



# Strategic Business Plan for Water Supply and Sewerage Services

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Griffith City Council

2018

# Strategic Business Plan for Griffith Water Supply and Sewerage Services

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2018

**Adopted by Griffith City Council on 12 June 2018**

## **ACKNOWLEDGEMENTS**

This Strategic Business Plan (SBP) has been prepared by Griffith City Council in accordance with the NSW Best-Practice Management of Water Supply and Sewerage Framework, with assistance from Daryl McGregor, DLM Environmental Consultants Pty Ltd, and Michael Cuthbert, MC Environmental Consulting, who provided guidance and reviews throughout the preparation of this document in particular the Financial Plan and the Total Asset Management Plan.

This updates Council's Strategic Business Plan 2009.

## EXECUTIVE SUMMARY

The main objective of the Strategic Business Plan (SBP) is to provide Council with a clear framework for the ongoing operation and management of its Water Supply and Sewerage Services. The Strategic Business Plan (SBP) has been prepared to integrate with Council's overall management planning process and specifically to align with the Integrated Planning and Reporting (IP&R) framework. The Strategic Business Plan has a 30 year planning horizon, particularly in relation to capital works and asset management and it fully satisfies the "Best Practice" requirements of the NSW Office of Water.

The Strategic Business Plan addresses following key planning elements:

- Review and assessment of the current operating environment,
- Key strategic objectives of water supply and sewerage services,
- Performance measurement & performance standards,
- Principal focus areas,
- A 30 Year Capital Works Program, and
- Financial management over the 30 year planning horizon

### Current Operating Environment

Griffith has a regional population of over 26,000 people and is the principal commercial and administrative centre of the Murrumbidgee Irrigation Area. Griffith is regarded as the food bowl of NSW and the local government area (LGA) administered by Griffith Council covers 1,600 km<sup>2</sup>. The City is approximately 570 km west of Sydney by road. Griffith has experienced a steady growth rate of 0.7% over the last 10 years and projections indicate that this will continue. The population of the local government area is expected to reach nearly 30,118 people by 2036 (forecast.id.com.au).

The principal sources of economic growth and development in Griffith include:

- Residential and rural residential development
- Agriculture (grapes, citrus, fruit, rice & vegetables), forestry and fishing.
- Industry, including wineries, food manufacturing, tourism, retail trade, manufacturing, & education

Baiada/Bartter Industries (poultry processor) & Casella Wines (one of 14 wineries which produce world class wines) are major industries in the City.

The continued growth and development in Griffith presents ongoing challenges to the water and sewerage business, in terms of maintaining continued high levels of service.

The 30 year Forward Capital Works Programs have been framed with this development in mind and Council's Pricing Policies will ensure that sufficient revenue is generated to maintain the existing assets and facilitate the necessary infrastructure development.



### ***Water Supply Services***

Griffith City Council serves a population of 25,700 (8,360 connected properties). Water is drawn from Murrumbidgee Irrigation Area Main Canal to supply Griffith and Yenda plants. The water supply network comprises dissolved air flotation and microfiltration treatment works, 4 service reservoirs (55 ML), 4 pumping stations (1 potable, and 3 raw water), 62 ML/d delivery capacity into the distribution system, 6 km of transfer and trunk mains and 550 km of reticulation. 90% of water supplied is potable and 10% non-potable. All the villages are connected to the reticulated water supply.

The TBL Water Supply Performance Report 2015-16 has shown that Griffith City Council has achieved 100% implementation of the outcomes required by the NSW BPM Framework, and Council also has planned to prepare a 30 Year IWCM Strategy by 2020.

Overall water supply system performance is summarised below:

- The 2016-17 typical residential bill was \$759 which was above the statewide median of \$625
- The economic real rate of return was 1.4% which was less than the statewide median.
- The operating cost (OMA) per property was \$713 which was well above the statewide median of \$440.
- Water quality complaints were negligible compared to the statewide median of 3.
- Compliance with ADWG was achieved for microbiological water quality (100% of the population, 2 of 2 zones compliant), chemical water quality and physical water quality.
- There were no failures of the chlorination system or the treatment system.
- There were no water supply public health incidents.
- Council has a risk-based Drinking Water Management System (DWMS) and had 0 days of water restrictions.
- Current replacement cost of system assets was \$182M (\$18,500 per assessment). Cash and investments were \$13.8M and revenue was \$9.9M (excluding capital works grants).

### ***Sewerage Services***

Griffith City Council serves a population of 25,700 (7,070 connected properties) and has 3 sewage treatment works providing primary, secondary and tertiary treatment. The system comprises 71,810 EP treatment capacity (Membrane Biological Reduction, Oxidation Pond and Aerated Lagoon), 30 pumping stations (14 ML/d), 63 km of rising mains and 172 km of gravity trunk mains and reticulation. Approximately 9% of effluent was recycled in 2015/16 and the treated effluent is discharged to land and river. Griffith City Council has 2 Pollution Incident Response Management Plans (PIRMPs) for their sewage treatment works

The TBL Sewerage Performance Report 2015-16 has shown that Griffith City Council achieved 100% implementation of the outcomes required by the NSW BPM Framework, and Council also has planned to prepare a 30 Year IWCM Strategy by 2020.

Overall sewerage system performance is summarised below:

- Residential growth for 2015-16 was 1.7% which is higher than the statewide median.
- The 2016-17 typical residential bill was \$792 which was above the statewide median of \$718.
- The economic real rate of return was 1.7% which was less than the statewide median.
- The operating cost per property (OMA) was \$611 which was above the statewide median of \$470.
- Sewage odour complaints were less than the statewide median of 0.9.
- Griffith Council reported no public health incidents. 2 of 3 sewage treatment works were compliant at all times.
- It was found during monitoring process that in an occasion, Council did not fully comply with the SS & Faecal Coliforms requirements of the environmental regulator for effluent discharge from Yenda plant; the aeration rate was increased to meet the requirements.
- The current replacement cost of system assets was \$180M (\$21,600 per assessment), cash and investments were \$6M and revenue was \$8.4M (excluding capital works grants)

### **Asset Management Plan**

Griffith City Council has developed its Asset Management System using 'Assetic Asset Management Software'. The software incorporates various predictive tools to enable Council to design renewals programmes based on available budget and asset condition.

The asset valuation information shows that the high value components of the water supply and sewerage systems typically are still in the earlier phases of their expected life. However the Assetic register identifies that Council will need to make significant investments across most infrastructure classes over the next 30 years as the older parts of the water supply and sewerage network approach end of life.

The asset condition is based on age of assets. Council will implement a condition assessment programme for its asset base, based on visual inspection and sampling, with a focus on assets approaching the end of their projected life.

### **Asset Renewals**

During the 30 year planning horizon it is projected that a significant proportion of water supply and sewerage mains will reach the end of their useful life. If mains are operated beyond the end of their useful life the potential for breaks and blockages increases significantly, leading to degraded service to customers. Also Griffith experiences relatively high rates of growth and if the growth continues then there is significant potential for level of service failures to occur due to demand exceeding asset capacity.

The asset renewal programme has been developed using a combination of Council's Long Term Financial Plan for the next ten years, with renewals for the remaining years based on Council's valuation of water supply and sewerage assets.

Given the lack of validated condition data for water supply and sewerage mains, works programmes have been smoothed out to reflect more realistic investment profiles. The renewals programme will in practice be driven by performance monitoring of water mains and targeted CCTV inspections of sewer mains. For water supply assets, the primary renewals task will be replacing the 1950s era ductile iron (cement lined) pipe network. The sewerage mains renewals programme will focus on rising mains and vitrified clay pipes. It is likely that CCTV inspection may reveal younger trunk sewers requiring renewals due to corrosion by industrial sewage.

### ***Water Supply Assets***

The Griffith Water Supply business is reasonably mature, although with the majority of assets in the first half of their operating life. The capital works planning involves optimising the capacity of major infrastructure, extending the service area to service development and renewing assets to maintain level of service.

The main investments over the planning period consist of:

- A 15ML/d upgrade to the Griffith WTP, with associated upgrades to sand filters and carbon dosing.
- Increased trunk capacity to transport water to new development area, including duplications of existing mains near the water treatment plant and pressure boosting stations to manage peak day demand.
- A substantial water mains renewals programme in the latter half of the 30 year planning period as water mains reach the end of their useful life.

### ***Sewerage Assets***

The Griffith Sewerage business has a number of new assets retrofitted to a relatively old core network that has had a difficult history. The main capital works planning involves addressing existing level of service issues through targeted renewals and extending the service area to service development.

The main investments over the planning period consist of:

- Extending sewerage services to Lake Wyangan, Tharbogang, and Nericon as well and expanding the existing service area in line with development.
- Constructing stage 2 of the Griffith WRP, when required to service demand – expected in the latter part of the 30 year planning period.
- Commencing a targeted CCTV data collection programme to identify sewers which are in poor condition, particularly those that present a high risk to the business, the community or the environment.
- A substantial sewer mains renewals programme targeted at improving the level of service to customers and reducing risk.

Council will acquire knowledge about longer term capital works requirements through the following actions:

- Updating its Development Servicing Plan, which will identify longer term strategies for servicing development, and
- Updating its Integrated Water Cycle Management Plan, which will identify any new works required to ensure water security.

In the interim this plan has used an allowance approach for the later years of the capital works plan based on the rate of spending proposed under the 10 year Long Term Financial Plan.

### **Financial Plan**

The primary objective of financial planning is to model the costs of each of the preferred service options and to determine appropriate funding strategies to ensure that the services remain affordable in the long term.

This Financial Plan seeks to meet the following objectives to support Council's water supply and sewerage businesses:

- The businesses are capable of funding new and replacement assets needed to provide the current level of service to its customers and the broader community,
- Over the long term, customer charges are kept as low and as stable as possible

### **Modelling Results - Water Supply Services**

The financial modelling results indicate that typical residential bills can be maintained at current levels in real terms. The economic real rate of return progressively reduces during the model period, however remains strongly positive. The business will accumulate and deplete cash throughout the model period and is capable of funding all projected capital works without recourse to borrowings. The result is that the value of system assets steadily increases consistent with the growth in the number of assessments, suggesting that the plan has an appropriate rate of investment in system assets over the model period.

The sensitivity analysis shows that a lower than forecast growth rate and inflation at recent historical averages have the most significant impact on the business. Under the low growth scenario the cash in the business depletes, however the business still is capable of delivering a positive economic real rate of return. The inflation case severely affects reserves, requiring large borrowings to fund renewals and new works. Given the lack of borrowings in the base case, variations in loan interest rates do not affect the results. None of the cases require a change in typical residential bills.

It will be important for Council to monitor actual rates of growth and regularly review the capital works programme to ensure that the business maintains a pricing path that allows the business to be financially sustainable.

## Modelling Results – Sewerage Business

The financial modelling results indicate that rates and charges need to increase by 2.5% above inflation to allow future borrowing requirements to be serviced, but the significantly positive economic real rate of return indicates that the business is financially sustainable over the long term, with the debt to equity ratio varying between 10% and 19%. During the model period the business continues to require loans to fund new assets and renewals, with peak borrowings occurring in 2033 and 2041. The result is that the value of system assets progressively increases consistent with the growth in the number of assessments, suggesting that the plan has an appropriate rate of investment in system assets over the model period.

The sensitivity analysis shows that a lower than forecast growth rate and inflation at recent historical averages have the most significant impact on the business. Under these scenarios, typical residential bills need to be higher than for the base case, some 5% higher than the current typical residential bill for the business. Inflation in particular has a negative effect on cash, with a significant increase in debt required. Given the level of debt in the business, there is a significant sensitivity to loan interest rates, meaning Council will need to monitor the financial markets and adjust its capital works programme accordingly.

These results reinforce the need for Council to monitor actual rates of growth and regularly review the capital works programme to ensure that the business maintains a pricing level that allows the business to be financially sustainable.

## Action Plan

Griffith City Council has successfully achieved 100% implementation of the outcomes required by the NSW BPM Framework for both Water Supply and Sewerage Services, and Council will continuously work towards maintaining this status.

The main work Council will focus during the planning period are:

- Continue update and improvements of asset registry and asset management system,
- Continue improvement of the BPM indicators recommended in the TBL Performance Report of Water Supply and Sewerage Services,
- Continue investments in asset maintenance, asset renewal and capital works program as outlined in Asset Management Plan and Capital Works program eg. upgrade of filtration unit of Griffith Water Treatment plant, extension of sewerage services to Lake Wyangan, Nericon and Tharbogang, upgrade of G3 sewage pump etc.,
- Update Development Servicing Plan (DSP),
- Update Integrated Water Cycle Management Plan.

## Investigation of Additional Raw Water Storage Facility

Council resolved on 27 March 2018 to include the option of an additional raw water storage facility in the next review of the Strategic Business Plan for Water and Sewerage Services, please refer to Appendix F.

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# **OVERVIEW OF THE STRATEGIC BUSINESS PLANNING PROCESS**

## 1. INTRODUCTION

### 1.1 Best-Practice Management Guidelines

The NSW Government's Best-Practice Management of Water Supply and Sewerage Guidelines 2007 have been developed as a practical means of implementing the goals of the Water supply and Sewerage program. The guidelines involve 6 criteria:

- Strategic Business Planning and financial planning
- Pricing and regulation of water supply, sewerage and trade waste
- Water conservation and demand management
- Drought management
- Annual performance monitoring, and
- Integrated Water Cycle Management plan

### 1.2 Local Government Integrated Planning and Reporting Framework

NSW local government Councils are required to undertake their planning and reporting activities in accordance with the Local Government Act 1993 and the Local Government (General) Regulation 2005. The Integrated Planning & Reporting (IP&R) framework enables councils to integrate their various plans together, understand how they interact and get the maximum leverage from their efforts by planning holistically for the future. Under the IP&R framework 2010 Council is required to prepare the following documents:

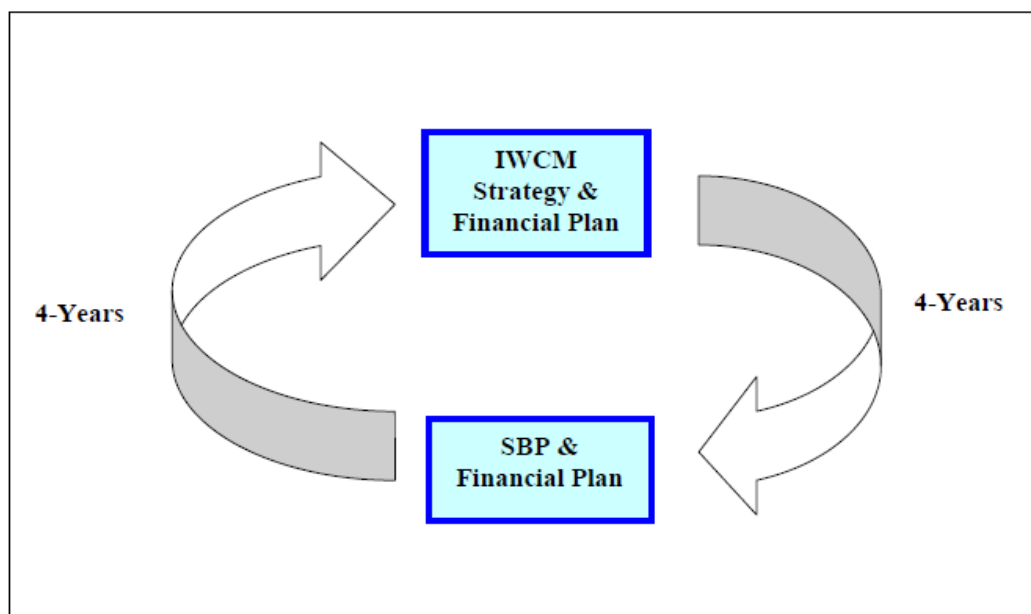
- Community Strategic Plan (CSP) (10 year plan)
- Delivery Program (4 year plan)
- Resourcing Strategy (10 Year Financial Plan, Workforce Management Plan and Asset Management Plan)
- Operational Plan (1 year)
- Annual Report

Councils responsible for water supply and sewerage infrastructure need to comply with the following requirements:

- Preparing and implementing a 30 year Integrated Water Cycle Management (IWCM) strategy
- Preparing and implementing a 20-30 year Strategic Business Plan (SBP), Financial Plan (FP), and Total Asset Management Plan (TAMP), and
- Annual Performance Monitoring.

### 1.3 Strategic Business Plans

For Local Water Utilities (LWUs), the Strategic Business Plan (SBP) and Integrated Water Cycle Management (IWCM) Strategy are peak planning documents for their water supply and sewerage business. The IWCM Strategy and SBP need to be prepared every 8 years on a rotation of every 4 years as shown in Figure 1.



**Figure 1: The IWCM Strategy and SBP**

This Document is an update of 'Griffith City Council's Strategic Business Plan for Water Supply and Sewerage Services 2009/10' and it comprises a series of interrelated Sections. These Sections provide the framework for Griffith City Council's Water and Sewerage strategic management and will be the basis for reporting to Council and the local community with respect to the provision of water supply and sewerage services.

This Strategic Business Plan (SBP) has been prepared to integrate with Council's overall management planning process and specifically to align with the Integrated Planning and Reporting Framework.

It will also provide Council with information to assist in the development of Best Value management practices and in involving the community in the future delivery of services.

