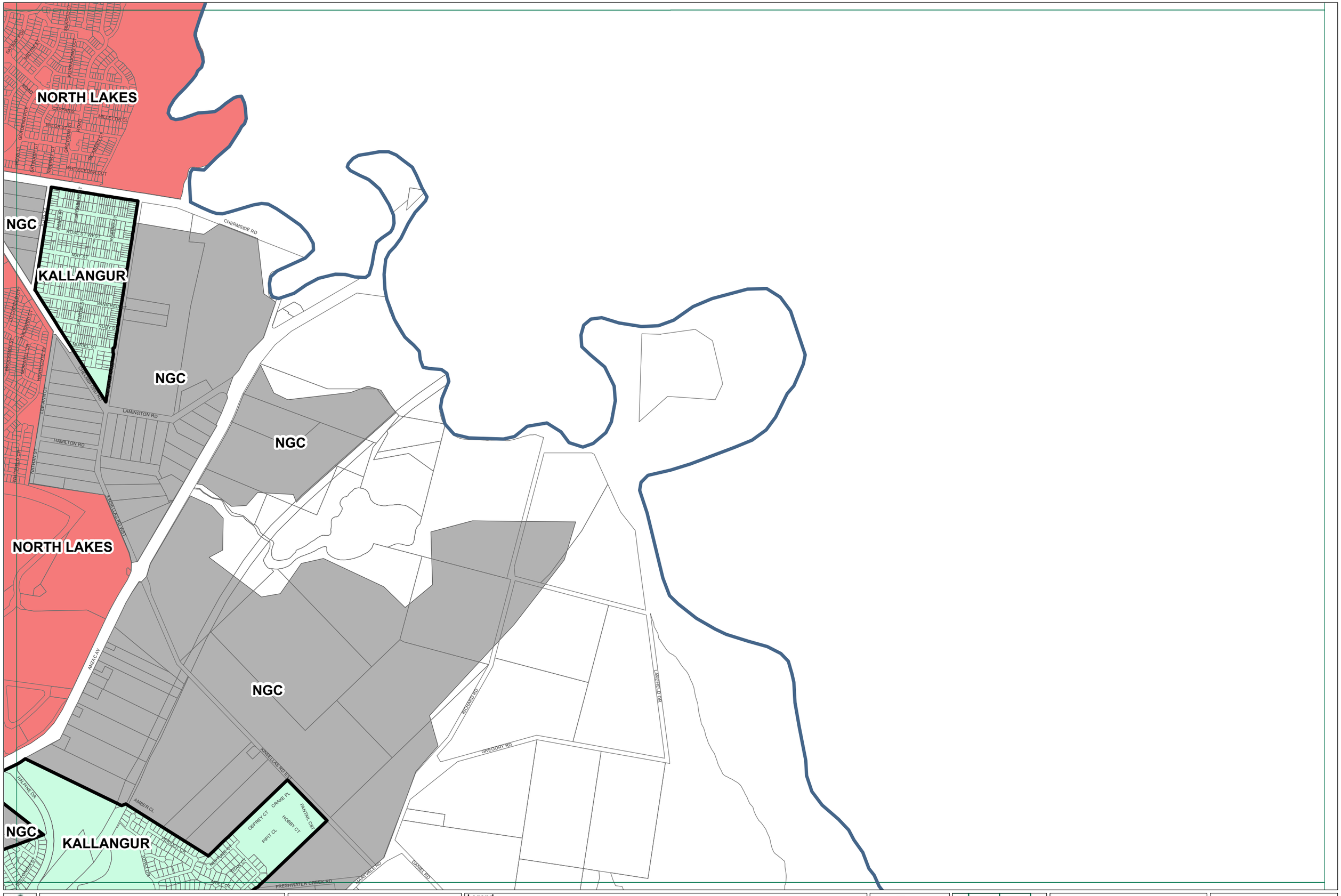
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 9.11



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

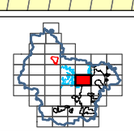
WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 9.13

PETRIE

STRATHPINE / LAWNTON LLZ

CLEAR MOUNTAIN HLZ



9.7	9.9	9.11
11.7	11.9	11.11
13.7	13.9	13.11

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 11.9

0 95 190 380 570 760

Metres

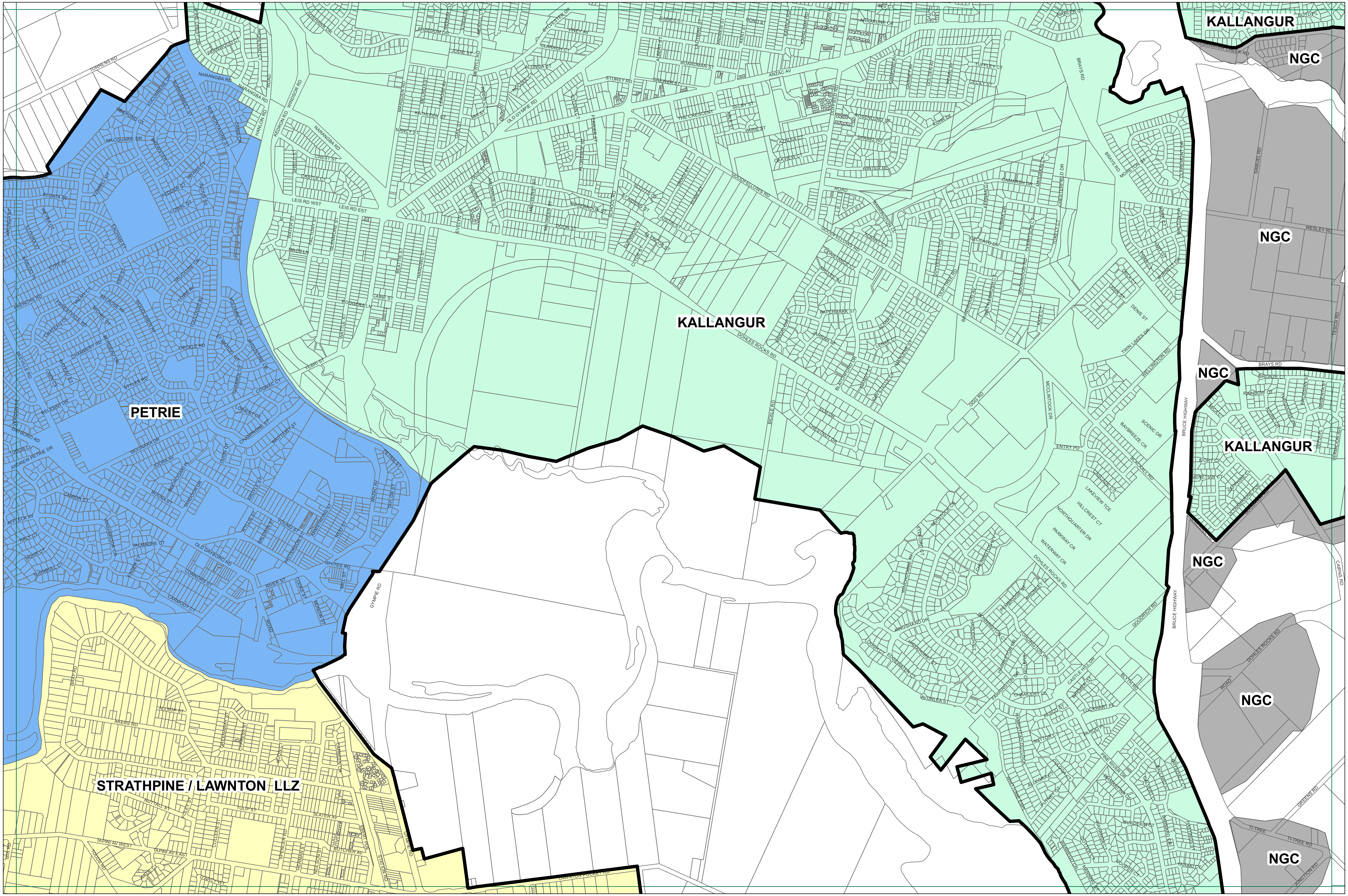
Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL



9.9	9.11	9.13
11.9	11.11	11.13
13.9	13.11	13.13

0 95 190 380 570 760
Metres

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Legend

Local Water Catchments
- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments
- DAYBORO
- PINE CENTRAL

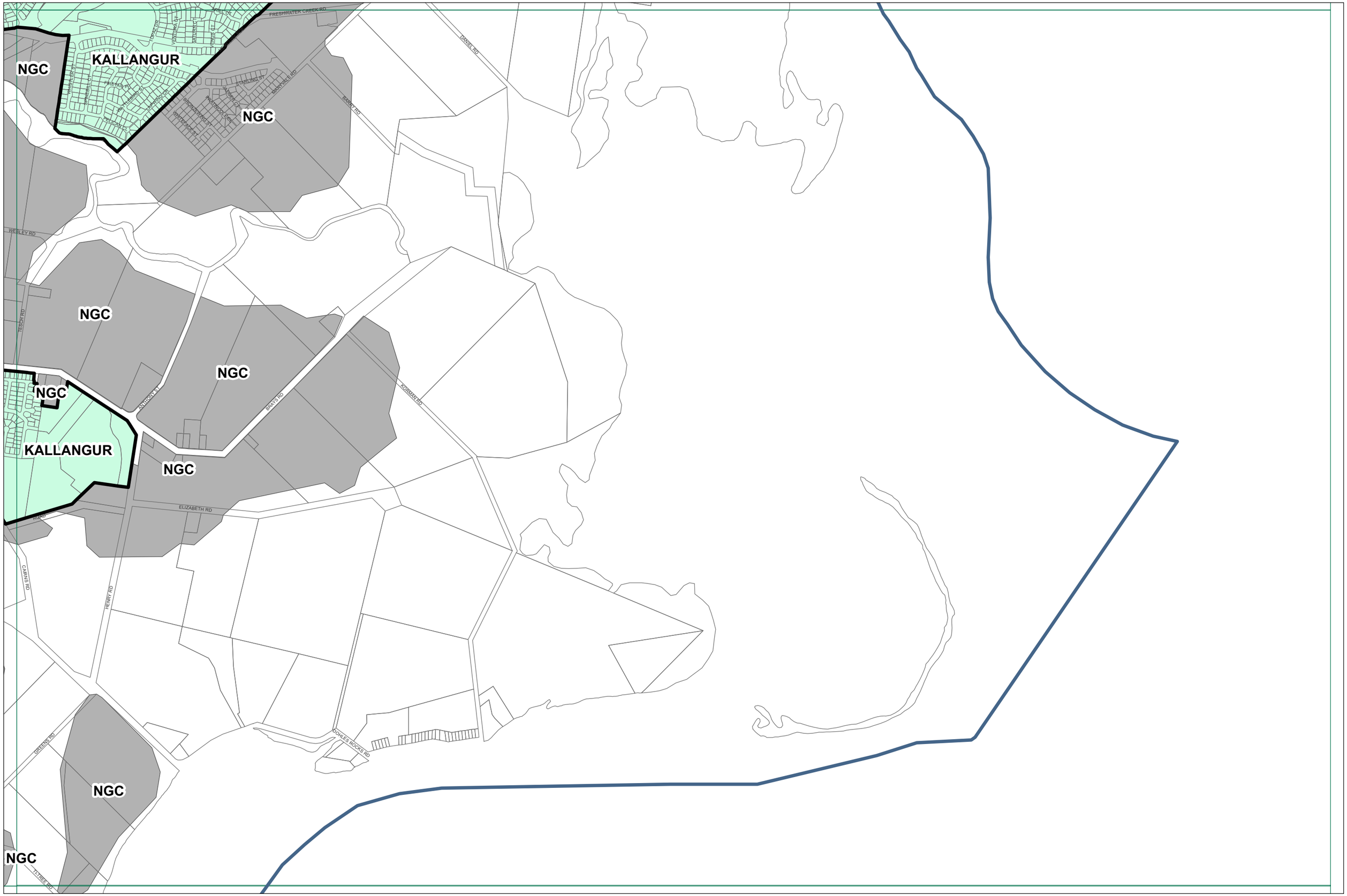
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 11.11



