CENTRAL TABLELANDS WATER

Water Supply
Development Servicing Plan
2021

VISION

An independent regional water authority
providing a quality water supply
- reliably and sustainably.

Adopted 16 June 2021

Document Control

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1	Author	Fiona Conlon	7/04/2019	Draft for CTW Review
2	Updated	Fiona Conlon	9/04/2019	Updated post CTW review
3	Author	Fiona Conlon	3/04/2021	Capital Works Updated
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Prepared by

Atom Consulting
ABN:12 098 130 968
Annalisa@atomconsulting.com.au

And

Fiona Conlon Water Asset Management Pty Ltd

ABN: 39 150 533 127
Email: fiona.conlon.wam@gmail.com

SUMMARY

Central Tablelands Water County Council (CTW) has two separate water supply systems namely, Lake Rowlands and Quandialla.

Lake Rowlands water supply system is supplied by Lake Rowlands Dam and Quandialla water supply system is supplied by Quandialla borefield.

This DSP covers water supply developer charges for the following areas served by CTW.

- Lake Rowlands DSP Area: Blayney, Carcoar, Lyndhurst, Mandurama, Millthorpe, Canowindra, Cargo, Cudal, Eugowra, Manildra and Grenfell.

A DSP is not required for the Quandialla water supply system as the planned growth is zero. However, if there are any new connection requests on the Quandialla water supply system, a capital contribution in accordance with CTW's Fees and Charges will apply to fund future infrastructure renewals for the Quandialla water supply system. CTW will develop a Quandialla DSP should development in the area become apparent.

The water supply developer charge calculated for the Lake Rowlands DSP area is:

DSP Name	Developer Charge ($/ET)
Lake Rowlands	$6,211

In the period between any review, developer charges will be adjusted annually, on 1 July each year, on the basis of the movements in CPI for Sydney, excluding the impact of GST.

This DSP document has been prepared in accordance with the 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater issued by the Minister for Lands and Water, pursuant to section 306 (3) of the *Water Management Act, 2000*.

The areas covered by the DSP are shown in section 12.

CTW completed an extensive Asset Management Plan in 2018. The Plan formed the basis of the capital works program. The priority works are renewal of aging pipelines and dam safety remediation works to Lake Rowlands dam.

The timing and expenditures for capital works serving the DSP area are shown in section 4.

Levels of service to be provided in each DSP area are summarised in section 5.

Developer charges relating to this DSP document will be reviewed after a period of 4 to 8 years.

The developer shall be responsible for the full cost of the design and construction of water supply and sewerage reticulation works within subdivisions.

Background information containing all the critical data including calculation models behind each DSP is available on request (e.g., on USB).

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Tables

Figures

1 INTRODUCTION

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

A Development Servicing Plan (DSP) details the water supply developer charges to be levied on development areas utilising a local water utility's water supply infrastructure.

Central Tablelands Water County Council (CTW) has two separate water supply systems namely, Lake Rowlands and Quandialla. Lake Rowlands water supply system is supplied by Lake Rowlands Dam and Quandialla water supply system is supplied by Quandialla borefield.

This DSP covers water supply developer charges for the following areas served by CTW.

- Lake Rowlands DSP Area: Blayney, Carcoar, Lyndhurst, Mandurama, Millthorpe, Canowindra, Cargo, Cudal, Eugowra, Manildra and Grenfell

A DSP is not required for the Quandialla water supply system as the planned growth is zero. However, if there are any new connection requests on the Quandialla water supply system, a capital contribution in accordance with CTW's Fees and Charges will apply to fund future infrastructure renewals for the Quandialla water supply system. CTW will develop a Quandialla DSP should development in the area become apparent.

The boundaries of both DSP areas can be defined as the extent of their respective water supply networks. Figures showing the areas served by the water supply network can be found in section 12.

This DSP document has been prepared in accordance with the 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater issued by the Minister for Lands and Water, pursuant to section 306 (3) of the *Water Management Act, 2000*. The final dispute resolution arbiter is the NSW Ombudsman. CTW is not a member of the specialist utilities ombudsman, the Electricity and Water Ombudsman (EWON).

This DSP document supersedes any other requirements related to water supply developer charges for the areas covered by this DSP. This DSP document takes precedence over any of Council's codes or policies where there are any inconsistencies relating to water supply developer charges.

Figure 1-1. Central Tablelands Water area

2 ADMINISTRATION

2.1 DSP NAME AND AREA COVERED

CTW is a constituency of three local government areas, namely, Blayney Shire, Cabonne Shire and Weddin Shire. CTW also supplies bulk water to Cowra Shire Council to service the villages of Woodstock and Gooloogong.

This DSP covers water supply developer charges for the following areas served by CTW.

- Lake Rowlands DSP Area: Blayney, Carcoar, Lyndhurst, Mandurama, Millthorpe, Canowindra, Cargo, Cudal, Eugowra, Manildra and Grenfell. Bulk water to Cowra Shire Council supplying the towns of Gooloogong and Woodstock.

The boundary of the DSP area can be defined as the extent of the water supply network. Boundary polygons are not possible due to the extent of large rural properties supplied by the Lake Rowlands DSP area. Section 12 contains maps of the water supply network.

2.2 PAYMENT OF DEVELOPER CHARGES

Developer charges will be determined and levied in accordance with the provisions of this DSP document.

Time & Payment of Developer Charges

The General Purpose Constituent Council is to refer the assessment to CTW at the time of assessing the development application. CTW will assess the development and collect the relevant developer charges prior to issuing the Council with a Certificate of Compliance. Developers may pay the charges at any time before the Certificate of Compliance is released. However, if the developer charges are not paid in full within the time limit set out in the notice, the developer charges will be determined by CTW at the time of considering the application for a Compliance Certificate, using the DSP current at that time.

In the case of a consent for subdivision:

After submission of plans to CTW from Blayney, Cabonne, or Weddin Councils, Councils will notify CTW of development or subdivision. Following assessment by CTW and payment of fees, a Certificate of Compliance will be issued to Council on behalf of the applicant / property owner.

Deferment /periodic payment

CTW may consider deferred payment requests from a developer for a water mains extension plus developer charges for a period of up to two (2) years if the applicant, or any other person entitled to act upon the relevant consent, satisfies the following conditions:

- An independent assessment of the marketability of any proposed development should be submitted stating that the developed lots would be in high demand and likely to be sold within a four year period.
- CTW must be satisfied as to the feasibility and economic viability of providing water to any proposed development.
- Any deferred payment of a water mains extension plus, developer charge, must be repaid, proportionate to the frontage of each block of land, from the full realisation of each block of land within the development. The full cost, or the balance remaining, must be repaid in full at the end of the two year period.
- Security for the deferred payment must be by a bank guarantee for the cost of the mains extension plus developer charges.
- Each application would need to be determined by CTW, based on the adopted policy.

3 DEMOGRAPHIC AND LAND USE PLANNING INFORMATION

3.1 INTRODUCTION

CTW supplies portions of four Council areas but not 100% of these Council areas. The Lake Rowlands water supply system supplies 14 towns and villages, rural properties, large processing businesses, and bulk water to Cowra Shire Council.

Blayney Shire

- Blayney, Carcoar, Lyndhurst, Mandurama

Cabonne Shire

- Canowindra, Cargo, Cudal, Eugowra, Manildra

Weddin Shire

- Grenfell

Cowra Shire

- Gooloogong, Woodstock

Just over 50% of the water usage is non-residential water usage. The 2019 annual metered consumption was 1667 ML with 784 ML usage by residential customers (47% residential).

3.2 HISTORICAL POPULATION, WATER USAGE AND CONNECTIONS

The Guidelines require the number of ET serviced by the existing assets in 1996.

The 1996 ET was determined by extrapolation of CTW's budget income/consumption records for 2000. The number of connections in 2000 was 4863, equating to 8029 ET. Linear extrapolation to 1996 resulted in 4709 connections and 7783 ET.

Therefore, the 1996 ET used in the calculations was 7783 ET.

Table 7.4 shows the Historical and projected ET growth used in this investigation, from 1996 to 2049.

Existing Residential and Non-Residential Water Usage

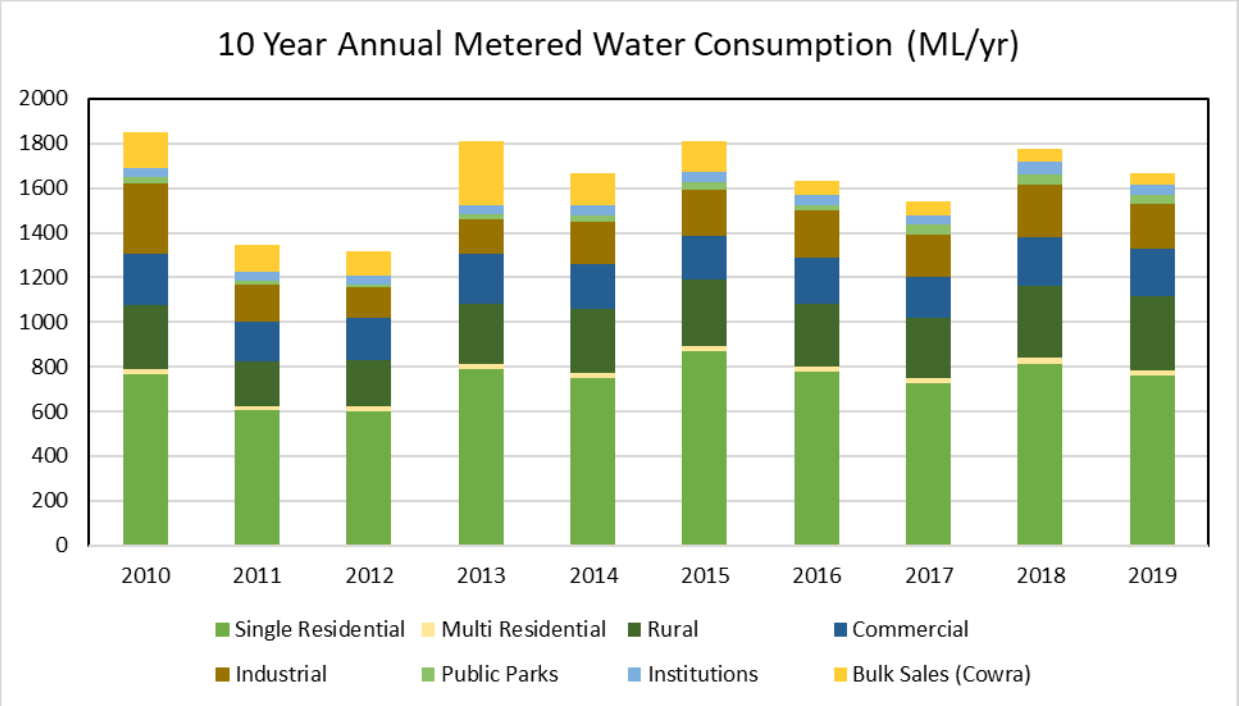
Table 3-1 and

Figure 3-1 below show the 10 year metered consumption trend from the 2018/2019 CTW Annual Report.

Table 3-1. 10 year CTW Metered Consumption ML/yr (includes Quandialla)

CONSUMER TYPE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	% USAGE
Single Residential	768	605	601	792	751	869	777	725	814	763	46%
Multi Residential	22	20	20	22	23	23	21	24	25	21	1%
Rural	287	196	209	266	282	301	285	268	325	332	20%
Commercial	231	180	189	224	203	193	204	187	217	211	13%
Industrial	315	167	136	158	189	208	212	188	236	204	12%
Public Parks	28	17	15	21	32	31	27	43	44	38	2%
Institutions	41	42	36	42	45	46	43	44	58	44	3%
Bulk Sales (Cowra)	156	117	110	285	144	141	63	62	55	54	3%
TOTAL	1848	1344	1316	1810	1669	1812	1632	1541	1774	1667	

Figure 3-1. 10 year CTW Metered Consumption ML/yr



3.3 GROWTH PROJECTIONS

The growth projections used in this study are lower than the growth projections documented in the CTW Strategic Business Plan (2015). Growth projections in the Strategic Business Plan were based on the best knowledge at the time, the constituent councils had economic development strategies in place which would have delivered growth of both residential and industrial (non-residential) water usage.

Unfortunately, CTW and its constituent councils no longer foresee growth in non-residential water usage and have reduced their predicted residential growth.

For this study, CTW directed ATOM Consulting to assume zero non-residential growth and residential growth projections will be similar to the 2013 to 2018 growth rates.

Investigation of the Developer Charge income for the past five years showed the growth in the Lake Rowlands water supply system has been an average of 30 new dwellings per year. Many of the towns and villages in this system have existing vacant unconnected urban lots. The majority of new dwelling growth has been take-up of these lots.

A growth projection of 30 ET per year was assumed for the duration of this DSP's planning horizon.

Table 7.4 shows the historical and projected ET growth used in this investigation, from 1996 to 2049.

3.4 LAND USE INFORMATION

This DSP document should be read in conjunction with Blayney, Cabonne and Weddin Council planning documents.

4 WATER SUPPLY INFRASTRUCTURE

4.1 WATER SUPPLY SYSTEM

The Lake Rowlands DSP water supply system is named after its main source, Lake Rowlands. Lake Rowlands was formed by the damming of Coombing Rivulet, a tributary of the Belubula River. It lies within the north-eastern region of the Lachlan River catchment.

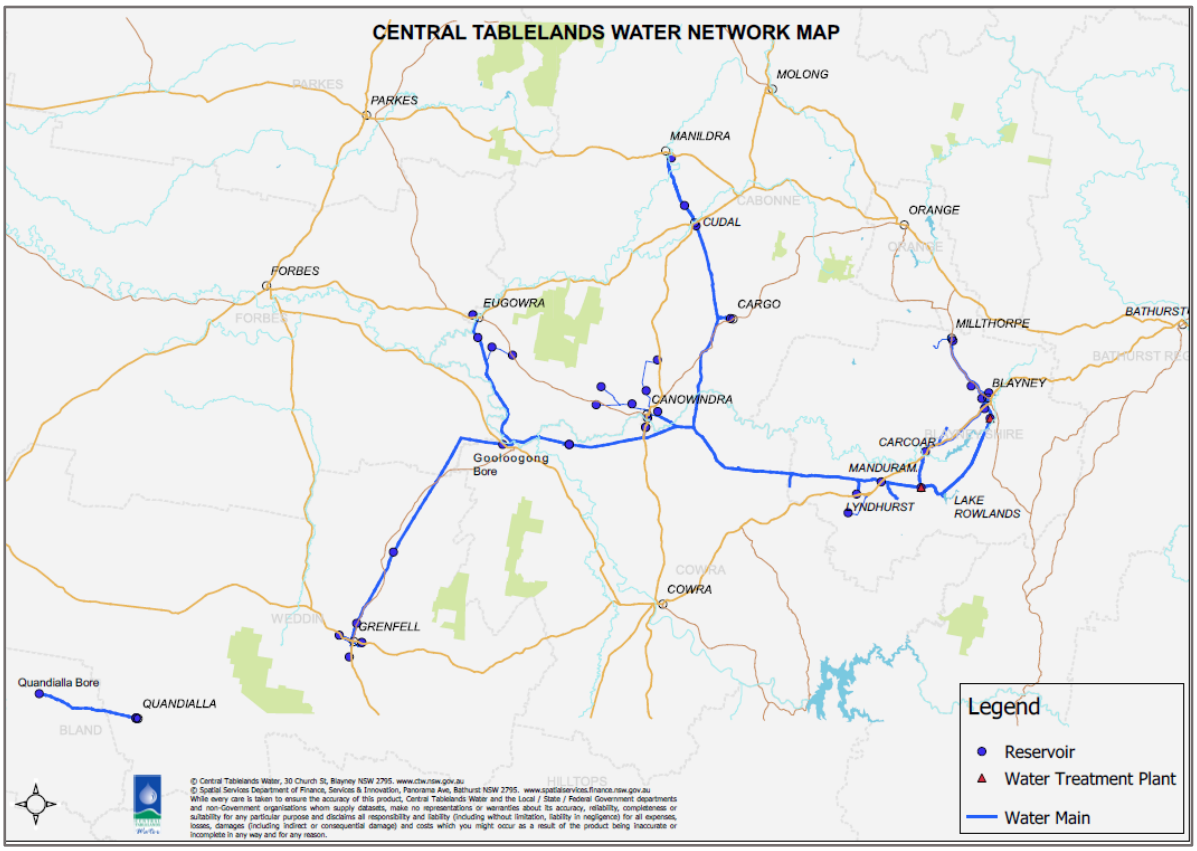
The Lake Rowlands dam is a concrete buttress dam impounding 4,500ML at full surface level. The dam was commissioned in 1954 and will undergo major remediation works within the next 10 years. The system has two main arms, known as the Carcoar System (Trunk main "C") and the Blayney System.