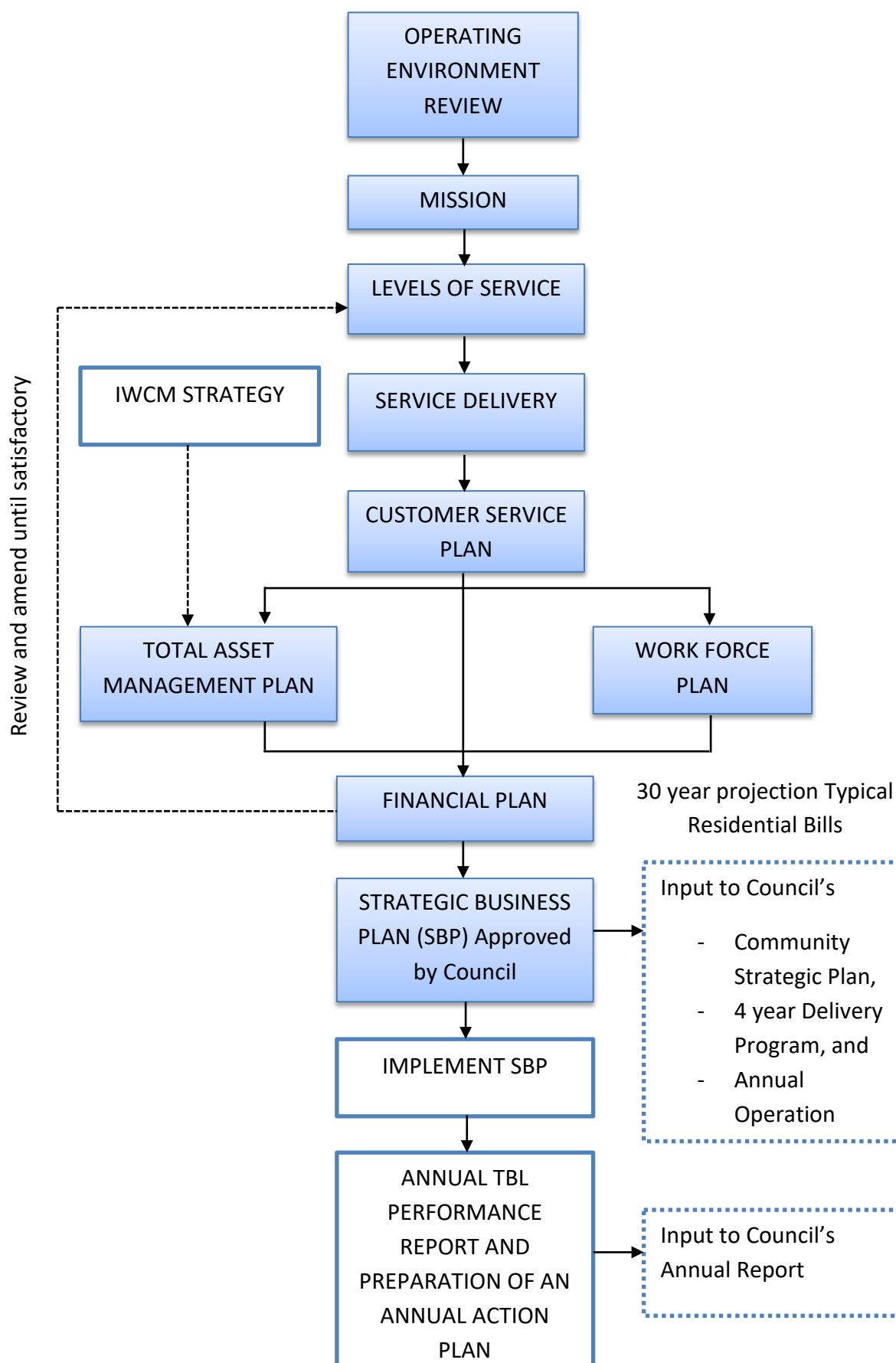
The principal purposes of this Strategic Business plan are to:

- review the business activities associated with Council's Water Supply and Sewerage services;
- identify and address any issues associated with service delivery, financial management and asset management;
- provide a framework for improvements to overall performance;
- improve accountability;
- provide a long term (30 Year) planning horizon for the water and sewerage businesses;
- satisfy the State Government's requirements for Best Practice management.

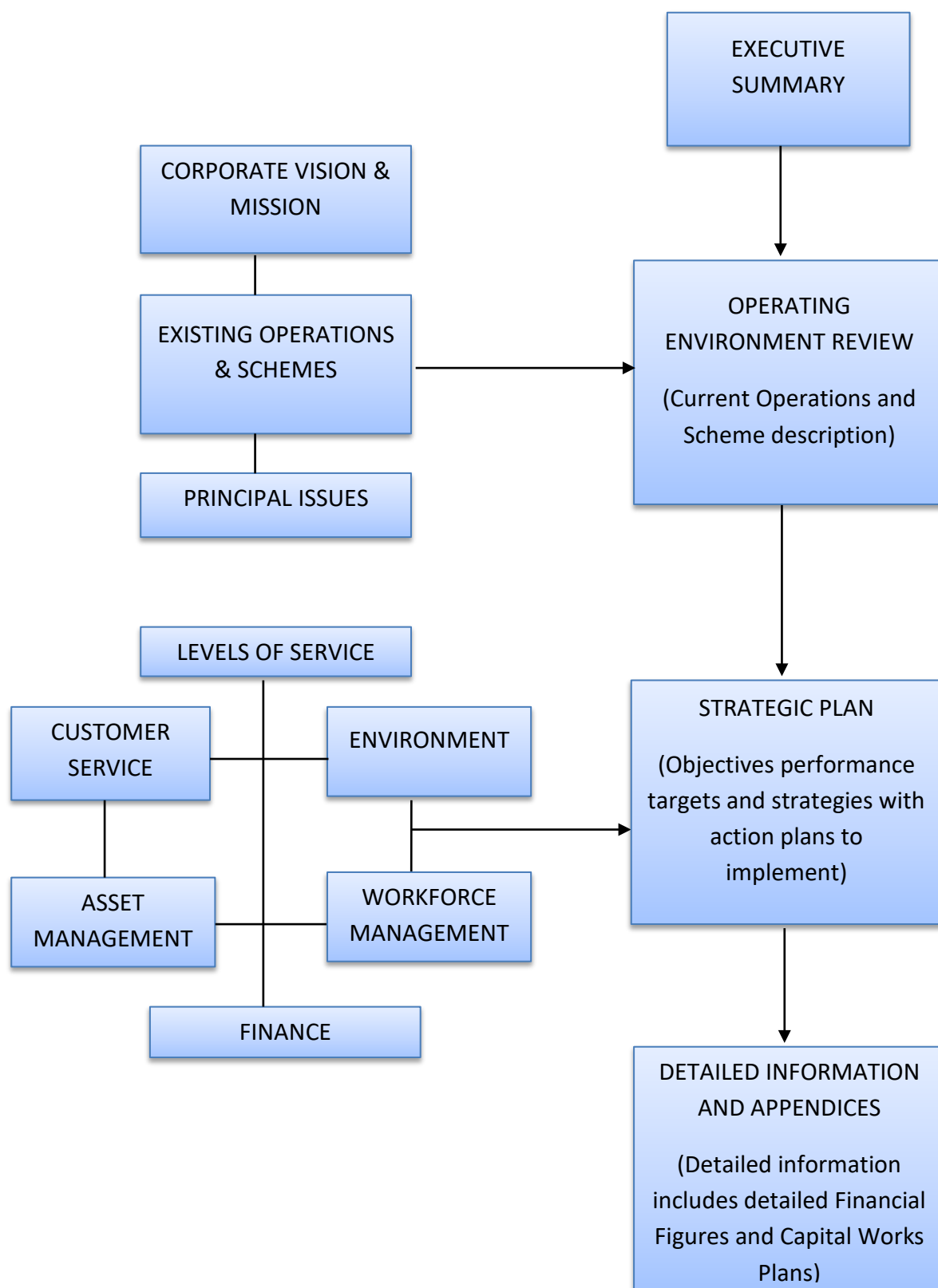
## 1.4 Structure of Strategic Business Plan (SBP)

The strategic business planning process for water supply and sewerage is consistent with a total asset management approach and it involves following components:

- **The Operating Environment Review** considers all corporate, community, environmental, financial, legislative, institutional, and regulatory elements that can affect water supply and sewerage activities,
- **The Mission Statement** describes the long term desired position of Griffith City Council with regard to water supply and sewerage services,
- **Levels of Service** set out the quality of services that Griffith City Council provides to customers
- **Service Delivery** describes the means that Griffith City Council uses to deliver services to customers,
- **Separate Sub-Plans for the key result areas:**
  - **Customer Service Plan** covers negotiating levels of service with customers, areas serviced, demand management, pricing, customer/community involvement in decision making, public health protection, environmental protection and sustainable development
  - **Total Asset Management** Plan covers service delivery, operation, maintenance, and capital works
  - **Work Force Plan** covers staff skill development, health and safety and, and resource planning, and
  - **Finance Plan** covers overall financial management including future capital works and the required Typical Residential Bills.



**Figure 2 Strategic Business Planning Process for Water and Sewerage Services**



**Figure 3 Structure of Griffith City Council's Business Plan for Water and Sewerage Services**



# **ELEMENTS OF WATER SUPPLY AND SEWERAGE STRATEGIC BUSINESS PLAN**

## 2. OPERATING ENVIRONMENT REVIEW

This section of the Strategic Business Plan provides corporate information and structure, a review of Water Supply and Sewerage businesses and details issues, and factors affecting the operating environment which need to be considered in planning for the future.

### 2.1 General

Griffith has a regional population of 25,681 (1) people and is the principal commercial and administrative centre of the Murrumbidgee Irrigation Area and is regarded as the food bowl of NSW. The area administered by Griffith Council covers 1,640 km<sup>2</sup>. The City is approximately 570 km west of Sydney by road. Griffith is expected to continue its strong population growth of 0.7% over the next 20-30 years.

Apart from the City of Griffith itself, Council's local government area also includes a number of small towns and villages, including Yenda, Bilbul, Yoogali, Lake Wyangan, Hanwood, Beelbangera and Tharbogang.

(Note (1): Id.com.au)

### 2.2 Corporate Vision & Mission

#### Vision

To be an acknowledged major regional centre with an emphasis on best agricultural practices, providing:

- *a viable local economy with sustainable development and growth;*
- *a clean and ecologically sustainable built environment and natural environment;*
- *a quality lifestyle for residents, and*
- *a pride in our cultural diversity*

#### Mission

The Griffith City Council has adopted a two point mission statement which it believes is the crux of Council's role and purpose. That mission statement is:-

- *To respond to the needs of the community and deliver in an economical manner those services which are the responsibility of Local Government.*
- *To provide Local Government administration that is dedicated, accountable and committed to the improvement of the quality of life and the economic well-being of the citizens of the city of Griffith.*

## 2.3 Corporate Directions

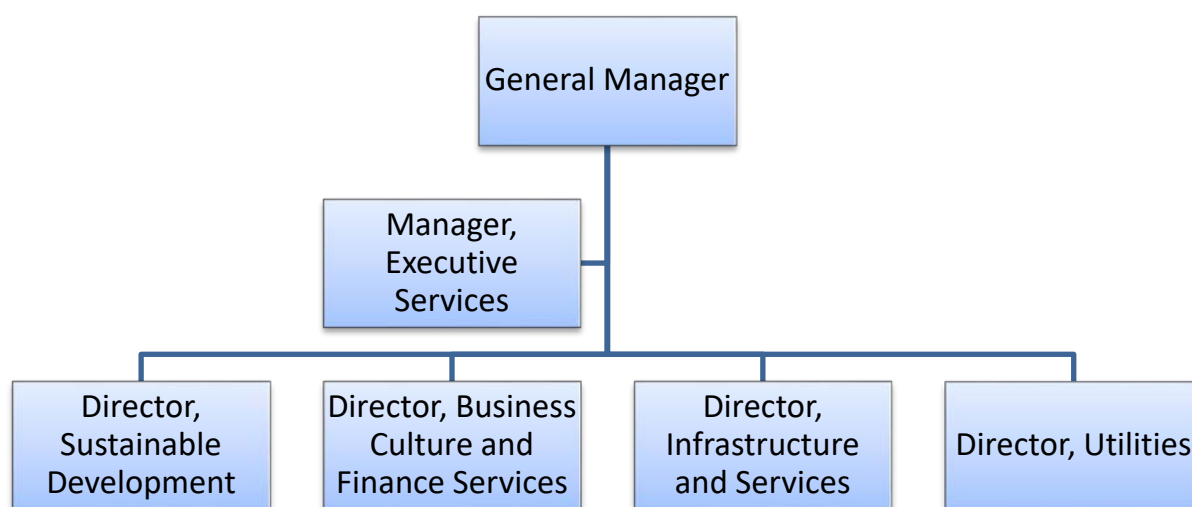
Council is committed to implementing the Integrated Planning and Reporting (IP&R) Framework in accordance with the Local Government Act 1883 and the Local Government (General) Regulation 2005, and the key elements of this planning framework are:

Growing Griffith 2030 - Council's most important strategic document that provides broad based objectives and strategic directions for the whole of City. Council also adopted Guiding Griffith 2040 (which is a Community Strategic Plan) in February 2017.

- **The Resourcing Strategy** - This details the long-term financial plans, asset management plans and workforce planning.
- **Delivery Program** – Council's 4-year delivery program containing actions derived from Growing Griffith 2030.
- **The Operational Plan** - A resource allocation plan which contains annual budget, works program and defined measures. Growing Griffith 2030 and its underlying plans such as the long term Financial Management Plan and Community Strategic Plan are the main drivers in the formation of the yearly program/plan. It identifies all of Council's services and the key initiatives to be delivered over the financial years.
- **The Annual Report** - This provides an overview of the City's progress towards the vision. The Annual report publishes data on the objectives and indicators in Growing Griffith 2030 and the Council's Delivery Program to track progress towards achieving the vision of a thriving and sustainable City.
- **End of Term Report** – This document is prepared at the end of each Council 4-year term to provide an overview of the progress of the community against the priorities and strategies outlined in Growing Griffith 2030.

## 2.4 Organisational Structure

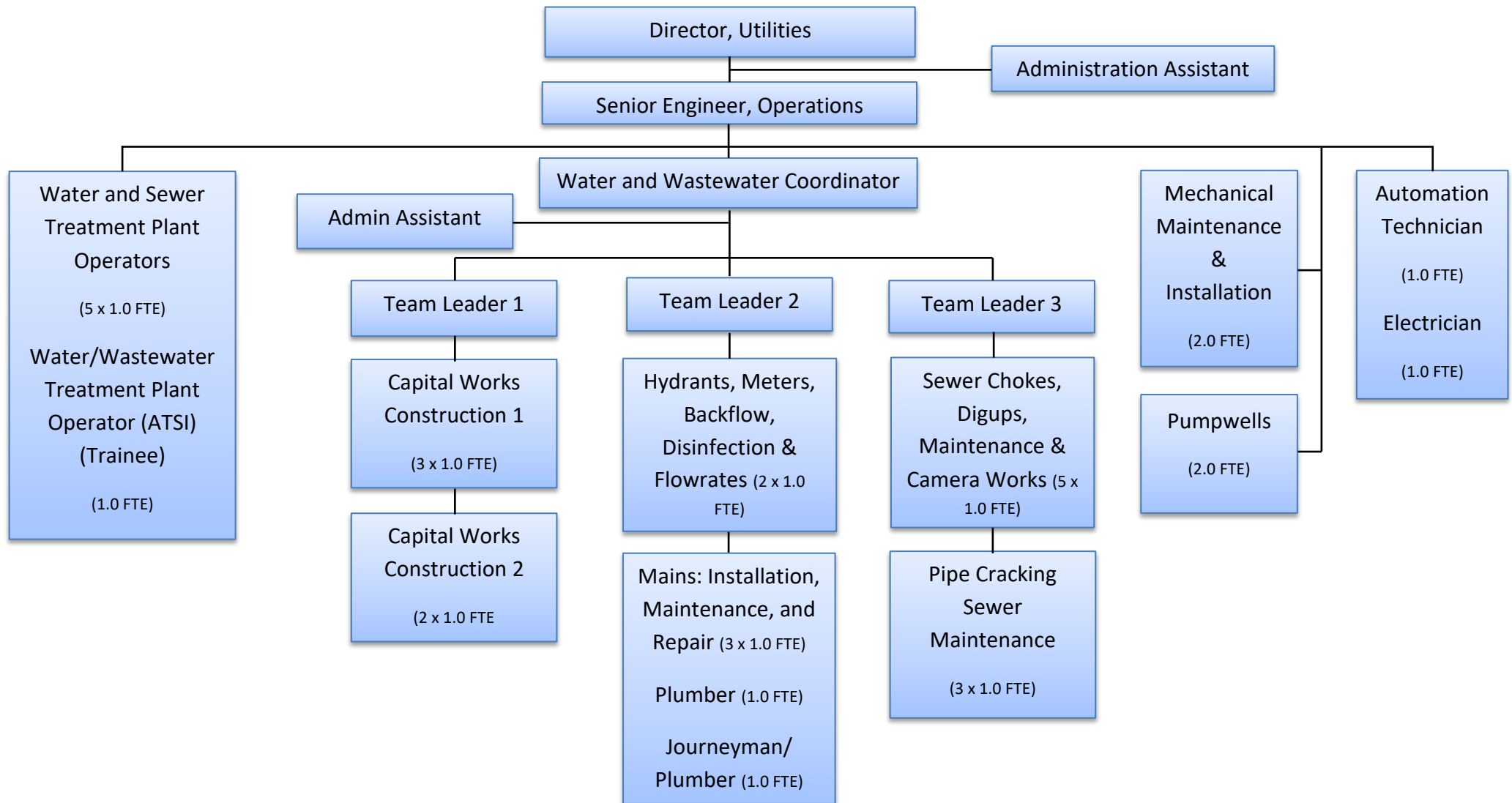
Griffith City Council has 4 directorates and a governance department headed by Manager, Executive Services as shown in Figure 4.



**Figure 4 Griffith City Council's Organisational Structure**

Griffith City Council's water and sewerage services are provided under the directorate, Utilities and its structure is shown in Figure 5.

## Strategic Business Plan for Water Supply and Sewerage Services



**Figure 5 Griffith City Council's Water and Sewerage Structure**

## 2.5 Population, Growth & Development

### 2.5.1 Residential Growth

Griffith has experienced a steady growth rate of 0.7% over the last 10 years and projections indicate that this will continue. The population of the local government area is expected to reach nearly 30,118 people by 2036.

Population projections have been developed to be consistent with projections prepared by .id, a specialist forecasting company, and commissioned by Griffith City Council<sup>1</sup>. These projections are for population and dwellings for the period 2011 to 2036. The forecast growth for the full Griffith LGA has been used as all of the regions in the analysis include a centre provided with water supply and sewerage services.

This Strategic Business Plan considers projections of dwellings to 2047. It does so by extrapolating from these forecasts.

The rate of residential growth is driven by two factors:

- Changes in population
- Changes in the occupancy rate of dwellings.

The resulting projections are summarised in Table 1.

**Table 1: Residential populations and dwellings, Griffith LGA, 2011-2036**

Year	2011	2016	2021	2026	2031	2036
Population	25,361	26,107	26,732	27,796	28,946	30,118
Average household size	2.68	2.64	2.63	2.63	2.63	2.63
Households	9,347	9,762	10,032	10,433	10,861	11,299
Dwellings	10,050	10,423	10,818	11,252	11,706	12,167

The Griffith urban areas are expected to follow the national trend of minor declines in occupancy rates. Declines in occupancy are related to increasing affluence and changed social dynamics.

It has been assumed that all of the forecast growth in residential dwellings for the Griffith LGA will occur in areas provided with water supply and sewerage services. Dwellings projections have been extrapolated from 2036 to 2046 based on the rate of growth from 2031 to 2036.

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Available at <http://forecast.id.com.au/griffith?WebID=200>, accessed 8 May 2017.

The projected dwellings for the serviced portions of the Griffith LGA are shown in Table 2.

**Table 2: Projected dwellings growth in service areas, 2016-2046**

Year	2016	2021	2026	2031	2036	2041	2046
Projected dwellings in Griffith LGA	10,423	10,818	11,252	11,706	12,167	10,423	10,818
Projected dwellings in water supply service areas	8,279	8,357	8,439	8,522	8,603	8,684	8,769
Water supply dwellings growth rate (pa)		0.94%	0.98%	0.98%	0.95%	0.94%	0.98%
Projected dwellings in sewerage service areas	7,433	7,510	7,592	7,674	7,754	7,835	7,920
Sewerage dwellings growth rate (pa)		1.04%	1.09%	1.08%	1.04%	1.04%	1.09%

### 2.5.2 Non Residential Growth

Non-residential growth is difficult to accurately forecast and there is a lack of information regarding the potential impact on the water supply and sewerage systems. The net change in non-residential assessments is assumed to be proportional to the change in population for the Griffith LGA. This implicitly assumes that some non-residential growth will occur in areas which are not provided with water supply and sewerage services.