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

11.11	11.13
13.11	13.13

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 11.13

0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

11.5	11.7	11.9
13.5	13.7	13.9
15.5	15.7	15.9

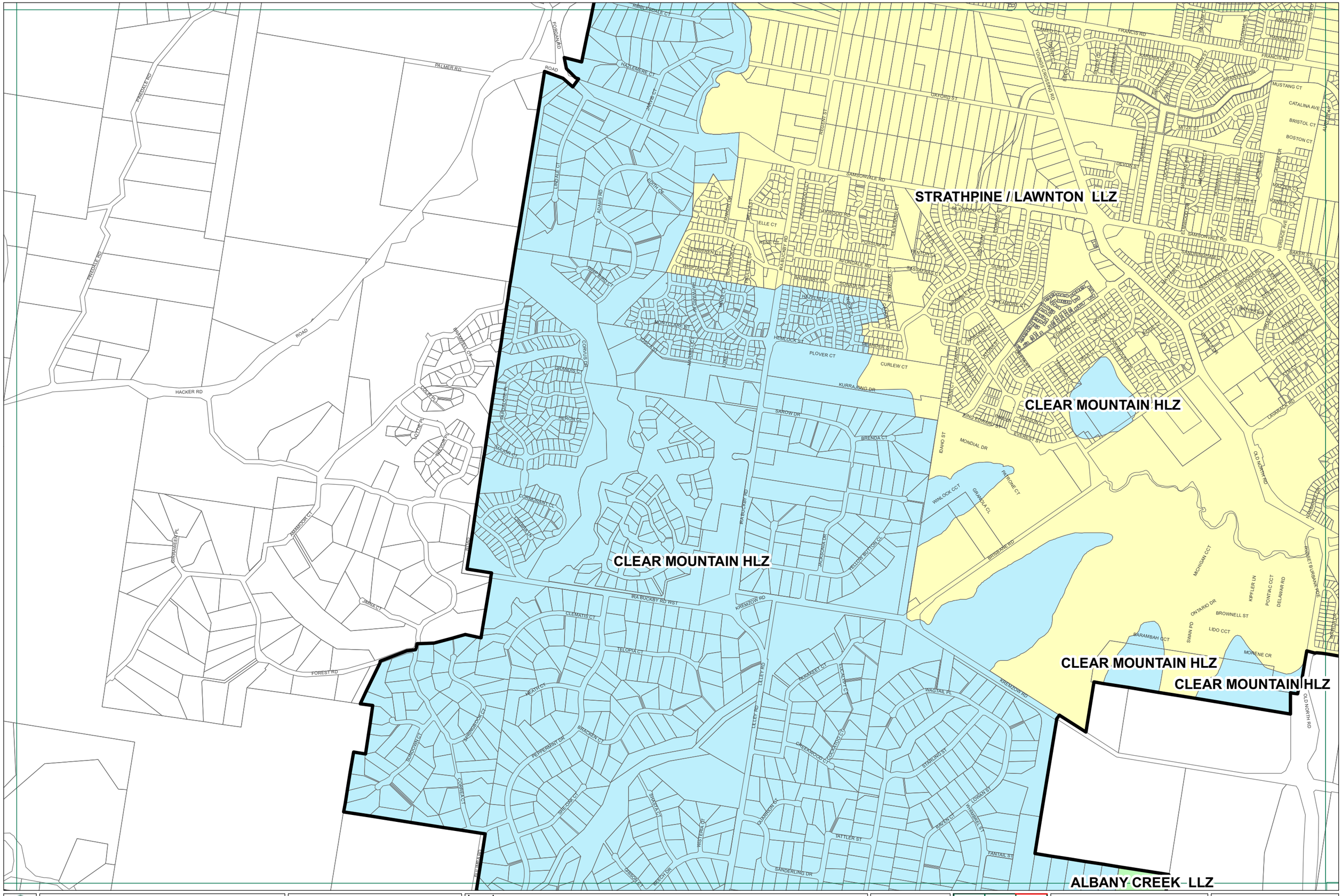
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 13.7



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

11.7	11.9	11.11
13.7	13.9	13.11
15.7	15.9	15.11

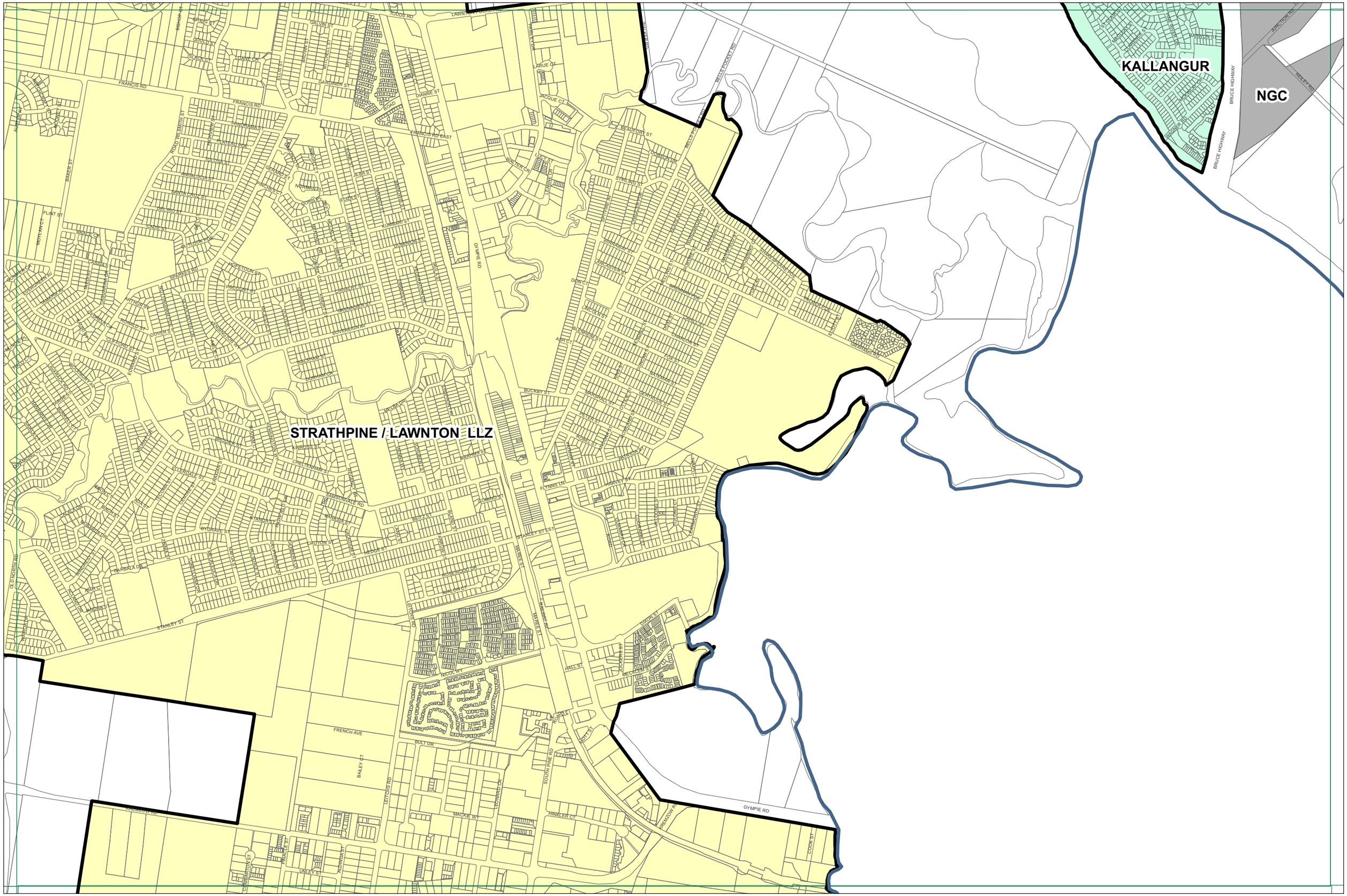
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 13.9



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

11.9	11.11	11.13
13.9	13.11	13.13
15.9	15.11	

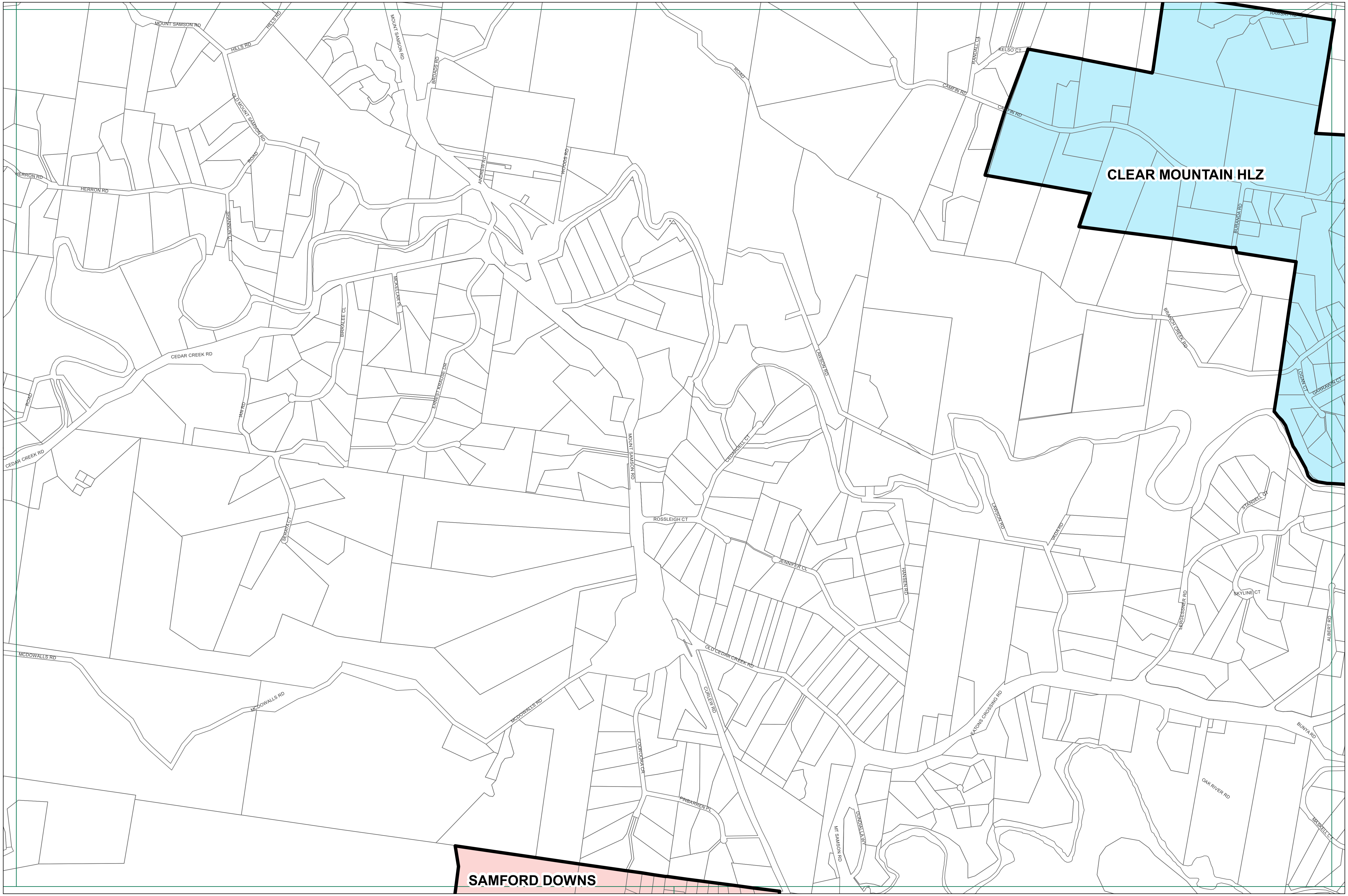
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 13.11



0	95	190	380	570	760

Metres

Legend

Local Water Catchments
- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments
- DAYBORO
- PINE CENTRAL

13.5	13.7	13.9	
15.5	15.7	15.9	
17.4	17.6	17.8	17.10

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 15.7

CLEAR MOUNTAIN HLZ

EATONS HILL HLZ

ALBANY CREEK LLZ

ALBANY CREEK HLZ

0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

13.7	13.9	13.11
15.7	15.9	15.11
17.6	17.8	17.10

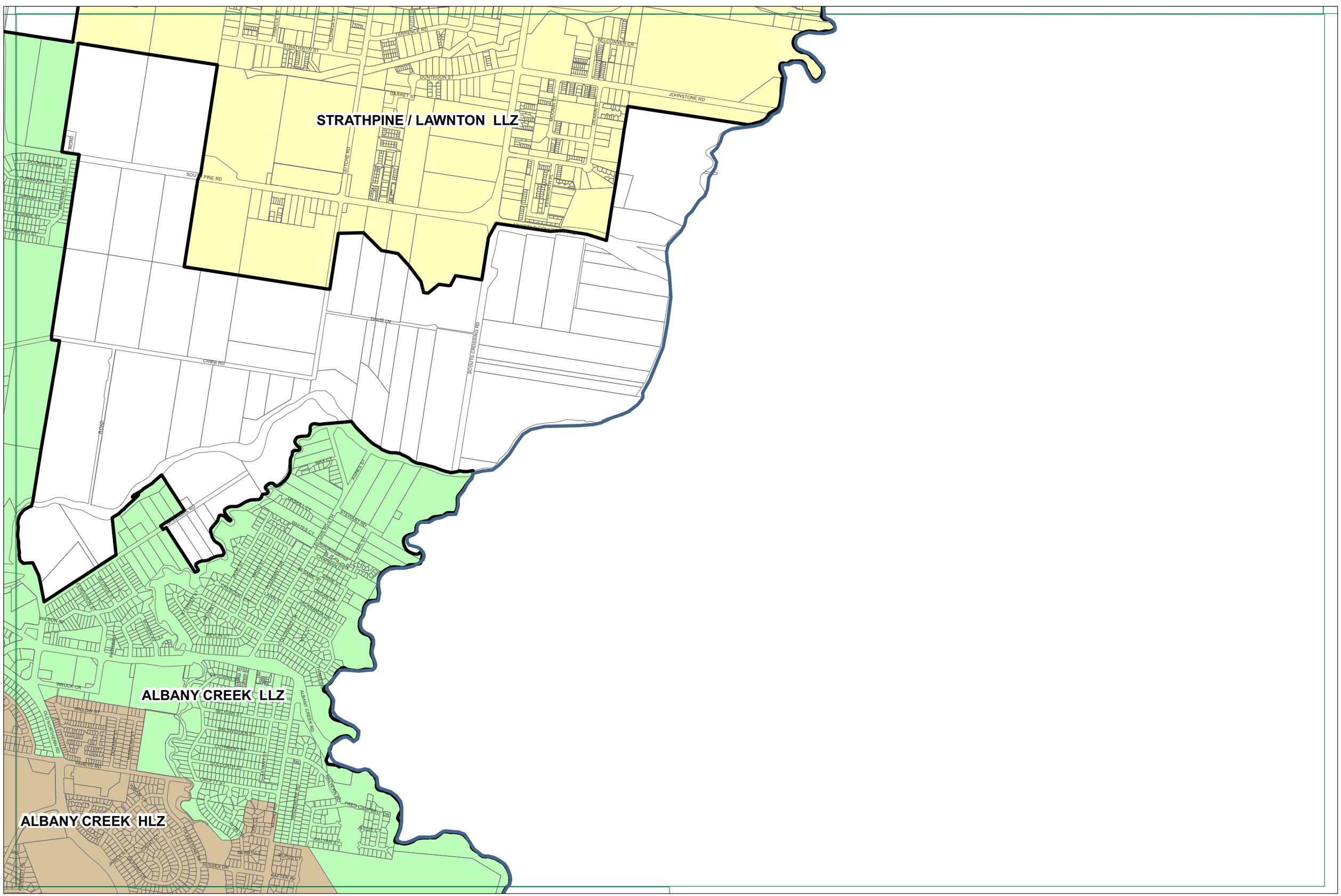
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 15.9