Blayney Well, Gooloogong, Bangaroo and Cudal bores draw from the South Western Fractured Rock aquifer. All the above bores are connected to the Lake Rowlands Water Supply System. The Gooloogong bores are in regular use during peak demand periods.

The Carcoar arm of the Lake Rowlands water supply system was the first water supply system constructed by CTW and serves the majority of the area covered by CTW. A 375mm trunk main supplies water by gravity from Lake Rowlands to Carcoar water treatment plant.

The Blayney System was built in the late 1950's with Blayney water treatment plant commissioned later, in 1966. Water from Lake Rowlands is pumped to Blayney water treatment plant via a 300/375mm diameter trunk main and supplies Blayney and Millthorpe townships.

Figure 4-1. Central Tablelands Water Network



Plans of each township are shown in section 12.

Table 4-1. Infrastructure

Asset type	No.	Capacity	Comments
Dams	1	4,500 ML	
Water Filtration Plants	2	15 ML/d	Carcoar WFP = 9ML/d Blayney WFP = 6 ML/d
Reservoirs	45	29 ML	
Pumping Stations	28	28 ML/d	
Bores	7	7 ML/d	
Length of trunk mains	306 km		
Length of reticulation mains	267 km		Not included in DSP Calculations

Tables of the existing assets included in the plan are shown section 14.

Lake Rowlands dam, the majority reservoirs and trunk mains are over 30 years old.

Renewal of trunk mains is the highest high priority.

Table 4-2. Trunk Main Renewals

Trunk Main Renewals in the 10 yr financial plan	Year commissioned
Trunk Main 'K' Relocation - Stage 3 - commissioning	1946
Trunk Main 'U' - 'C' to TMK Cudal - 35kms	1957
Trunk Main 'C' - Mandurama to 'U' - 35kms	1946
Trunk Main 'B' - CWFP to Mandurama - 7kms	1955
Trunk Main 'C' - 'U' to Gooloogong - 30kms	1946

The 2018 Asset Management Plan states *"Central Tablelands Water assets are sized to supply current demand for services. The assets will be augmented as required to meet the future demand."*

Figure 4-2. SCADA Screen 1: Lake Rowlands, Blayney WTP & Area, Carcoar WTP & Part Carcoar System

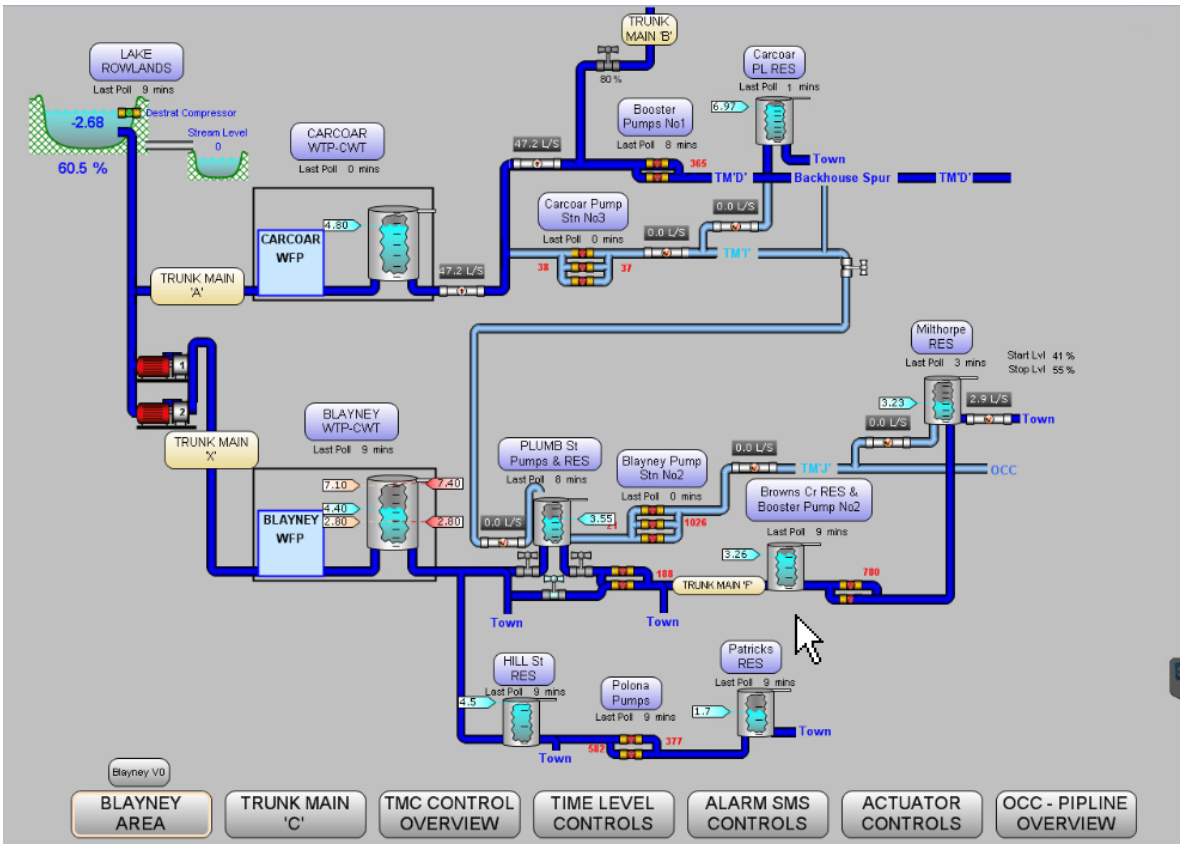
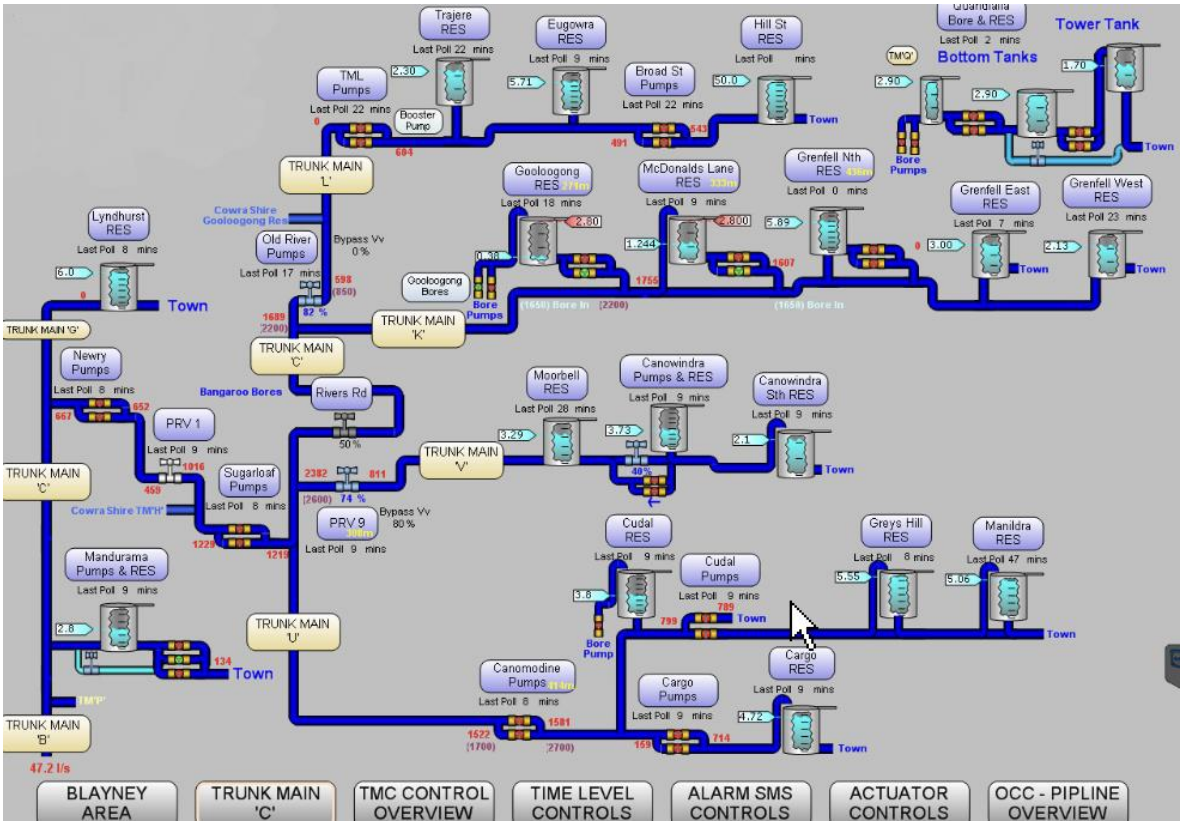


Figure 4-3. SCADA Screen 2: Rest of Carcoar System – Trunk main "C"



4.2 EXISTING CAPITAL COSTS

As previously discussed, Lake Rowlands dam and the majority of trunk mains are over 30 years old, and their costs are excluded from the Existing Asset calculation.

The Capital Cost (MEERA) value of the pre - 1990 Assets total $74,323,085.

A full list of CTW existing assets, construction years, capacities and 2019 MEERA Capital Costs are shown in section 14.

Table 4-3. Capital Costs Existing Assets

Lake Rowlands DSP Area			
Asset Type	Exclude Pre 1990	1990 to 1996	Post 1996
Trunk mains	$41,797,358	$1,683,767	$20,282,868
Reservoirs	$10,361,111	$745,718	$2,570,813
Pumping stations	$462,401	$488,916	$5,742,961
Telemetry	$0	$9,853	$306,334
Dam	$18,334,513	$0	$930,033
Water treatment plants	$3,269,860	$229,419	$11,718,732
Bores	$97,842	$152,776	$68,281
Total	$74,323,085	$3,310,449	$41,620,022

Source: Asset_2019_forDSP.xlsx date 24032020

Figure 4-4 below shows the Capital Cost and Present Value of the existing assets included in the Lake Rowlands DSP by year.

Table 4-4. Existing Assets included in the Lake Rowlands DSP by year

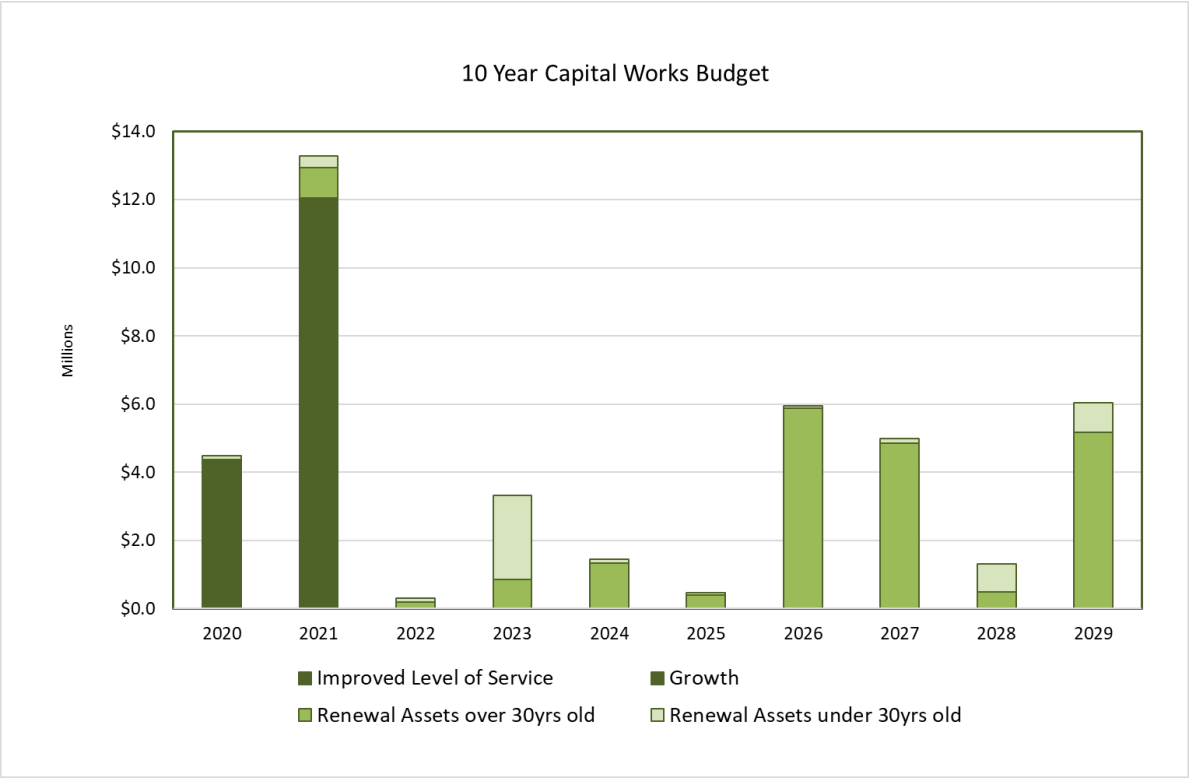
Year	1990 to 1996	Post 1996
1990	$1,327,652	$0
1991	$282,950	$0
1992	$0	$0
1993	$102,533	$0
1994	$422,069	$0
1995	$489,058	$0
1996	$686,186	$0
1997	$0	$1,288,825
1998	$0	$266,800
1999	$0	$1,304,130
2000	$0	$353,991
2001	$0	$7,195,073
2002	$0	$1,054,367
2003	$0	$1,262,322
2004	$0	$2,771,630
2005	$0	$1,198,117
2006	$0	$987,766
2007	$0	$508,473
2008	$0	$32,162
2009	$0	$91,632
2010	$0	$47,277
2011	$0	$216,268
2012	$0	$248,700
2013	$0	$0
2014	$0	$871,015
2015	$0	$1,981,104
2016	$0	$182,704
2017	$0	$41,491
2018	$0	$15,520
2019	$0	$19,700,656
Total	**$3,310,449**	**$41,620,022**

4.3 FUTURE CAPITAL WORKS PROGRAM

CTW maintains a rolling 30 year capital works program, including forecast renewal investment. The renewal program is constantly being refined based on new information on asset condition and performance. CTW maintains a detailed 10 year capital works program including an evidence based renewal plan.

The major works in the next 10 years are the Lake Rowlands Dam wall raising, upgrade of the Blayney WTP, bore renewal at Gooloogong and Bangaroo, a new 12 ML reservoir at Carcoar WTP and renewal of ageing trunk and reticulation mains (reticulation mains not included in calculations). It is noted that the CTW Asset Management Plan 2018 indicated priority should be given to the ageing trunk mains. The full capital works program is shown in section 15.

Figure 4-4. Capital Works Program



4.4 RETICULATION WORKS

The developer shall be responsible for the full cost of the design and construction of water supply and sewerage reticulation works within subdivisions.

5 LEVELS OF SERVICE

System design and operation are based on providing the following levels of service (LOS). The following Levels of Service are the Target Levels of Service found in the 2018 CTW Asset Management Plan, 2015 and 2018 Strategic Business Plans. Further information on Levels of Service and community consultation is available from Council upon request.

Table 5-1. Levels of service

LEVELS OF SERVICE FOR WATER SUPPLY		
Description	**Unit**	**Level of Service**
AVAILABILITY OF SERVICE		
Normal Quantity Available		
Domestic Peak Day	L/tenement/day	1,400
Domestic Annual	kL/tenement/year	190
Fire Fighting		
Compliance with the Water Supply Investigation Manual - urban properties	% area served	100
Pressure		
Min pressure when delivering 15 l/min	metres head	20
Maximum static pressure	metres head	60
Flow Rate		
Domestic (non-rural customers)	L/min	25
Rural Customers	L/min	6.3
CONSUMPTION RESTRICTIONS IN DROUGHTS		
Level of Restrictions Applied Through a Repeat of the Worst Drought on Record		
Average duration of restrictions	% normal usage	0
Average frequency of restrictions	No. per 10 year period	1
Supply Interruptions to Consumers		
Planned (95% of Time)		
Notice given to domestic customers	Hours	48
Notices given to commercial customers	Hours	48
Notice given to major industrial and institutional customers	Days	7
Unplanned		
Maximum duration	Hours	12
Frequency	No/year/customer	2
RESPONSE TIME TO CUSTOMER COMPLAINTS.		
Supply Failure		

LEVELS OF SERVICE FOR WATER SUPPLY		
Description	**Unit**	**Level of Service**
Priority 1: Defined as failure to maintain continuity or quality of supply to a large number of customers or to a critical use at a critical time)		
During working hours	Hours	1
Out of working hours	Hours	2
Priority 2: Defined as failure to maintain continuity or quality of supply to a small number of customers or to a critical use at a critical time)		
During working hours	Hours	3
Out of working hours	Hours	4
Priority 3: Defined as failure to maintain continuity or quality of supply to a single customer		
Any Time	Working days	1
Priority 4: Defined as a minor problem or complaint, which can be dealt with at a time convenient to the customer and the Council		
	Weeks	1
CUSTOMERS COMPLAINTS Note: Time apply for 95% of occasions		
Personal/Oral	Working days	5
Written	Working days	5
WATER QUALITY Should meet drinking water quality guidelines of Australia 2011		
Microbiological Parameters	Cfu/100 mL	2
Total Coliforms	Cfu/100 mL	2
Thermo-tolerant coliforms	Cfu/100 mL	0
Sampling Frequency	Samples/month	22
Physical-Chemical Parameters		
pH	Unit	7.5
Turbidity	NTU	1
Fluoride	mg/L	1.0
Free Available Chlorine at WTP	mg/L	2
Free Available Chlorine at reticulation system	mg/L	0.6
Sample Frequency	Samples/year	365
Percentage Compliance with ADWG 2011		
Physical Parameters	%	100
Chemical Parameters	%	100
Total Coliforms	%	98
Thermo=Tolerant Coliforms	%	100

Note: The Levels of Service are the targets which CTW aims to meet, they are not intended as a formal customer contract.