This approach is reliable provided that there aren't significant changes in the composition of the non-residential sector over the planning period. The resulting employment and growth rates are provided in Table 3.

**Table 3: Projected non-residential growth rate, 2016-2046**

Year	2016	2019	2025	2031	2036	2041	2046
Griffith LGA population	25,361	26,107	26,732	27,796	28,946	30,118	25,361
Non-residential growth rate (pa)	0.58%	0.47%	0.78%	0.81%	0.80%	0.58%	0.47%

The principal sources of economic growth and development in Griffith include:

- Residential and rural residential development
- Agriculture (grapes, citrus, fruit, rice & vegetables), forestry and fishing
- Industry, including wineries, food manufacturing, tourism, retail trade, manufacturing, & education

Baiada/Bartter Industries (poultry processor) & Casella Wines (one of 14 wineries which produce world class wines) are major industries in the City.

### **2.5.3 Implications of growth on the business**

The projected growth in dwellings and employment in the sewerage service areas has a series of implications:

1. New development leads to the need for increased capital works to link new areas to the water supply and sewerage network, and provide capacity to treat and transport water and sewage respectively;
2. The creation of new assets, and the increased loading on existing assets, increases operating and maintenance expenses, including labour, energy and chemicals;
3. New development also leads to increased revenue.

This Plan considers the impact of this growth through the Asset Management, Workforce and Financial Plans.

The continued growth and development in Griffith presents ongoing challenges to the water and sewerage business, in terms of maintaining continued high levels of service

The 30 year Forward Capital Works Programs have been framed with this development in mind and Council's Pricing Policies will ensure that sufficient revenue is generated to maintain the existing assets and facilitate the necessary infrastructure development



## 2.6 Water Supply Services

### 2.6.1 General

Griffith City Council provides treated, potable water supplies to Griffith and Yenda. Raw water is drawn from the Murrumbidgee Irrigation Area Main Canal, the source of which is the Murrumbidgee River.

Historical water consumption statistics for the Griffith water supply area are summarised in the tables below:

**Table 4: Water Supply Data**

Item	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Permanent urban population served	23,801	25,847	25,292	24,634	25,630	25,425	25,681
Peak population served	25,703	26,347	26,070	25,373	26,319	26,188	26,451
No. of assessments	9,743	9,771	9,857	9,870	10,474	9,967	9,831
Total properties connected	8,309	8,305	8,378	8,390	8,903	8,472	8,360

(Source: <https://ctw.water.nsw.gov.au/Utility/APMData/>)

**Table 5: Water Consumption Data**

Item	2009/10 (ML/yr)	2010/11 (ML/yr)	2011/12 (ML/yr)	2012/13 (ML/yr)	2013/14 (ML/yr)	2014/15 (ML/yr)	2015/16 (ML/yr)
<b>Total Consumption</b>	6,336	4,484	5,266	5,996	5,805	5,975	5,985
Residential	3,894	2,617	3,133	3,784	3,672	3,738	3,913
Commercial/Industrial	1,419	1,125	1,049	1,379	1,349	1,216	1,231
Institutional	0	0	0	0	0	0	0
Rural	773	571	544	521	468	377	405
Bulk Sales/Other	0	0	0	0	0	0	0
Municipal Public Parks	217	137	39	140	136	260	194
Municipal excluding Public Parks	0	34	471	171	137	261	222
Unaccounted for water	33	0	30	1	43	123	20

(Source: <https://ctw.water.nsw.gov.au/Utility/APMData/>)

### 2.6.2 Water Treatment

Griffith City Council operates two (2) water treatment plants, namely:

<b>Griffith WTP:</b>	DAF Plant
	Capacity: 60 ML/d
	Built in 1987
<b>Yenda WTP:</b>	Microfiltration Plant
	Capacity: 2 ML/d
	Built in 2001

**Table 6: Water Filtration Plant Production**

Item	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Annual Production (ML)	7,399	5,003	5,780	6,472	6,516	6,508	6,679
Peak Day Demand (ML/d)	51.7	40.5	44.7	50.9	49.8	45.2	50.9

Treated water is pumped to 4 potable service reservoirs (capacity: 55 ML) located in Griffith and Yenda and two raw water reservoirs, one each at Griffith and Yenda.

There are 4 pump stations (1 potable, and 3 raw water) and 554.6 kilometres (2015/16) of trunk mains and reticulation pipework.

All the villages are connected to the reticulated water supply.

### 2.6.3 Water Quality

Typically, Council's water supply achieves 100% compliance with Australian Drinking Water Guidelines for both chemical and microbiological parameters, as shown below.

**Table 7: Water Quality**

Item	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Chemical Water Quality Compliance (%)	100	100	100	100	100	100	100
Microbiological (E.coli) Water Quality Compliance (%)	100	100	100	100	100	100	100

(Source: NSW Health)

## 2.6.4 Water Pricing

**Table 8: Water Pricing**

Element	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Residential Filtered Water							
up to 200 kL/a	\$0.55	\$0.55	\$0.55	\$0.60	\$0.63	\$0.65	\$0.67
>200 kL/a	\$0.90	\$1.00	\$1.08	\$1.11	\$1.20	\$1.25	\$1.30
Access charge: Varies							
Base: 20 mm service	\$120	\$120	\$123	\$126	\$129	\$129	\$129

## 2.6.5 Overall Water Supply System Performance

Griffith's overall water supply system performance is summarised in Table 9 below.

**Table 9: Overall Water Supply System Performance**

Item	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2015/16 State Median
Connected Properties	8,305	8,378	8,390	8,903	8,472	8,360	-
Residential consumption (kL per property)	382	457	572	525	567	585	248
Typical residential Bill (\$ per assessment)	405	511	635	621	690	734	601
Number of mains breaks (per 100km)	7	12	3	12	13	16	9
Drought Water Restrictions (% of time)	61	0	0	0	0	0	0
Water Quality Complaints (per 1000 properties)	7.7	8.2	2.9	1.9	1.6	0.7	3
Water Service Complaints (per 1000 properties)	32.0	32.9	42.5	27.2	47.9	50	4
Chemical Water Quality Compliance (%)	100	100	100	100	100	100	100
Microbiological (E.coli) Water Quality Compliance (%)	100	100	100	100	100	100	100

Item	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2015/16 State Median
Infrastructure leakage index	-	-	-	-	-	-	-
Water losses per Connection (L per day)	70	100	100	100	110	110	70
Operating Cost (\$ per property)	619	674	683	625	702	713	440
Management cost (\$ per property)	274	298	297	280	297	308	148

(Source: DWE Performance Reports)

### 2.6.6 Water Supply System Drawings

Schematic drawings of the Griffith Water Supply System are included as Appendix D.

## 2.7 Sewerage Services

### 2.7.1 General

The Griffith wastewater system comprises 172 km of reticulation and gravity mains, 63km of rising mains, 30 pump stations and three (3) Wastewater Treatment Plants (total capacity of 99,310 EP). Council is required by Water NSW to implement a Pollution Reduction Program (PRP 100) for the Griffith Water Reclamation Plant.

The Treatment Plants are located at Griffith, Yenda and Bilbul. Details of the plants are:

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<b>Griffith STP:</b>	MBR Plant (Advanced Tertiary Treatment) Built in 2012 Capacity 37,500 EP Note: The MBR Plant can be expanded to 50,000 + EP capacity
<b>Yenda STP:</b>	Oxidation Ponds, mechanically aerated Built in 1981 Capacity 34,000EP
<b>Bilbul STP:</b>	Oxidation Pond Built in 1990

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310EP capacity

## System Characteristics

The sewerage system has the following characteristics:

**Table 10: Sewerage System Characteristics**

Item	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Permanent population served	21,802	25,847	25,292	24,634	25,630	25,425	25,681
Peak population served	23,827	26,347	26,070	25,373	26,319	26,188	26,451
Residential properties connected	6,754	7,033	7,056	7,060	6,216	6,237	6,237
Unserved Urban Premises (%)	0	0	0	0	0	0	0

## 2.7.2 Sewage Treatment Plant Performance

The performance of the WWTW is summarised below:

**Table 11: Sewage Treatment Plant Performance**

Item	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Percentage of sewage receiving tertiary treatment, %	93	94	94	96	95	95	96
Percentage of effluent recycled, %	9	9	9	0	0	8	9
Biosolids reused/recycled, %	0	0	0	0	0	0	0
Biosolids to farmland, %	0	0	0	0	0	0	0
Volume of sewage collected per property (kL/year)	283	328	185	246	274	301	342
Odour complaints per 1000 properties	0	0.1	0.5	0.6	1.4	0.7	0
No. of sewer chokes per 100 km of mains	70	57	55	63	57	85	106
Percentage of sewage volume treated that was compliant, %	39	27	52	98	99	98	98
Compliance with Licence – BOD (%)	100	100	100	100	100	100	100
Compliance with Licence – SS (%)	39	29	53	98	99	98	99

### 2.7.3 Overall Sewerage System Performance

Griffith's overall sewerage system performance is summarised in Table 12.

**Table 12: Overall Sewerage System Performance**

Item	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2015/16 State Median
Number of connected Properties	7,786	7,868	7,863	7,013	7,050	7,070	-
Volume of sewage collected (ML)	2,553	1,456	1,938	1,919	2,123	2,415	4,900
Volume of sewage treated (kL per property)	328	185	246	274	301	342	234
Typical Residential Bill (\$ per assessment)	690	690	708	729	750	774	697
Operating cost (\$ per property)	441	470	491	572	590	611	470
Management cost (\$ per property)	142	167	155	180	212	204	164
Treatment cost (\$ per property)	96	110	156	173	159	179	159
Sewer Chokes/Collapses (per 100 km of main)	57	55	63	57	85	106	38
Sewer Overflows (per 100 km of main)	24	15	2	3	8	6	14
Odour Complaints (per 1000 properties)	0.1	0.5	0.6	1.4	0.7	0	0.9
Service Complaints (per 1000 properties)	15	17	19	20	27.8	37.3	5
Sewage treated that was compliant with Licence (%)	27	52	98	99	98	98	100

### 2.7.4 Sewerage System Drawings

Schematic Drawings of the Griffith Sewerage System are included in Appendix B.

## 2.8 Water and Sewer Assets

Council's water supply and sewerage asset valuations are summarised in Table 13 and Table 14 respectively.

**Table 13: Water Supply Asset register statistics (2017)**

Asset Class	Current Replacement Cost (\$'000)	Annual Depreciation (\$'000)	Written Down Current Cost (\$'000)	% life used
Water Ancillary	10,966	5,425	5,542	49%
Water Mains	104,101	29,113	74,988	28%
Water Pumping Stations	777	307	470	39%
Water Reservoirs	11,982	2,374	9,608	20%
Water Treatment Plants	39,571	10,916	28,556	28%
<b>Total</b>	<b>167,398</b>	<b>48,136</b>	<b>119,164</b>	<b>29%</b>

**Table 14: Sewage Asset register statistics (2017)**

Asset Class	Current Replacement Cost (\$'000)	Annual Depreciation (\$'000)	Written Down Current Cost (\$'000)	% life used
Sewerage Ancillary	12,204	5,299	6,905	43%
Sewage Pumping Stations	12,277	5,857	6,420	48%
Sewer Mains	71,299	26,550	44,748	37%
Sewage Treatment Plants	33,905	8,301	25,533	25%
<b>Total</b>	<b>129,684</b>	<b>46,008</b>	<b>83,605</b>	<b>36%</b>

The asset valuation information shows that the high value components of the water supply and sewerage systems typically are still in the earlier phases of their expected life. However the register identifies that Council will need to make significant investments across most infrastructure classes over the next 30 years as the older parts of the water supply and sewerage network approach end of life. This is addressed in the Capital Works Plan.

At this stage, asset condition is not explicitly assessed for water supply and sewerage mains, rather asset condition is inferred based on age. Griffith City Council will implement a condition assessment programme for its asset base, based on visual inspection and sampling, with a focus on assets approaching the end of their projected life.

## 2.9 Factors Affecting the Operating Environment

The delivery of water supply and sewerage services to Council's customers is subject to a large number of constraints, requirements, guidelines and other factors, which are collectively referred to as the operating environment. As part of the business planning process, a review has been carried out to examine how the surrounding environment impacts on Council's operations of its water and wastewater schemes. The six (6) major elements of the operating environment are shown in the Figure 6. Progressive review of these elements is an effective management tool into the future.



**Figure 6 Operating Environment Elements**



### 2.9.1 Institutional Arrangements for Service Provision

Under the Local Government Act 1993, Local Government Councils are responsible for making necessary institutional arrangements internally and/or externally for providing water supply and sewerage services.

Griffith City Council receives bulk raw water supply from Murrumbidgee Irrigation. Raw water is drawn from the Murrumbidgee Irrigation Area Main Canal, the source of which is the Murrumbidgee River.

Griffith City Council owns, operates, and manages two water treatment facilities, the Griffith Water Treatment Plant (60 ML/d) and the Yenda Water Treatment Plant (2 ML/d).

Similarly Griffith City Council owns, operates, and manages 3 wastewater treatment plants, the Griffith Water Reclamation Plant (GWRP) (50,000+ EP capacity), the Yenda Wastewater Treatment Plant (34,000 EP capacity), and the Bilbul Wastewater Treatment Plant (310 EP capacity).

Council is committed to continuation of the current institutional arrangement; namely, separate water supply and sewerage businesses, owned, operated and managed by Griffith City Council; however it supports the RAMROC model of a Binding Alliance

### 2.9.2 Legislative Framework

Griffith City Council understands that numerous Acts impinge on and influence the way Council provides water supply and sewerage services. The principal Act applying is the Local Government Act 1993.

Several other Acts also affect Council's operations and these are summarised under three (3) categories (Pricing, Environmental Protection and Health and Safety) in Table 14.

**Table 15 Legislative Framework**

Act	Implications for Council
<b>Pricing</b>	
Local Government Act 1993  Especially Sections 64 and 428.	<p>Determining developer charges:</p> <ul style="list-style-type: none"> <li>- provide a source of funding for infrastructure required for new urban development</li> <li>- provide signals regarding costs of urban development and encourage less costly forms</li> </ul> <p>Need to be more accountable.</p> <p>Need for better asset management.</p>

Act	Implications for Council
Environmental Planning and Assessment Act 1979 (incl. the EPA Regulation 2000).	Determining developer charges. Requirement for LEPs and DCPs. Council control of service approvals.
Water Management Act 2000	Determining developer charges. Water Rights, licences and allocations.
Water Administration Act 1986	Provide water to meet the needs of water users in a commercial manner consistent with the overall water management policies.
Local Government Regulation 1993 (Savings and Transitional)	Determining developer charges.
Independent Pricing and Regulatory Tribunal Act 1992	Gives powers to the Independent Pricing and Regulatory Tribunal to inquire into and regulate prices.  IPART has developed a set of consistent pricing principles to be adopted by local government authorities.  Charging guidelines.  Trend towards a user pay system in the industry.
Water Industry Competition Act 2006	The Act and regulations encourage competition in the water industry and foster innovative recycling projects and dynamic efficiency in the provision of water and wastewater services
Fluoridation of Public Water Supplies Act 1957	Under the Act, approval of NSW Health is required in order that a Council can fluoride to public water supplies in the interests of enhancing the oral health of the community.
<b>Environmental Protection</b>	
Protection of the Environment Operations Act 1997  Brings together:	Regulating pollution activities and issue of licenses as well as the monitoring of and reporting on waste output.  Council is required to apply Due Diligence in undertaking the scheme operations.

Act	Implications for Council
<p>Clean Air Act 1961</p> <p>Clean Waters Act 1970</p> <p>Pollution Control Act 1970</p> <p>Noise Control Act 1975</p> <p>Environmental Offences and Penalties (EOP) Act 1989</p> <p>Waste Avoidance and Resource Recovery Act 2001.</p>	
Soil Conservation Act 1938	<p>Conserves soil resources and farm water resources and the mitigation of erosion and land degradation.</p> <p>Preservation of watercourse environments.</p>
Environmental Planning and Assessment Act 1979	Encourages the proper management of natural and man-made resources, the orderly use of land, the provision of services and protection of the environment.
<p>Catchment Management Authorities Act 2003</p> <p>Native Vegetation Act 2003</p> <p>Natural Resources Commission Act 2000.</p>	<p>Promotes the coordination of activities within catchment areas. This Act has implications for the management of river quality and quantity.</p> <p>Requirement for ongoing management plan.</p>
Water Management Act 2000	<p>The Act provides for sustainable and integrated management of NSW's water resources.</p> <p>Water rights, licenses, allocations.</p>
Water Administration Act 1986	Ensure that water is allocated and used in ways which are consistent with environmental requirements and provide the maximum long-term benefit.
Dams Safety Act 1978	Ensure that any risks that may arise in relation to dams (including any risks to public safety and to environmental and economic assets) are of a level that is acceptable to

Act	Implications for Council
	the community
<b>Health and Safety</b>	
Public Health Act 2010	Prevention of the spread of disease.  Effluent disposal methods.  Delivery of quality water.
Work Health and Safety Act 2011 (and Regulations 2011)	Council's responsibility to ensure health, safety and welfare of employees and others at places of work.  Likely cost implications.  Impacts all operations.  Note public safety – insurance.
Fluoridation of Public Water Supplies Act 1957	Authorise and control the addition of fluorine to public water supplies in the interests of enhancing the oral health of the community

### 2.9.3 Stakeholder Relationships

In delivering quality water and sewerage services, Griffith City Council has on-going, working relationships with the following organisations:

- Murrumbidgee Irrigation
- DPI Water/Water NSW
- Murrumbidgee Catchment Management Authority
- Office of Environment and Heritage
- Murray Darling Basin Commission
- NSW Health
- NSW Water Directorate
- WorkCover

### 2.9.4 Best-Practice Compliance

Griffith City Council (GCC)'s present level of compliance with Best-Practice Requirements for water supply and sewerage services are provided in Tables 16 and 17.