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

13.9	13.11	13.13
15.9	15.11	

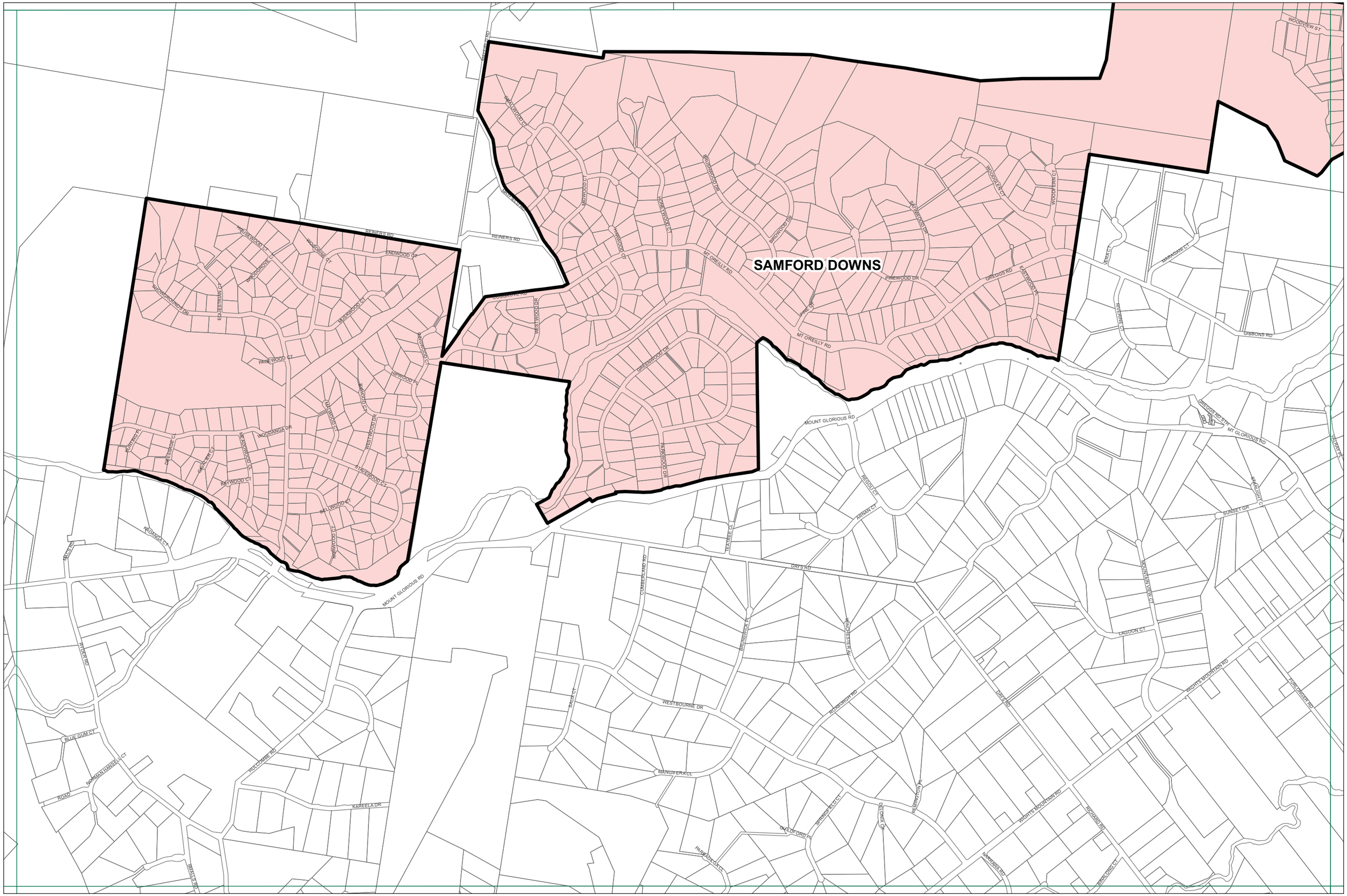
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 15.11



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

15.3	15.5	15.7	15.9
17.4	17.6	17.8	
19.4	19.6	19.8	

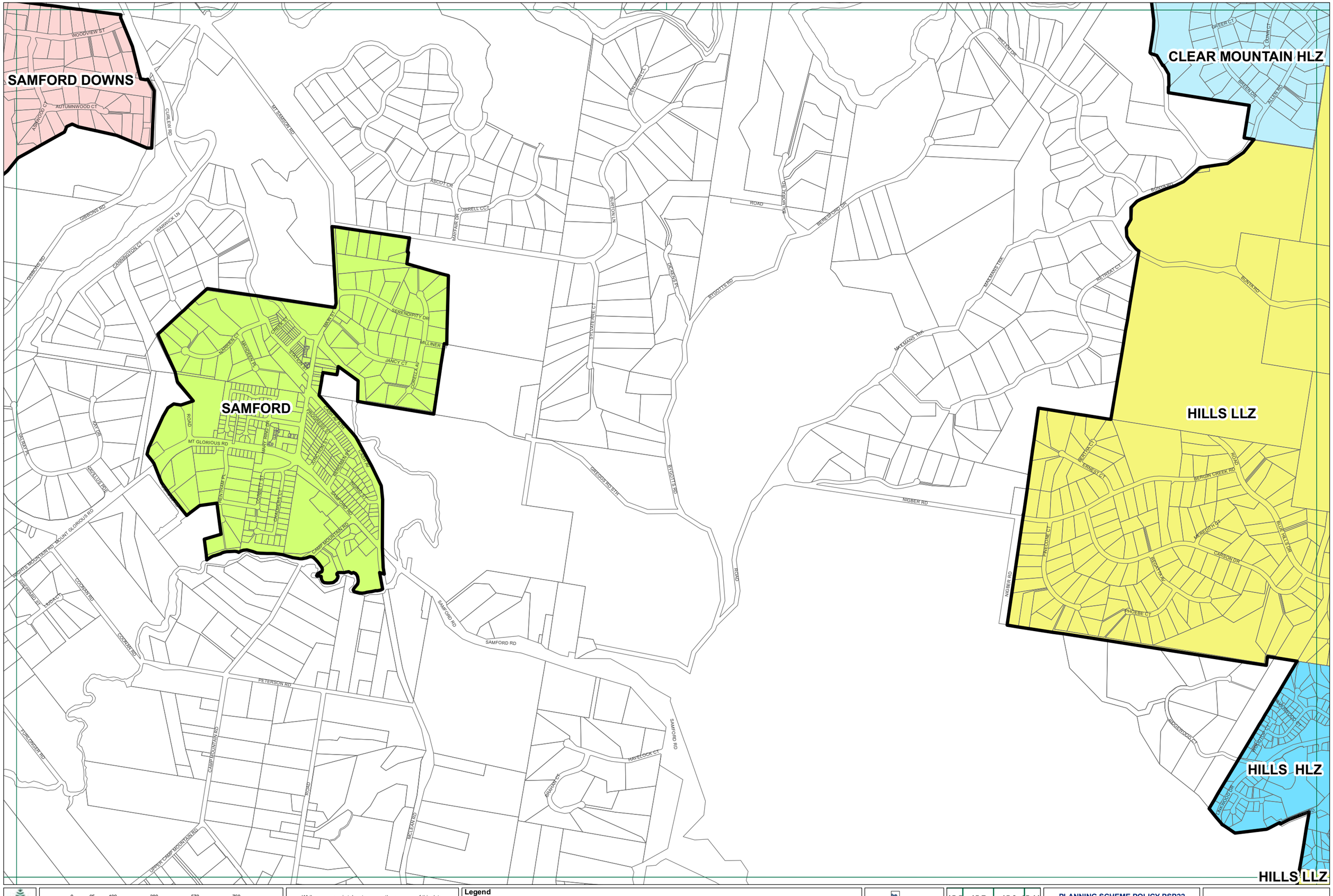
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 17.6



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

15.5	15.7	15.9	15.11
17.6	17.8	17.10	
19.6	19.8	19.10	

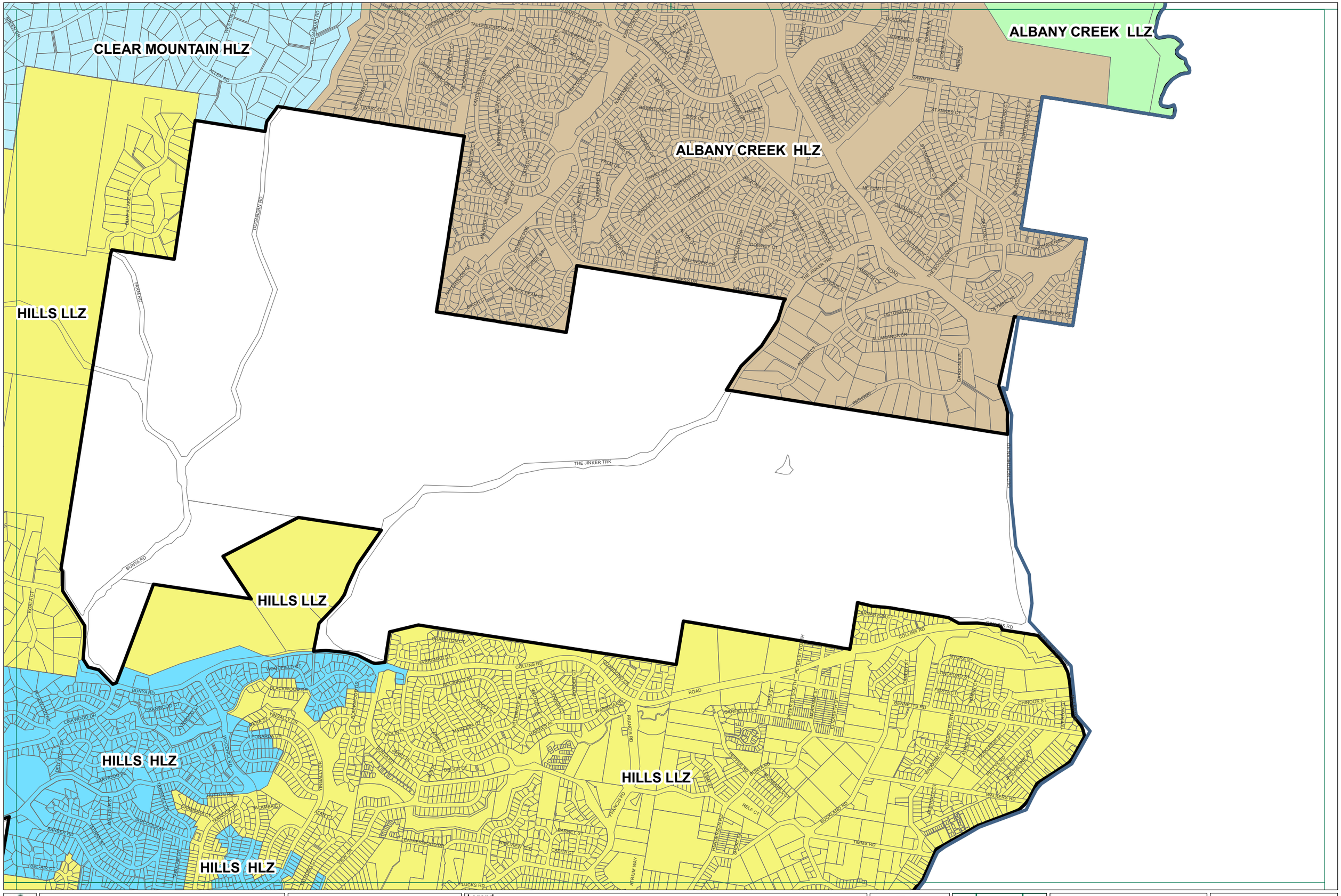
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 17.8