6 DESIGN PARAMETERS

6.1 WATER SUPPLY

Investigation and design of water supply system components is based on:

- CTW Level of Service (refer section 5 above)
- Water Services Association Australia (WSAA) Water Supply Code WSA 03-2011
- CTW Asset Management Plan (2018)
- CTW Financial Plans and financial data, as referenced in section 8.
- CTW Strategic Business Plan (2015)
- CTW Strategic Business Plan (2018)
- NSW Reference Rates Manual, Valuation of water supply, sewerage and stormwater assets and using 2019 attachment.
- Water Supply Investigation Manual (1986).

7 DEVELOPER CHARGES CALCULATION – WATER SUPPLY

7.1 SUMMARY

The developer charges for the area covered by this DSP document are as follows:

Table 7-1. Developer charges

DSP Name	Capital Charge ($ per ET)	Reduction Amount ($ per ET)	Developer Charge ($ per ET)
Lake Rowlands	$7,927	$1,716	$6,211

These amounts have been calculated on the basis of the sections 7.2 to 7.8 below.

7.2 SERVICE AREAS

The water supply service areas and the basis of determining the service areas are as follows:

Table 7-2. Water supply service areas

DSP Areas	Basis of Determining each Service Area
Lake Rowlands	System with Lake Rowlands Dam as the water source
	The boundary of each service area is the extent of the water supply network

7.3 EQUIVALENT TENEMENTS (ETS)

One of the key levels of service (LOS) for Council's water supply is "average residential water to be supplied for a detached residential dwelling (1 ET) per tenement".

The CTW standard Equivalent Tenement is 2019 average residential water usage as reported in the Water Supply and Sewerage NSW Benchmarking Reports

The volume of 178 kL is CTW's average annual residential water supplied for a single detached residential dwelling and represents 1ET.

The number of ETs to be served has been determined as the estimated annual water to be supplied divided by the volume for 1 ET.

The 2018/2019 number of connections for Lake Rowlands was 5,779, conversion to ET results in 8,962 ET. Table 7-1 below contains a further breakdown of water usage and conversion to Equivalent Tenements.

Table 7-3. Determination of ET – Lake Rowlands DSP Area

	2018/2019			
Customer Type	Metered Usage KL/yr	Connections	Std ET Kl/yr	ET
Single Res	756,547	4,289	178	4,250
Multi Res	21,326	48		120
Rural	270,609	709		1,520
Commercial	208,329	621		1,170
Industrial	203,533	13		1,143
Public Parks	37,847	64		213
Institutions	43,006	34		242
Bulk Sales (Cowra)	53,972	1		303
TOTAL	1,595,169	5,779		8,962

Growth projections for population and number of water supply ETs are shown in the table below. These projections are from 1996 to 2049 which is this DSP's calculation period.

Table 7-4. Growth Projections - Lake Rowlands

Year	Connections	Total No of ET	New ET per Year
1996	**4709**	7783	51.3
1997	4760	7834	51.3
1998	4812	7885	51.3
1999	**4863**	7937	51.3
2000	4914	7988	51.3
2001	4966	8039	51.3
2002	5017	8091	51.3
2003	5068	8142	51.3
2004	5119	8193	51.3
2005	5171	8244	51.3
2006	5222	8296	51.3
2007	5273	8347	51.3
2008	5324	8398	51.3
2009	5376	8449	51.3
2010	5427	8501	51.3
2011	5478	8552	51.3
2012	5529	8603	51.3
2013	5581	8654	51.3
2014	5632	8706	51.3
2015	5683	8757	51.3
2016	5734	8808	51.3
2017	5786	8859	51.3
2018	5837	8911	51.3
2019	**5779**	**8962**	**30**
2020		8992	30
2021		9022	30
2022		9052	30
2023		9082	30

2024		9112	30
2025		9142	30
2026		9172	30
2027		9202	30
2028		9232	30
2029		9262	30
2030		9292	30
2031		9322	30
2032		9352	30
2033		9382	30
2034		9412	30
2035		9442	30
2036		9472	30
2037		9502	30
2038		9532	30
2039		9562	30
2040		9592	30
2041		9622	30
2042		9652	30
2043		9682	30
2044		9712	30
2045		9742	30
2046		9772	30
2047		9802	30
2048		9832	30
2049		9862	30
			2058

7.4 CAPITAL CHARGE

The capital charge for the Lake Rowlands DSP area has been calculated using Net Present Value (NPV) spreadsheet method. These capital costs are only for the share of the asset capacity used in the service area. The Present Value (PV) of capital cost and the PV of new ETs are calculated, and the capital charge per ET is the PV of the capital cost divided by the PV of the ETs.

The NPV spreadsheet method was followed for both the capital cost of relevant assets and projected ETs served in the service area. The summary of the capital charge calculations is shown in the table below.

Table 7-5. Summary of Capital Charges for Lake Rowland DSP Area

PV of New ETs for pre 1996 Assets @3%	PV of New ETs for post 1996 Assets @5%	PV of Capital cost for pre-1996 assets @3%	PV of Capital cost for post 1996 assets @5%	Capital charge for pre 1996 Assets	Capital charge for post 1996 Assets	Capital charge per ET ($)
1,181	886	$690,753	$6,504,980	$585	$7,342	$7,927

7.5 REDUCTION AMOUNT

CTW has adopted the NPV of Annual Bills method to calculate the Reduction Amount. The Reduction Amount is the amount by which the capital charge is reduced to arrive at the developer charge.

It is a portion of the future water rates that will be paid by the new residents in the DSP area. The majority of value of future rates will be spent on the Operation, Maintenance and Administration of the water supply, this is commonly termed OMA. This amount is calculated from CTW's Annual Financial Statement Special Schedule 3.

The difference between the water bill and OMA amount is the Net Income which CTW can spend on capital works.

The reduction amount has been calculated as follows:

Annual bill at the commencement of the DSP = $755 per ET (see section 17)

OMA cost at the commencement of the DSP = $611 per ET. (see section 17)

Net income = Annual bill – OMA cost (as above) = $143 per ET

Results:

PV (New ETS) over 30 years @ 5% = 484

PV (Net Income) from new ETs over 30 years @ 5% = $831,000

Reduction Amount = $831,000 / 484

Reduction Amount = $1,716

Calculation details for the reduction amount are shown in section 17.

7.6 CROSS-SUBSIDY

CTW will not be considering cross-subsidising the developer charge.

8 REVIEWING/UPDATING OF CALCULATED DEVELOPER CHARGES

Developer charges will be adjusted on 1 July each year based on movements in the CPI for Sydney, in the preceding 12 months to December, excluding the impact of GST.

Developer charges will be reviewed by Council after a period of 5 to 8 years.

9 BACKGROUND INFORMATION

Background information containing all the critical data including calculation models behind each DSP is available from CTW on request.

The following documents and data were used in this study:

- CTW 2018 Asset Management Plan
- CTW Strategic Business Plan, (2018)
- CTW IWCM Evaluation Report (2009)
- Review of Safe Yield for Lake Rowlands (2010)
- CTW 2017, 2018, 2019 Annual Financial Statements, specifically Special Schedule 3
- CTW 2017, 2018, 2019 Annual Reports
- NSW Performance Report data from 2010/11 to 2018/2019 inclusive.
- CTW 10 Year Capital Works Program
- CTW 10 year metered water usage data
- CTW Developer charge income
- CTW Asset Database data including asset commissioning dates, size/length of assets, 2018/9 MEERA valuation of assets.
- Blayney Master Plan 2016
- Cabonne Settlement Strategy
- WaterNSW 20 Year Infrastructure Options Study 2018, Rural Valleys Summary Report

10 OTHER RELATED CONTRIBUTION PLANS

Nil

11 GLOSSARY AND ABBREVIATIONS

Term	Description
Annual Bill	LWU's annual water supply for an annual demand of 1 ET (page 47 of Guidelines).
Annual Demand	The total water demand over a year. Used to size headworks components (page 13 of Guidelines).
Asset	An asset (or part of an asset) including land and headworks assets that directly provides, or will provide, the developer services to developments within the DSP area for which the Developer Charge is payable
Background Information	Contains all the critical data behind each DSP. This information should be made available electronically to developers on request, eg. on a CD and should include the calculation models in Excel or similar electronic spreadsheet format, so that all components of the model can be investigated.
Capital Cost	The Present Value (MEERA basis) of all expenditure on assets used to service the development.
Capital Charge	Capital cost of assets per ET adjusted for commercial return on investment (ROI)
CPI	Consumer price index.
CTW	Central Tablelands Water County Council
Developer Charge (DC)	Charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development.
Development Area	See DSP area.
Discount Rate	The rate used to calculate the present value of money arising in the future (page 21 of Guidelines).
DPIE Water	A division of NSW Department of Planning, Industry & Environment
DSP area	That part of a water utility's area covered by a particular Development Servicing Plan. Also referred to as Development Area (page 6 of Guidelines).
DSP Document	Development Servicing Plan Document (page 7 of Guidelines)
ET	Equivalent tenement. The annual demand a detached residential dwelling will place on the infrastructure in terms of the water consumption or sewage discharge (page 13 of Guidelines).
Government	Government funds provided towards the capital cost of a project
GST	Goods and services tax.
Headworks	Significant assets at the top end of the water systems or the bottom end of the wastewater and stormwater system. For example, water headworks may comprise a system of storage reservoirs, water treatment works and major supply conduits.
IPART	The NSW Independent Pricing and Regulatory Tribunal.
kL	Kilolitre (1,000 litres).
LGNSW	Local Government NSW.
LWU	Local water utility (NSW). Excludes Sydney Water Corporation, Hunter Water Corporation, Central Coast Council, Essential Water and Fish River Water Supply.

Term	Description
MEERA	Modern Engineering Equivalent Replacement Asset. An asset value calculated on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technologies, which provides similar utility functions to the existing asset in service.
ML	Megalitre (1,000,000 litres, or 1,000 kilolitres).
NOW	NSW Office of Water, replaced by DPIE Water
NPV	Net present value means the difference between the Present Value of a revenue stream and the Present Value of a cost stream.
OMA	Operation, maintenance and administration (cost).
Operating cost	In relation to a DSP is the operation, maintenance, and administration cost (excluding depreciation and interest) of a LWU in providing Customer services to a DSP area.
Peak Day Demand	The maximum demand in any one day of the year. Used to size treatment works, service reservoirs, trunk mains and pumping stations in the distribution system
Periodic bills	The periodic bills (generally quarterly) levied by a LWU in accordance with their annual operational plan.
Post 1996 Asset	An asset that was commissioned by a LWU on or after 1 January 1996 or that is yet to be commissioned.
Pre-1996 Asset	An asset that was commissioned by a LWU before 1 January 1996. PV
PV	Present value. The current value of future money or ETs.
Real Terms	The value of a variable adjusted for inflation by a CPI adjustment.
Reduction Amount	The amount by which the capital charge is reduced to arrive at the developer charge. This amount reflects the capital contribution that will be paid by the occupier of a development as part of future annual bills.
ROI	Return on investment. Represents the income that is, or could be, generated by investing money.
Service Area	An area serviced by a separate water supply system, an area served by a separate STW, a separate small town or village, or a new development of over 500 ETs.
TRB	Typical residential bill, which is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility's average annual residential water supplied per connected property.
WICA	*Water Industry Competition Act, 2006*
WICAA	*Water Industry Competition Amendment (Review) Act, 2014 WTW*
WTP	Water Treatment Plant

12 PLANS

12.1 INFRASTRUCTURE OPERATION

Figure 12-1. The Water Supply System: Blayney Area

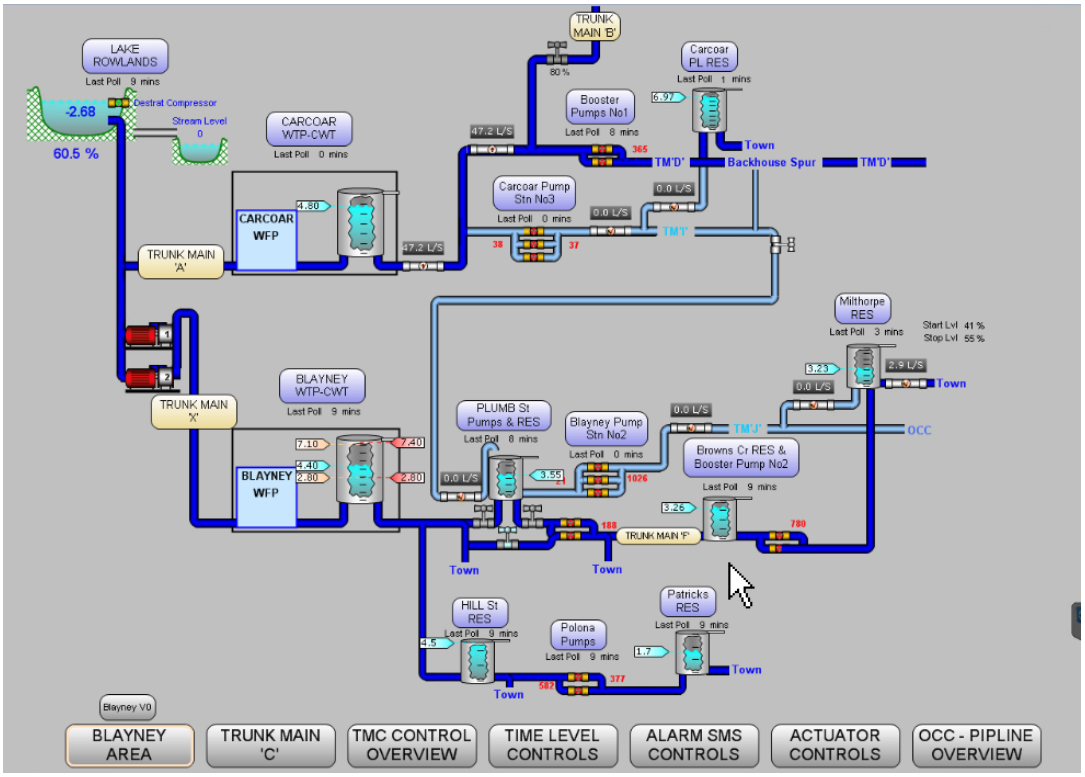
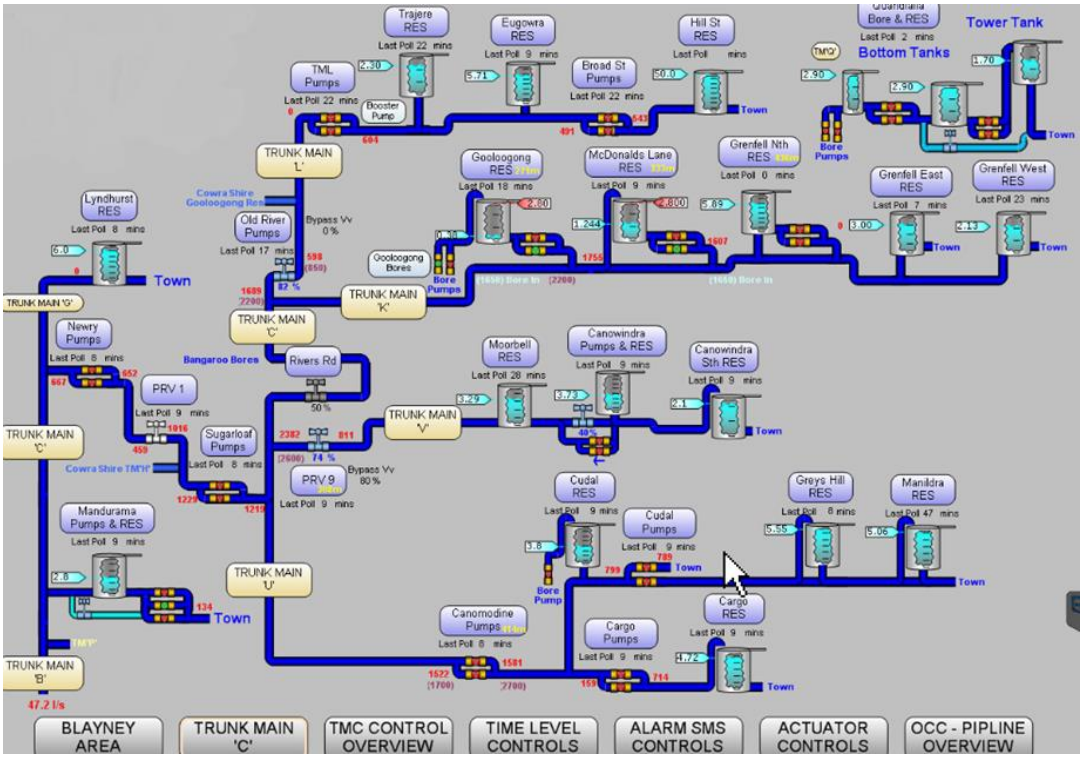