*Table 16 Compliance with Best-Practice Requirements for Water Supply*

Best-Practice Requirement	Status
1. Strategic Business Planning	This document complies with the requirement.  Last SBP prepared and adopted by GCC in 2009
2. Pricing <ul style="list-style-type: none"> <li>Full cost recovery without significant cross subsidies</li> <li>Complying residential charges with pay-for-use water pricing, independent of land value</li> <li>Complying non-residential charges</li> <li>Development servicing plan, commercial developer charges</li> <li>At least 75% of residential revenue from usage charges</li> </ul>	<p>Comply</p> <p>Comply to full cost recovery</p> <p>Comply to full cost recovery</p> <p>Comply. DSPs for both water supply and sewerage are in place</p> <p>Comply to full cost recovery</p>
3. Water Conservation	Water Conservation Strategy and Demand Management Modelling completed in 2010. This document will be reviewed by 2019/20 as part of IWCM. Council has Water Conservation Policy (WS-CP-102).
4. Drought Management	Drought Management Plan prepared and adopted by GCC in 2009. This document will be reviewed by 2019/20 as part of IWCM.
5. Performance Monitoring	Comply. Reported to DPI Water annually
6. Integrated Water Cycle Management (IWCM)	IWCM Evaluation completed by GCC in 2009. IWCM Strategy will be completed by 2019/20

*Table 17 Compliance with Best-Practice Requirements for Sewerage*

Best-Practice Requirement	Status
1. Strategic Business Planning	This document complies with the requirement.  Last SBP prepared and adopted by GCC in 2009
2. Pricing	Comply
• Full cost recovery without significant cross subsidies	Comply to full cost recovery
• Complying residential charges, independent of land value	Comply to full cost recovery
• Complying non-residential charges	Comply. DSPs for both water supply and sewerage are in place
• Development servicing plan, commercial developer charges	Comply to full cost recovery
• Complying trade waste fees and charges	Comply. GCC has a Trade Waste Policy (WS-CP-302) in place and is implementing DPI Water approved Trade Waste Charging.
• Complying trade waste policy and approval for all discharges	
I. Performance Monitoring	Comply. Reported to DPI Water annually
II. Integrated Water Cycle Management (IWCM)	IWCM Evaluation completed by GCC in 2009.  IWCM Strategy will be completed by 2019/20

### 2.9.5 Key Issues

Griffith City Council has implemented all the water supply and sewerage outcomes required by the Best-Practice Management Framework and the Council is committed to continue to do so by addressing any emerging issues. Key issues identified at the macro level in respect of the key result areas of Water Supply and Sewerage services are:

#### Water Supply Issues

##### Issue

Review Griffith growth strategy, Growing Griffith 2030 (Water Supply elements) to ensure that water

supply services are available to support the current and future development needs of the

City, including compliance with statutory requirements.

Meet the adopted Levels of Service and the Best-Practice Management of Water Supply and Sewerage Guidelines, 2007.

Manage and fund future capital works for new assets and for systematic asset rehabilitation and renewal.

Adopt appropriate pricing of water supply services.

Maintain effective communication among Council, customers and Government.

Minimise the costs of operation, maintenance, management and treatment.

Continue comprehensive data acquisition and development of full asset management processes. Implement efficient data management systems for reporting and decision making

Maintain adequate staffing of Water Supply and Sewerage Services.

Fully comply & implement National Water Quality Management Strategy, Australian Drinking Water Guideline (ADWG) 2004

Review water quality monitoring & testing protocols for raw water from Canal – in conjunction with MI

Plan augmentation of Griffith service reservoir capacity

Continue the refurbishment of Griffith Water Treatment Plant (GWTP)

Continue capturing water use and usage patterns, and

Monitor district metering and pressure management zones.

Maintain water reticulation system to reduce breakages

Review water supply systems for villages

Plan Asbestos Cement (AC) Pipe renewal

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Plan duplicate trunk main from the GWTP

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Review the operation of GWTP for the need of additional raw water storage.

## Sewerage Issues

### Issue

Meet the adopted Levels of Service and the Best-Practice Management of Water Supply and Sewerage Guidelines, 2007

Review Griffith growth strategy, Growing Griffith 2030 (Water Supply elements) to ensure that water supply services are available to support the current and future development needs of the City, including compliance with statutory requirements.

Extension of services to unsewered areas including Lake Wyangan, Nericon, and Tharbogang.

Minimise costs of operation, pumping and treatment.

Maintain effective communication among Council, customers and Government.

Monitor reuse of reclaimed water.

Continue development and implementation of comprehensive data acquisition asset management processes. Ensure efficient data management for reporting and decision making

Maintain adequate staffing of Water Supply and Sewerage Services.

Manage and fund future capital works for new assets and for systematic asset rehabilitation and renewal.

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Identify and plan areas of improvement at Yenda Sewage Treatment Plant

## 3. Mission Statement

To provide a cost effective water supply and sewerage services to Griffith LGA which meets the Levels of Service to which customers have agreed, and for which they are prepared to pay, and which satisfies all statutory requirements. These services will be provided equitably and in a commercial manner, taking into account the values of the broader community. These services will be environmentally sensitive, promote ecological sustainability within the area



### 3.1 Council's Aims and Objectives

Council aims to provide a safe reticulated water supply and sewerage services to the entire Griffith LGA community in a cost effective and environmentally sustainable manner that meets the needs of the community and businesses.

#### Water Supply

Council's primary aim is to supply water to its customers to a standard that meets their needs.

#### Sewerage Services

Council's aim is to safely collect, transport and treat the sewage wastes from Griffith in a way which provides sufficient capacity to meet the needs of the community and future growth requirements in an efficient, cost effective manner and return all treated products back into the ecosystem in a way which is ecologically sustainable and maximises the resources available and, where appropriate, to investigate the provision of services for areas outside the City boundaries. Specific objectives of water supply and sewerage services are summarised in Table 18.

**Table 18 Specific Objectives of Water Supply and Sewerage Services**

Management Area	Water Supply Business Objectives	Sewerage Business Objectives
Customer Service	<p>Operations meet currently adopted levels of service with progress towards target levels of service.</p> <p>Potable water services are provided in advance of demand</p> <p>Review and update Development Servicing Plans (DSPs)</p> <p>Encourage Griffith Institutions and rural residents to use non-potable water services.</p> <p>To ensure and encourage wise water use</p> <p>An equitable pricing policy that supports current and future</p>	<p>Operations meet currently adopted levels of service with progress towards target levels of service.</p> <p>Sewerage services are provided in advance of demand. Consider provision of services to remaining unserved urban area.</p> <p>Review and update Development Servicing Plans (DSPs)</p> <p>To provide sewer services on a full cost recovery and user pays basis.</p> <p>Minimise hydraulic load due to infiltration, inflow and illegal connections and manage the industrial and</p>

## Strategic Business Plan for Water Supply and Sewerage Services

Management Area	Water Supply Business Objectives	Sewerage Business Objectives
Public Health	service provision and encourages efficient water use on full cost recovery and user pays basis.	commercial biological load.
	Keep the community informed of issues relating to the water supply services and provide services in a professional and efficient manner.	Keep the community informed of issues relating to sewerage services and provide services in a professional and efficient manner.
	Engage the community in consultation in the delivery of water supply services as appropriate.	Engage the community in consultation in the delivery of sewerage services as appropriate.
	Provide potable water supplies to all customers in accordance with NSW Health protocols. Complete and implement Water Quality Management Plan in accordance with ADWG requirements	Ensure all activities are carried out in such a way as to protect public health at all times; particularly in the reuse of reclaimed water.
Environment	Manage the water supply system in an environmentally responsible and economically sustainable manner.	Manage the sewerage system in an environmentally responsible and economically sustainable manner.  Maximise the beneficial reuse of reclaimed water
Asset Management	Provide reliable, safe and cost effective services.	Provide reliable, safe and cost effective services.
	Maximise overall system reliability at optimal cost to meet agreed levels of service.	Maximise overall system reliability at optimal cost to meet agreed levels of service.
	Capital Works program framed to provide agreed levels of service at optimal life cycle costs to meet required social, economic and	Capital Works program framed to provide agreed levels of service at optimal life cycle costs to meet required social, economic and

Management Area	Water Supply Business Objectives	Sewerage Business Objectives
Human Resources	environmental outcomes.  Have the appropriate staff numbers in the correct positions with the necessary skills to meet the technical and operational requirements.	environmental outcomes.  Have the appropriate staff numbers in the correct positions with the necessary skills to meet the technical and operational requirements.
Finance	Prepare and implement sound financial policies and practices to provide required services at an affordable level.	Prepare and implement sound financial policies and practices to provide required services at an affordable level.

In summary, Council's Key objectives are:

- Levels of Service to our customers are defined and achieved
- A sound financial plan is prepared and continuously reviewed
- A fair and equitable Human Resources Plan is adopted and practised
- A logical and systematic Operations and Maintenance plan is implemented
- A realistic and affordable capital works plan is adopted
- A safety plan is implemented to ensure the safety of our employees, consumers and the general public
- Council's assets are adequately maintained to provide optimum service life
- An Environmental Management Plan is developed and implemented
- An Asset Management Plan is developed and implemented
- Long term planning to cater for future growth is undertaken
- We comply with Best Practice Guidelines.

#### 4. Levels of Service

Defined Levels of Service are necessary to ensure that service delivery is optimised, affordable and achievable within the constraints of the water supply and sewerage systems.

Council has adopted Levels of Service that take into account legislative requirements, industry standards and customer requirements.

These Levels of Service will be reviewed by Council taking into account the following issues:

- Levels of Service in the water industry have been generally rising, mainly in terms of customer expectations and environmental protection. It is likely that in the future

both legislation and customer requirements will lead to a higher level of service at higher cost.

- The majority of customers are likely to require Levels of Service comparable with those provided by other similar, water and sewerage authorities.
- The community should be aware of, and endorse the Levels of Service provided.
- To demonstrate continuous improvement, Council will seek to provide target Levels of Service that are both achievable and affordable.
- A performance review will be carried out to demonstrate that Council is either achieving the Level of Service or improving towards achieving the target levels. Monitoring and benchmarking are important elements of this review process.
- Council will be reviewing Levels of Service over the next three years and benchmarking with other Councils to ensure that the adoption of best practice supports the goal of continuous improvement.

Council's adopted **Levels of Service** for its water supply and sewerage businesses are shown in Tables 19 and 20.

#### **Water Supply Levels of Service**

The targeted Levels of Service are documented in Table 19 below:

*Table 19: Water Supply: Levels of Service*

Description	Unit	2017 Level of Service
<b>Service Provision:</b>		
<b>Service area</b>		All residential areas and industrial areas where economically viable
Connection time for a new service in serviced areas (90% of the time)	days	21
<b>Availability of Supply:</b>		
<b>Fire Fighting</b>		
Compliance with the Building Code of Australia	% area served	100 (urban)

# Strategic Business Plan for Water Supply and Sewerage Services

Description	Unit	2017 Level of Service
and NSW Fire Brigade requirements (for all residential, commercial and industrial areas)		70 (Rural)
<b>Pressure</b>		
Min. pressure when delivering 0.1 L/s (6 L/min)	Metres head	30 (Griffith) 12 (Yenda)
Max. static pressure	Metres head	70 (Griffith) 30 (Yenda)
<b>Supply</b>		
Supply in accordance with Council design standards.	L/s (throughout system)	0.15 typically
<b>Consumption Restrictions in Droughts:</b>		
In accordance with restrictions defined in Council's Drought Management Plan & as required by the DPI Water		
<b>Supply Interruptions to Consumers:</b>		
Temporary supply arrangements during interruptions		Where possible
<b>Planned (95% of time)</b>		
- Notice given to domestic customers	Hours	48
- Notice given to commercial customers	Hours	48
- Notice given to major industrial customers	Days	7
<b>Unplanned</b>		
- Maximum duration	Hours	8
- Frequency	No./ year	80

Description	Unit	2017 Level of Service
<b>Response Times:</b>		
(Defined as time to have staff onsite to commence rectification after notification of problem)		
<b>Supply Failure</b>		
All Customers:		
- During working hours	Hours	1
- Out of working hours	Hours	2
<b>Customer Complaints</b>		
Personal / Oral	Working Days	1
Written	Working Days	5
Note: Times apply for 95% of occasions		
<b>Service Provision:</b>		
Time to provide a domestic individual connection to water supply in serviced area (90% of time)	Working days	21
<b>Water Quality:</b>		
In accordance with the Australian Drinking Water Guidelines, 2004	CFU/100ml	0
Sampling Frequency	CFU/100ml	10
Physical & chemical testing	In accordance with NSW Health requirements	0
<b>Microbiological Results</b>		
Total coliforms – 95% of samples	CFU/100ml	0
Maximum in any sample	CFU/100ml	10
E.coli (in any sample)	CFU/100ml	0

Description	Unit	2017 Level of Service
<b>Physico-chemical Parameters</b>		
Percentage Compliance with the Australian Drinking Water Guidelines (ADWG), 2004:	As required by NSW Health and ADWG (Refer Appendix C for monitoring schedule)	

**Note:**

- Certain customers may have special needs by virtue of specific health, commercial or industrial circumstances. Specific levels of service will be negotiated with these customers.
- Yenda village has raw water supply for firefighting purpose.

**Sewerage Levels of Service**

The targeted Levels of Service are documented in Table 20 below:

*Table 20: Sewerage: Levels of Service*

Description	Unit	2017 Level of Service
<b>Availability of Service:</b>		
- Extent of areas serviced.	Service area	100% within the defined service area
<b>System Failures:</b>		
<b>Category One</b>		
Failure due to rainfall and deficient capacity (overflows).	No./ 5 year	0
<b>Category Two</b>		
Failures due to pump or other breakdown including power failure.	No /year	2
<b>Category Three:</b>		
Failures due to main blockages and collapses (fat and tree roots).	No./ year	150
<b>Response Times for System Failures:</b>		

Description	Unit	2017 Level of Service
(Defined as the maximum time to have staff on site to commence rectification).		
<b>Priority One</b>		
(Major spill, significant environmental or health impact, or affecting large number of consumers i.e. a major main).		
- Response time during working hours	Minutes	30
- Response time after hours	Minutes	60
<b>Priority Two</b>		
(Moderate spill, some environmental or health impact, or affecting small number of consumers i.e. other mains).		
- Response time during working hours	Minutes	30
- Response time after hours	Minutes	60
<b>Priority Three</b>		
(Minor spill, little environmental or health impact, or affecting a couple of consumers).		
- Response time during working hours.	Hours	1
- Response time after hours.	Hours	2
<b>Response Times for Complaints:</b>		
<b>General Complaints and Inquiries</b>		
Written complaints.	Working days	5
Oral complaints.	Working days	1
Note: times for 95% of complaints.		
<b>Odour Complaints</b>		
Treatment works	No./ year	<2
Pumping Stations	No./ year	<4
<b>Effluent Discharge and Sludge Management:</b>		



Description	Unit	2017 Level of Service
Failure to meet licence limits and statutory requirements (100 percentile)	No. of samples/ year	0

#### 4.1 Standard Levels of Service

Council is committed to provide Water Supply and Sewerage Services to the customers as per their need and requirements in a sustainable manner. Council's Service Delivery Objectives, Strategies, Performance Measures and Implementation Strategies in the key result areas identified as critical to the fulfilment of Council's corporate objectives are summarised in Tables 21 & 22.

##### 4.1.1 Water supply services

Strategic Objective of Water Supply Services is to provide an equitable water supply to all consumers, which is healthy and adequate to meet existing and future needs.

**Table 21 Water Supply Performance Indicators**

Key Result Area	Objective	2017 Performance Target
<b>Customer Service</b>	Operations meet currently adopted levels of service and progress towards target levels of service.	95% compliance with levels of service and action planning
	Provide services in advance of demand.	100% provided
	Review and update Development Servicing Plans (DSP).	By 2018/19 (and review annually)
	Encourage Griffith Industries and residents to use other water sources e.g. raw water, rain water etc.	As defined in the 2009 Demand Management Plan & any subsequent amendments.
	Encourage wise water use practices	Review Demand Management Plan by 2019/20.
	An equitable pricing policy that supports current and future service provision and encourages efficient water use on full cost recovery and user pays basis.	Water supply tariff structure to comply with Best-Practice Pricing Criteria.
	Keep the community informed of issues relating to the water supply services and	Responses meet Council's adopted levels of service.

## Strategic Business Plan for Water Supply and Sewerage Services

Key Result Area	Objective	2017 Performance Target
	provide services in a professional and efficient manner.	
	Engage the community in consultation in the delivery of water supply services as appropriate.	Continue implementing community awareness & education programs.
<b>Public Health</b>	Provide potable water supplies to all customers in accordance with NSW Health protocols. Comply & implement ADWG 2004 Water Quality Management Plan in accordance with ADWG requirements	Continue sampling, testing and reporting results program
<b>Environment</b>	Manage the water supply system in an environmentally responsible and economically sustainable manner.	Review IWCM Evaluation and complete IWCM Strategy by 2019/20. Review Demand management Strategy Management Plan by 2019/20.
<b>Asset Management</b>	Provide reliable, safe and cost effective services.	Continue development and implementation of comprehensive data acquisition asset management processes. Meet designated levels of service.
	Maximise overall system reliability at optimal cost to meet agreed levels of service.	Annual report on breakdown and planned maintenance costs.
	Capital works program provides agreed levels of service at optimal life cycle costs to meet social, economic and environmental considerations.	Capital works program fully achieved on an annual basis
<b>Human Resources</b>	Have the appropriate staff numbers in the correct positions with the necessary skills to meet the technical and operational requirements.	Provide necessary inputs to corporate HR Plan as required. Prepare an annual staff training program
<b>Finance</b>	Prepare and implement sound financial policies to provide required services at an affordable level.	Quarterly review and annual updating of financial plan. Review FINMOD Plan annually

### 4.1.2 Sewerage Services

Strategic Objective of Sewerage Services is to provide an equitable sewerage supply to all consumers, which is adequate to meet existing and future needs and is environmentally sustainable

*Table 22 Sewerage Performance Indicators*

Key Result Area	Objective	2017 Performance Target
<b>Customer Service</b>	Operations meet currently adopted levels of service and progress towards target levels of service.	95% compliance with levels of service and action planning
	Provide services in advance of demand & consider provision of services to remaining unserved urban areas. Review and update Development Servicing Plans (DSP).	100% provided In accordance with capital works program.  By 2018/19 (and review annually)
	Minimise hydraulic load due to infiltration, inflow and illegal connections and manage the industrial and commercial biological load.	Ongoing implementation of relining refurbishment, and mains renewal program, in accordance with Council approved capital works program.
	To provide sewer services on a full cost recovery and user pays basis.	In accordance with Best-Practice Criteria & Requirements.
	Keep the community informed of issues relating to the sewerage services and provide services in a professional and efficient manner.	Response times meet Council's adopted Levels of Service. Regular reporting to community and provision of appropriate information.
	Engage the community in consultation in the delivery of sewerage services as appropriate.	Carry out community consultation in relation to Lake Wyangan, Nericon and Tharbogang Sewerage Scheme.
<b>Environment</b>	Manage the sewerage system in an environmentally responsible and economically sustainable manner.	Review IWCM Plan by 2019/20. Full compliance with DPI Water requirements and conditions.
	Maximise beneficial reuse of reclaimed water	Monitor the use of recycled water at Saleyard Facilities.
<b>Asset Management</b>	Provide reliable, safe and cost effective services.	Continue development and implementation of comprehensive data acquisition asset management processes. Meet designated levels of service.
	Maximise overall system reliability at optimal cost to meet agreed levels of service.	Annual report on breakdown and planned maintenance costs.
	Capital works program provides agreed	Capital works program fully

Key Result Area	Objective	2017 Performance Target
	levels of service at optimal life cycle costs to meet social, economic and environmental considerations.	achieved on an annual basis
<b>Human Resources</b>	Have the appropriate staff numbers in the correct positions with the necessary skills to meet the technical and operational requirements.	Provide necessary inputs to corporate HR Plan as required.  Prepare an annual staff training program
<b>Finance</b>	Prepare and implement sound financial policies to provide required services at an affordable level.	Quarterly review and annual updating of financial plan. Review FINMOD Plan annually

## 4.2 Review of Levels of Service

### 4.2.1 Water Supply Services

Council will continue to meet DPI Water requirements whilst providing for future growth and development, with appropriate levels of service. At the same time, Council will use appropriate charges and demand management techniques to reduce average residential water consumption.