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

15.7	15.9	15.11
17.8	17.10	

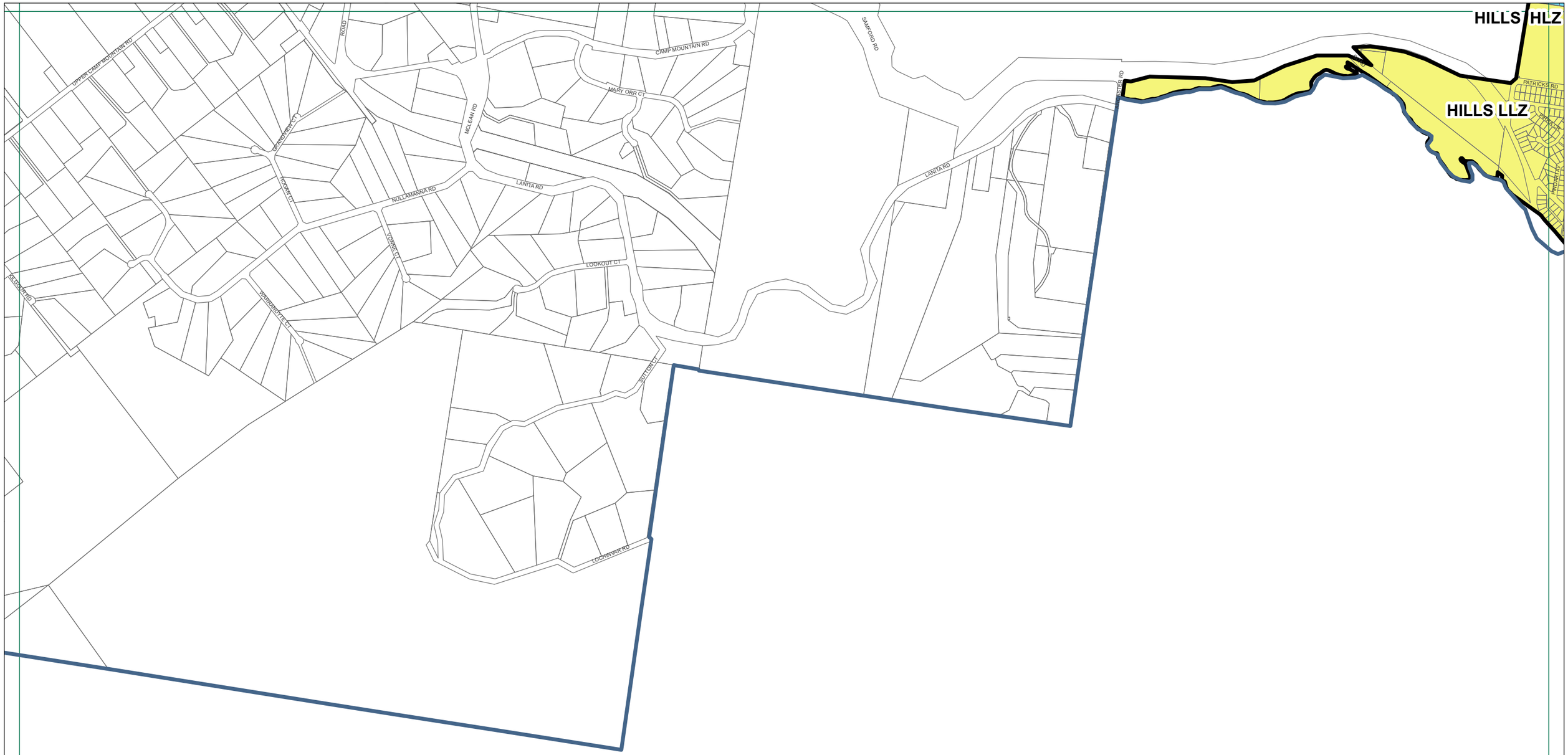
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 17.10



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

17.6	17.8
19.6	19.8

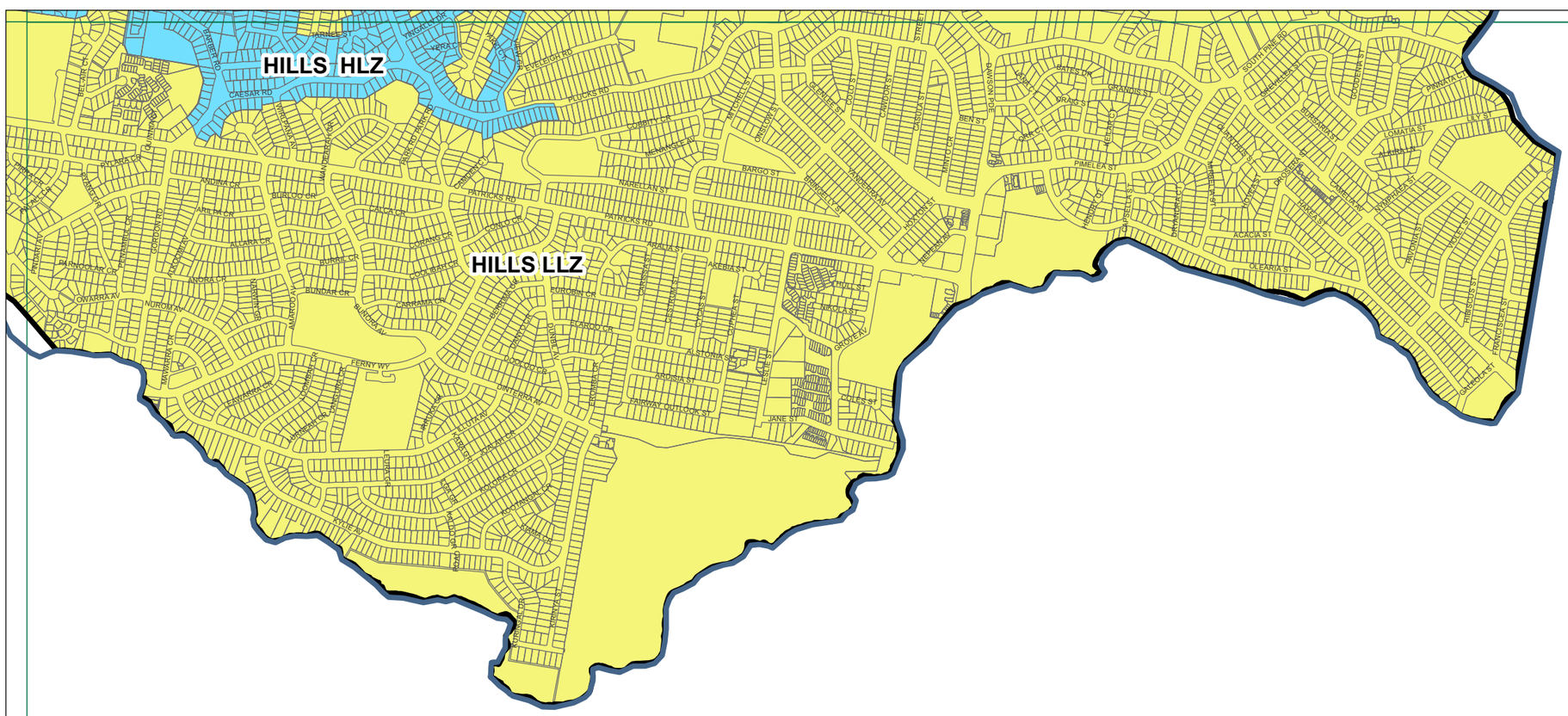
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 19.8



0 95 190 380 570 760

Metres

Legend

Local Water Catchments

- ALBANY CREEK HLZ
- ALBANY CREEK LLZ
- CLEAR MOUNTAIN HLZ
- DAYBORO
- EATONS HILL HLZ
- HILLS HLZ
- HILLS LLZ
- KALLANGUR
- NGC
- NORTH LAKES
- PETRIE
- SAMFORD
- SAMFORD DOWNS
- STRATHPINE / LAWNTON LLZ

Regional Water Catchments

- DAYBORO
- PINE CENTRAL

19.10

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK SERVICE CATCHMENTS

Map Number 19.10

Schedule D: Network Assets

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

5.3	5.5	5.7
7.3	**7.5**	7.7
9.3	9.5	9.7

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 7.5

BROWNS CREEK RD

ROAD

THEODORE RD

SMITHS RD

NEILSON RD

BROWNS RD

MCCORMACK RD

PATHWAY

BONNIE VIEW CT

ERIC MCSWEENEY CT

RARKINGS RD

PINE RIVERS

N W E S

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

5.7		
7.7	7.9	7.11
9.7	9.9	9.11

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 7.9

PINE RIVERS

N W E S

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

7.3	7.5	7.7
9.3	9.5	9.7
11.3	11.5	11.7

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 9.5

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

7.5	7.7	7.9
9.5	9.7	9.9
11.5	11.7	11.9

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 9.7

BONNIE VIEW CT
PARKLANDS CT
SMITHS RD
TREODORE RD
THEODORE RD
SHEA RD
DUNLOP LN
MISTAKE RD
DAYBORO RD
ADDETTS RD
DAYBORO RD
MCCORMACK RD
FORBES RD
DENHAM RD
SCOUT RD
BROWNS RD
MOORE RD
ROCHE RD
MARGARET RD
COOPER RD
LAKESIDE RD
NICHOLSON RD
SKI RD
NICKLIN RD
ROAD

PINE RIVERS

N
W E
S

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

7.7	7.9	7.11
9.7	9.9	9.11
11.7	11.9	11.11

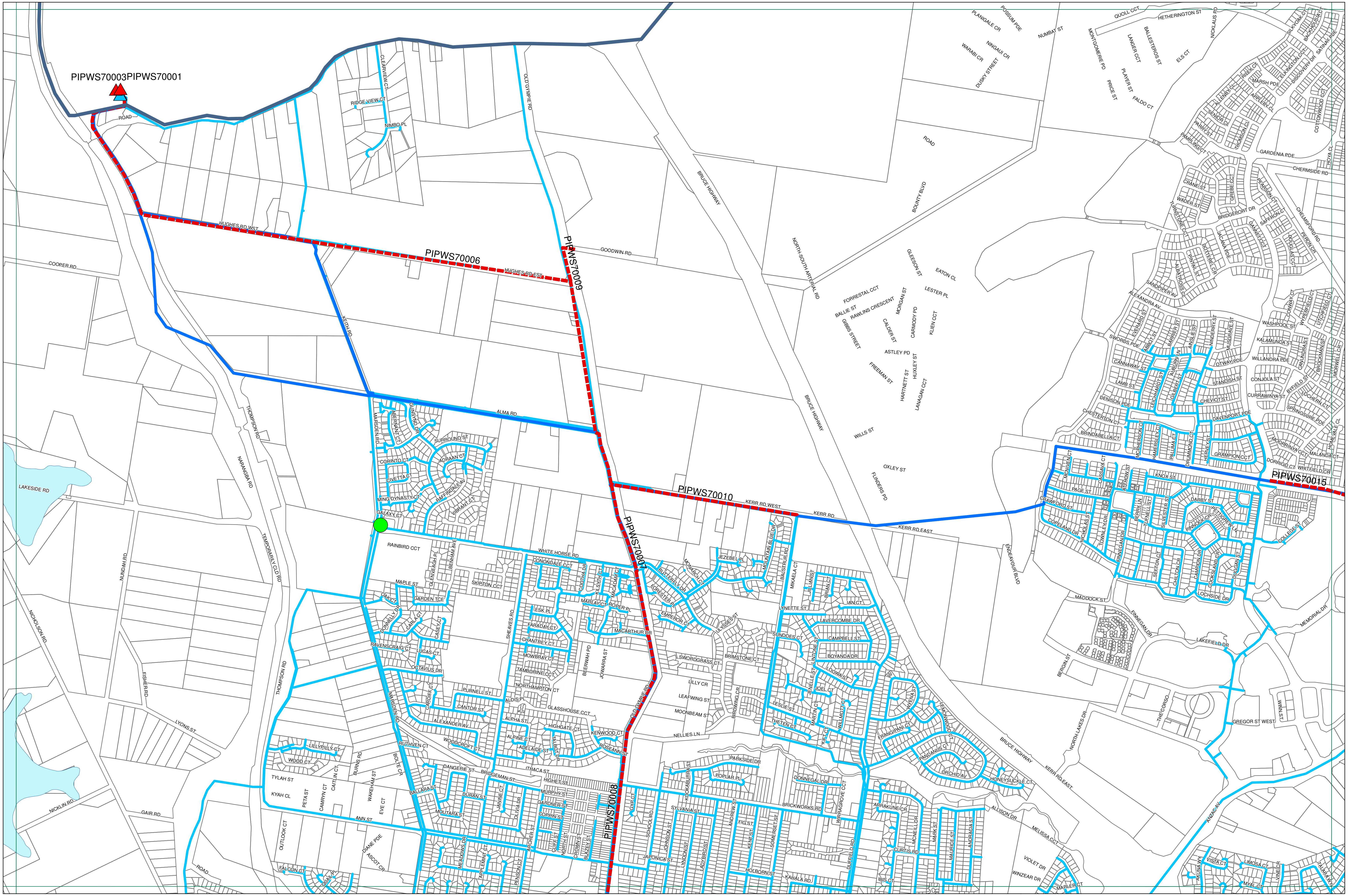
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 9.9