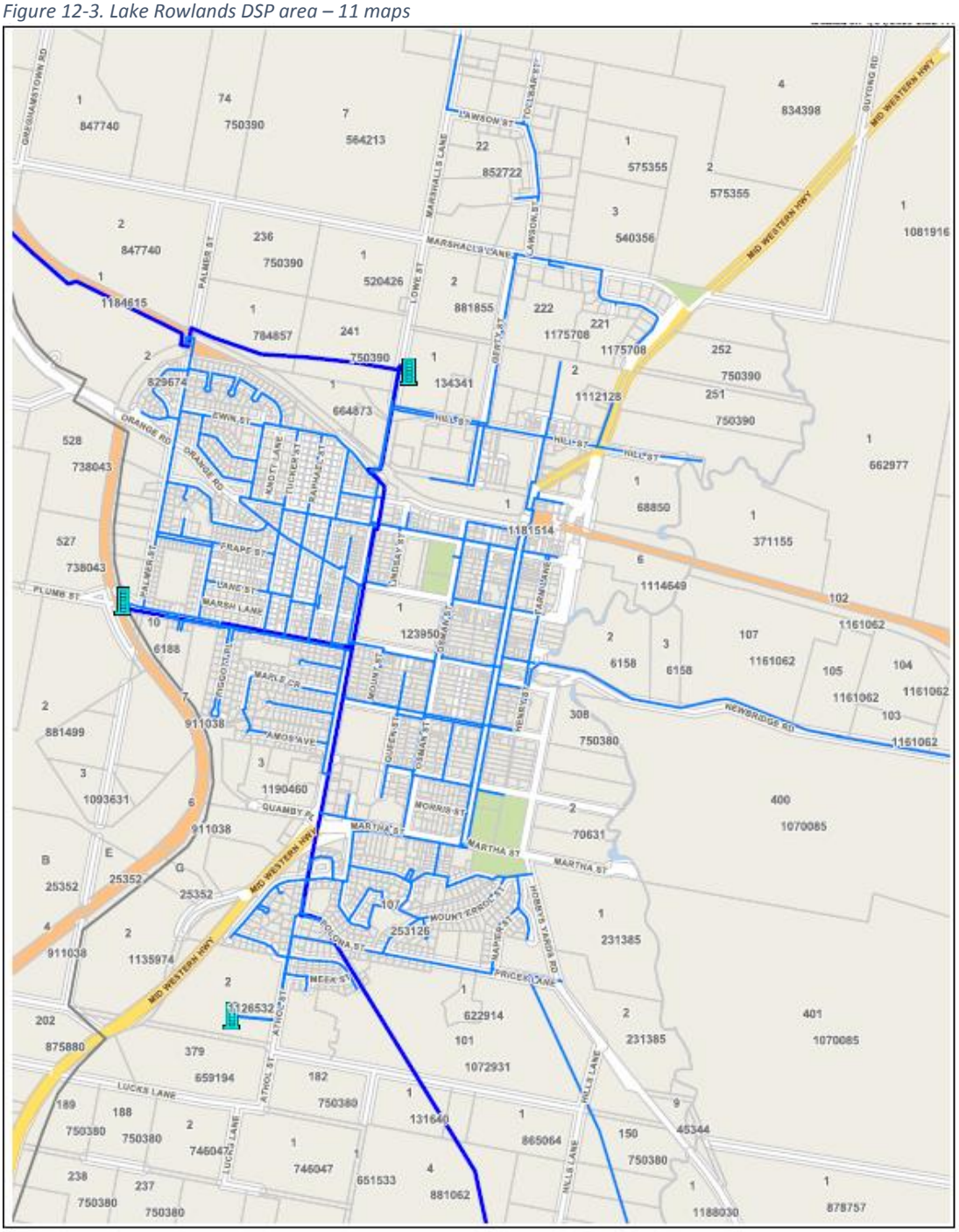
Figure 12-2. The Water Supply System: Trunk main "C" (Western Supply)

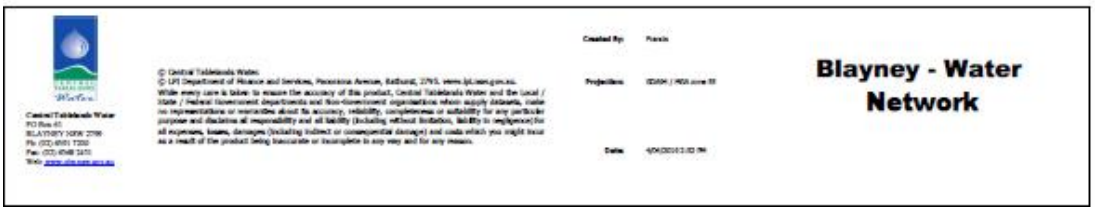


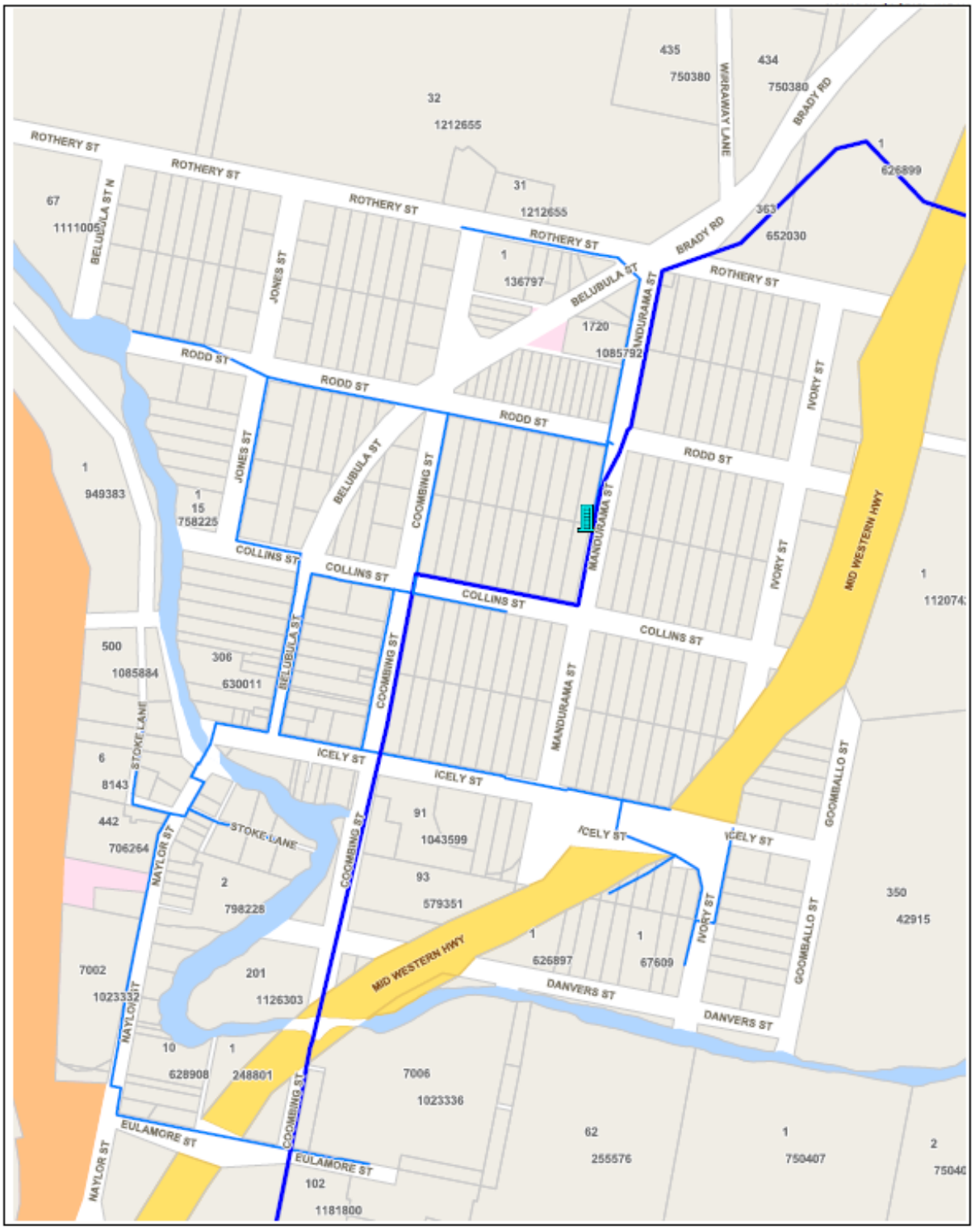
12.2 AREAS SERVED BY THE LAKE ROWLANDS DSP

The boundary of the DSP area for each township is defined as the extent of the water supply network. Boundary polygons are not possible due to the extent of large rural properties supplied by the Lake Rowlands DSP area.

Figure 12-3. Lake Rowlands DSP area – 11 maps







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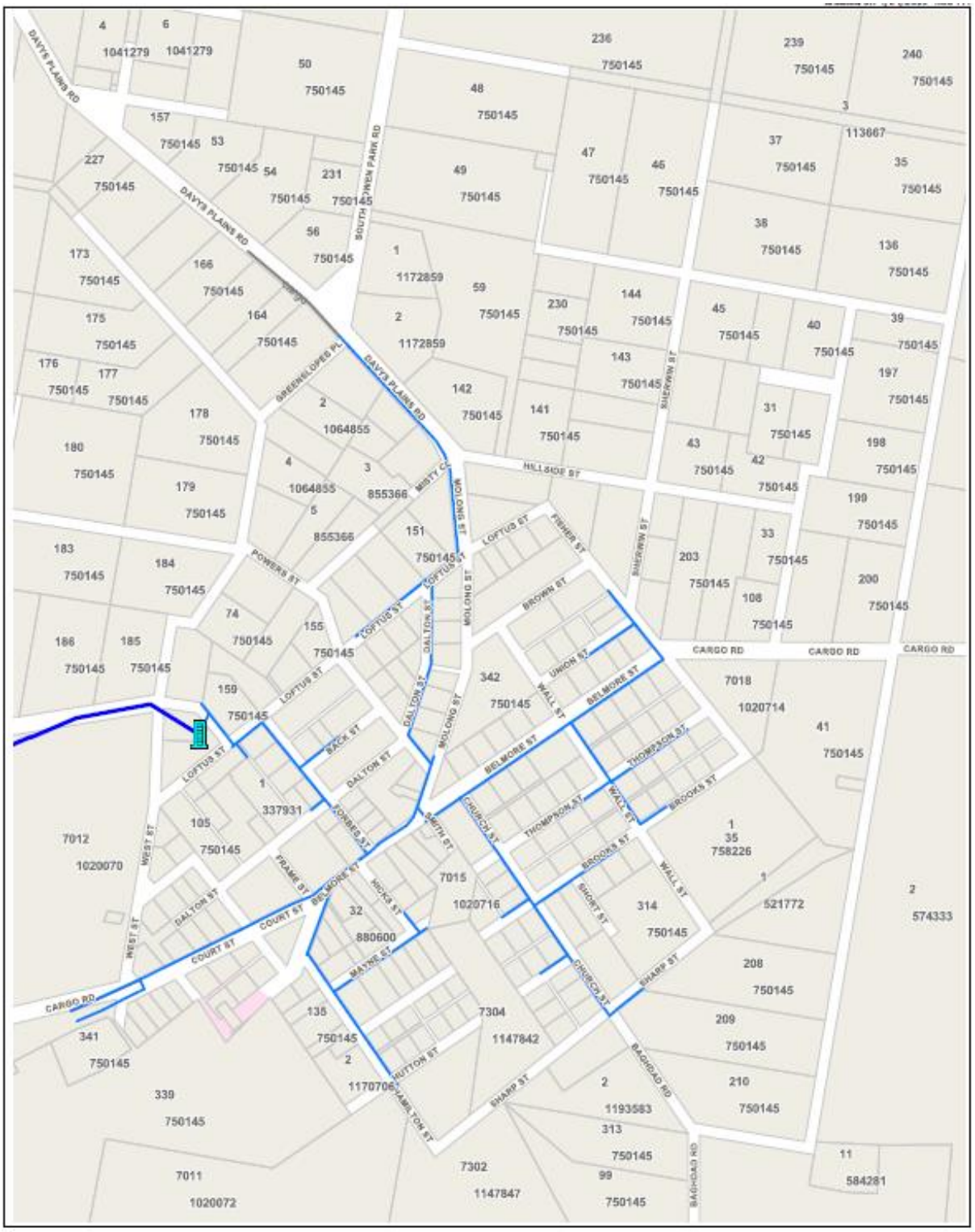
Carcoar - Water Network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GREENELOPES PL
MISTY CL
MOLONG ST
HILLSIDE ST
SHERWIN ST
FISHER ST
LOFTUS ST
POWERS ST
DALTON ST
BROWN ST
UNION ST
WALL ST
BELMORE ST
THOMPSON ST
BROOKS ST
CHURCH ST
SHORT ST
SMITH ST
BACK ST
FORBES ST
WEST ST
FRAME ST
NICKS ST
COURT ST
MAYNE ST
HUTTON ST
HAMILTON ST
SHARP ST
BAGHDAD RD
CARGO RD
1041279
750145
1172859
1064855
855366
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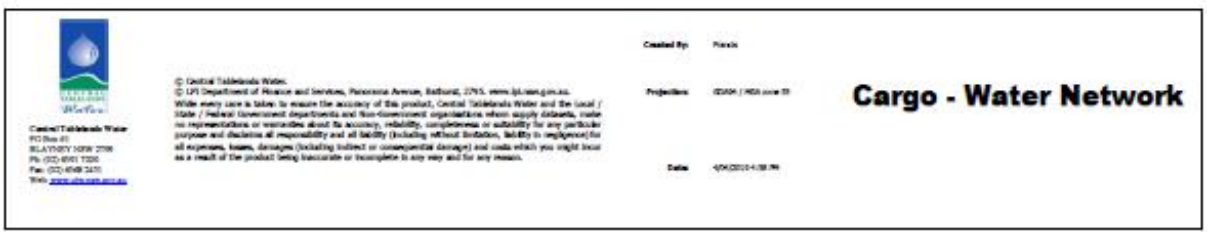
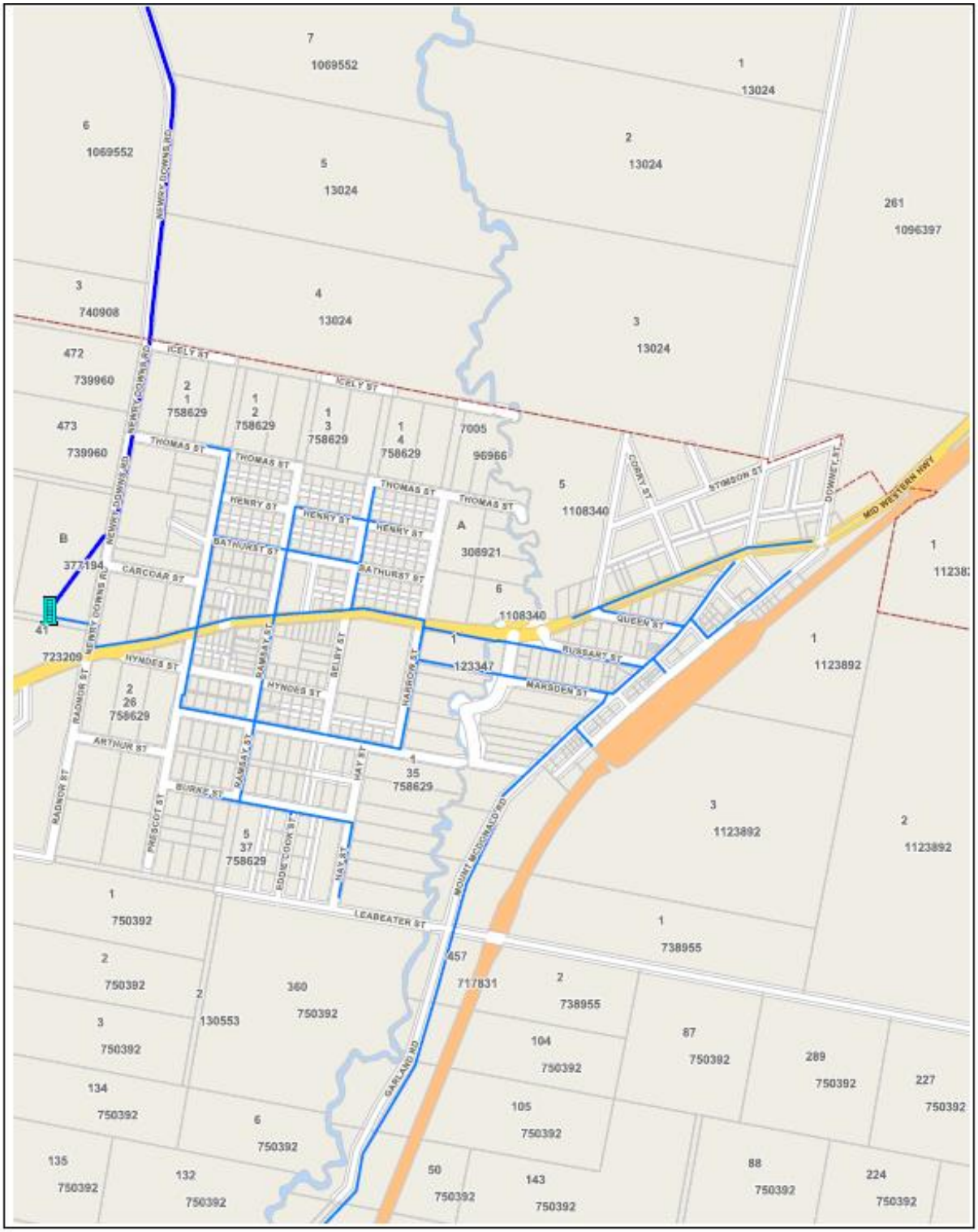