Council undertakes a complete review of the current Levels of Service every three years by Community Survey which provides Council a broad determination of the attitude towards the current Levels of Service (last Community Survey was carried out in July 2016).

Performance indicators from NSW Office of Water Performance Reports together with State-wide comparisons are presented in Table 23

**Table 23 Key Performance Indicators of Water Supply Services**

Influences	Key Performance Indicator	Results 2014/15	Results 2015/16	State Wide Median 2015/16
	<b>Performance Indicators from DPI Water achieved</b>			
	<b>Projects</b>			
	- Projects completed to schedule in accordance with the Management Plan (% of \$ allocated)	95	95	
	- Maintain a 30 year advance program (%)	100	100	

Strategic Business Plan for Water Supply and Sewerage Services

Influences	Key Performance Indicator	Results 2014/15	Results 2015/16	State Wide Median 2015/16
	<b>Performance Indicators from DPI Water achieved</b>			
<b>Social</b>				
<i>Charges &amp; Bills</i>	Residential water usage charge (c/kl) for usage up to 200 kl	65 (first 200 kl) 125 >200kl	67 (first 200 kl) 130 >200kl	213
	Residential Access Charge/Assessment, \$	129	132	174
	Typical residential bill/assessment, \$	690	734	566
	Typical Developer charge per equivalent tenement, \$/ET	5,160	6,600	5,900
<i>Health</i>	Urban population without reticulated water supply (%)	0.8	0.8	0.8
	Physical water quality compliance (%)	100	100	-
	Chemical water quality compliance (%)	100	100	100
	Microbiological (E.coli) water quality compliance (%)	100	100	100
<i>Service Levels</i>	Water quality complaints per 1000 properties	1	0.7	3
	Water service complaints per 1000 properties	47	50	4
	Customer interruption frequency per 1000 properties	24	11	32
	Average duration of interruption (min)	90	90	150
	Number of main breaks per 100km	13	16	9
	Drought water restrictions (% of time)	0	0	0
<b>Environmental Management</b>	Average annual residential consumption per property (kL)	567	585	162
	Water losses (including leakage) (L/connection/day))	110	110	70
	Energy consumption per Megalitre	366	366	660

Influences	Key Performance Indicator	Results 2014/15	Results 2015/16	State Wide Median 2015/16
	<b>Performance Indicators from DPI Water achieved</b>			
	(kilowatt hours)			
<b>Economic Finance</b>	Residential revenue from usage charges (% of residential bills)	82	83	73
	Economic real rate of return (%)	0.7	1.4	2.3
	Return on assets (%)	1.7	0.9	1.7
	Net Debt to equity (%)	2	0	-3
	Interest Cover	3	5	34
	Loan payment per property (\$)	108	0	11
<b>Efficiency</b>	Operating cost (OMA) per 100km of main (\$'000)	1,180	988	1,120
	Operating cost (OMA) per property (\$)	702	713	440
	Operating cost (OMA) per kilolitre (cents)	76	75	120
	Management cost per property (\$)	297	308	148
	Energy cost per property (\$)	5	8	17

#### 4.2.2 Sewerage Services

Council will continue to meet EPA requirements as well as provide for future development and growth with appropriate levels of service by creating new assets and rehabilitating and replacing old sewer assets which have reached their serviceable life.

Increasing effluent and biosolids reuse in a sustainable and economic manner is another area of focus for the Council.

Performance indicators from DPI Water Performance Reports together with State-wide comparisons are presented in Table 24.

**Table 24 Key Performance Indicators of Sewerage Services**

Influences	Key Performance Indicator	Actual 2014/15	Actual 2015/16	State Wide Median 2015/16
	<b>Performance Indicators from DPI Water achieved:</b>			
	<b>- Projects completed to schedule in</b>	95	95	

Strategic Business Plan for Water Supply and Sewerage Services

Influences	Key Performance Indicator	Actual 2014/15	Actual 2015/16	State Wide Median 2015/16
	<b>accordance with the Management Plan (% of \$ value)</b>			
<b><u>Social</u></b>				
Charges & Bills	Residential access charge/assessment (\$)	750	774	697
	Typical residential bill/assessment (\$)	750	774	697
	Typical developer charge/equivalent tenement (\$)	3,620	4,130	5,100
<i>Health</i>	Urban properties without reticulated sewerage service (%)	2.5	2.5	2.2
	Percentage of sewage treated that was EPA Licence compliant	98	98	100
	Sewage treatment works compliant at all times	2 of 3	2 of 3	-
<i>Service Levels</i>	Odour complaints per 1000 properties	0.7	0.0	0.9
	Service complaints per 1000 properties	27.8	37.3	5
	Average duration of interruption (mins)	60	60	108
<b><u>Environmental</u></b> <i>Natural Resource Management</i>	Volume of sewage treated per property (kL)	301	342	234
	Energy consumption per Megalitre (kilowatt hours)	755	693	810
<i>Performance</i>	Percentile licence limits for effluent discharge:			
	Compliance with BOD in licence (%)	100	100	100
	Compliance with SS in licence (%)	98	99	100
	Sewer main chokes and collapses per 100 km of main	85	106	38
	Sewer overflows to the environment per 100km of main	8	6	14
<b><u>Economic</u></b> <i>Finance</i>	Revenue per property	1,110	1,190	1,095

Influences	Key Performance Indicator	Actual 2014/15	Actual 2015/16	State Wide Median 2015/16
	Revenue from trade waste charges (% of total revenue)	2.6	2.5	1.0
	Economic real rate of return (%)	1.4	1.7	2.5
	Return on assets (%)	0.4	0.7	1.8
	Net Debt to equity (%)	-	0	-3
	Interest cover	-	5	34
	Loan payment per property (\$)	211	203	110
<i>Efficiency</i>	Operating cost (OMA) per 100km of main (\$'000)	1,850	1,840	1,700
	Operating cost (OMA) per property (\$)	590	611	470
	Operating cost (OMA) per kilolitre (cents)	196	179	208
	Management cost per property (\$)	212	204	164
	Energy cost per property (\$)	56	51	34

## 5 Service Delivery

Griffith City Council owns, operates, and manages two water treatment facilities. The water supply network comprises 60 ML/d capacity Dissolved Air Floatation (DAF), and 2 ML/d capacity Microfiltration (MF) treatment plants, 4 service reservoirs (55 ML), 4 pumping stations, 62 ML/d delivery capacity into the distribution system, 6 km of transfer and trunk mains and 462 km of reticulation. The 90% of water supplied is potation and 10% is non-potable i.e. raw water supply. Raw Water is drawn from Murrumbidgee Irrigation Area (MIA) Main Canal, the source of which is the Murrumbidgee River.

Similarly Griffith City Council owns, operates, and manages 3 wastewater treatment work facilities providing primary, secondary and advanced tertiary treatment. The sewerage system comprises 71,810 EP treatment capacity (Membrane Biological Reduction at Griffith with 37,500 EP capacity which can be upgraded to 50,000+ EP capacity if required, Aerated Lagoon at Yenda with 34,000 EP capacity, and Oxidation Pond at Bilbul with 310 EP capacity), 29 pumping stations (13 ML/d), 55 km of rising mains, and 170 km of gravity trunk mains and reticulation. Currently nearly 8% of effluent is recycled and the remaining treated effluent is discharged to land and drainage channel. Also Council has received approval from DPI Water for the reuse of effluent in the Saleyard. The project is complete and operational.

Council is committed to continuation of the current institutional arrangement; namely, separate water supply and sewerage businesses, owned, operated and managed by Griffith City Council; however it supports the RAMROC model of a Binding Alliance.



## Service Delivery Strategy

Council has in-house resources to carry out day to day operation and maintenance works as well as capital works program. However Council employs private sectors resources for specialised services and as required by Local Government Act 1993 for larger capital works program.

The service delivery strategy for Water Supply and Sewerage Services are summarised in Table 25

**Table 25 Service Delivery Strategy**

Key Result Area	Task	Service Delivery Strategy	
		Water Supply	Sewerage
<b>Operation</b>	Day to day operation of treatment works	In-house,	In-house,
	Laboratory testing Operational use Official Reporting	In-house, Contractors	In-house, Contractors
	Meter reading	In-house/ Contractors,	Trade Waste in-house
	Billing	In-house,	In-house
	Minor operations such as lawn mowing, weed control etc.	In-house, Contractors	In-house, Contractors
	Operator training	In-house, consultants	In-house, consultants
	Pumping Stations	In-house	In-house
	Reservoirs	In-house	-
<b>Maintenance</b>	Asset inventory and condition surveys	In-house, Consultants	In-house, Consultants
	Maintenance of equipment pumps, valves, electricals	In-house/Contractors In-house/Contractors	In-house/Contractors, In-house/Contractors
	General system maintenance planned or unplanned	In-house,	In-house,
	Pipe cleaning and flushing	In-house,	In-house,
	Leakage/infiltration detection and control	In-house/Contractors	In-house/Contractors
	Reservoirs	Contractors	-
<b>Planning and Management</b>	Policy formulation	In-house	In-house
	Strategic Plan	In-house/Consultants	In-house/Consultants

Key Result Area	Task	Service Delivery Strategy	
		Water Supply	Sewerage
Study	Management Plan	In-house/Consultants	In-house/Consultants
	Operation Plan	In-house	In-house
Capital Works Program	Detailed survey	In-house	In-house
	Detailed designs and contract documents	In-house/Consultants	In-house/Consultants
	Construction	In-house/Contractors	In-house/Contractors
	Update Asset database	In-house	In-house
Work Force	Planning and design	In-house,	In-house,
	Construction Management	In-house/ contract staff for major project e.g. project manager	In-house/ contract staff for major project e.g. project manager.

## 6 Customer Service Plan

Council has adopted Customer Service Policy (CS-CP-601) with objectives:

- To provide guidance for staff and Councillors in dealing with customers
- To ensure that all customers are treated in the same manner, and
- To ensure Council resources are used in the best available way.

The policy states that Council staff and Councillors shall strive to meet the needs of our customers in professional and ethical manner with courteous and efficient service.

### Customer Service Charter

Griffith City Council is committed to providing a high level of customer service and standards across the organisation. The Customer Service Charter outlines:

- *Council's commitments to customers* e.g. we will ensure that all our customers will be provided with an efficient, friendly and responsive service within an appropriate timeframe,
- *Council's responsibility* e.g. of Mayor, Councillors and General Manager,
- *Accessibility to Council* e.g. In Person, By Phone, By Email, By Fax, Via Website, Facebook, Emergency After Hours Contact, Water and Sewer Emergencies/Odour Complaints After Hours, Animal Hotlines After Hours,
- *Other Services Available* e.g. Community Directory, JP Services
- *How to Serve Customers* e.g. we will attend to the counter and answer the telephone promptly, courteously and deal with an enquiry directly without unnecessary referrals or transfers.

- *Customer Request Management System (CRM)* e.g. Record all works or services requests from customers into CRM for actioning and resolving within the relevant department
- *What to ask from customers* e.g. Accurate and complete details of the enquiry.

The Charter will support Council's vision to be acknowledged as a major regional centre with an emphasis on best agricultural practices, providing:

- a viable local economy with sustainable development and growth,
- a clean and ecologically sustainable, built and natural environment,
- a quality lifestyle for residents, and
- a pride in our cultural diversity.

The Customer Service Standards are reviewed and measured by periodic customer surveys. The 2016 Customer Survey results have indicated an overall satisfaction over water and sewerage services.

### **Customer Focus Improvement Strategy**

Council has developed Customer Focus Improvement Strategy following the 2014 Services Review. As part of this strategy, Council has developed Information Library for every service that Council can provide to Customers so that customer service staff can attend to the counter and/or answer the telephone promptly.

The key elements identified under the Customer Focus Improvement Strategy is summarised in Table 26

**Table 26 Key Elements Identified under the Customer Focus Improvement Strategy**

No.	Elements Identified for Improvement
	Customer Service Policy and Structure
1	Review Council policies relating to customer service to incorporate outcomes of Customer Focus Review
2	Write and publish a Customer Service Charter to set out the adopted principles of Customer Service the organisation aspires to.
3	Ensure Customer Focus is enshrined in future Community Strategic Plan to reinforce the expectation, obligation and accountability for customer service.
4	Review Complaints Management Policy e.g. define and separate complaints from service enquiries.
5	Clarify division of responsibilities between CSOs and Departments

6	Adjustment of position descriptions across the organisation to incorporate customer service KPIs, Include 'customer focus' in staff induction and Performance Appraisal for all positions.
7	Review out of hours contact details and processes to ensure currency of contact details.
8	Review opening hours of front counter
	Customer Service Culture and Image
9	Seek customer feedback e.g. Questionnaires at front counter; facebook/web site; regular customer survey; integrate with broader community satisfaction surveys; include occasional internal customer survey.
10	Initiate staff climate surveys to gauge staff morale (typically every two years).
11	Customer Service training to all staff to explain expectations and provide instruction and tools to achieve them.
12	Plain English explanatory notes in official correspondence such as rates notices, DA matters
13	Uniform selection for front counter to present a consistent and professional image to customers.
14	Department duty officer available e.g. For each organisation unit, a contact person is nominated or a roster is published (by Level 3 Managers) and available to take important calls and messages including during breaks.
	<i>Customer Service Standards</i>
15	Standardised greeting for phone and out of office phone e.g. "Good morning/afternoon, Griffith City Council, this is Name, how may I help you?"
	Name badge worn by all indoor staff when dealing with the public
16	Council logo visible for all outdoor staff to display professional image and pride in representing Council.
17	Refresh customer service standards, circulate internally as expectation and incorporate into Customer Service Charter e.g. Answer calls in 4 rings; standard greeting; phone message returned within 1 working day; email reply within 1 working day; letter reply within 5 days; interim response required if investigation will take longer; transfer to officer only once; officer receiving call to take message and ensure it is passed on, even if not their job; re-assign enquiries when action officer

	has planned leave.
	<i>Customer Service Systems and Processes</i>
18	Diligent maintenance of intranet for staff absences e.g. CSO to be advised of all staff absences to enable accurate intranet update.
19	Diligent notification to CSOs about "What's On", meetings, visitors and other events
20	All staff to apply out of office messages (phone and email) and divert calls
21	Front counter signage and front counter queue management e.g. Extendable queue barrier; improved "What's On" notice board.
22	Photocopier at front counter area to avoid officers leaving front counter area to take copies etc.
23	Modifications to front counter e.g. install CCTV; install hands free headsets and wide pc screens etc. Much of this is related to WHS issues and safer management of incident risk.
24	Install phone software for monitoring call activity and quality
25	Install a procedure or device to capture data on front counter enquiries
26	Create an Information Library e.g. Constructed to contain searchable first point of contact information.
27	Central and single location on Council web site for corporate forms
28	Improve the "What's On" section of Council web site
29	Instil better discipline on file management and use of other corporate systems
30	Fine tune CRM to be the tool of choice for customer enquiries
31	Monitoring of CRM responses
32	Customer Service performance reports generated monthly and reported to Management, and annually to Council

Most of these elements identified under the Customer Focus Improvement Strategy have already been completed and improved.

Within Utilities department, staff are highly trained and experienced to provide a high level of customer service as summarise in the Table 27

**Tabel 27 Customer Service Practices in Utilities Department**

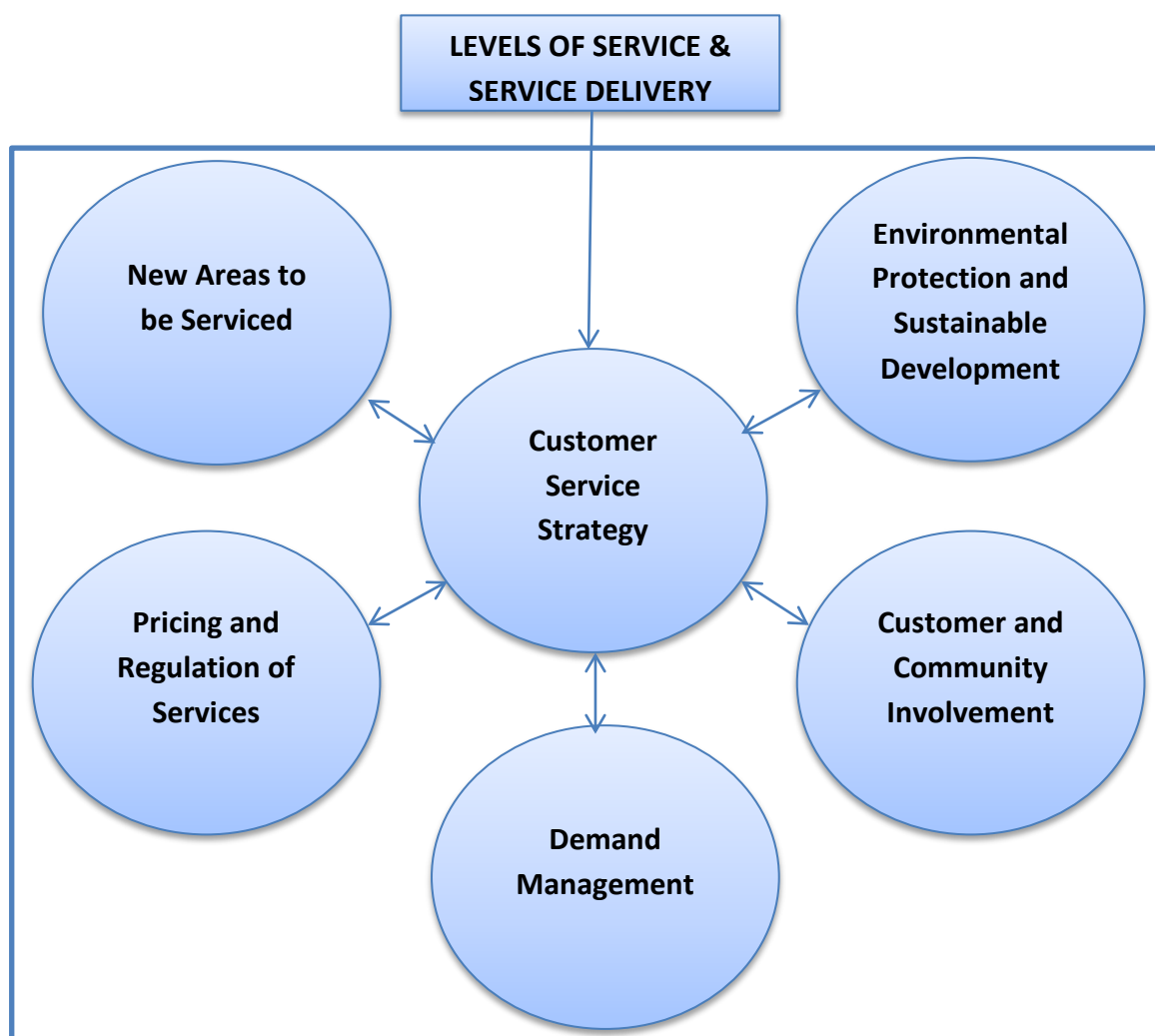
<b>Our Standards Reflect a Commitment to:</b>	<b>Phone Contact</b>	<b>Written Enquiries</b>	<b>Face to Face Enquiries</b>
<ul style="list-style-type: none"> <li>* Fair and equitable access to our services</li> <li>* Integrity in all our actions</li> <li>* Treat all enquiries with respect</li> <li>* Be transparent and open in responding to community needs</li> <li>* Offer friendly, professional advice</li> <li>* Offer accurate and consistent information</li> <li>* Clearly outline our policies, standards</li> </ul>	<ul style="list-style-type: none"> <li>* We will answer calls within 6 rings</li> <li>* We will greet calls in a positive friendly manner</li> <li>* Staff will identify themselves by name</li> <li>* We will assist with enquiries in an efficient manner</li> <li>* We will advise if we need to place a customer on hold or transfer a call</li> <li>* Before transferring a caller we will offer an explanation to the staff member receiving the call</li> <li>* Before ending a call we will check that the customer is satisfied their enquiry has been answered</li> </ul>	<ul style="list-style-type: none"> <li>* All written enquiries will receive a response within 10 working days</li> <li>* All responses will include details of a Council action officer or senior staff member to contact for further information</li> <li>* Email responses will be treated as incoming correspondence and also be responded to within 10 working days</li> <li>* All correspondence will be written in plain language with a minimum of jargon or abbreviations and include the information required to ensure there is no confusion</li> </ul>	<ul style="list-style-type: none"> <li>* We will greet customers with a courteous, positive, friendly attitude</li> <li>* We will identify ourselves and wear a name badge</li> <li>* We will provide accurate and consistent advice</li> <li>* We will provide a timely response and acknowledge if there is a delay in responding to your enquiries</li> </ul>