0 125 250 375 500
Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

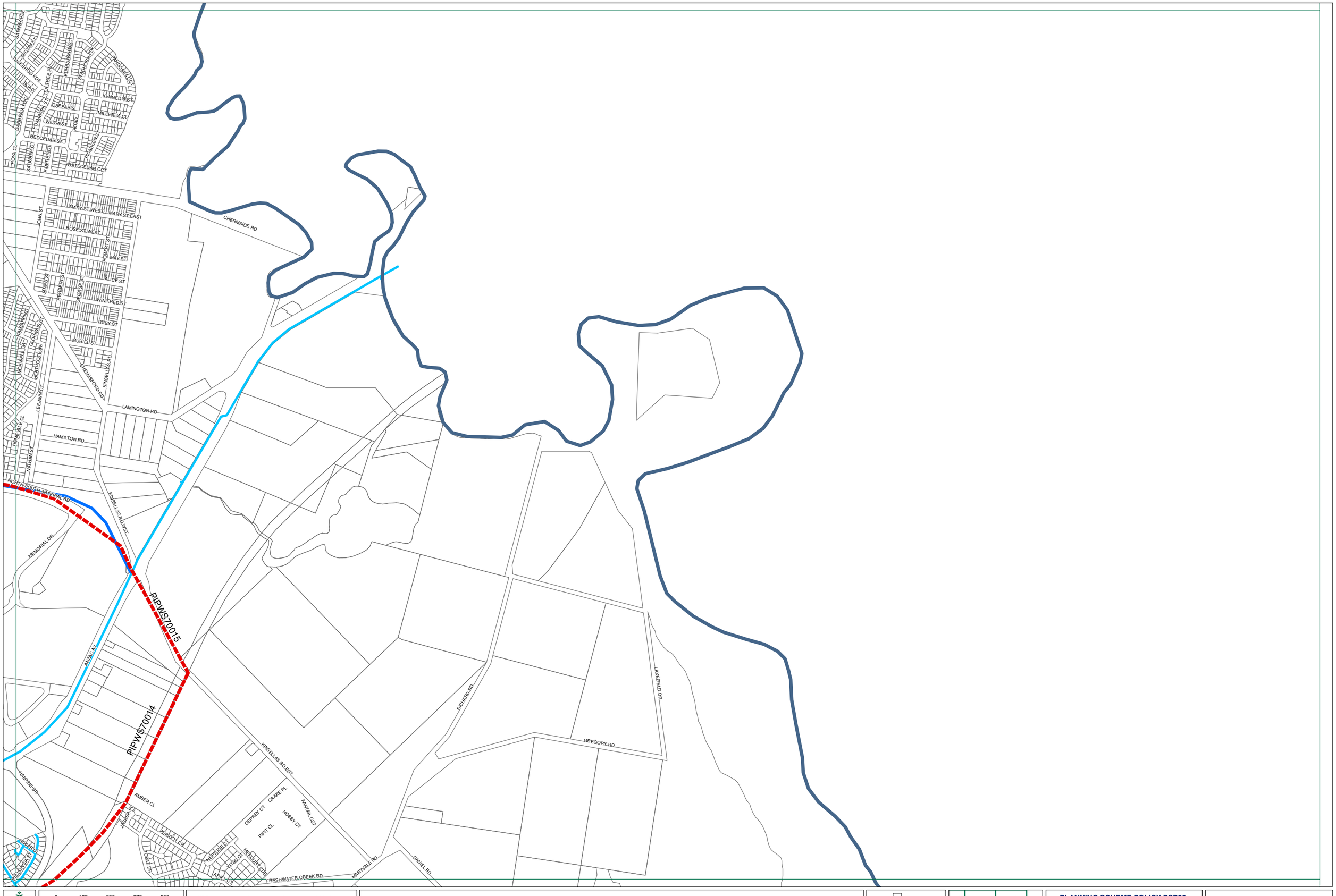
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 9.11



PINE RIVERS

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

7.9	7.11	7.13
9.9	9.11	9.13
11.9	11.11	11.13

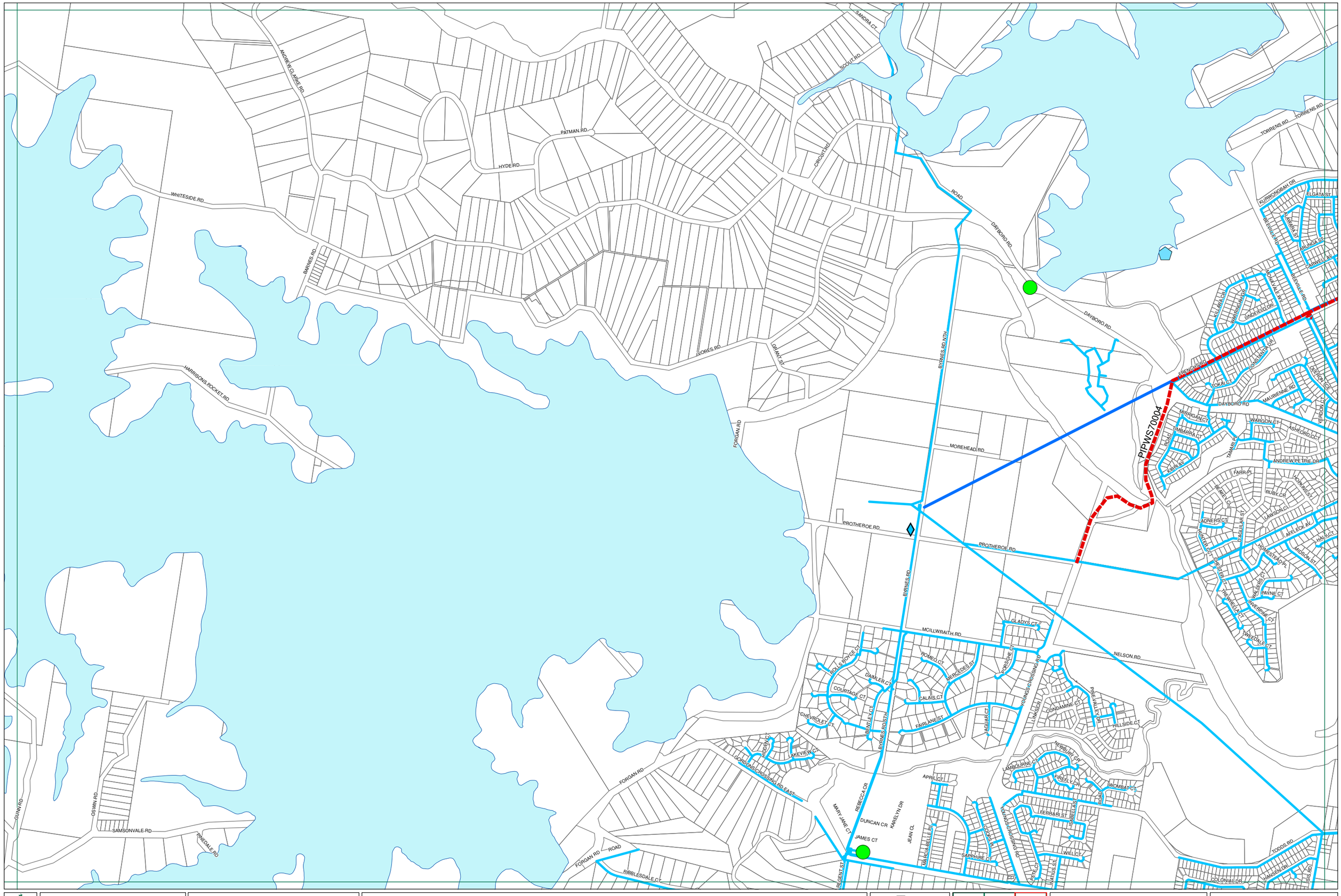
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 9.13



PINE RIVERS

N W E S

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

9.7	9.9	9.11
11.7	11.9	11.11
13.7	13.9	13.11

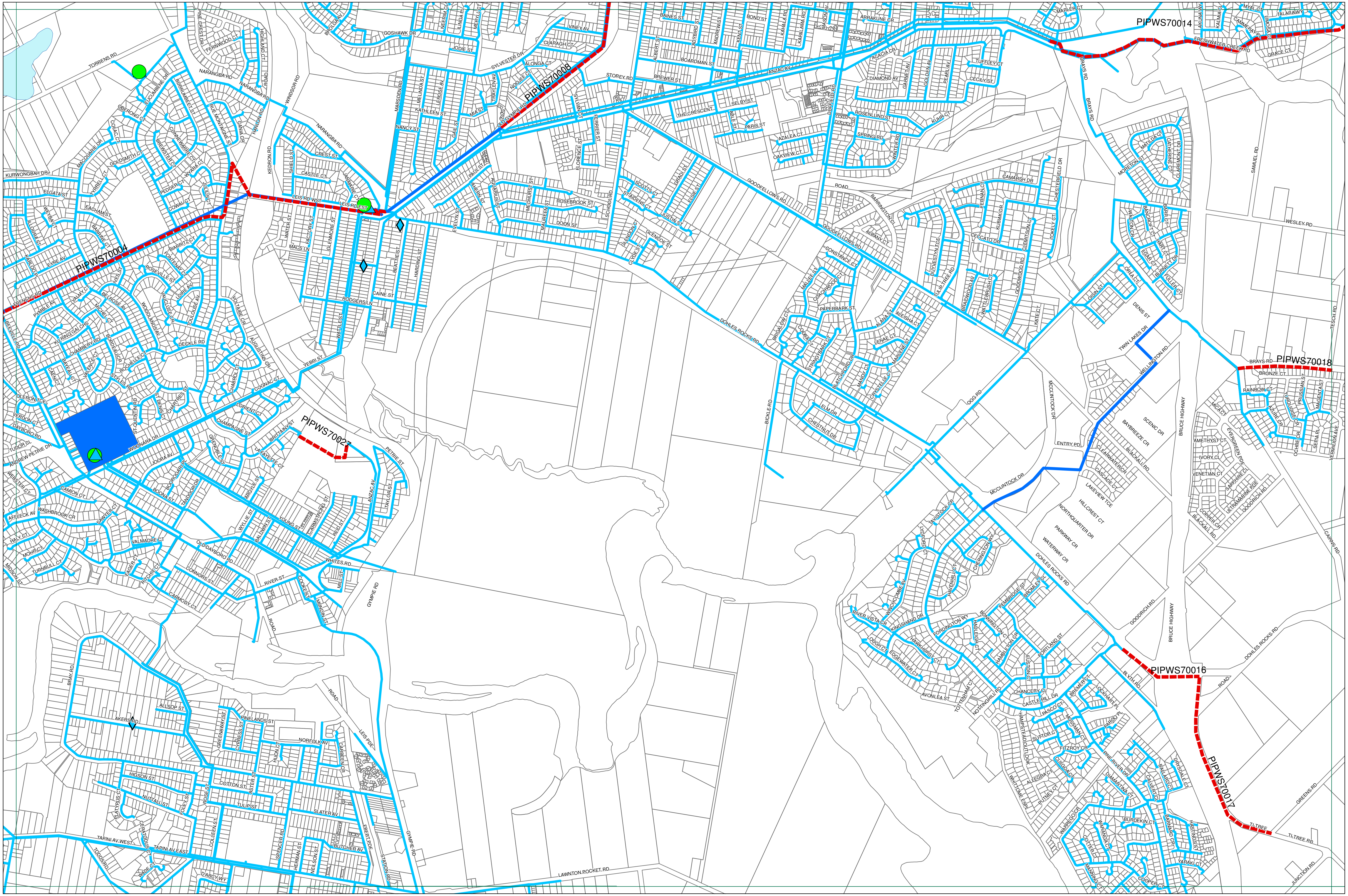
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 11.9



Scale: 0 125 250 375 500 Metres

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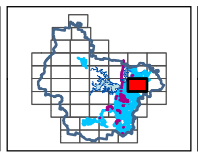
Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains



9.9	9.11	9.13
11.9	11.11	11.13
13.9	13.11	13.13

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 11.11

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

11.11	11.13
13.11	13.13

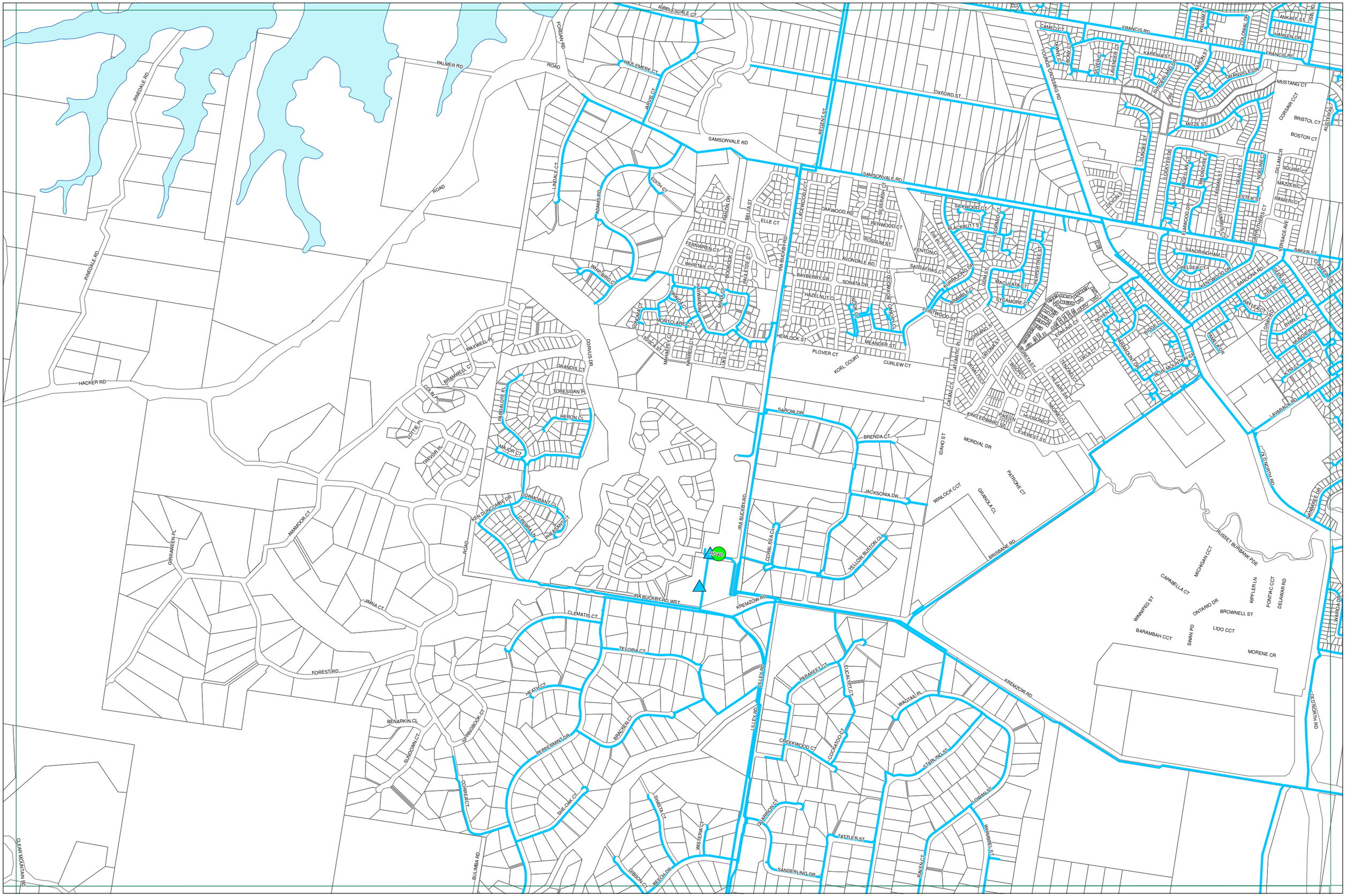
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 11.13



0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

11.7	11.9	11.11
13.7	13.9	13.11
15.7	15.9	15.11

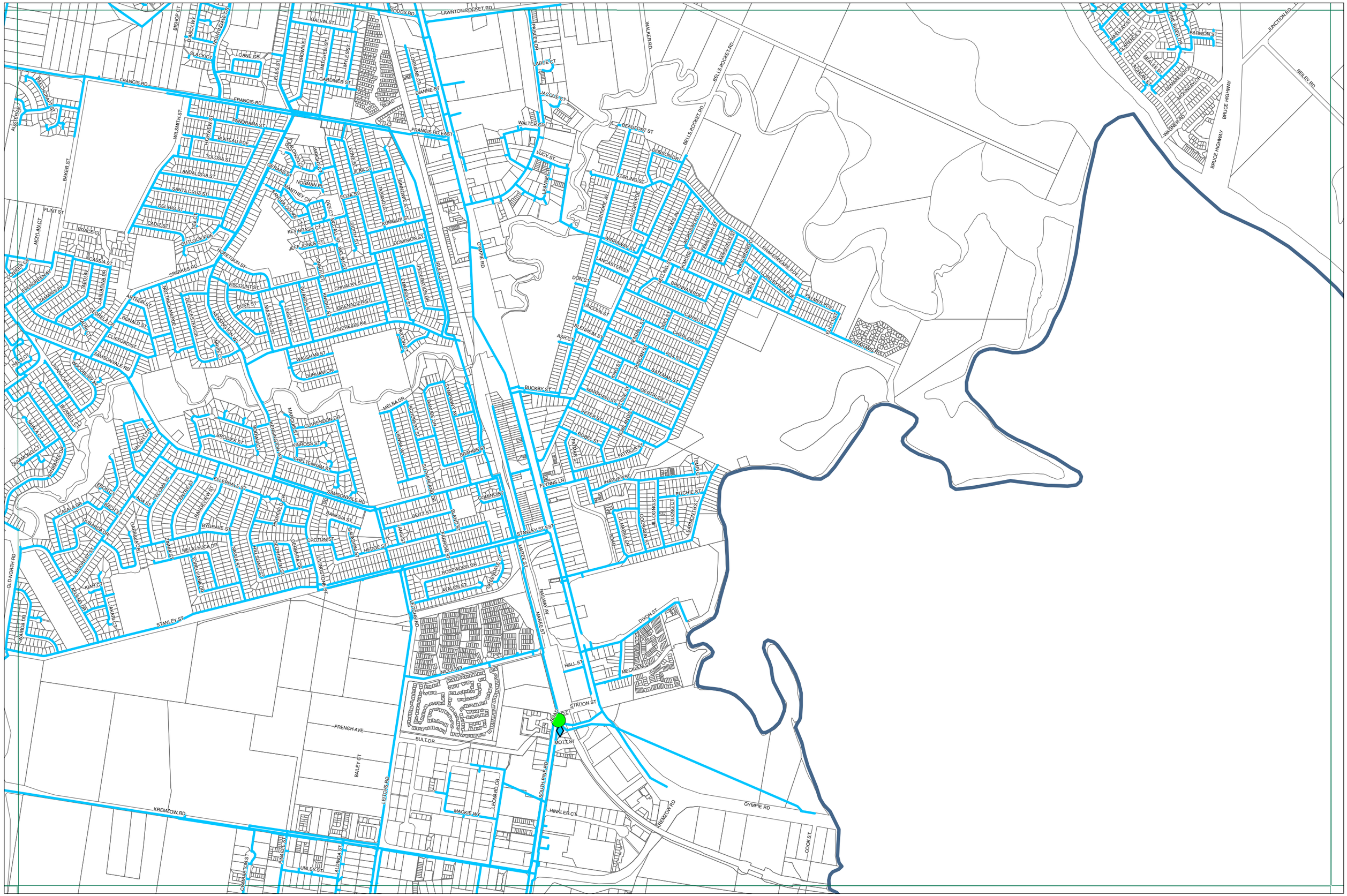
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 13.9



PINE RIVERS

N W E S

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

11.9	11.11	11.13
13.9	13.11	13.13
15.9	15.11	

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 13.11

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

13.5	13.7	13.9	
15.5	15.7	15.9	
17.4	17.6	17.8	17.10

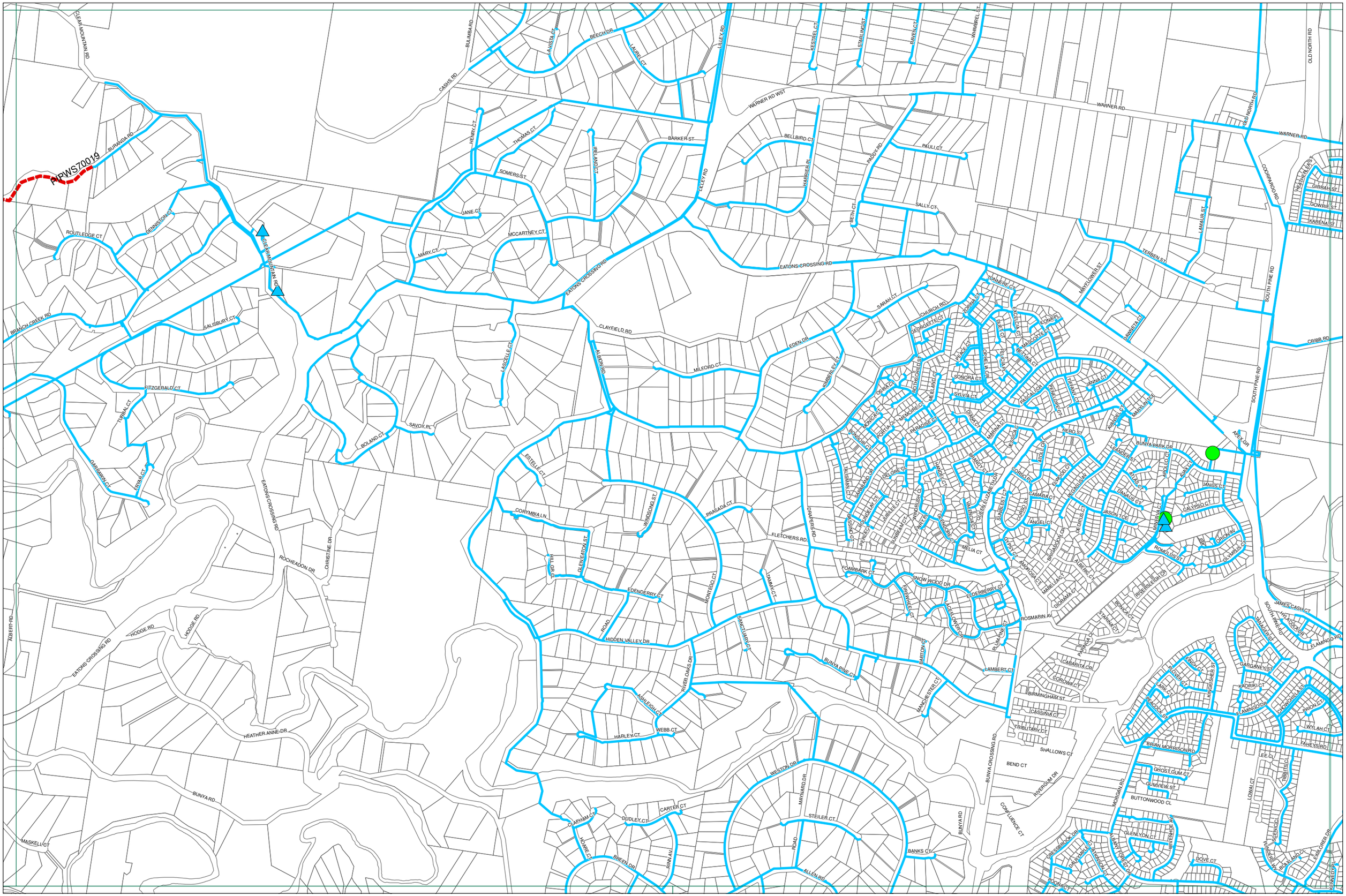
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 15.7



PINE RIVERS

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

13.7	13.9	13.11
15.7	**15.9**	15.11
17.6	17.8	17.10

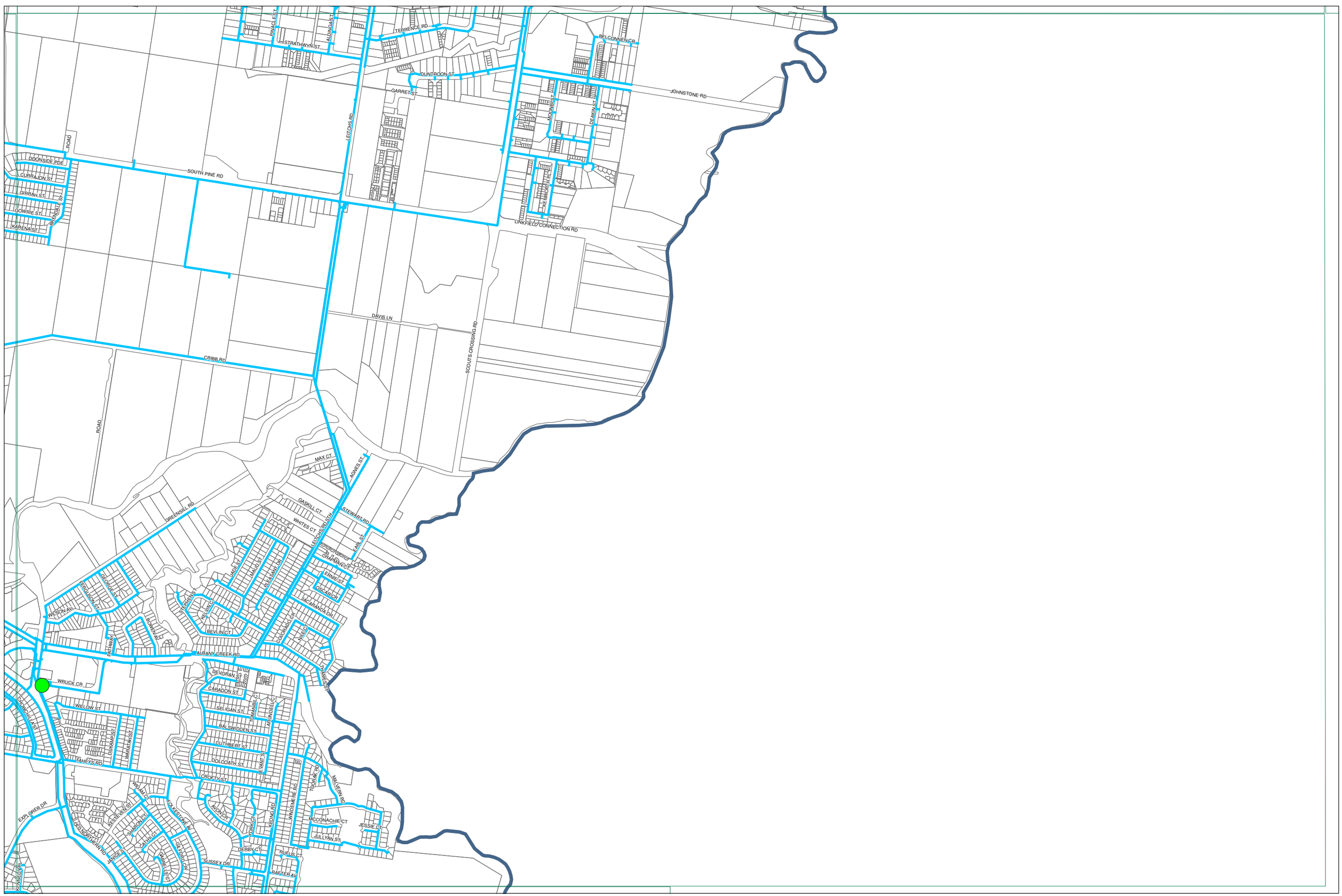
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 15.9