Cargo - Water Network



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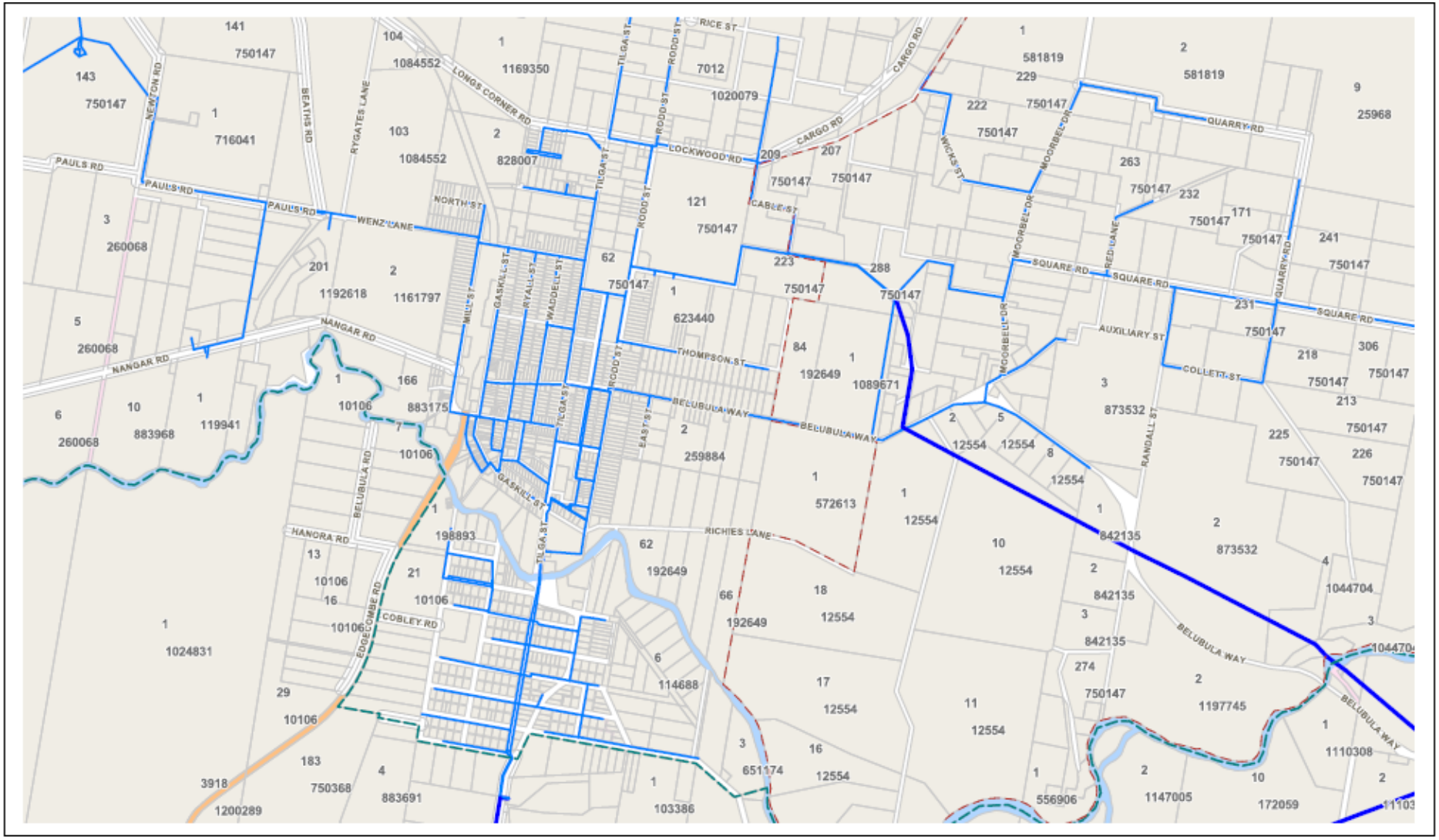
Lyndhurst - Water Network



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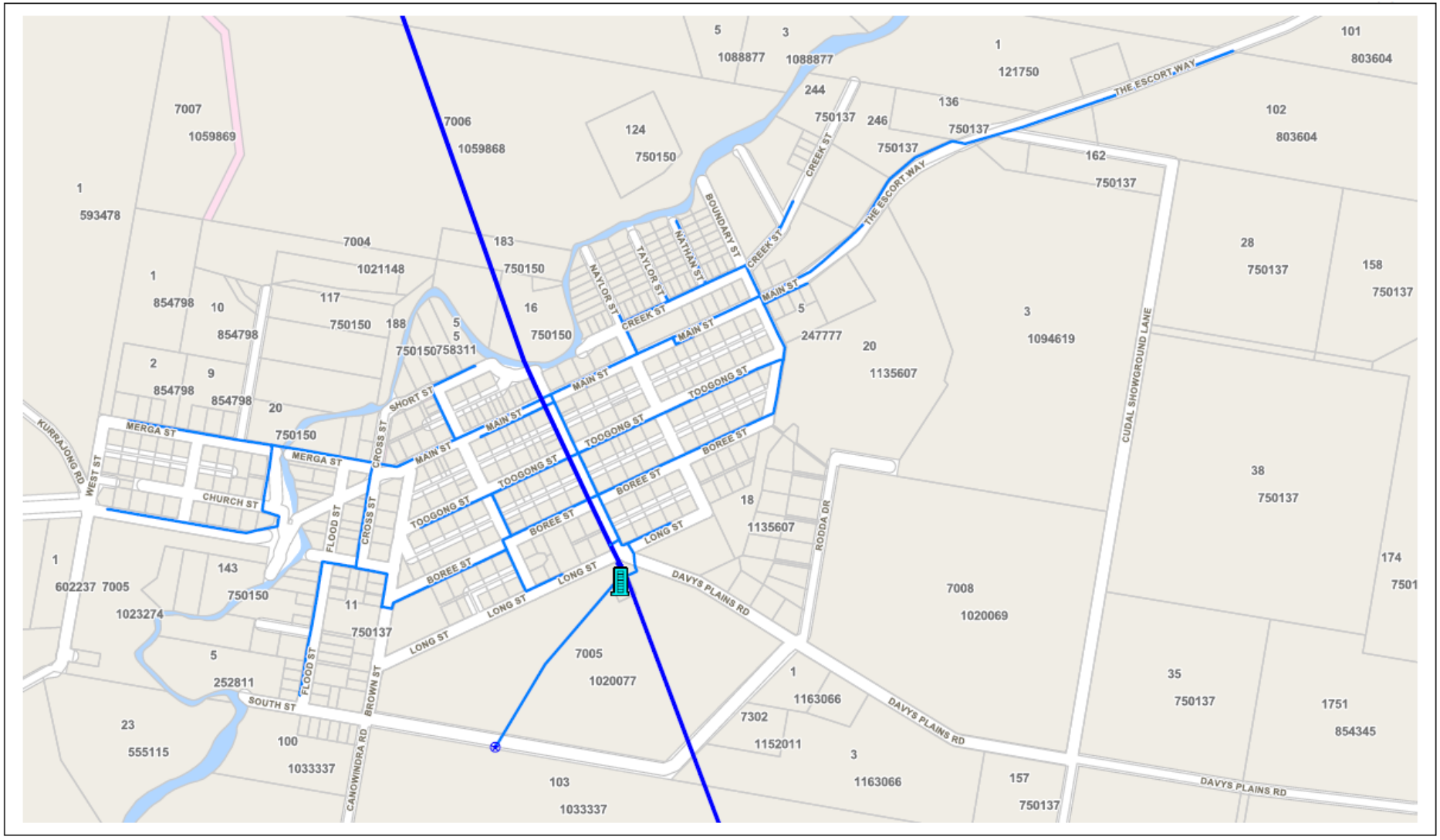
Canowindra - Water Network



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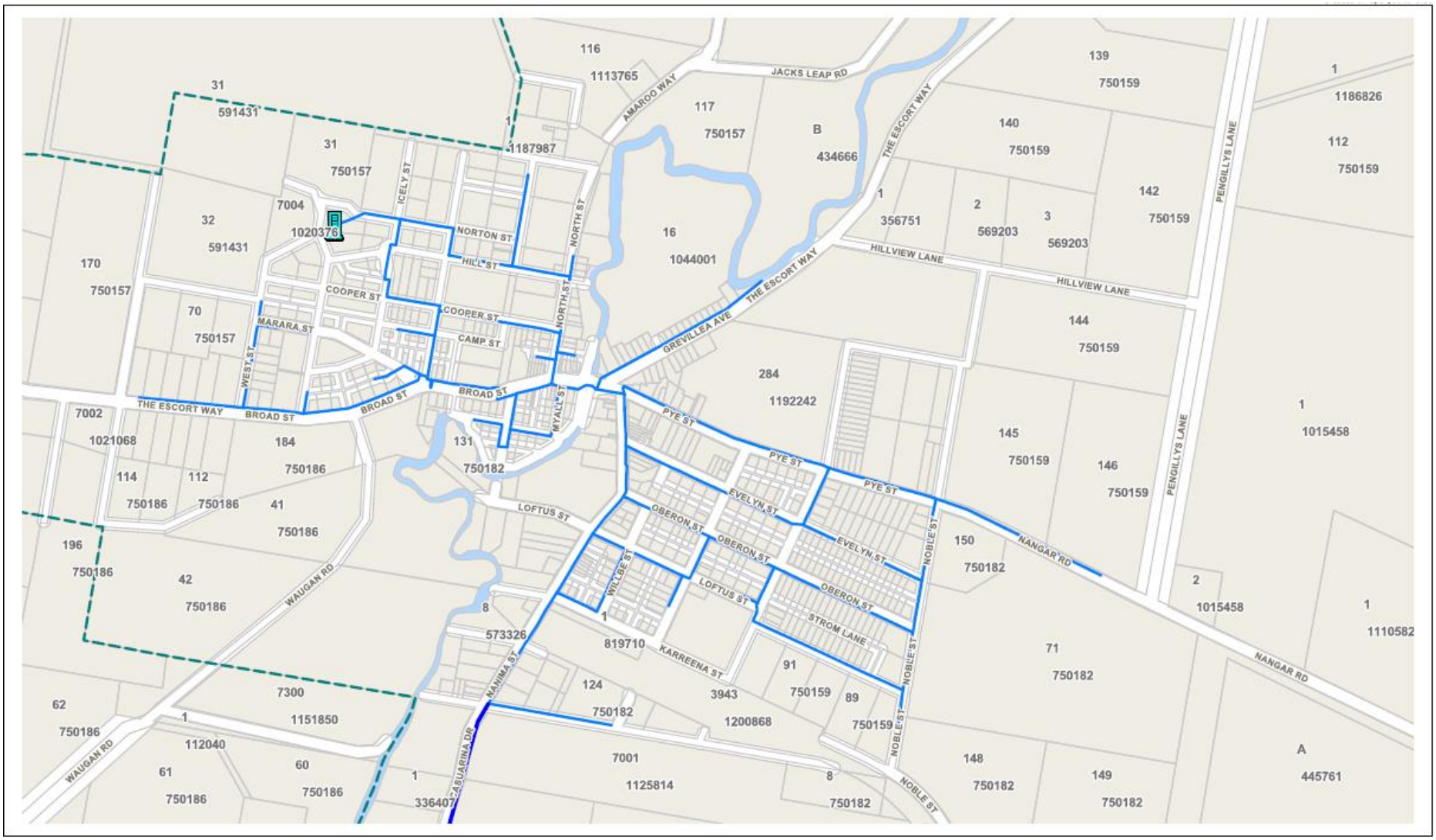

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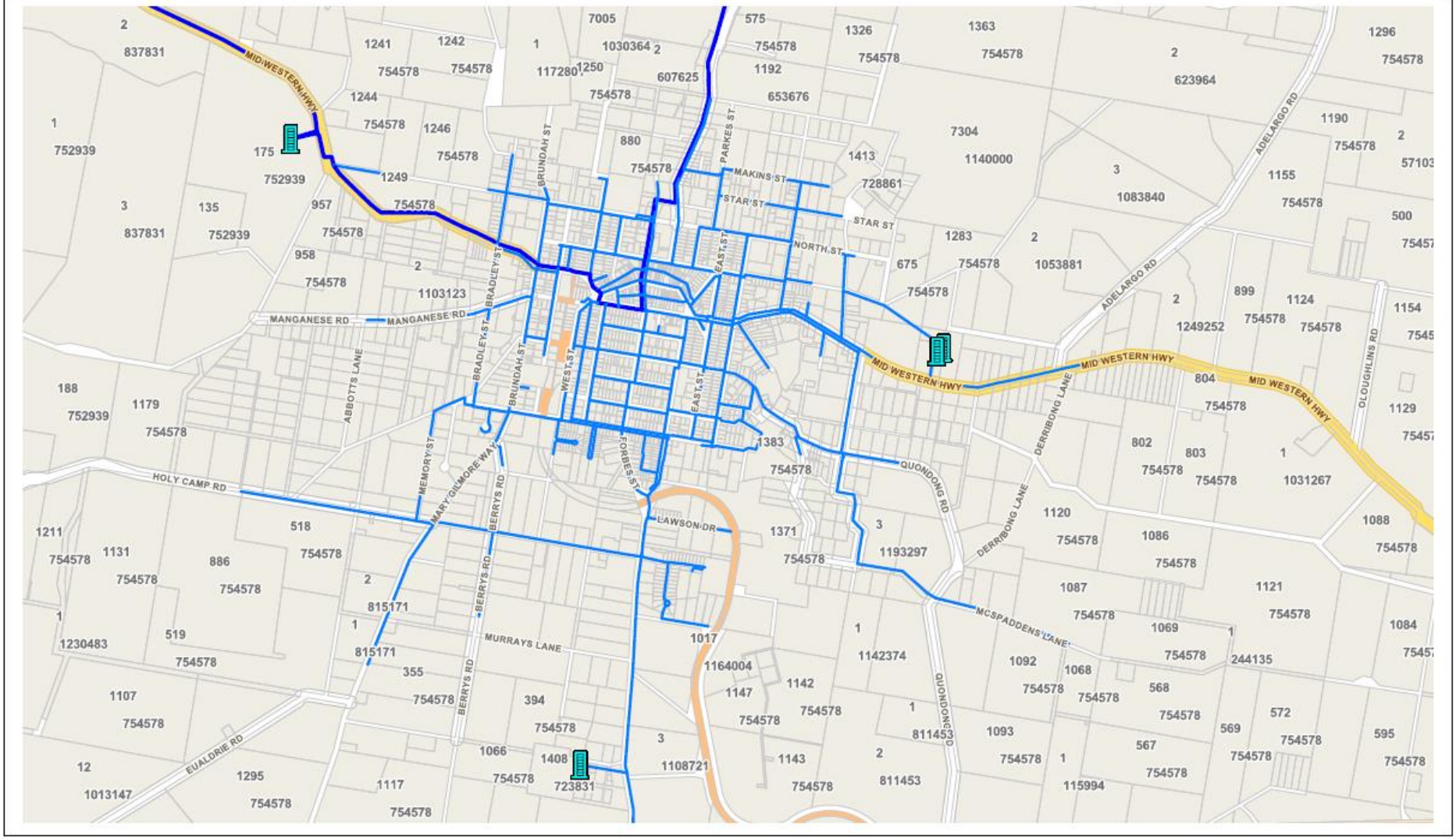
Eugowra - Water Network