<b>After Hours Service</b>	<b>Customer Commitment</b>	<b>Access &amp; Equity</b>	<b>Governance</b>
<ul style="list-style-type: none"> <li>* After hours emergency service numbers are listed under Griffith City Council in the white pages and advertised regularly in the press</li> </ul>	Maintaining quality customer service standards requires a commitment from both Council and its customers. We ask members of the public to commit to:	<ul style="list-style-type: none"> <li>* We recognise the need for an organisation wide approach to the delivery of services</li> <li>* We will provide culturally responsive services as needed</li> </ul>	<ul style="list-style-type: none"> <li>* We will provide the community with timely and accurate information to facilitate open and accountable government</li> </ul>
	<ul style="list-style-type: none"> <li>* treating staff with respect and courtesy at all times</li> </ul>	We will promote Council services, programs and procedures to all members of the	We will ensure statutory requirements on Council information are

## Strategic Business Plan for Water Supply and Sewerage Services

After Hours Service	Customer Commitment	Access & Equity	Governance
		community	met
	* Meeting any requests Council has with respect to completing your enquiry	* We will provide facilities and services that meet the needs of all enquiries	* We will ensure Council's policies reflect community needs
	* Providing accurate information to allow Council to assist with a consistent and timely response to your enquiries		

The main components of Customer Service Strategies for Water Supply and Sewerage are shown in Figure 7 and discussed in this Section.



**Figure 7 Components of Customer Service Strategy for Water and Sewerage Services**

## 6.1 Extending Service Areas

Council is committed to provide the agreed Levels of Service to the customers. Water Supply service area includes all residential areas and industrial areas where economically viable. Similarly Sewerage service includes 100% of the areas within the defined service area. The objectives, strategy and the performance target of Water Supply and Sewerage services have been discussed in Section 4.1 Standard Levels of Service.

Council has commenced the extension of Sewerage service to unsewered villages of Lake Wyangan, Nericon and Tharbogang areas and the project has been scheduled to be completed by 2020 (Table 28). Council has obtained financial support from the DPI Water under Backlog Projects Program 2015 to complete the project. Council has contributed 52% of the total project cost.

**Table 28 Strategy to extend Sewerage Service to Villages of Lake Wyangan, Nericon and Tharbogang.**

OBJECTIVE	Extend sewerage service to the villages of Lake Wyangan, Nericon and Tharbogang
PERFORMANCE TARGET	Connect the villages of Lake Wyangan, Nericon and Tharbogang to Griffith Sewerage system
STRATEGY	Plan and construct the Sewerage service to Lake Wyangan by 2017/18 Plan and construct the Sewerage service to Nericon by 2018/19 Plan and construct the Sewerage service to Tharbogang by 2019/20
ACTIONS	Council has obtained financial support (48% of the total cost) from DPI Water  Council has contributed the remaining 52% of the cost in Council's budget  The project has been awarded to Enviro-One in accordance with Local Government procurement processes to carry out detailed design and supply a low pressure sewerage system for the villages.
PERFORMANCE INDICATORS	Lake Wyangan will be connected to Griffith Sewerage system by 2017/18  Nericon will be connected to Griffith Sewerage system by 2018/19  Tharbogang will be connected to Griffith Sewerage system by 2019/20



## 6.2 Demand Management

Council prepared Water Conservation Strategy and Demand Management Modelling in 2010 addressing:

- Concepts of water conservation and demand management,
- Modelling of a range of demand management scenarios specific to the then water consumption patterns in the City,
- The links to issues identified in Council's Integrated Water Cycle Management Plan 2010, and
- Then water conservation initiatives implemented by Council.

Water Conservation and Demand Management Options discussed in the report included:

- Water use efficiency
- Pricing policy
- Use of rainwater tanks
- Residential greywater reuse
- Stormwater collection and reuse
- Reuse of reclaimed water
- Groundwater use
- Water sensitive urban design.

Modelling of then water consumption trends in Griffith was undertaken utilising the DPI Water's "Demand Side Management Decision Support System Software (Version S1.1), 2006".

Four integrated demand management scenarios were modelled in this investigation. The modelling had indicated that:

- I. Dual reticulation for all new residential development and implementation of BASIX, with both rainwater use and dual reticulation would deliver the greatest benefits in terms of water savings. Conservation pricing and permanent low level water restrictions were also reported to yield significant water savings. Conservation pricing was shown to yield the highest annual water savings with clearly the highest utility and community benefit/cost ratio, followed by the introduction of permanent low level water restrictions.
- II. Full uptake of the demand management initiatives modelled might deliver significant water savings – up to 3,128 ML/year (or 46% reduction) for Scenario 4 initiatives. A more realistic and achievable objective was reported to be adoption and introduction of Scenario 3 initiatives (community education, system water loss management, audits of evaporative cooling units and cooling towers, with continued support for BASIX – fixture efficiency with rainwater use and dual reticulation, where feasible).

- III. The capacity of the Water Treatment Plant could be reached by 2025, but the implementation of demand management initiatives was expected to extend the life of the plant (in terms of capacity) – to 2027 under Scenarios 1 and 2; to 2038 under Scenario 3 and well beyond the 30 year planning horizon for Scenario
- IV. The capacity of the Sewage Treatment Plant was not expected to be reached within the 30 year planning horizon.

The report summarised that Council had demonstrated a commitment to water conservation in the City and had implemented a range of initiatives which, based on the general reduction in water consumption since 2003/04, had been quite successful, particularly with a consistent growth in population over the period. Those initiatives included most of the elements which the model predicted would deliver the greatest water savings, namely BASIX requirements for all new homes, progressive implementation of conservation pricing and water restrictions.

Council completed **Water Loss Management Program** in 2012. The project targeted 3 main areas:

- a) **Zone metering and pressure management:** By metering flows into different zones Council could assess the water loss. Similarly the pressure management program resulted in
  - Reduction of background losses,
  - Extension of asset life,
  - Reduction of burst recurrence, hence fewer interruptions
  - Reduced consumption
- b) **Active leakage control:** A leak detector contractor was engaged to undertake a leak detection survey of 258.1 km of Griffith Water Mains in the following zones:
  - Zone 1 – Central Griffith
  - Zone 3 – Lower Collina
  - Zone 4 – Casella / Bilbul / Yoogali
  - Zone 5 – Yenda
  - Zone 7 – Tharbogang
  - Zone 9 – Aerodrome
- c) **Home tune up:** Council offered existing households:
  - Installation of up to four tap aerators,
  - \$300 rebate for replacing single flush toilets with dual flush (maximum 2 toilets),
  - \$70 rebate for replacing a showerhead (maximum 2 showerheads)

Council also completed **Sewer Lining Program** in 2014.

The Water Conservation and Demand Management 2010 Report will be reviewed as part of IWCMS Strategy by 2019/20.

### **6.3 Drought Management**

Council has adopted Drought Management Plan 2009. The purpose of the Plan is to regulate a reduced supply when the bulk water supplies from MI to Council are less than the full allocation. The Plan comprises a set of triggers and cascading levels of response to reduced allocations. The trigger is a set of allocation and the responses are water restrictions and additional actions by Council.

The Plan has reviewed available water supply sources, history of past droughts, water requirements, water dependent businesses, regulatory framework, public and other government agencies consultation, and monitoring required during drought.

Accordingly Council has adopted Water Conservation Measures-Policy (WS-CP-102) and Recycled Wastewater Policy (WS-CP-212).

The main objectives of Council's Water Conservation Measures Policy are:

- To provide an operational framework to manage the risk of failure to supply water in circumstances where low rainfall, water supply system failures or water quality issues restrict or limit the ability of Council to supply and deliver water.
- To guide the public in the expectations and requirements of Council when water conservation measures are imposed.

Under this policy Council will determine and implement 5 levels of restrictions:

- Level 1 – Low,
- Level 2 – Moderate,
- Level 3 – Medium,
- Level 4 – High, and
- Level 5 – Extreme

It will apply to all water supplied by Griffith City Council through its reticulated water supply systems (both drinking water and raw water supply).

These measures provide a graduated scale of controls to promote water demand management to ensure good water conservation practices within the Griffith City Council Local Government area.

The implementation of water conservation measures will consider the following matters:

- Restrictions placed on High or General Security water supply by the NSW Office of Water for the Murrumbidgee system
- Upstream dam status

- Comparative restriction levels in adjacent council areas
- Seasonal conditions

An annual usage target curve for each level of restriction has been prepared. A review of the restriction level is made when the target level is exceeded.

Under Recycled Wastewater Policy (WS-CP-212), Council is using effluent from Griffith Reclamation Plant for the purpose of irrigation and landscaping of the Plant Site, and washing and cleaning hard surface at Griffith Sale Yard.

## 6.4 Drinking Water Quality Management

Council has adopted Risk Based Drinking Water Management System 2014 which was reviewed in 2015 to include the changes from Chlorine to Free Chlorine. This document and the supporting systems demonstrate Griffith Council's compliance with the requirement in the Public Health Act 2010 to develop a Quality Assurance Plan in line with the Framework for Drinking Water Quality Management in the Australian Drinking Water Guidelines. This document acts as a roadmap of the activities that Council undertakes to ensure the provision of safe drinking water to its customers.

### Critical Control Points

The day-to-day safety of the water is maintained to critical control points (CCP). The critical control points for the Griffith and Yenda systems are shown in the Tables 29 & 30.

**Table 29 Critical Control Points at Griffith Water Treatment Plant**

	Operational Target	Adjustment Limit	Critical Limit
Filter Outlet [CCP G1]	≤0.3 NTU (Combined filter results)	≤0.7 NTU (Combined filter results)	≥1.0 NTU (Combined filter results)
Reticulation / On-line [CCP G2]	1.0–2.0 mg/L	≤1.0 mg/L	≤0.5 mg/L
Reticulation [CCP G3]	1.0 mg/L	≤0.9 or ≥1.1 mg/L	≥1.5 mg/L
Reservoirs 30 ML [CCP G4.1] 9 ML [CCP G4.2] 14 ML [CCP G 4.3]	Secure and vermin proof	Evidence of breaches, Free chlorine residual ≤0.5 mg/L at reservoir	Breach not rectified, Free chlorine ≤0.4 mg/L at reservoir or E. coli positive

**Table 30 Critical Control Points at Yenda Water Treatment Plant**

	Operational Target	Adjustment Limit	Critical Limit
Membrane Unit [CCP Y1]	≤0.3 NTU	≤0.7 NTU	≥1 NTU
On-line pre chlorine booster (Griffith Line) [CCP Y2]	1.0-2.0 mg/L	≥1.0 mg/L	≤0.5 mg/L
On-line post chlorine booster (Yenda Line) [CCP Y3]	1.0–2.0 mg/L	≥1.0 mg/L	≤0.5 mg/L
Fluoride Dosing System [CCP Y4]	1.0 mg/L	≤0.9 or ≥1.1 mg/L	≥1.5 mg/L
Reservoirs [CCP Y5]	Secure and vermin proof	Evidence of breaches, Free chlorine ≤0.5 mg/L at reservoir	Breach not rectified, Free chlorine ≤0.4 mg/L at reservoir or E. coli positive

**Action Plan**

A number of actions were identified through the risk assessment and plan development. These actions were assigned to staff members and contractors/consultants to complete. The action plan is reviewed regularly as actions are completed and as part of the annual planning cycle.

**Plan Review**

This plan is reviewed internally at least annually or subject to advice from NSW Health.

## 6.5 Pricing and Regulation of Water Supply, Sewerage and Trade Waste

Council has adopted and implemented the Best-Practice Pricing Principles as defined by the DPI Water. The primary purpose of water supply and sewerage pricing is to determine fair pricing of services which achieve full cost recovery and provide strong pricing signals to enable each customer to balance the benefits and costs of using the services.

**Water Charges**

Council levies both an access charge and a consumption charge (including block tariff). Land, not built upon, and able to be connected to the water pays an access charge. The dimension of the meter determines the access charge (Table 31)

Table 31 Two Part Tariff Comprising Access Fee based on Meter Size and Consumption Charge of Step 1 (0-200 kL) & Step 2 (> 200 kL)

**Table 31 Two Part Tariff Comprising Access Fee based on Meter Size and Consumption Charge**

Drinking Water Consumption Charge			
Consumption	2015/16 Charge /kL (\$)	2016/17 Charge / kL (\$)	% Variation
0-200 kL	0.67	0.69	3.0%
> 200 kL	1.30	1.35	3.8%
Drinking Water Access Charge			
Meter Size	2015/16 Access Fee (\$)	2016/17 Access Fee (\$)	% Variation
20 mm	129	132	2.3%
25 mm	201	207	3.0%
32 mm	330	339	2.7%
40 mm	516	528	2.3%
50 mm	807	825	2.2%
80 mm	2064	2112	2.3%
100 mm	3225	3300	2.3%
150 mm	7257	7425	2.3%
200 mm	7257	7425	2.3%
Strata Neighbourhood	261	267	2.3%
Unmetered Property	129	132	2.3%
Yenda Dual	201	207	3.0%
CBD (C1)	441	471	6.8%
CBD (C2)	825	882	6.9%
CBD (C3)	2700	2907	7.7%
Raw Water Consumption Charge			
Consumption	2015/16 Charge / kL (\$)	2016/17 Charge / kL (\$)	% Variation
	0.34	0.35	2.9%
Standpipe Charges for the taking of water from designated standpipes at Griffith (Oakes Rd) and Yenda (Mirrool Ave)			
Standpipe (metered) potable – per kilolitre		\$2.10	
Standpipe (metered) non potable – per kilolitre		\$0.75	
Nature Strip			
The rebate for an additional 100kL of free water for publicly accessible nature strips or reserves is available for the 2016/17 financial year			

## Sewerage Charges

Council levies a Charge for residential properties and an Access Charge and Consumption Charge for businesses (Table 32).

**Table 32 Sewer Charges for Residential and Non-Residential Properties**

	2015/16 Fee (\$)	2016/17 Fee (\$)	% Variation
<b>Residential Properties</b>			
-Existing Infrastructure & Operating Fee	544	557	2.4%
-Sewer Reclamation Plant Upgrade Levy	230	235	2.2%
<b>Total Fee</b>	<b>774</b>	<b>792</b>	
<b>Non Connected Residential Properties Within 75m Of Service</b>			
-Existing Infrastructure & Operating Fee	391	399	2.0%
-Sewer Reclamation Plant Upgrade Levy	227	231	1.8%
<b>Total Fee (Non Connected Residential)</b>	<b>618</b>	<b>630</b>	
<b>Non Residential Properties</b>	See below	See below	
Sewer charges for non-residential for 2016/17 is based on:- <ul style="list-style-type: none"> <li>• Water Consumption (C)</li> <li>• Sewer Discharge Factor (SDF)</li> <li>• Annual Access Charge-Includes Sewer Reclamation Plant Upgrade Levy (AC)</li> <li>• Sewerage Treatment Charge (STC)</li> <li>• Trade Waste Administration Charge - if applicable (TWAC)</li> <li>• Trade Waste Usage Charge - if applicable (TWUC)</li> <li>• Trade Waste Discharge Factor - if applicable (TWDF)</li> </ul>			
<b>Sewerage Access Annual Charge (Based on meter size)</b>			
	2015/16	2016/17	% Variation
<b>Meter Size</b>	<b>Access Charge (\$)</b>	<b>Access Charge (\$)</b>	
<b>20mm Water Meter Service</b>			
-Existing Infrastructure & Operating Fee	214	218	1.9%
-Sewer Reclamation Plant Upgrade Levy	230	235	2.2%
<b>Total Charge (20mm)</b>	<b>444</b>	<b>453</b>	
<b>25mm Water Meter Service</b>			
-Existing Infrastructure & Operating Fee	335	342	2.1%
-Sewer Reclamation Plant Upgrade Levy	256	261	2.0%
<b>Total Charge (25mm)</b>	<b>591</b>	<b>603</b>	

	2015/16 Fee (\$)	2016/17 Fee (\$)	% Variation
<b>32mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	549	560	1.7%
-Sewer Reclamation Plant Upgrade Levy	408	415	
<b>Total Charge (32mm)</b>	<b>957</b>	<b>975</b>	
<b>40mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	857	874	2.1%
-Sewer Reclamation Plant Upgrade Levy	622	635	
<b>Total Charge (40mm)</b>	<b>1,479</b>	<b>1,509</b>	
<b>50mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	1338	1365	1.9%
-Sewer Reclamation Plant Upgrade Levy	948	966	
<b>Total Charge (50mm)</b>	<b>2,286</b>	<b>2,331</b>	
<b>80mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	3428	3497	2.0%
-Sewer Reclamation Plant Upgrade Levy	2398	2446	
<b>Total Charge (80mm)</b>	<b>5,826</b>	<b>5,943</b>	
<b>100mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	5357	5465	2.0%
-Sewer Reclamation Plant Upgrade Levy	3736	3811	
<b>Total Charge (100mm)</b>	<b>9,093</b>	<b>9,276</b>	
<b>150mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	12054	12295	2.0%
-Sewer Reclamation Plant Upgrade Levy	8349	8516	
<b>Total Charge (150mm)</b>	<b>20,403</b>	<b>20,811</b>	
<b>200mm Water Meter Service</b>			2.0%
-Existing Infrastructure & Operating Fee	12054	12295	2.0%
-Sewer Reclamation Plant Upgrade Levy	8349	8516	
<b>Total Charge (200mm)</b>	<b>20,403</b>	<b>20,811</b>	
<b>CBD Area-Unmetered Services (Low)</b>			2.2%
-Existing Infrastructure & Operating Fee	541	553	2.6%
-Sewer Reclamation Plant Upgrade Levy	233	239	
<b>Total Charge (CBD Area-Low)</b>	<b>774</b>	<b>792</b>	
<b>CBD Area-Unmetered Services (Medium)</b>			2.0%
-Existing Infrastructure & Operating Fee	1379	1407	2.0%
-Sewer Reclamation Plant Upgrade Levy	406	414	



	2015/16 Fee (\$)	2016/17 Fee (\$)	% Variation
<b>Total Charge (CBD Area-Medium)</b>	<b>1,785</b>	<b>1,821</b>	
<b>CBD Area-Unmetered Services (High)</b>			2.0%
-Existing Infrastructure & Operating Fee	2482	2532	2.1%
-Sewer Reclamation Plant Upgrade Levy	620	633	
<b>Total Charge (CBD Area-High)</b>	<b>3,102</b>	<b>3,165</b>	
<b>Non Connected Non Residential Properties Within 75m Of Service</b>			1.9%
-Existing Infrastructure & Operating Fee	214	218	2.2%
-Sewer Reclamation Plant Upgrade Levy	230	235	
<b>Total Charge (Non Connected Non Res.)</b>	<b>444</b>	<b>453</b>	
<b>Sewerage Treatment Charge/kL</b>	1.48	1.51	2.0%
<b>Annual Trade Waste Administration</b>	<b>Charge (\$)</b>	<b>Charge (\$)</b>	
Category 1	81	84	3.7%
Category 2	180	183	1.7%
Category 3	486	492	1.2%

Council issues sewer usage charges every four months in arrears, which is issued separately to General Rate notices. The SDF (Sewerage Discharge Factor) is the estimated percentage of volume discharged into the sewer system from total water consumption and it will vary for individual properties.