0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

13.9	13.11	13.13
15.9	15.11	

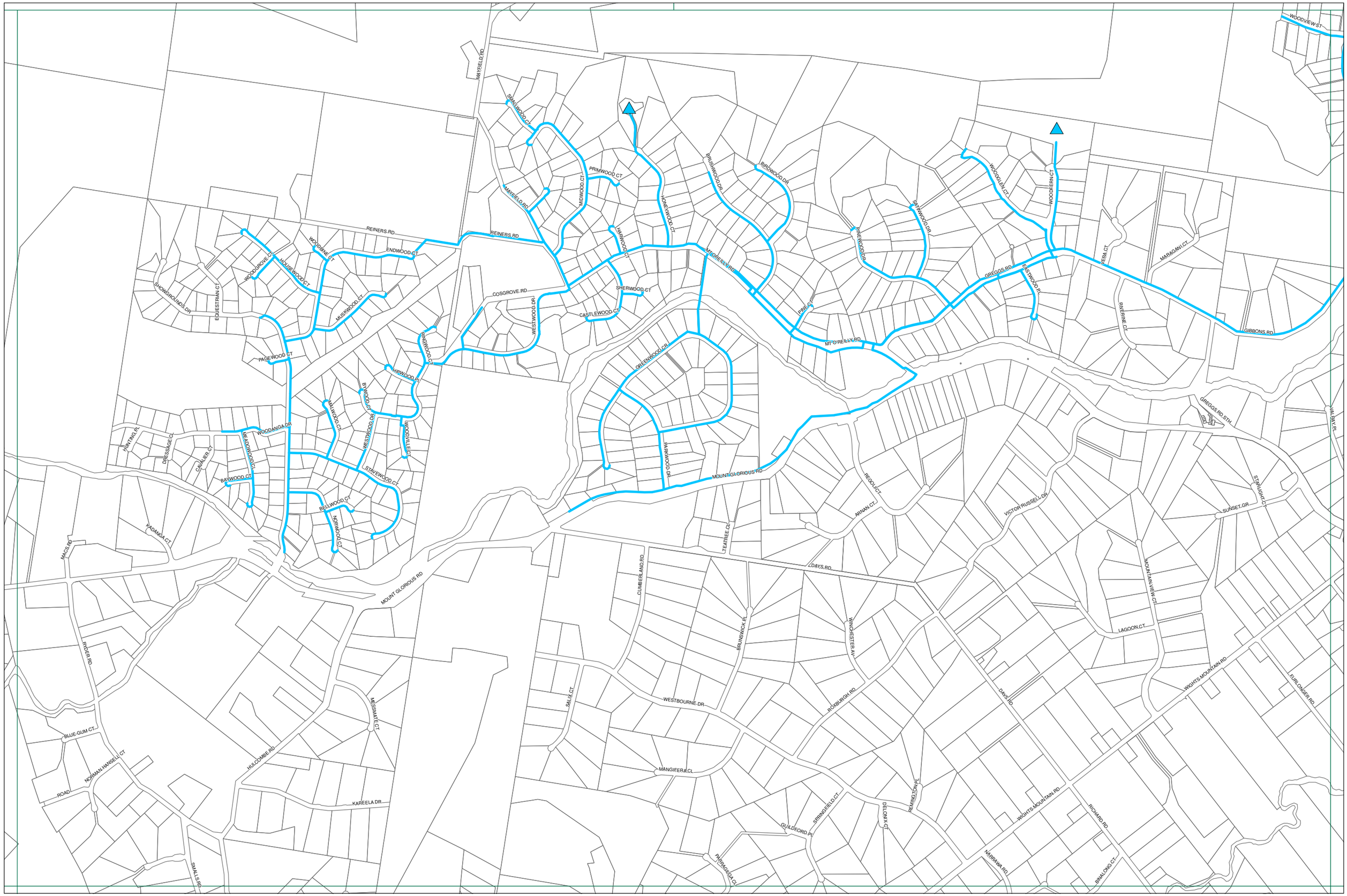
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 15.11



PINE RIVERS

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

15.3	15.5	15.7	15.9
17.4	**17.6**	17.8	
19.4	19.6	19.8	

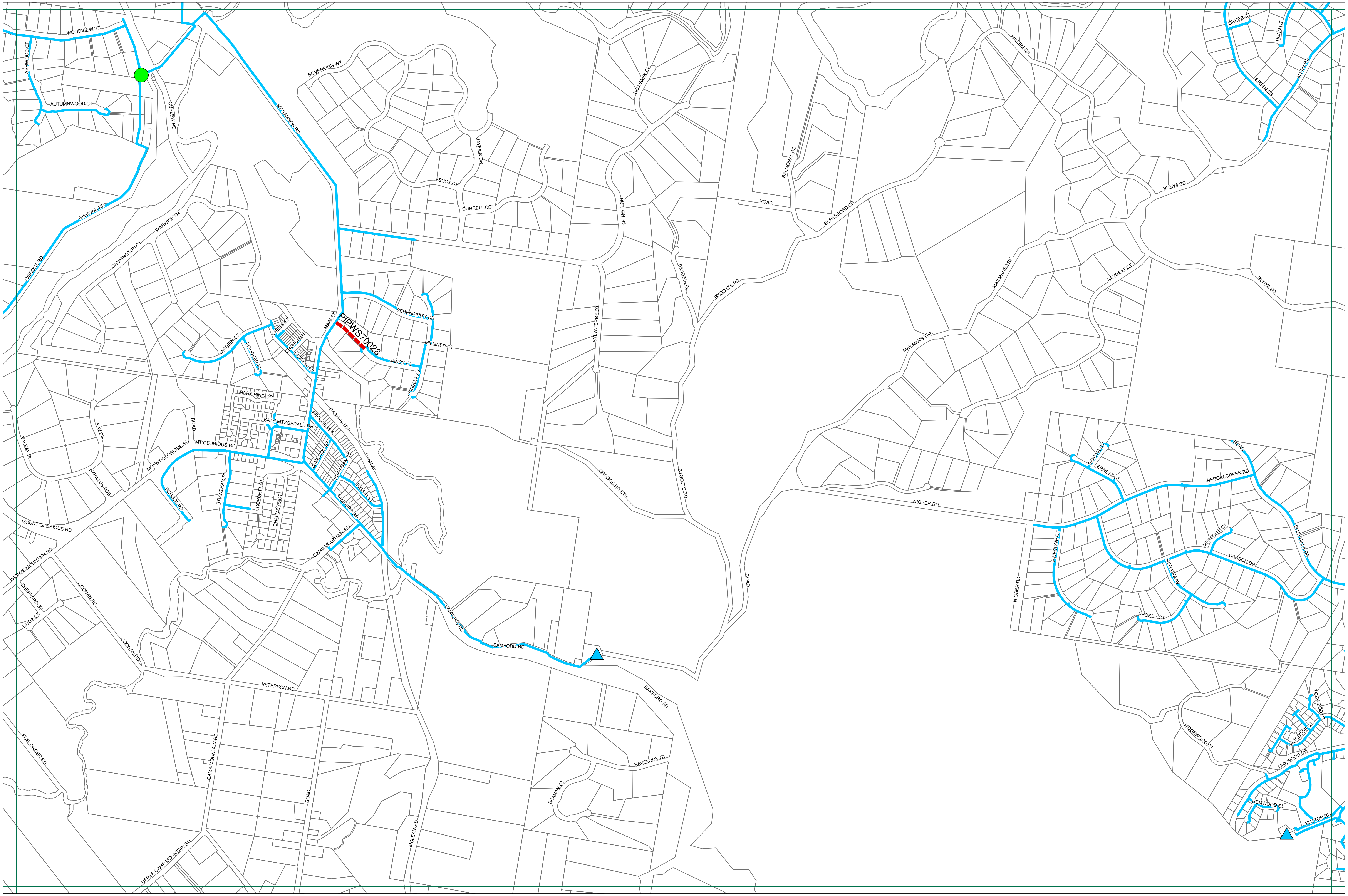
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 17.6



0 125 250 375 500

Metres

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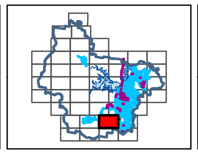
Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains



15.5	15.7	15.9	15.11
17.6	17.8	17.10	
19.6	19.8	19.10	

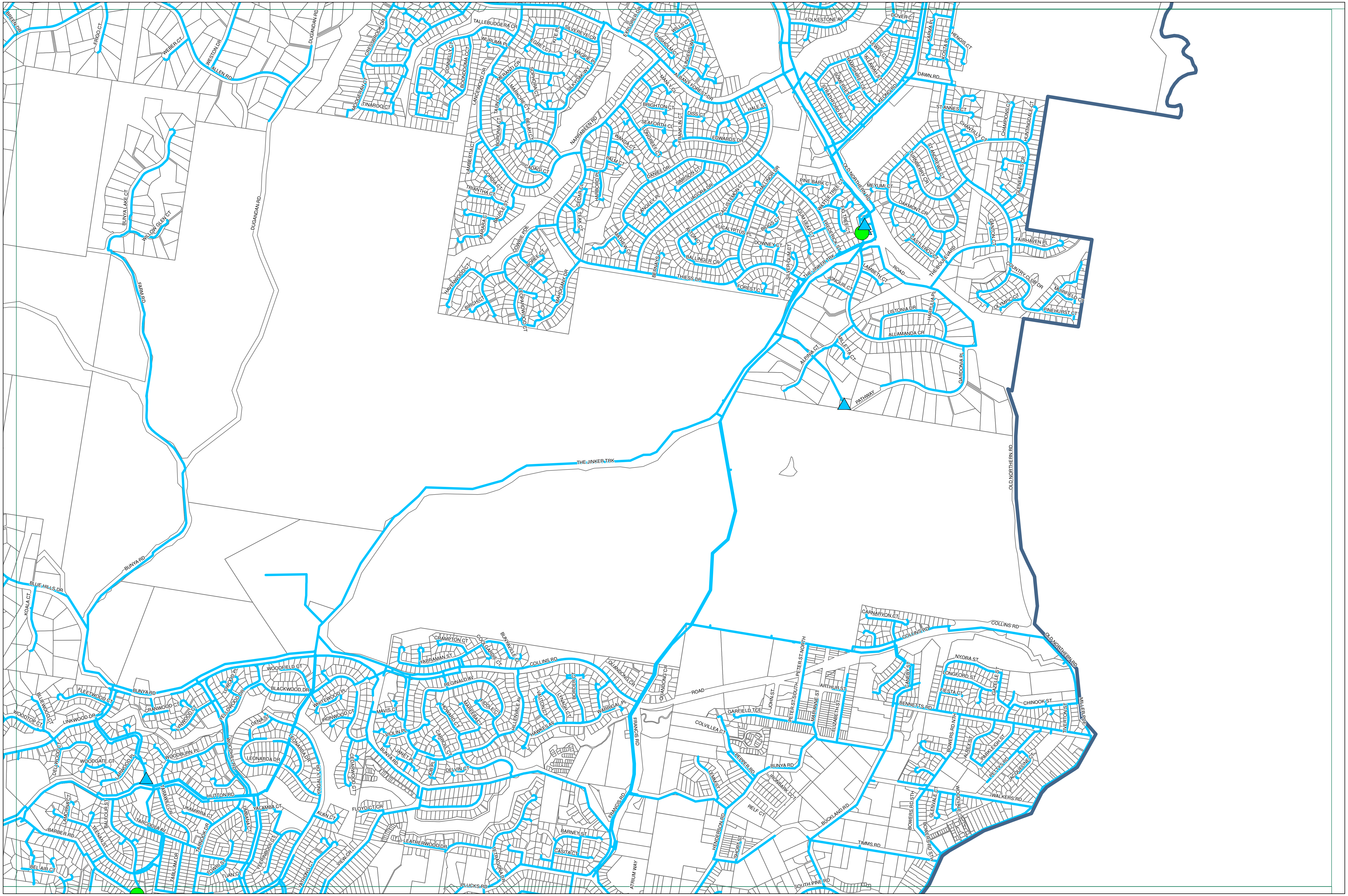
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 17.8