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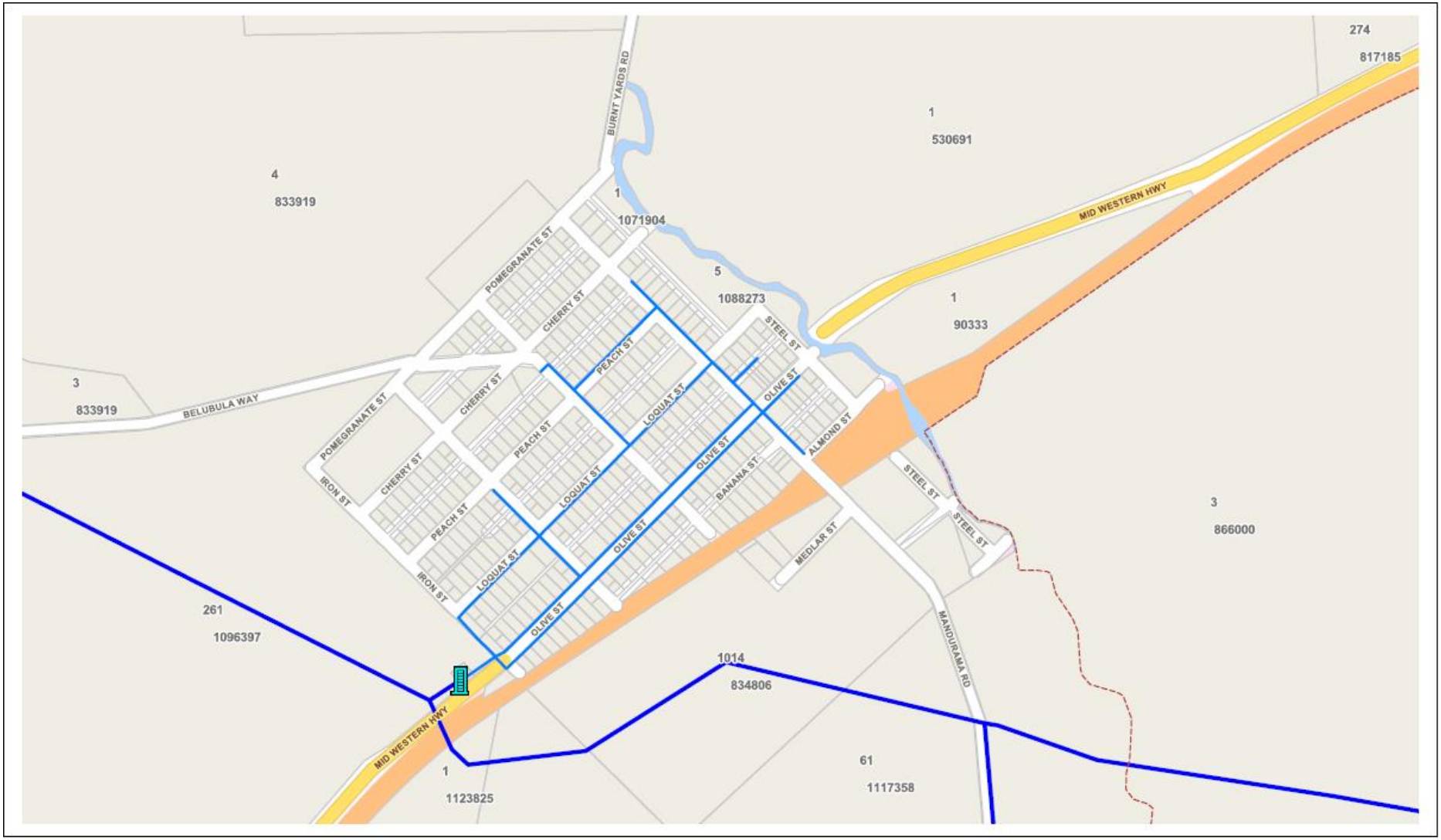
Grenfell - Water Network



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Mandurama - Water Network

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Date: 5/04/2019

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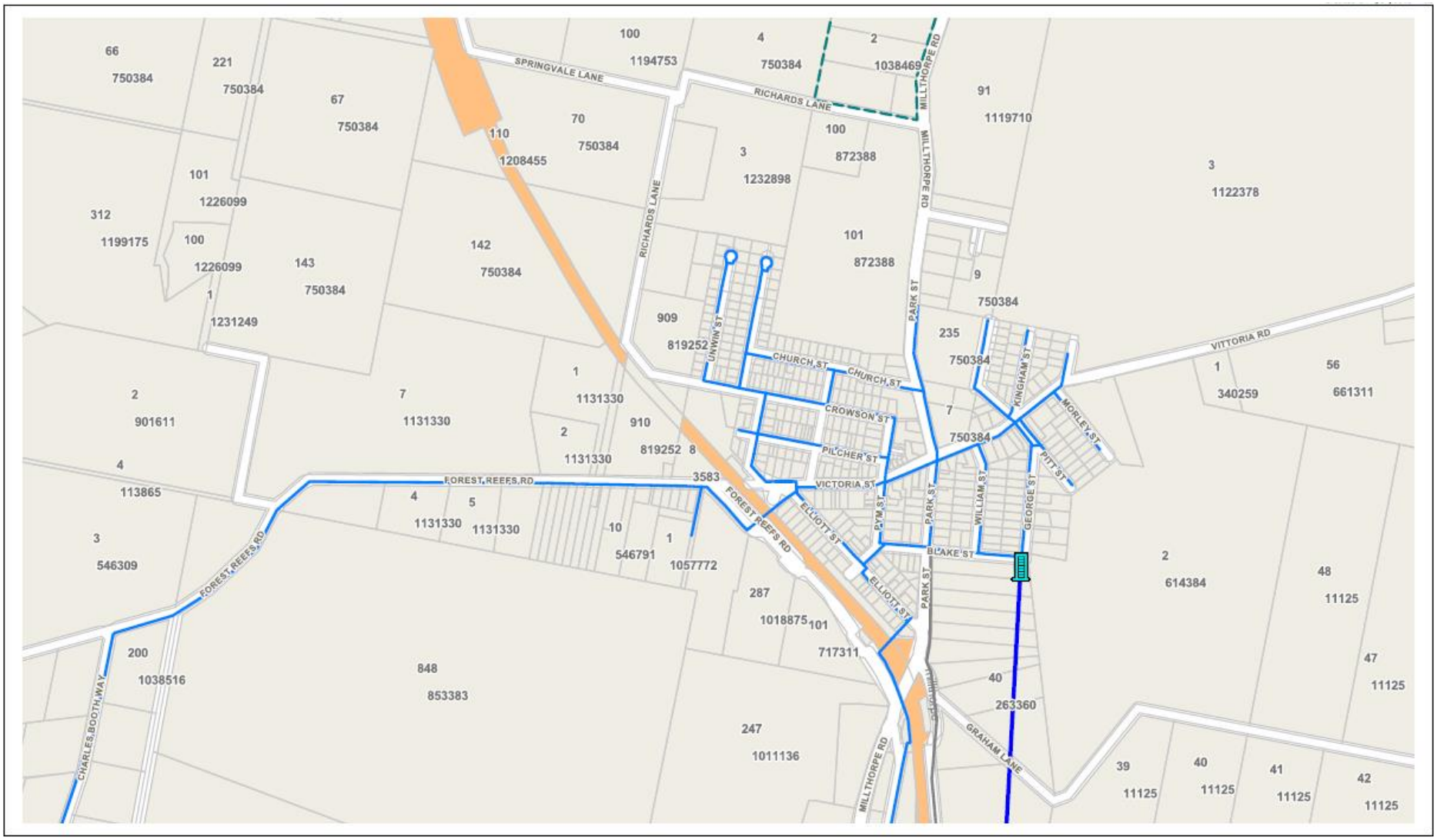
Manildra - Water Network



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Millthorpe - Water Network

13 CALCULATION OF ETS

The CTW standard Equivalent Tenement is the 2019 “average annual residential water usage” as reported in the Water Supply and Sewerage NSW Benchmarking Report.

14 EXISTING CAPITAL COSTS

The 2018 Asset Management Plan states “Central Tablelands Water assets are sized to supply current demand for services. The assets will be augmented as required to meet the future demand.”

The Existing Assets are shown in the Table 14-1 to Table 14-6.

Reservoirs

Table 14-1. Existing assets: reservoirs

Description	Location	Capacity ML	Component	Construction Year	Replacement Cost 2019
Hill Street	Blayney	1.14	Civil	1930	$464,262
Hill Street	Blayney		Roof	1999	$116,065
Blayney WFP	Blayney	4.55	Civil	1966	$1,083,843
Blayney WFP	Blayney		Roof	2004	$451,019
Blayney WFP	Blayney		Mechanical	2004	$65,352
Blayney WFP	Blayney		Electrical	2004	$21,784
Patricks (Marsdens)	Blayney	0.45	Civil	1974	$197,741
Patricks (Marsdens)	Blayney		Roof	1974	$49,435
Plumb Street	Blayney	0.91	Civil	1958	$464,262
Plumb Street	Blayney		Roof	1999	$116,065
Booster No. 2	Blayney	0.23	Civil	1954	$90,273
Booster No. 2	Blayney		Roof	1997	$22,568
George St / Blake St	Millthorpe	1.36	Civil	1955	$464,262
George St / Blake St	Millthorpe		Roof	1998	$116,065
Mandurama St	Carcoar	0.68	Civil	1954	$270,819
Mandurama St	Carcoar		Roof	1999	$67,705
Carcoar WFP	Carcoar	2.16	Civil	1952	$997,511
Carcoar WFP	Carcoar		Roof/Mechanical	1999	$290,867
Carcoar WFP	Carcoar		Electrical	1999	$36,825
Mid Western H'way	Mandurama	0.91	Civil	1953	$464,262
Mid Western H'way	Mandurama		Roof	1998	$116,065
Newry Downs Rd	Lyndhurst	0.68	Civil	1953	$270,819
Newry Downs Rd	Lyndhurst		Roof	1997	$67,705
Hines Lane	Garland	0.05	Civil	1954	$4,149
Hines Lane	Garland		Roof	1998	$1,037
Bangaroo #1	Canowindra	0.18	Civil	1968	$4,149
Bangaroo #1	Canowindra		Roof	1988	$1,037
Bangaroo #2	Canowindra	0.18	Civil	1968	$4,149
Bangaroo #2	Canowindra		Roof	1988	$1,037
Bangaroo #3	Canowindra	0.18	Civil	1968	$4,149
Bangaroo #3	Canowindra		Roof	1988	$1,037
Cauarina Dr	Eugowra	1.36	Civil	1953	$464,262
Casuarina Dr	Eugowra		Roof	1994	$116,065
Hill Street No.2	Eugowra	0.45	Civil	1971	$5,187
Hill Street No.1	Eugowra	0.05	Civil	2002	$197,741
Hill Street No.1	Eugowra		Roof	2002	$49,435
Meadowbank Road	Trajere	0.14	Civil	1967	$54,164
Meadowbank Road	Trajere		Roof	1989	$13,541
Nangar Road	Pyes Gap	0.14	Civil	1965	$4,149
Nangar Road	Pyes Gap		Roof	1989	$1,037

Church St	Canowindra	0.91	Civil	1933	$464,262
Church St	Canowindra		Roof	1985	$123,965
South Canowindra #1	Canowindra	0.18	Civil	1986	$90,273
South Canowindra #1	Canowindra		Roof	1989	$22,568
South Canowindra #2	Canowindra	0.18	Civil	1990	$90,273
South Canowindra #2	Canowindra		Roof	1990	$22,568
North Canowindra #1	Canowindra	0.09	Civil	1967	$4,149
North Canowindra #1	Canowindra		Roof	1989	$1,037
North Canowindra #2	Canowindra	0.09	Civil	1967	$4,149
North Canowindra #2	Canowindra		Roof	1989	$1,037
Blue Jacket Lane	Moorbel	1.14	Civil	1955	$464,262
Blue Jacket Lane	Moorbel		Roof	1990	$116,065
Nyrang Creek #1(Eastern)	Nyrang Creek	0.136	Civil	1969	$54,164
Nyrang Creek #1(Eastern)	Nyrang Creek		Roof	1989	$13,541
Nyrang Creek #2 (Southern)	Nyrang Creek	0.091	Civil	1969	$54,164
Nyrang Creek #2 (Southern)	Nyrang Creek		Roof	1989	$13,541
Nyrang Creek #3 Northern)	Nyrang Creek	0.045	Civil	1969	$54,164
Nyrang Creek #3 Northern)	Nyrang Creek		Roof	1989	$13,541
3 Reservoir St	Cargo	0.68	Civil	1958	$270,819
3 Reservoir St	Cargo		Roof	1997	$67,705
Long St	Cudal	0.23	Civil	1959	$90,273
Long St	Cudal		Roof	2000	$22,568
Cartys Lane	Manildra	0.45	Civil	1959	$197,741
Cartys Lane	Manildra		Roof	1990	$49,435
Scenic Drive	Cudal	2.27	Civil	1964	$859,744
Scenic Drive	Cudal		Roof	1997	$214,936
Gooloogong Bore	Gooloogong	0.18	Civil	1977	$90,273
Gooloogong Bore	Gooloogong		Roof	2004	$22,568
Grenfell North	Grenfell	4.55	Civil	1959	$1,633,514
Grenfell North	Grenfell		Roof	2004	$408,378
Grenfell West	Grenfell	1.36	Civil	1930	$464,262
Grenfell West	Grenfell		Roof	1996	$116,065
Grenfell South	Grenfell	0.09		1970	$5,187
Grenfell East #1	Grenfell	0.272	Civil	1965	$90,273
Grenfell East #1	Grenfell		Roof	1965	$22,568
Grenfell East #2	Grenfell	0.45	Civil	1991	$197,741
Grenfell East #2	Grenfell		Roof	1991	$49,435
McDonalds Lane	Grenfell	0.14	Civil	1981	$54,164
McDonalds Lane	Grenfell		Roof	2006	$13,541

Bores

Table 14-2. Existing assets: bores

Description	Component	Construction Year	Useful Life	Replacement Cost 2019
Cudal Bore	Civil	1994	30	$13,434
Cudal Bore	Mechanical	1994	25	$18,807
Cudal Bore	Electrical	1994	25	$21,494
Bangaroo bore north	Civil	1987	30	$13,434
Bangaroo bore north	Mechanical	1987	25	$18,807
Bangaroo bore north	Electrical	1998	25	$21,494
Bangaroo bore west	Civil	1968	30	$13,434
Bangaroo bore west	Mechanical	1991	25	$18,807
Bangaroo bore west	Electrical	1991	25	$21,494
Gooloogong no1	Civil	1993	30	$23,959
Gooloogong no1	Mechanical	1993	25	$37,227
Gooloogong no1	Electrical	2004	25	$24,223
Gooloogong no.2	Civil	1987	30	$19,985
Gooloogong no.2	Mechanical	1987	25	$25,868
Gooloogong no.2	Electrical	1987	25	$31,166