#### Example Non-Residential Sewerage Charge for 2016/17

##### 1. With No Trade Waste

Assumptions:

\*Water Consumption (C) = 500kl/annum

\*Sewerage Discharge Factor (SDF) = 0.7

\*20mm Water meter (AC) = \$453

\*Sewerage Treatment Charge (STC) = \$1.51/kL

Annual Bill = AC + (C x STC) x SDF

= \$453.00 + (500 x 1.51) x 0.7

= \$453.00 + \$528.50

= \$981.50

## **2. With Trade Waste (Complying Category 1)**

If the above example also had a trade waste discharge (of Category 1) with a:

- \*Trade Waste Discharge Factor (TWDF) = 0.5
- \*Trade Waste Administration Charge (TWAC) = \$84
- \*Trade Waste Usage Charge (TWUC) = \$1.24/kL

then the annual bill would be:-

$$\begin{aligned}\text{Annual Bill} &= \$981.50 + \text{TWAC} + (\text{C} \times \text{TWUC}) \times \text{TWDF} \\ &= \$981.50 + \$84.00 + (500 \times 1.24) \times 0.5 \\ &= \$981.50 + \$84.00 + \$310.00 \\ &= \$1,375.50\end{aligned}$$

## **3. With Trade Waste (Complying Category 2)**

If example number 1 also had a trade waste discharge (of Category 2) with a:

- \*Trade Waste Discharge Factor (TWDF) = 0.5
- \*Trade Waste Administration Charge (TWAC) = \$183
- \*Trade Waste Usage Charge (TWUC) = \$1.24/kL

then the annual bill would be:

$$\begin{aligned}\text{Annual Bill} &= \$981.50 + \text{TWAC} + (\text{C} \times \text{TWUC}) \times \text{TWDF} \\ &= \$981.50 + \$183.00 + (500 \times 1.24) \times 0.5 \\ &= \$981.50 + \$183.00 + \$310.00 \\ &= \$1,474.50\end{aligned}$$

## **6.6 Community Engagement Strategy**

Council has developed Community Engagement Strategy to ensure that those who live and work in the LGA are able to contribute to the development of the Community Strategic Plan – Growing Griffith 2030.

This strategy aims to increase levels of engagement, and we are committed to having an open, honest, truthful and respectful conversation with members of the community.

The Griffith Community has a strong voice and Council's Community Engagement Strategy provides an essential link between Councillors, Council Staff and the community to ensure those voices are heard.

This Strategy aims to:

- Gauge the needs of the Community by ensuring residents are given equal opportunity to be included, informed and contribute,
- Reduce misinformation and/or miscommunication,
- Gather ideas and input from the community,

- Make decisions that will strengthen and improve the social fabric of the community,
- Reinforce community ownership in the decision making process,
- Enable Council to make sustainable decisions, and
- Enable Council to be transparent and equitable in all decisions.

Community engagement and consultation can take place at any time of the year depending on Council's work program. Each time there is a project to be developed or a decision to be made there is an opportunity for community consultation and feedback.

Early notice of emerging issues puts Council in a better position to respond in a proactive way.

In the engagement planning process, consideration is given to the complexity of the decision and the optimal time needed for people to respond. Whilst the Local Government Act 1999 sets out minimum requirements for some specific consultations, each engagement process is considered on its individual basis and merit.

To ensure a successful consultation, careful consideration is given to the appropriate tools and timing for the project or decision. Attention is given to things like community and stakeholder interest, political sensitivity, opportunities for partnerships, the level of social, economic and environmental impact, legislative requirements, time, resource and monetary constraints.

Community engagement is about ensuring that the community has an opportunity to be involved in the decisions made by Council. The Community Engagement Toolkit provides step-by-step practical advice for staff on how to select and use the most appropriate tools for a Griffith City Council engagement. These include:

- Online
- Community Opinion Group
- Council newsletter/Community Catch-up
- Social media
- Councillors
- Community groups
- Focus groups
- Council Committees and Action Groups
- Advertising across print, television and
- Radio
- Letterbox drop
- Letter
- Petition
- Survey
- Site visits
- Personal Briefings
- Media Release
- Email

- Telephone
- Community events
- Community Indicators and profiling data

The role of Council staff in community engagement is to organise and facilitate discussion, record, provide feedback, evaluate the engagement which has been undertaken and consider the feedback of the community when making recommendations to Council.

A Councillor's role in this is to participate as an elected member, listen to the views of the community and consider these views when making a decision.

Specific to Water Supply and Sewerage Services, Council has established **Utilities Management Committee** which has representations from different stakeholders, community, Councillors and key staff members dealing with Water Supply and Sewerage Services. The Committee meets quarterly to discuss Water Supply and Sewerage businesses, Levels of service, standards of service, service improvement target and strategies, charging system, capital works program etc. The Committee also make decisions on community consultation processes i.e. public meeting, newsletters, media release, television and radio interviews, community opinion surveys.

## 6.7 Environment Protection and Sustainable Development

Environment protection and sustainable development are core values of Griffith Community as outlined in the Community Strategic Plan 2012. Based on the community concerns, Council has set objectives and developed strategies to meet these objectives.

Environmental strategies related to Water Supply and Sewerage services are summarised in Table 33

**Table 33 Strategies to meet Environmental Objectives**

Community Concern	Objective	Strategy	Potential partners
<ul style="list-style-type: none"> <li>• Councillors should be more active in planning for life without water (in case it happens)</li> <li>• Water use has a very high priority and the</li> </ul>	To reduce consumption and loss of water.	<ul style="list-style-type: none"> <li>- Implement the Environmental Sustainability Strategy's action plan for water- SML</li> <li>- Develop and implement a detailed asset management and replacement program for water infrastructure - S</li> </ul>	Griffith City Council Community Business Murrumbidgee Irrigation, NSW Government Commonwealth Government

## Strategic Business Plan for Water Supply and Sewerage Services

Community Concern	Objective	Strategy	Potential partners
<p>community needs to continue this focus</p> <ul style="list-style-type: none"> <li>The community can lead by example with low use water gardens</li> </ul>	To increase reuse/recycling of wastewater and stormwater.	<p>- Implement the Environmental Sustainability Strategy's action plan for water- SML</p> <p>– Develop and implement a detailed asset management and replacement program for sewerage – S</p>	<p>Griffith City Council</p> <p>Community Business Operators NSW</p> <p>Government</p> <p>Commonwealth Government</p>
<ul style="list-style-type: none"> <li>Water tastes/smells/looks unappealing</li> </ul>	To protect and enhance water quality.	<p>- Implement the Environmental Sustainability Strategy's action plan for water - SML</p> <p>– Develop and implement a detailed asset management and replacement program for water- S</p>	<p>Griffith City Council</p> <p>Community Business Operators NSW</p> <p>Government</p> <p>Commonwealth Government</p>
<ul style="list-style-type: none"> <li>Council should be more proactive in climate change issues</li> <li>Use less energy, plant more trees and recycle more</li> <li>Council must be a role model in adaptation to new energy sources</li> </ul>	To reduce energy consumption and greenhouse gas emissions.	<p>- Implement the Environmental Sustainability Strategy's action plan for energy, air and climate change - ML</p>	<p>Griffith City Council</p> <p>Community Business Operators</p>

*Note: Timeframe – S (short-term i.e. 2 years), M – (medium-term, 2 - 5 years), L – (long-term, 5 years and beyond) unless otherwise stated, all activities are ongoing.*

Further the Local Government Act 1993 (Sec 428A) requires that the annual report of a council in the year in which an ordinary election of councillors is to be held must include a State of the Environment (SoE) report for the local government area.

Council is required to report on the state of the environment in the local government area it administers, covering the key environmental sectors such as:

- Water
- Atmosphere & Energy
- Land
- Biodiversity
- Heritage and
- Waste

The State of the Environment (SoE) Report is an important management tool which aims to provide the community and Council with information on the condition of the environment in the local area to assist in decision-making.

With the introduction of the Integrated Planning and Reporting (IP&R) framework, the requirements for SoE reporting changed to make it part of the corporate planning and reporting process.

In addition, the SoE reports on the progress of the Community Strategic Plan - Growing Griffith and subsequently, the Griffith City Council Environmental Sustainability Strategy.

**Major water achievements noted in the 2016 SoE Report were:**

Over the reporting period, a number of Council activities related to improving the water supply and quality have been undertaken. These include:

- Capital renewals at the Griffith Water Treatment Plant (GWTP) including rehabilitation of flocculation and DAF tank walls, installed Variable Speed Drives to improve raw water flows into GWTP and introducing a more robust coagulant.
- Provided chlorine boosting facilities at drinking water reservoirs.
- Refurbished the internal of the 30 ML drinking water reservoir.
- Installed new hatches to drinking water reservoirs to eliminate ingress of rainwater.
- Renewed 10,900 meter of drinking water and raw water mains.
- Constructed 2900 meter new water mains.
- Completed a leakage detection repair program covering all connections within the city.
- Implemented extensive pressure reduction and monitoring programs throughout the reticulation system.

**Major wastewater related achievements were listed as:**

Commissioning of Griffith Water Reclamation Plan (GWRP) took place in March/ April 2012, treating full sewerage flows from that time. Practical Completion was achieved in June 2012 for the majority of the components of the construction project.

The \$26M project was the largest single project undertaken by Council. The new Membrane Bioreactor (MBR) Plant was one of the most modern and advanced sewer treatment plants in Australia at the time of commissioning.

Council constructed a Bio-Scrubber Odour Control facility at GWRP in 2016 to mitigate odour issues around the treatment plant site.

Council continued with the **sewer relining** program till 2014/2015. During this period, 3800 meters of gravity sewers were relined. Emphasis has now moved on to **condition assessment** of the sewer rising mains and sewer pump stations to prioritise renewals.

A by-pass was constructed at G4 sewer pump station to enable planned refurbishment of the wet well of the pump station.

Council has developed an award winning 'Get SepticSmart' package of flyers for all landholders with 'On-site Sewage Management Systems'.

**Recommendations arising from the 2016 SoE were:**

- Review and reinforce water education programs.
- Investigate water reuse from the Water Reclamation plant, both on and off site.
- Continue to monitor groundwater on a regular basis.
- Raise awareness of practices that pollute the Mirrool Creek and Lake Wyangan by encouraging and educating the community.
- Keep all Geographical Information System (GIS) datasets relating to water and drainage systems up to date.
- Foster sharing of information with Murrumbidgee Irrigation including groundwater and algae monitoring to reduce costs.
- Implement recommendations in Lake Wyangan Study.
- Draft a comprehensive Plan of Management for the Lake Wyangan Wetland Complex in partnership with Murrumbidgee Irrigation.
- Map all onsite sewerage management systems within the catchment and inspect according to their level of risk (e.g. high, medium and low).
- An ongoing program for replacing asbestos cement pipes.
- An ongoing rebate program for installing water efficient toilets and showerheads.

## **7 Total Asset Management Plan**

A Total Asset Management Plan (TAMP) enables Council to manage its water supply and sewerage assets throughout their whole life cycle. This includes asset installation, operation, maintenance, replacement and disposal.

The primary objective of this Total Asset Management Plan (TAMP) is to develop sustainable asset management processes to allow the continued delivery of water supply and sewerage to the serviced communities in Griffith City Council.

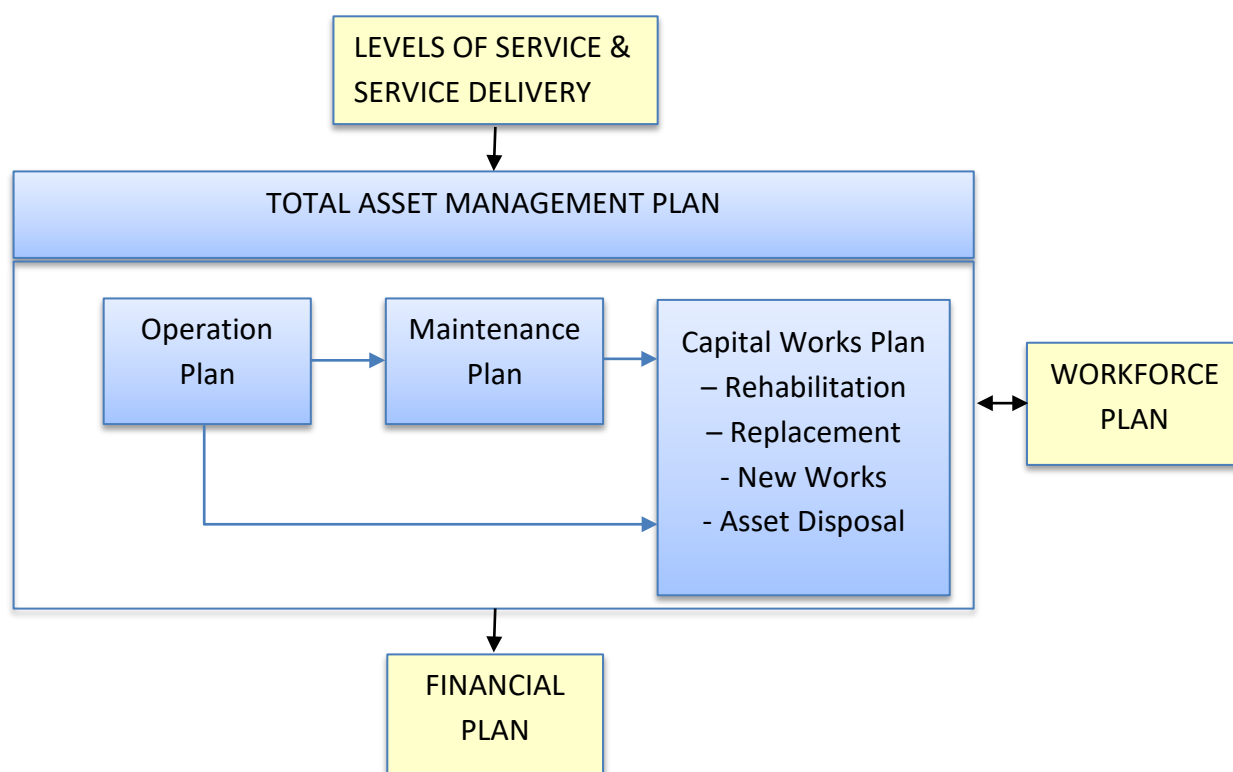
The performance of water supply and sewerage systems is heavily dependent on the correct physical assets being provided in a condition that allows them to deliver the design level of service. Effective asset management and maintenance is fundamental to the assets achieving the intended design life, and in turn, delivering the services in a cost effective manner.

Griffith City Council has the following current asset management documents:

- Griffith City Council Water Asset Management Plan (6 June 2017)
- Griffith City Council Sewer Asset Management Plan (6 June 2017)
- Griffith City Council Development Servicing Plan No 1: Water Supply (adopted 27 November 2012)
- Griffith City Council Development Servicing Plan No 1: Sewerage (adopted 27 November 2012)

Griffith City Council also has completed an Integrated Water Cycle Management Evaluation Plan. The current draft was last revised in April 2010 and was been prepared in accordance with the guidelines applicable at that time.

Key elements of a total asset management plan are shown in Figure 8.