0 125 250 375 500
Metres

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Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

15.7	15.9	15.11
17.8	17.10	

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 17.10

0 125 250 375 500

Metres

Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

17.6	17.8
19.6	19.8

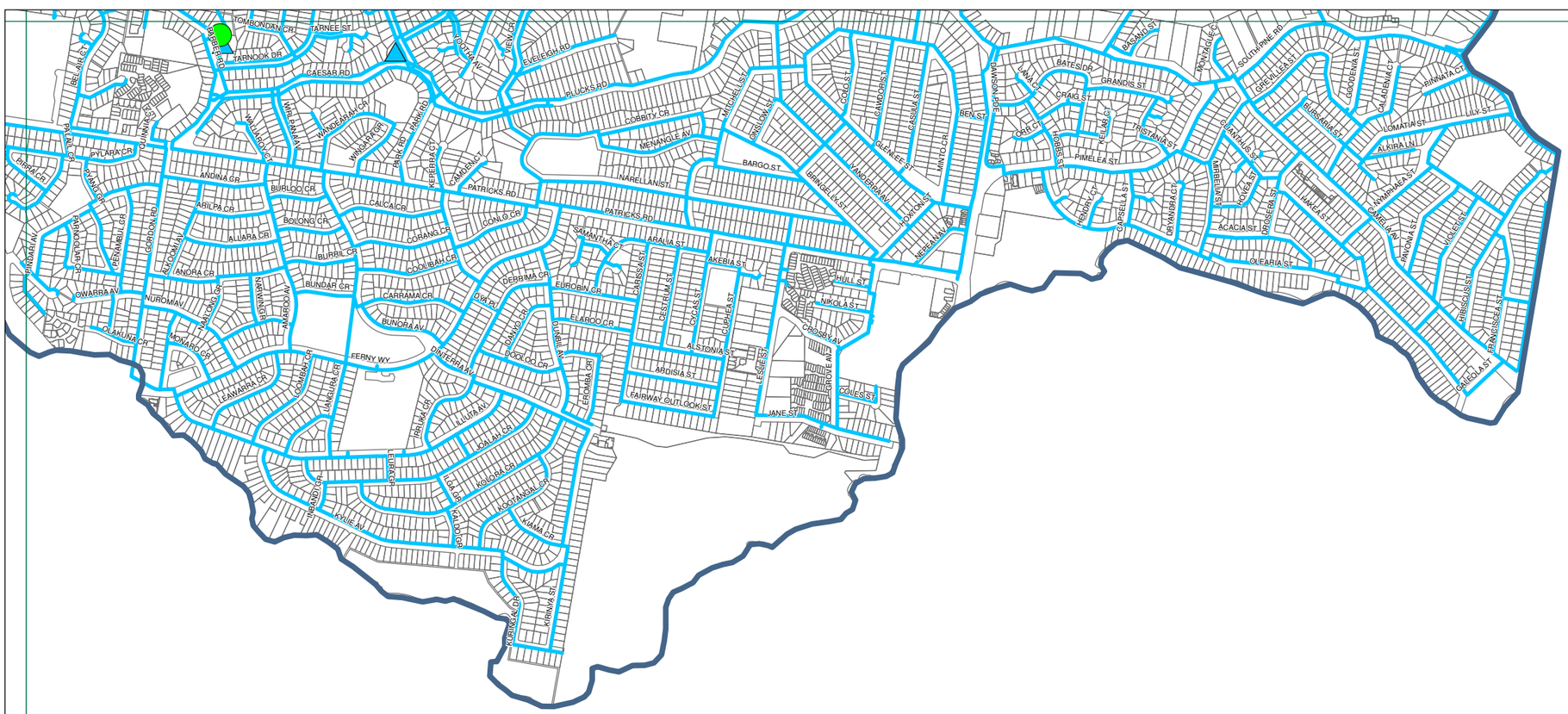
PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 19.8



Legend

- WATER ROUTE
- PINE WM PIPES
- Water Treatment Plants
- Existing Bulk Meters
- Lake Kurwongbah Facilities
- Existing Water Pumps
- Existing Reservoirs
- Future Waters Reservoirs
- Future Water Mains

19.10

PLANNING SCHEME POLICY PSP22

DEVELOPMENT CONTRIBUTIONS FOR TRUNK INFRASTRUCTURE - WATER SUPPLY

Effective from 1 September 2008

WATER SUPPLY NETWORK PLAN FOR TRUNK INFRASTRUCTURE

Map Number 19.10

Schedule E: Desired Standards of Service

The Desired Standards of Service (DSS) for water supply and sewerage trunk infrastructure within the Shire have been determined in accordance with the requirements of the *Water Act 2000* and were published by Pine Water in September 2002. Pine Water's approved Strategic Asset Management Plan and Total Management Plan detail ongoing practice and future initiatives to achieve and maintain the published standards of service.

The Desired Standards of Service for water supply and sewerage infrastructure provision under this policy are expressed in terms of 'Operational Objectives' and 'Detailed Design Parameters'.

The 'Operational Objectives' and 'Detailed Design Parameters' are aimed at achieving the stated purpose of the *Integrated Planning Act* while satisfying the relevant requirements of the Environmental Protection Act. The detailed design parameters are the means by which the performance requirements of the operational objectives are achieved.

The Guidelines prepared by the Queensland Department of Natural Resources, Mines and Energy (the QDNRM&E Guidelines) for design of urban water supply and sewerage systems and a survey of current practice of local governments in South-East Queensland have also been used in establishing the desired standards of service and design criteria for the water supply and sewerage systems. Authorities that were consulted to confirm current practice in South-East Queensland included Ipswich Water, Redland Water, Brisbane Water, CalAqua, Cooloola Shire, Wide Bay Water, Logan Water and Gold Coast Water.

Operational Objectives for Water Supply Services

Each of the 'Operational Objectives' for the provision of water supply services in Pine Rivers Shire is examined in the context of corresponding user benefits and environmental effects. The Primary Objectives adopted for water services in this policy are set out in Table E1.

Table E1 – Water Supply Operational Objectives

Objective	User Benefit	Environmental Effect
Corporate / Business Objective	• **Community and Customer Service** • **Quality and Safety**	• **Environmental Protection**
Drinking water will comply with the Australian Drinking Water Guidelines 1996.	• Uniform quality of water monitored in relation to recognised standards. • Safe and reliable water supply	• Improves community health
Designs will comply with State Government Guidelines, and *Council's Planning Scheme Policy PSP 28 "Civil Infrastructure Design"*. .	• System will be adequate in terms of; ○ day-to-day reliability, ○ long term continuity of supply; ○ delivery of high quality drinking water to the consumer ;and ○ minimum life cycle cost (i.e., optimum maintenance, replacement and operation costs). • Cost effective service for community.	• Maintains the health of the community. • Chemicals are stored and handled in accordance with relevant legislation to ensure safety of worker, public safety and to protect the environment. • Minimisation of Greenhouse gas emissions. • Optimum use of resources.
Minimise water loss	• Extend asset life • Defer system augmentation • Conserve raw water supply • Minimise energy consumption • Optimise size of elements within water supply network.	• Improve environmental flows • Minimisation of Greenhouse gas emissions.
Effective management of water consumption (Demand Management)	• Reduced cost of water • Defer requirement for new water source • Minimise energy consumption • Optimise size of elements within water supply network.	• Improve environmental flows • Minimisation of Greenhouse gas emissions.
Implement environmental responsibilities with respect to	• Noise control	• Improves community health

Objective	User Benefit	Environmental Effect
Corporate / Business Objective	• **Community and Customer Service** • **Quality and Safety**	• **Environmental Protection**
water supply operations	• No adverse visual impact • Control of overflows from system. • Management of flushing water. • Maintain flows or storage in raw water sources for environmental purposes.	• Maintain amenity (eg, visual and noise characteristics) of locality. • Reductions in discharges that have concentrations of free chlorine greater than 1 mg/l. • Control of discharge of turbid water to stormwater drainage during construction of infrastructure and flushing or scouring operations. • Required environmental flows maintained
System design will aim to minimise energy consumption and optimise the use of green energy	• Reduced energy costs. • Cost effective service for community.	
The design of the water supply network shall provide fire fighting flow and specified water pressures and flow to the consumer.	• Reliable water supply • Adequate supply for community services • Adequate pressures and flow for fire fighting purposes.	• Maintains health and safety of the community.
Infrastructure will be designed, constructed and operated in accordance with Workplace Health and Safety Legislation.	• Minimisation of risk to workers and community (reduction in accidents and insurance premiums).	• Minimise risk of pollution events. • Safer work environment for staff and public.

Detailed Design Parameters – Water Supply

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 water supply systems.

These factors are applied in accordance with procedures detailed in Section 21 of the QDNRM&E Guidelines.

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

Table E2 - Water Supply Design Parameters

Item	Description	Adopted Design Parameter
Water Demand		
1	Average Day Demand (AD)	• Existing Demand – 340 L/EPW/d • Future Demand – 340 L/EPW/d
Demand Factors		
4	Mean Day Maximum Month (MDMM/AD)	1.5 x AD – Global Peaking Factor • Residential A Demand (L/hr) = (1.5) x AD • Residential B Demand (L/hr) = (1.21) x AD • Park Residential Demand (L/hr) = (1.5) x AD • Commercial Demand (L/hr) = (1.11) x AD • Public Demand (L/hr) = (1.11) x AD • Industrial A Demand (L/hr) = (1.10) x AD • Irrigation Demand (L/hr) = (1.32) x AD
5	Maximum Day (MD/AD)	1.5 x MDMM – Global Peaking Factor • Residential A Demand (L/hr) = (2.0) x AD • Residential B Demand (L/hr) = (1.34) x AD • Park Residential Demand (L/hr) = (2.0) x AD • Commercial Demand (L/hr) = (1.17) x AD • Public Demand (L/hr) = (1.17) x AD • Industrial A Demand (L/hr) = (1.16) x AD • Irrigation Demand (L/hr) = (1.59) x AD
6	Maximum Hour (MH/AD)	• Residential A Demand (L/hr) = (4.33 ÷ 24) x AD • Residential B Demand (L/hr) = (2.57 ÷ 24) x AD

Item	Description	Adopted Design Parameter
		• Park Residential Demand (L/hr) = (4.49 ÷ 24) x AD • Commercial Demand (L/hr) = (2.24 ÷ 24) x AD • Public Demand (L/hr) = (2.84 ÷ 24) x AD • Industrial A Demand (L/hr) = (1.67 ÷ 24) x AD • Irrigation Demand (L/hr) = (1.43 ÷ 24) x AD
Peak Demand Modelling Periods		
7	Bulk distribution	• Reservoirs must not empty under 3 consecutive maximum day demands. • During MDMM demand reservoir shall have net positive inflow and shall be capable of continuous operation under this demand.
8	Zonal reticulation	Flow and pressure levels of service must be satisfied under 3 consecutive days of maximum day demand.
System Pressure		
9	Minimum Operating Pressure	• 22 m above the highest elevation on any lot in the pressure zone with the water level in the reservoir not less than 1.5 m below top water level. • In isolated high level areas, the minimum operating pressure may be reduced to 16 m above the highest elevation on any lot with the water level in the reservoir not more than 1.0 m above reservoir floor level.
10	Maximum Operating Pressure	80 m above the lowest elevation of any lot in the pressure zone.
Fire Fighting Requirements		
11	System Pressure	12 m minimum at any location in the reticulation mains with model conditions as detailed in Items 12, 13 and 14.
12	Fire Flow	• Residential - 15 L/s (simultaneous with background demand as defined in Item 13) • Commercial /Industrial - 30 L/s (simultaneous with background demand as defined in Item 13) • Special risk/hazard land use – to be assessed.
13	Background demand	MH Demand
14	Reservoir level	Set at Reservoir Mid-Water Level where: Mid-Water Level = (Top Water Level + Floor Level) ÷ 2 (AHD)
Reservoir Storage		
15	Ground Level Storage Capacity	[3 x (MD – MDMM)] + Fire Fighting Storage where fire fighting storage = 4 hrs of MDMM demand or 0.5 ML whichever is the greater
16	Elevated Storage Capacity	Required Storage Volume = Operating Volume + Fire fighting Reserve Where: Operating Volume = 6 x (MH – 1/12 MDMM) Fire storage = 150 kL
Pumping Capacity		
17	Duty pump capacity to serve ground level reservoirs.	Supply MDMM demand in 20 hours of operation in any 24 hour period.
18	Pumps serving elevated storage.	Pump must discharge not less than; (6xMH – Operating Volume)/(6 x 3600) where Operating Volume is defined in item 16 above.
19	Standby Pump Capacity	Equal to the capacity of the largest pump
Pipeline Design		
20	Trunk Main Capacity	Sized for MDMM flows
21	Reticulation Capacity	Sized for Maximum Hour and Fire Flow
21	Friction Default Values	Hazen Williams Coefficients of Friction: • C = 100 (diameters ≤ 150 mm) • C = 110 (150 mm> diameter < 300 mm) • C = 120 (diameter ≥ 300 mm)
22	Maximum Velocity	2.5 m/s

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 Manager Development Services; and

(2) reviewed and amended in accordance with the "Review Triggers" by the Manager Strategic Direction in consultation with the Manager Development Services.

VERSION CONTROL

CEO Approval Date

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 22	▪ 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