Pumping Stations

Table 14-3. Existing assets: pumping stations

Description	Location	Component	Construction Year	Useful Life	Replacement Cost 2019
Cudal WPS - Grays Hill Reservoir	Cudal	Civil	1962	60	$1,037
Cudal WPS - Grays Hill Reservoir	Cudal	Mechanical	2015	25	$6,224
Hill Street - Blayney Well	Blayney	Civil	1993	50	$21,494
Hill Street - Blayney Well	Blayney	Mechanical	2007	25	$30,091
Hill Street - Blayney Well	Blayney	Electrical	2007	25	$34,390
Browns Creek Road Booster 2	Blayney	Civil	2007	50	$37,614
Browns Creek Road Booster 2	Blayney	Mechanical	2007	25	$0
Browns Creek Road Booster 2	Blayney	Electrical	2007	25	$0
Polona Street	Blayney	Civil	1974	55	$30,897
Polona Street	Blayney	Mechanical	1974	50	$43,256
Polona Street	Blayney	Electrical	1974	50	$55,435
Plumb Street 1	Blayney	Civil	2005	50	$30,897
Plumb Street 1	Blayney	Mechanical	2005	25	$43,256
Plumb Street 1	Blayney	Electrical	2005	25	$49,435
Canomodine Lane	Canowindra	Civil	1957	70	$51,047
Canomodine Lane	Canowindra	Mechanical	1996	25	$71,466
Canomodine Lane	Canowindra	Electrical	1996	25	$81,676
Nyrang Creek	Canowindra	Civil	1969	50	$7,521
Nyrang Creek	Canowindra	Mechanical	2000	25	$10,529
Nyrang Creek	Canowindra	Electrical	2000	25	$12,033
Near New Bridge Canowindra Well	Canowindra	Civil	1994	50	$16,857
Near New Bridge Canowindra Well	Canowindra	Mechanical	1994	25	$9,077
Church St Reservoir	Canowindra	Mechanical	1990	35	$21,473
Church St Reservoir	Canowindra	Electrical	1990	35	$26,245
Rodd Street North Canowindra	Canowindra	Civil	1997	50	$21,494
Rodd Street North Canowindra	Canowindra	Mechanical	1996	25	$30,091
Rodd Street North Canowindra	Canowindra	Electrical	1996	25	$34,390
Sugarloaf Road	Walli	Civil	2003	50	$99,408
Sugarloaf Road	Walli	Mechanical	2003	25	$139,171
Sugarloaf Road	Walli	Electrical	2003	25	$159,053
Fell Timber Road Booster 1	Carcoar	Civil	2002	50	$37,614
Fell Timber Road Booster 1	Carcoar	Mechanical	2015	25	$0
Fell Timber Road Booster 1	Carcoar	Electrical	2002	25	$0
Cargo WPS - Barragin Rd	Canowindra	Civil	2000	50	$21,494
Cargo WPS - Barragin Rd	Canowindra	Mechanical	2000	25	$30,091
Cargo WPS - Barragin Rd	Canowindra	Electrical	2000	25	$34,390
Cudal WPS - Cargo Road Town Reservoir	Cudal	Civil	2004	50	$75,228
Cudal WPS - Cargo Road Town Reservoir	Cudal	Mechanical	2004	25	$105,319
Cudal WPS - Cargo Road Town Reservoir	Cudal	Electrical	2004	25	$120,364
Bangaroo WPS - Soldiers Settlement Road Bangaroo Bore	Canowindra	Civil	1967	60	$51,047

Bangaroo WPS - Soldiers Settlement Road Bangaroo Bore	Canowindra	Mechanical	1996	25	$71,466
Bangaroo WPS - Soldiers Settlement Road Bangaroo Bore	Canowindra	Electrical	1996	25	$81,676
Eugowra Broad Street Transfer Booster	Eugowra	Civil	2002	50	$21,494
Eugowra Broad Street Transfer Booster	Eugowra	Mechanical	2017	25	$30,091
Eugowra Broad Street Transfer Booster	Eugowra	Electrical	2002	25	$34,390
Gooloogong Rd BPS Trunk Main L	Eugowra	Civil	2001	50	$30,897
Gooloogong Rd BPS Trunk Main L	Eugowra	Mechanical	2001	30	$43,256
Gooloogong Rd BPS Trunk Main L	Eugowra	Electrical	2001	25	$49,435
Trajere WPS	Eugowra	Civil	1967	60	$21,494
Trajere WPS	Eugowra	Mechanical	1997	25	$30,091
Trajere WPS	Eugowra	Electrical	1997	25	$34,390
Garland WPS - Hines Lane	Garland	Civil	1960	50	$3,112
Garland WPS - Hines Lane	Garland	Mechanical	2003	25	$4,357
Garland WPS - Hines Lane	Garland	Electrical	2003	25	$4,979
Forbes Road Bore Surface	Gooloogong	Civil	1977	50	$99,408
Forbes Road Bore Surface	Gooloogong	Mechanical	1999	25	$139,171
Forbes Road Bore Surface	Gooloogong	Electrical	1999	35	$159,053
Warraderry Way Lachlan River	Gooloogong	Civil	1946	75	$12,137
Warraderry Way Lachlan River	Gooloogong	Mechanical	2016	25	$6,535
McDonalds Lane	Grenfell	Civil	1981	50	$99,408
McDonalds Lane	Grenfell	Mechanical	1999	25	$139,171
McDonalds Lane	Grenfell	Electrical	1999	30	$159,053
Quandong Road	Grenfell	Civil	2009	50	$3,112
Quandong Road	Grenfell	Mechanical	1990	35	$4,357
Quandong Road	Grenfell	Electrical	1990	35	$4,979
North Street	Grenfell	Civil	1999	50	$21,494
North Street	Grenfell	Mechanical	1999	25	$30,091
North Street	Grenfell	Electrical	2015	25	$34,390
Goolongong Road North Transfer	Grenfell	Civil	2000	50	$30,897
Goolongong Road North Transfer	Grenfell	Mechanical	2016	25	$43,256
Goolongong Road North Transfer	Grenfell	Electrical	1999	25	$49,435
Newry Downs Road	Lyndhurst	Civil	2003	50	$155,829
Newry Downs Road	Lyndhurst	Mechanical	2003	25	$218,160
Newry Downs Road	Lyndhurst	Electrical	2003	25	$249,326
Mid Western Highway	Mandurama	Civil	1993	50	$21,494
Mid Western Highway	Mandurama	Mechanical	1997	25	$30,091
Mid Western Highway	Mandurama	Electrical	1997	25	$34,390
Carcoar WTP - Civil	Carcoar		2019	50	$318,378
Carcoar WTP - Mechanical	Carcoar		2019	25	$261,058
Carcoar WTP - Electrical	Carcoar		2019	25	$512,590
Plumb Street new	Blayney	Civil	2019	50	$555,531
Plumb Street 2	Blayney	Mechanical	2019	25	$435,264
Plumb Street 2	Blayney	Electrical	2019	25	$510,675
Millthorpe Reservoir - Civil	Millthorpe		2019	50	$71,686

Millthorpe Reservoir - Mechanical	Millthorpe		2019	25	$110,811
Millthorpe Reservoir - Electrical	Millthorpe		2019	25	$37,327
Carcoar Reservoir - Civil	Carcoar		2019	50	$36,549

Telemetry

Table 14-4. Existing assets: telemetry

Description	Location	Sub-Location	Construction Year	Useful Life	Replacement Cost 2019
Blayney Hill St Reservoir Telemetry	Blayney	Hill St	1995	25	$10,010
Blayney Marsdens Reservoir Telemetry	Blayney	Lucks Ln	2005	15	$10,010
Blayney Plumb St Reservoir Telemetry	Blayney	Plumb St	2009	15	$10,010
Browns Creek Reservoir Telemetry	Blayney	Browns Creek Rd	2009	15	$10,010
Millthorpe Reservoir Telemetry	Millthorpe	Blake St	2006	15	$10,010
Mandurama Reservoir Telemetry	Mandurama	Mid Western Hwy	2006	15	$10,010
Carcoar Tower Reservoir Telemetry	Carcoar	Mandurama St	2006	15	$10,010
Lyndhurst Reservoir Telemetry	Lyndhurst	Newry Downs Rd	2002	20	$10,010
Eugowra Reservoir Telemetry	Eugowra	Casuarina Dr	2002	20	$10,010
Trajere Reservoir Telemetry	Trajere	Meadowbank Rd	2002	15	$10,010
Canowindra Tower Reservoir Telemetry			2002	20	$10,010
South Canowindra #1 Reservoir Telemetry	Canowindra	Cowra Rd	2002	20	$10,010
North Canowindra #2 Reservoir Telemetry	Canowindra	Traves Ln	2002	20	$10,010
Moorbel Reservoir Telemetry			2002	15	$10,010
Nyrang Ck South Reservoir	Nyrang Creek	Nangar Rd	2002	20	$10,010
Cargo Reservoir Telemetry	Cargo	off Loftus St	2002	20	$10,010
Cudal Reservoir Telemetry	Cudal	Long St	2002	20	$10,010
Manildra Reservoir Telemetry			2002	15	$10,010
Grays Hill Reservoir Telemetry	Cudal	Scenic Dr	2002	20	$10,010
Gooloogong Bore Reservoir Telemetry	Gooloogong	Forbes Rd	2002	20	$10,010
Grenfell North Reservoir Telemetry	Grenfell	Gooloogong Rd	2002	20	$10,010
Grenfell West Reservoir Telemetry	Grenfell	Mid Western Hwy	2002	20	$10,010
Grenfell East Reservoir #2 Telemetry	Grenfell	Cowra Rd	2002	20	$10,010
McDonalds Ln Reservoir Telemetry	Grenfell	McDonalds Lane	2002	20	$10,010
Grenfell Telemetry Repeater unit	Grenfell	Gooloogong Rd	2014	5	$31,120
Mt Canobolas Telemetry Repeater	Orange	Mt Canobolas Rd	2017	5	$12,064
Blayney Office Base Station	Blayney	30 Church St	2012	10	$15,560
backup system at Blayney WTP			2019	15	$21,903

Water Filtration Plants

Table 14-5. Existing assets: water filtration plants

Component	Asset Description	Capacity	Length	Width/Diam	Depth	Construction Date	Useful Life	Replacement Cost 2019
Blayney WTP								
Mechanical	Backwash Air Scour System					2000	30	$130,704
Electrical	Backwash Air Scour System					2008	20	$32,676
Mechanical	Compressed Air Service	150L, 5.5kW				2015	20	$79,875
Civil Works	Gravity Filters		20	10	13	1986	80	$1,530,620
Civil Works	Alum Dosing System		4	4	1	2011	60	$20,041
Mechanical	Alum Dosing System					2011	30	$84,958
Electrical	Alum Dosing System					2011	20	$7,261
Mechanical	Polymer Dosing System					2011	20	$67,531
Electrical	Polymer Dosing System					2011	20	$39,937
Mechanical	Fluoride Dosing System					2005	20	$103,837
Electrical	Fluoride Dosing System					2005	20	$54,460
Mechanical	Powder Activated Carbon Do					2014	20	$23,236
Electrical	Powder Activated Carbon					2014	20	$7,261
Mechanical	Chlorine Disinfection System					2016	20	$55,186
Electrical	Chlorine Disinfection System					2014	20	$46,473
Mechanical	Gravity Filters					2015	40	$508,295
Electrical	Gravity Filters					2015	20	$334,022
Civil Works	Sedimentation Tanks		20	10	6	1960	80	$1,147,294
Mechanical	Sedimentation Tanks					1960	40	$471,988
Electrical	Sedimentation Tanks					1960	20	$94,398
Mechanical	Service Water Pump Station					2012	20	$17,427
Electrical	Service Water Pump Station					2012	20	$5,083
Civil Works	Return Groundwater Pump Station					2006	60	$36,307
Mechanical	Return Groundwater Pump Station					2009	30	$28,319

Electrical	Return Groundwater Pump Station					2010	20	$18,153
Mechanical	Backwash Pump Station					2006	30	$53,734
Electrical	Backwash Pump Station					2012	20	$24,689
Civil Works	Sludge Backwash Lagoons					2006	60	$209,853
Civil Works	PAC Dosing Shed		7	5	3	2014	40	$22,873
Mechanical	PAC Dosing Shed		7	5		2015	30	$7,624
Electrical	PAC Dosing Shed		7	5		2016	20	$12,707
Civil Works	Chemical Dosing Building		4	4	3	2006	60	$32,531
Mechanical	Chemical Dosing Building		4	4		2010	40	$3,485
Electrical	Chemical Dosing Building		4	4		2014	20	$5,809
Civil Works	Chlorine Dosing Building		5	4	3	2006	60	$46,473
Mechanical	Chlorine Dosing Building		5	4		2010	40	$7,261
Electrical	Chlorine Dosing Building		5	4		2014	20	$10,166
Civil Works	Shed near Reservoir		4	3	2	1998	40	$7,842
Civil Works	Site Services Infrastructure					1994	60	$138,692
Mechanical	Site Services Infrastructure		250			2009	30	$25,415
Electrical	Site Services Infrastructure					2006	40	$36,307
Civil Works	Process Systems					1994	60	$94,398
Mechanical	Process Systems					2006	40	$544,601
Electrical	pH meter; turbidity meter					2015	30	$591,074
Control	Process Systems					2015	15	$268,670
Civil	Siteworks walkway					1970	60	$77,878
Civil	Site Fencing					2018	30	$15,768
Mechanical	Sludge Lagoon Recycle pump					2019	15	$3,272
Carcoar WTP								
Civil Works	Alum Dosing System	30kL	4	4	1	2001	60	$23,568
Mechanical	Alum Dosing System	2 off				2007	30	$197,384
Electrical	Alum Dosing System					2007	20	$33,143
Mechanical	Powdered Activated Carbon Dosing					2001	30	$95,010
Electrical	Powdered Activated Carbon Dosing					2001	20	$18,413

Mechanical	Polyelectrolyte Dosing System					2001	30	$140,673
Electrical	Polyelectrolyte Dosing System					2001	20	$44,191
Mechanical	Fluoride Dosing System					2001	30	$134,781
Electrical	Fluoride Dosing System					2001	20	$36,825
Mechanical	Chlorine Disinfection System					2001	30	$94,273
Electrical	Chlorine Disinfection System					2001	20	$83,962
Mechanical	Raw Water Inlet Chamber Mixing Zone					2001	30	$225,372
Electrical	Raw Water Inlet Chamber Mixer	0.55kW				2001	20	$44,191
Civil Works	Clarifier Tank			17	6	2001	60	$993,036
Mechanical	Clarifier Tank					2001	40	$176,762
Electrical	Clarifier Tank					2001	30	$66,286
Civil Works	DAFF System		15	10	6	2001	60	$848,598
Mechanical	DAFF System					2001	40	$493,461
Electrical	DAFF System	2x0.3kW				2001	30	$95,746
Mechanical	Backwash Air Scour System					2001	30	$88,381
Electrical	Backwash Air Scour System					2001	20	$29,460
Mechanical	Supernatant Return Pump Station			2	3	2001	30	$22,095
Electrical	Supernatant Return Pump Station	3kW				2001	20	$7,365
Civil Works	Washwater Storage Tank			8	4	2001	60	$141,679
Electrical	Washwater Storage Tank	2.5kW				2001	20	$22,095
Mechanical	Washwater Storage Tank					2001	30	$44,191
Civil Works	Sludge Thickener			6	5	2001	60	$140,880
Mechanical	Sludge Thickener			6	5	2001	40	$66,286
Electrical	Sludge Thickener	0.55kW				2001	20	$18,413
Mechanical	DAF Recycle Pumps	7.5kW				2001	30	$53,029
Mechanical	Saturator	1200L				2001	30	$51,556
Mechanical	CAS	115psig				2001	20	$81,016
Mechanical	Valves					2001	20	$36,825
Civil Works	Sludge Drying Beds		75	7	3	2001	60	$676,032
Civil Works	Detention Pond		35	5	1	2001	40	$20,777

Civil Works	Filtered Water Pump Station		3	3	5.5	2001	60	$89,486
Mechanical	Filtered Water Pump Station					2001	30	$44,191
Electrical	Filtered Water Pump Station					2001	20	$22,095
Civil Works	Process Systems					2001	60	$76,597
Mechanical	Process Systems					2001	40	$788,064
Electrical	Process Systems					2014	40	$709,994
Control	Process Systems					2001	15	$419,810
Civil Works	Fluoride Dosing Building		8	4	3	2001	60	$75,418
Mechanical	Fluoride Dosing Building		8	4		2001	40	$11,784
Electrical	Fluoride Dosing Building		8	4		2001	30	$14,141
Civil Works	Chlorine Dosing Building		8	5	3	2001	60	$94,273
Mechanical	Chlorine Dosing Building		8	5		2001	40	$14,730
Electrical	Chlorine Dosing Building		8	5		2001	30	$17,676
Civil Works	Site Services Infrastructure					2001	60	$169,102
Mechanical	Site Services Infrastructure					2001	40	$72,914
Electrical	Site Services Infrastructure					2001	40	$51,556
Mechanical	Filtered Water Pump Station - submersible pump					2019	15	$35,718
Mechanical	WTP augmentation Chlorine System					2019	30	$90,847
Electrical	WTP augmentation Chlorine System					2019	20	$126,776

Lake Rowlands Dam

Table 14-6. Existing assets: Lake Rowlands Dam

Asset	Sub-Asset	Component	Construction Year	Capacity	Length	Width/Diam	Depth	Useful Life	Replacement Cost 2019
Raw Storage	Concrete Buttress Dam	Civil	1954		150	16	15	100	$13,624,672
Raw Storage	Dam	Civil	1954	4500ML	200	30	4	200	$1,920,323
Raw Storage	Emergency Spillway	Civil	1954		200	75	1	200	$1,568,763
Pump Station	Building	Civil	1966		17	5	3	60	$232,094
Pump Station	Building	Mechanical	1966					40	$56,141
Pump Station	Building	Electrical	1988					30	$24,647
Pump Station	Pumps	Mechanical	1997					40	$32,863
Pump Station	Pipework	Mechanical	1997					60	$102,696
Pump Station	Valves	Mechanical	1997					40	$82,157
Pump Station	SWBD	Electrical	1997					30	$184,853
Pump Station	Motor	Electrical	1997	132kW				30	$60,248
Pump Station	VSD	Electrical	2012					20	$49,294
Raw Storage	Outlet Tower	Civil	1954			8	18	80	$1,201,226
Raw Storage	Outlet Tower	Mechanical	1997					40	$262,197
Raw Storage	Outlet Tower	Electrical	1997					30	$36,825
Raw Storage	Aeration Shed	Civil	1997		4	3	2	40	$7,394
Raw Storage	Aeration Shed	Mechanical	1997		4	3		30	$2,465
Raw Storage	Aeration Shed	Electrical	1997		4	3		20	$4,108
Raw Storage	Aeration System	Mechanical	2001	$10.1m^3$/min				30	$109,543
Raw Storage	Aeration System	Electrical	1997					20	$10,270

15 FUTURE CAPITAL WORKS PROGRAM

The capital works have been divided into categories for Developer Charge calculation purposes in accordance with the Guidelines.

Table 15-1. 10 year capital works program ($A2019)

Central Tablelands Water

10 Year Financial Plan for the Years ending 30 June 2029

CAPITAL EXPENDITURE PROGRAM	Improved Level of Service	Growth	New Works	Renewal Assets > 30yrs	Renewal Assets < 30yrs	Check		Yr 1 2020 2019/20	Yr 2 2021 2020/21	Yr 3 2022 2021/22	Yr 4 2023 2022/23	Yr 5 2024 2023/24	Yr 6 2025 2024/25	Yr 7 2026 2025/26	Yr 8 2027 2026/27	Yr 9 2028 2027/28	Yr 10 2029 2028/29	Total
							$	$	$	$	$	$	$	$	$	$	$	
SUMMARY																		
Improved Level of Service								**3,943,406**	**10,954,655**	-	-	-	-	-	-	-	-	**14,898,061**
Growth								**394,297**	**1,095,345**	-	-	-	-	-	-	-	-	**1,489,642**
																		-
New Works								**4,337,703**	**12,050,000**	-	-	-	-	-	-	-	-	**16,387,703**
Renewal Assets over 30yrs old								**40,131**	**880,232**	**189,436**	**851,287**	**1,335,216**	**390,557**	**5,877,387**	**4,845,779**	**495,285**	**5,169,120**	**20,074,431**
																		-
Renewal Assets under 30yrs old								**115,234**	**346,327**	**118,554**	**2,463,805**	**115,081**	**66,383**	**67,711**	**143,480**	**814,564**	**865,973**	**5,117,111**
							-	-	-	-	-	-	-	-	-	-	-	-
CAPITAL WORKS																		-
Pump Replacement	0%	0%	0%	20%	80%	100%		50,156	51,159	52,182	53,226	54,291	55,377	56,485	57,615	58,767	59,942	549,200
Other Plant and Equipment Replacement	0%	0%	0%	0%	100%	100%		20,000	20,400	20,808	21,224	21,648	22,081	22,523	22,973	23,432	23,901	218,990
Cargo Pump Station	0%	0%	0%	0%	100%	100%			150,000									150,000
Conomadine Pump Station	0%	0%	0%	25%	75%	100%			180,000									180,000
Woodstock Pump Station	91%	9.09%	100%	0%	0%	100%		806,703										806,703
																		0
Trunk Main Renewals																		0
Trunk Main 'K' Relocation - Stage 3 - commissioning	0%	0%	0%	100%	0%	100%		30,100										30,100
Trunk Main 'U' - 'C' to TMK Cudal (150 to 200) - 35kms	0%	0%	0%	100%	0%	100%							138,776	2,461,224	2,461,224			5,061,224
Trunk Main 'C' - Mandurama to 'U' (225 to 300) - 35kms	0%	0%	0%	100%	0%	100%									0	297,502	4,971,102	5,268,604
Trunk Main 'B' - CWFP to Mandurama (250 to 300) - 7kms	0%	0%	0%	100%	0%	100%						75,642	1,324,358	0				1,400,000
Trunk Main 'C' - 'U' to Gooloogong (225 to 300) - 30kms	0%	0%	0%	100%	0%	100%								240,706	3,404,866	2,354,428	0	6,000,000
Post Chlorinator - Grenfell North	91%	9.09%	100%	0%	0%	100%		50,000										50,000
Post Chlorinator - Greys Hill	91%	9.09%	100%	0%	0%	100%			50,000									50,000
Water Quality Testing Facility - Carcoar to Orange Pipeline	91%	9.09%	100%	0%	0%	100%		60,000										60,000
																		0
Lake Rowlands Remediation Works Dam Safety	0%	0%	0%	100%	0%	100%												0
Lake Rowlands Augmentation - Options Study	91%	9.09%	100%	0%	0%	100%		630,000										630,000
Lake Rowlands Dam Wall Raising - 2.2 Metres	91%	9.09%	100%	0%	0%	100%			10,000,000	0								10,000,000
Bore renewals Gooloogong/Bangaroo	0%	0%	0%	100%	0%	100%			825,000	165,000	165,000	0						1,155,000
Carcoar WFP - Mechanical and Electrical Refurbishment	0%	0%	0%	20%	80%	100%									93,019	930,148	930,148	1,953,315
Telemetry Upgrades and Renewals	0%	0%	0%	0%	100%	100%		55,109				50,000	0				50,000	155,109
Blayney Water Filtration Plant	0%	0%	0%	20%	80%	100%				70,000	3,000,000							3,070,000
Blayney Water Filtration Plant - Fluoride Unit	91%	9.09%	100%	0%	0%	100%		88,000										88,000
Carcoar WFP New Reservoir	91%	9.09%	100%	0%	0%	100%		2,703,000	2,000,000									4,703,000
																		0
Total Capital Expenditure								**4,493,068**	**13,276,559**	**307,990**	**3,315,092**	**1,450,297**	**456,940**	**5,945,098**	**4,989,259**	**1,309,849**	**6,035,093**	**41,579,245**

16 CALCULATION OF THE CAPITAL CHARGE

Table 16-1. Lake Rowlands DSP Capital Charge NPV Spreadsheet Method

								Rate of return (pre 1996)				3%
								Rate of return (post 1996)				5%
Year	**Connections**	**Total No of ET**	**New ET per Year**		**Description of Asset**	**Capital Cost (2018/2019$)**	**Effective commissioning date & proportion capital cost for post 1996 development (2018/19$)**	**PV of pre 1996 works (@ 3%) (2018/2019$)**	**PV of post 1996 works (@ 5%) (2018/2019$)**		**PV of ET @3% (ET)**	**PV of ET @5% (ET)**
1990					Existing asset 1990	$1,327,652						
1991					Existing asset 1991	$282,950						
1992					Existing asset 1992	$0						
1993					Existing asset 1993	$102,533						
1994					Existing asset 1994	$422,069						
1995					Existing asset 1995	$489,058						
1996	**4709**	7783	51.3		**Existing asset 1996**	$686,186	**$690,753**	**$690,753**			**51**	**51**
1997	4760	7834	51.3		Existing asset 1997	$1,288,825	$268,924		$256,118		50	49
1998	4812	7885	51.3		Existing asset 1998	$266,800	$55,670		$50,494		48	46
1999	**4863**	7937	51.3		Existing asset 1999	$1,304,130	$272,118		$235,066		47	44
2000	4914	7988	51.3		Existing asset 2000	$353,991	$73,863		$60,767		46	42
2001	4966	8039	51.3		Existing asset 2001	$7,195,073	$1,501,313		$1,176,318		44	40
2002	5017	8091	51.3		Existing asset 2002	$1,054,367	$220,003		$164,169		43	38
2003	5068	8142	51.3		Existing asset 2003	$1,262,322	$263,394		$187,189		42	36
2004	5119	8193	51.3		Existing asset 2004	$2,771,630	$578,324		$391,432		40	35
2005	5171	8244	51.3		Existing asset 2005	$1,198,117	$249,997		$161,150		39	33
2006	5222	8296	51.3		Existing asset 2006	$987,766	$206,106		$126,531		38	31
2007	5273	8347	51.3		Existing asset 2007	$508,473	$106,097		$62,033		37	30
2008	5324	8398	51.3		Existing asset 2008	$32,162	$6,711		$3,737		36	29
2009	5376	8449	51.3		Existing asset 2009	$91,632	$19,120		$10,140		35	27

2010	5427	8501	51.3		Existing asset 2010	$47,277	$9,865		$4,982		34	26
2011	5478	8552	51.3		Existing asset 2011	$216,268	$45,126		$21,706		33	25
2012	5529	8603	51.3		Existing asset 2012	$248,700	$51,893		$23,773		32	23
2013	5581	8654	51.3		Existing asset 2013	$0	$0		$0		31	22
2014	5632	8706	51.3		Existing asset 2014	$871,015	$181,745		$75,519		30	21
2015	5683	8757	51.3		Existing asset 2015	$1,981,104	$413,374		$163,586		29	20
2016	5734	8808	51.3		Existing asset 2016	$182,704	$38,123		$14,368		28	19
2017	5786	8859	51.3		Existing asset 2017	$41,491	$8,658		$3,108		28	18
2018	5837	8911	51.3		Existing asset 2018	$15,520	$3,238		$1,107		27	18
2019	**5779**	**8962**	**30**		Existing asset 2019	$19,700,656	$4,110,708		$1,338,329		**15**	**10**
2020		8992	30		Capital Works 2020	**$4,377,834**	$913,472		$283,238		15	9
2021		9022	30		Capital Works 2021	**$12,930,232**	$2,698,002		$796,727		14	9
2022		9052	30		Capital Works 2022	**$189,436**	$39,528		$11,117		14	8
2023		9082	30		Capital Works 2023	**$851,287**	$177,628		$47,577		14	8
2024		9112	30		Capital Works 2024	**$1,335,216**	$278,604		$71,070		13	8
2025		9142	30		Capital Works 2025	**$390,557**	$81,493		$19,798		13	7
2026		9172	30		Capital Works 2026	**$5,877,387**	$1,226,366		$283,754		12	7
2027		9202	30		Capital Works 2027	**$4,845,779**	$1,011,113		$222,808		12	7
2028		9232	30		Capital Works 2028	**$495,285**	$103,345		$21,689		12	6
2029		9262	30		Capital Works 2029	**$5,169,120**	$1,078,580		$215,579		11	6
2030		9292	30								11	6
2031		9322	30								11	5
2032		9352	30								10	5
2033		9382	30								10	5
2034		9412	30								10	5
2035		9442	30								9	4
2036		9472	30								9	4
2037		9502	30								9	4
2038		9532	30								9	4
2039		9562	30								8	4

2040		9592	30								8	4
2041		9622	30								8	3
2042		9652	30								8	3
2043		9682	30								7	3
2044		9712	30								7	3
2045		9742	30								7	3
2046		9772	30								7	3
2047		9802	30								7	2
2048		9832	30								6	2
2049		9862	30								6	2
		9862	**2058**			**81,392,604**	**16,983,253**	**690,753**	**6,504,980**		**1,181**	**886**

Percentage of capital works utilised by new ETs after 1995/96 = 20.9%

		$PV_{1995/96}$ of new ETs for pre-1996 asset @ 3%		1,181	ET
		$PV_{1995/96}$ of new ETs for post-1996 asset @ 5%		886	ET
		$PV_{1995/96}$ of capital cost for pre-1996 asset @ 3%		$690,753	
		$PV_{1995/96}$ of capital cost for post-1996 asset @ 5%		6,504,980	
		Capital Charge			
		Pre 1996 assets =	$585	per ET	
		Post 1996 assets =	$7,342	per ET	
		Total =	**$7,927**	**per ET**	

17 CALCULATION OF THE REDUCTION AMOUNT

The Reduction Amount is defined as the net present value of the future net income expected from providing water-related services to the new residents in the DSP area.

The three main inputs to the calculation are:

1. The annual bill per ET: The annual bill per ET is the utility's bill for a residential customer with a water consumption equal to 1 ET.

Annual bill tariff =	Access Charge (20mm meter) +
	(Average annual residential water usage kL/yr * water usage charge)

Where:

2019 Access Charge (20mm) = $235.00

Average annual residential water usage = 178 kL/yr

Water Usage Charge = $2.92 $/kL

Therefore: the annual bill at the commencement of the DSP = $235 + (178*$2.92) = **$755 per ET**

2. Growth projections for the next 30 years.

CTW supplies more than a dozen large water users including several large processing facilities, such as Manildra Flour Mills and Purina Pet Foods (Blayney) and bulk water to Cowra.

CTW and its constituent Councils do not foresee any further non-residential growth and have reduced their predicted residential growth. For this study, CTW directed ATOM Consulting to assume zero non-residential growth and residential growth projections will be similar to the 2013 to 2018 growth rates.

Investigation of the Developer Charge income for the past five years showed the growth in the Lake Rowlands water supply system has been an average of 30 new dwellings per year. Many of the towns and villages in this system have existing vacant unconnected urban lots. The majority of new dwelling growth has been take-up of these lots.

The growth projection of 30 ET per year was assumed.

3. Operation, Maintenance and Administration (OMA) cost per ET.

As explained above, CTW and its constituent Councils foresee growth to be 100% residential.

Non-residential water usage has always been a high proportion of the total annual water usage. Customer water usage trends for the past 10 years show that water usage has been near 50% non-residential, 50% residential every year. The 2019 annual metered consumption was 1667 ML with 784 ML usage by residential customers (47% residential).

The high volume non-residential water users do not represent the typical annual bill and therefore reduction amount attributable, which is calculated on the basis of difference in annual bill per ET and OMA cost per ET, to the future new residents in the DSP area. CTW has adopted its reduction amount calculation based on the annual bill from the residential customers and the OMA cost attributable to the residential customers. It has calculated the OMA cost per ET using the 2018/2019 Special Schedule OMA expenses attributable to residential customers divided by the 2018/2019 number of residential ET. CTW has advised DPIE Water of this typical reduction amount calculation approach.

The OMA was calculated to be $2,620,344 for 2018/2019 for 4,286 single residential ET.

Note: The above ET count includes both the Lake Rowlands and Quandialla residents as the annual OMA expenses includes both the Lake Rowlands and Quandialla residential expenditure.

OMA per ET = $2,620,344 / 4,286 = $611

Results:

Net income per ET = Annual Water Bill – OMA Cost = $755 - $611 = $143 per ET

PV (Net Income) from new ETs over 30 years @ 5% = $831,000

PV (New ETS) over 30 years @ 5% = 484

Reduction Amount = $831,000 / 484 **Reduction Amount per ET = $1,716**

Table 17-1. Calculation of reduction amount

Year	Total ETs	New ETs per year	PV (New TET) over 30 years @ 5%	Cumulative New ETs	Net Income from New ETs ($'000)	PV (Net Income) from new ETs over 30 years @ 5% ($'000)	Reduction Amount ($ per ET)
	(1)	(2)	(3)=PV of (2)	(4)	(5) = (4) * ('C)	(6) = PV of (5)	(7)=(6)/ (3)
2019	8,962						
2020	8,992	30	**484**	30	4.30	**831**	**1,716**
2021	9,022	30		60	8.60		
2022	9,052	30		90	12.90		
2023	9,082	30		120	17.21		
2024	9,112	30		150	21.51		
2025	9,142	30		180	25.81		
2026	9,172	30		210	30.11		
2027	9,202	30		240	34.41		
2028	9,232	30		270	38.71		
2029	9,262	30		300	43.01		
2030	9,292	30		330	47.32		
2031	9,322	30		360	51.62		
2032	9,352	30		390	55.92		
2033	9,382	30		420	60.22		
2034	9,412	30		450	64.52		
2035	9,442	30		480	68.82		
2036	9,472	30		510	73.12		
2037	9,502	30		540	77.42		
2038	9,532	30		570	81.73		
2039	9,562	30		600	86.03		
2040	9,592	30		630	90.33		
2041	9,622	30		660	94.63		
2042	9,652	30		690	98.93		
2043	9,682	30		720	103.23		
2044	9,712	30		750	107.53		
2045	9,742	30		780	111.84		
2046	9,772	30		810	116.14		
2047	9,802	30		840	120.44		
2048	9,832	30		870	124.74		
2049	9,862	30		900	129.04		

18 CROSS-SUBSIDY CALCULATIONS

N/A