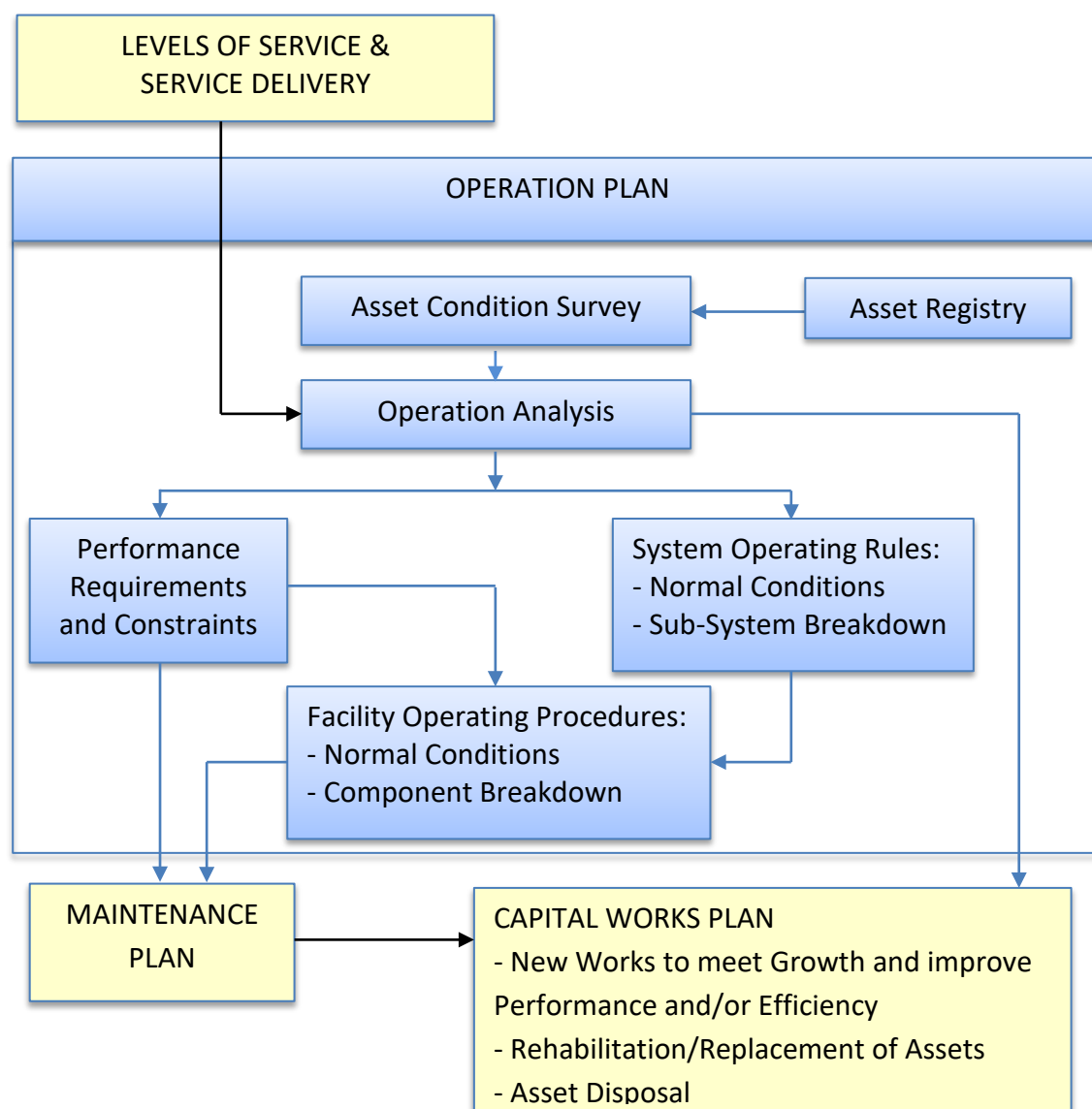
**Figure 8 Total Asset Management Plan for Water Supply and Sewerage Services**



## 7.1 Operations Plan

The purpose of the Operation Plan is to ensure that service objectives are achieved at the least cost and that the impact of any breakdowns or outages is minimised. The key inputs for this process are the level of service targets, including regulatory standards, and the knowledge of the current performance of the asset base. Key elements of operation plan are shown in Figure 9.

The operations plan is based on knowledge of the system assets and as such there are ongoing requirements for maintaining the Asset Register and for regularly assessing the condition of key elements of the systems. Contingency plans (emergency response plans) will be developed where the impact of failure would be significant. Council's existing inspection and maintenance procedures are appropriate.



**Figure 9: Operation Planning Process**

### 7.1.1 Asset Registers

Griffith City Council retains its asset data within Council's Assetic asset management system, with a spatial representation of the assets on its Geographic Information System. The information includes the asset capacity, year of construction/installation, estimated life and the most recent estimate of current replacement cost. The asset registers are generally valued based on local estimates of current replacement costs on a Modern Engineering Equivalent Asset basis. The data contained within these asset registers has been used to prepare asset management plans as required under the Integrated Planning and Reporting Framework.

A summary of these estimates is provided in Table 34 and Table 35.

**Table 34: Water Supply Asset register statistics (2017)**

Asset Class	Current Replacement Cost (\$'000)	Annual Depreciation (\$'000)	Written Down Current Cost (\$'000)	% life used
Water Ancillary	10,966	5,425	5,542	49%
Water Mains	104,101	29,113	74,988	28%
Water Pumping Stations	777	307	470	39%
Water Reservoirs	11,982	2,374	9,608	20%
Water Treatment Plants	39,571	10,916	28,556	28%
<b>Total</b>	<b>167,398</b>	<b>48,136</b>	<b>119,164</b>	<b>29%</b>

**Table 35: Sewage Asset register statistics (2017)**

Asset Class	Current Replacement Cost (\$'000)	Annual Depreciation (\$'000)	Written Down Current Cost (\$'000)	% life used
Sewerage Ancillary	12,204	5,299	6,905	43%
Sewage Pumping	12,277	5,857	6,420	48%

Asset Class	Current Replacement Cost (\$'000)	Annual Depreciation (\$'000)	Written Down Current Cost (\$'000)	% life used
Stations				
Sewer Mains	71,299	26,550	44,748	37%
Sewage Treatment Plants	33,905	8,301	25,533	25%
<b>Total</b>	<b>129,684</b>	<b>46,008</b>	<b>83,605</b>	<b>36%</b>

### 7.1.2 Assessment of Asset Condition

The asset valuation information shows that the high value components of the water supply and sewerage systems typically are still in the earlier phases of their expected life. However the register identifies that Council will need to make significant investments across most infrastructure classes over the next 30 years as the older parts of the water supply and sewerage network approach end of life. This is addressed in the Capital Works Plan.

At this stage, asset condition is not explicitly assessed for water supply and sewerage mains, rather asset condition is inferred based on age. Griffith City Council will implement a condition assessment programme for its asset base, based on visual inspection and sampling, with a focus on assets approaching the end of their projected life.

### 7.1.3 Asset Management System

Griffith City Council stores critical asset data within its Assetic Asset Management System. The software incorporates various predictive tools to enable Council to design renewals programmes based on available budget and asset condition.

Council's asset management system can be seen as incorporating its Asset Management Strategy and Asset Management Plans. Griffith City Council utilises the Institute of Public Works Engineering Australia's NAMS.PLUS suite of tools to allow it to cost-effectively create asset management plans based on industry accepted templates. At this stage asset management plans have undergone a number of revisions.

### 7.1.4 Operation Analysis

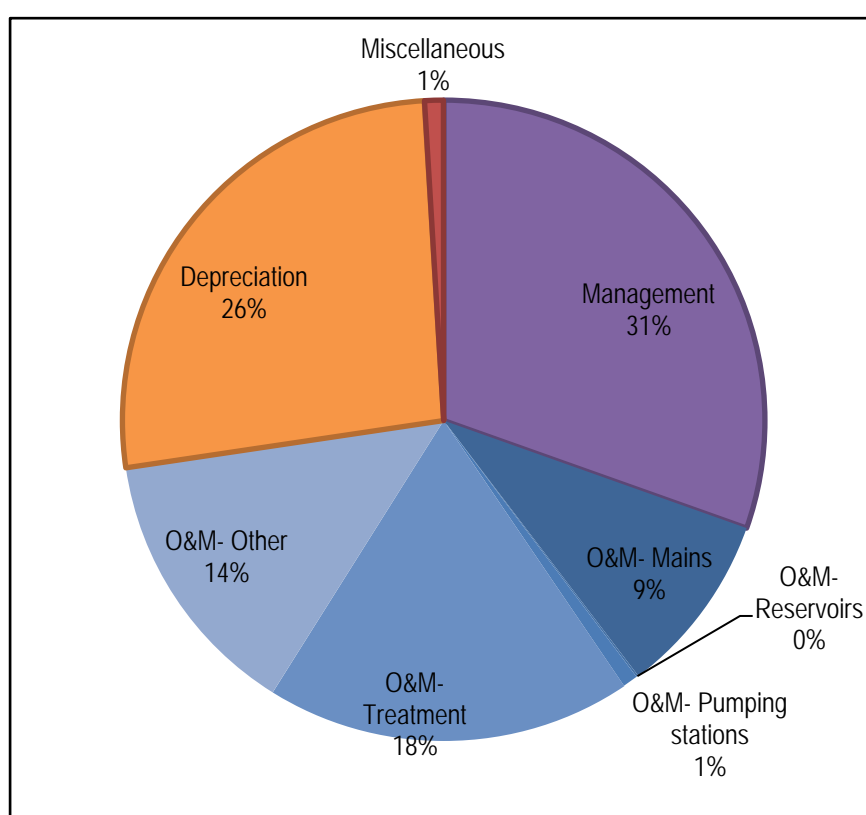
The Griffith City Council Water Supply and Sewerage systems are generally provided with technology that allows for relatively simple operations. The most technically demanding operations will be concentrated in the water treatment and sewage treatment processes.

The flat terrain of Griffith means that there are significant septicity risks if sewage is permitted to be stored for excessive periods in pumping stations. Major pumping stations have been provided with advanced controls to control detention times while ensuring that operational stability and emergency storage requirements are maintained.

#### 7.1.4.1 Water Supply Network

Table 36 provides a summary of the key principles of operation for the water supply systems.

The majority of operating costs are consistent from year to year. A summary of the water supply costs are presented as Figure 10.

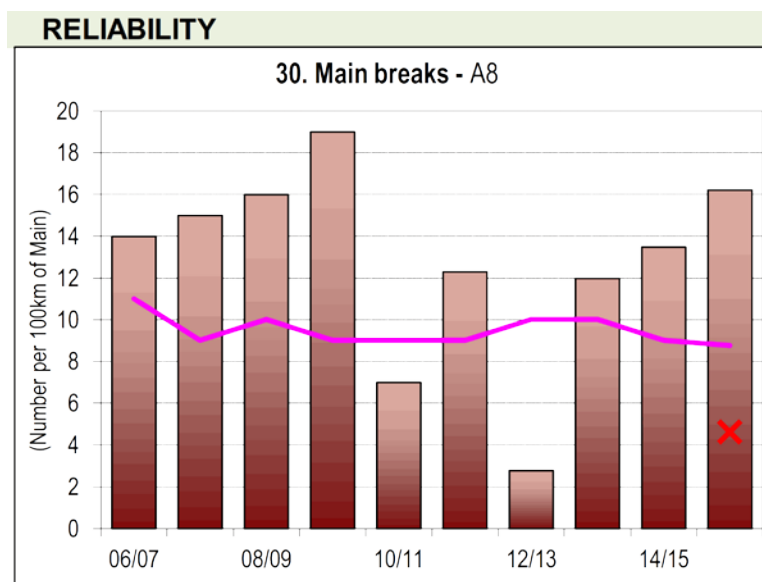


**Figure 10 Breakdown of operating costs – water supply**

The water treatment systems are effectively providing water that meets the target level of service. Council's Drinking Water Management System has not identified any risks requiring any significant alteration to infrastructure or operating practice.

No microbiological non-compliances under the Australian Drinking Water Guidelines have been identified in the last two financial years, no 'boil water' alerts have been issued in the last 18 months, and the requirements of Circular LWU18 (June 2014) are being met.

The Triple Bottom Line report for the Griffith City Water Supply for 2015/16 indicates a water main breakage rate of 16 breaks per 100km of main per year, slightly higher than the statewide median but with water supply interruptions at about the state average (11 per 1000 properties per year). This is consistent with a water distribution network that is in reasonable operating condition.



**Figure 11 Trend in Water Main Break 2006 - 2016**

Note: Triple Bottom Line Summary Report for Griffith City Council for 2015/16. Pink line indicates the state wide average, red cross indicates best 20% of the state.

Figure 11 shows that the rate of mains breaks over the last few years has progressively increased, which suggests that unless ongoing investment in mains breaks occurs, it is likely that the frequency of mains breaks will increase and quality of service to the community will decline.

The Griffith Water Supply business is reasonably mature, although with the majority of assets in the first half of their operating life. As a result the capital works planning involves optimising the capacity of major infrastructure, extending the service area to service development and renewing assets to maintain level of service.

The main investments over the planning period consist of:

- A 15ML/d upgrade to the Griffith WTP, with associated upgrades to sand filters and carbon dosing.
- Increased trunk capacity to transport water to new development area, including duplications of existing mains near the water treatment plant and pressure boosting stations to manage peak day demand.

- A substantial water mains renewals programme in the latter half of the 30 year planning period was water mains reach the end of their useful life.

*Table 36: Performance requirements and processes for water supply*

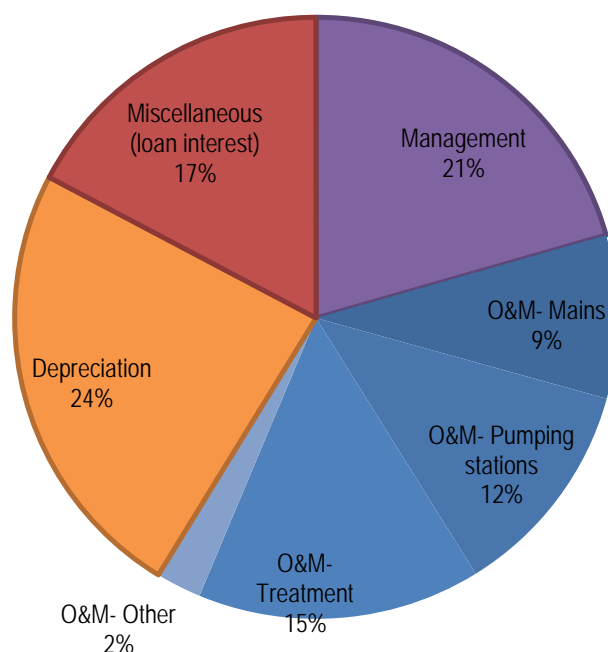
Sub-system	Performance requirements	Processes
Water treatment plant	<p>Continual compliance with Australian Drinking Water Guidelines quality standards.</p> <p>Rate of production meets demand (buffered by water storages)</p>	<p>Operation in accordance with manuals, including conformance to Drinking Water Quality Management System monitoring and control measures. Progressive upgrade of manuals based on outcomes of DWQMS with consideration of NSW Water Directorate operations and maintenance manuals to establish industry practice.</p> <p>Breakdown mode – reliance on clear water storages and service reservoirs to maintain supply, application of water restrictions to maintain availability of water to meet critical human needs in the event of source unavailability or inability to treat to drinking water standards.</p> <p>Conduct risk reviews from a due diligence perspective.</p>
Trunk distribution and storage	<p>Continual compliance with Australian Drinking Water Guidelines quality standards.</p> <p>Delivery of water to reticulation system at service pressure to meet demand.</p>	<p>Operation in accordance with manuals, including conformance to Drinking Water Quality Management System monitoring and control measures. Progressive upgrade of manuals based on outcomes of DWQMS with consideration of NSW Water Directorate operations and maintenance manuals to establish industry practice.</p> <p>Breakdown mode - standby pumps, isolation and diversion, supplementary disinfection, water restrictions, boil water/do not drink alerts.</p> <p>Conduct risk reviews from a due diligence perspective.</p>

Sub-system	Performance requirements	Processes
Reticulation	<p>Continual compliance with Australian Drinking Water Guidelines quality standards.</p> <p>Delivery of water to premises in accordance with level of service standards.</p>	<p>Operation in accordance with manuals, including conformance to Drinking Water Quality Management System monitoring and control measures. Progressive upgrade of manuals based on outcomes of DWQMS with consideration of NSW Water Directorate operations and maintenance manuals to establish industry practice.</p> <p>Breakdown mode – isolation and diversion, repair in accordance with response times specified in level of service targets.</p> <p>Conduct risk reviews from a due diligence perspective.</p>

#### 7.1.4.2 Sewerage Network

Table 37 provides a summary of the key principles of operation for the Griffith City Council water supply systems.

The majority of operating costs are consistent from year to year, although loan interest expenses are progressively reducing as the loan for the water reclamation plant is being paid. A summary of the water supply costs are presented as Figure 12.



**Figure 12 Breakdown of Operating Costs - Sewerage**

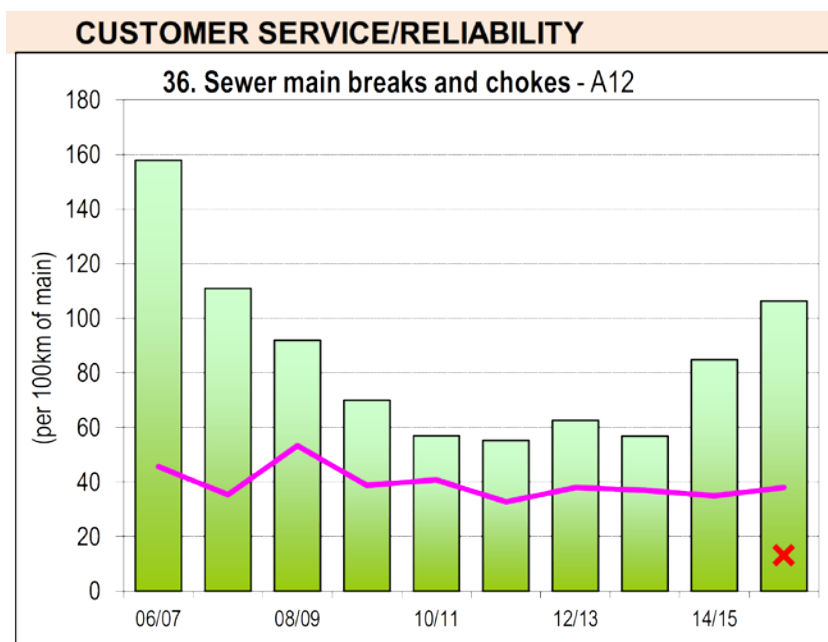
The sewage transport and treatment system is largely stable in terms of operation. Future changes to the sewerage network are primarily driven by development associated with population growth, resulting in an expansion of sewerage reticulation and the construction of additional sewage pumping stations. The flat terrain of Griffith means that land development requires active management to ensure the density of pumping stations is economically optimal, and the configuration of rising mains does not lead to inefficient pumping or odour concerns.

In the latter part of the planning period, stage two of the Griffith Water Reclamation Plant will need to be constructed to meet increased demand.

The oldest parts of the sewerage network date to the mid-1930s. Strong population growth in the second half of the 20th century means that, compared to other inland towns, the oldest parts of the network represent a relatively small proportion of the system.

The Triple Bottom Line report for the Griffith City Water Supply for 2015/16 reports 106 breaks per 100km of sewer, placing Griffith in the highest 20% of the state and at a rate over double the state average. The causes of poor performance are likely to be a combination of the structural failure of life expired sewers, and historical issues with liquid trade waste management having significantly shortened the useful life of key trunk sewers in the city.

Figure 13 shows that the rate of sewer chokes has degraded over the last few years. This would suggest that there is a need to rehabilitate or renew sewer mains to improve the quality of service to customers.



**Figure 13-Trend in Sewer Mains Chokes 2006 - 2016**

Note: Triple Bottom line summary report for Griffith City Council 2015/16. Pink line indicates the state wide average, red cross indicates best 20% of the state



The Griffith Sewerage business has a number of new assets retrofitted to a relatively old core network that has had a difficult history. Capital works planning involves addressing existing level of service issues through targeted renewals and extending the service area to service development.

The main investments over the planning period consist of:

- Extending sewerage services to Lake Wyangan, Tharbogang and Nericon as well and expanding the existing service area in line with development.
- Constructing stage 2 of the Griffith WRP, when required to service demand – expected in the latter part of the 30 year planning period.
- Commencing a targeted CCTV data collection programme to identify sewers which are in poor condition, particularly those that present a high risk to the business, the community or the environment.
- A substantial sewer mains renewals programme targeted at improving the level of service to customers and reducing risk.

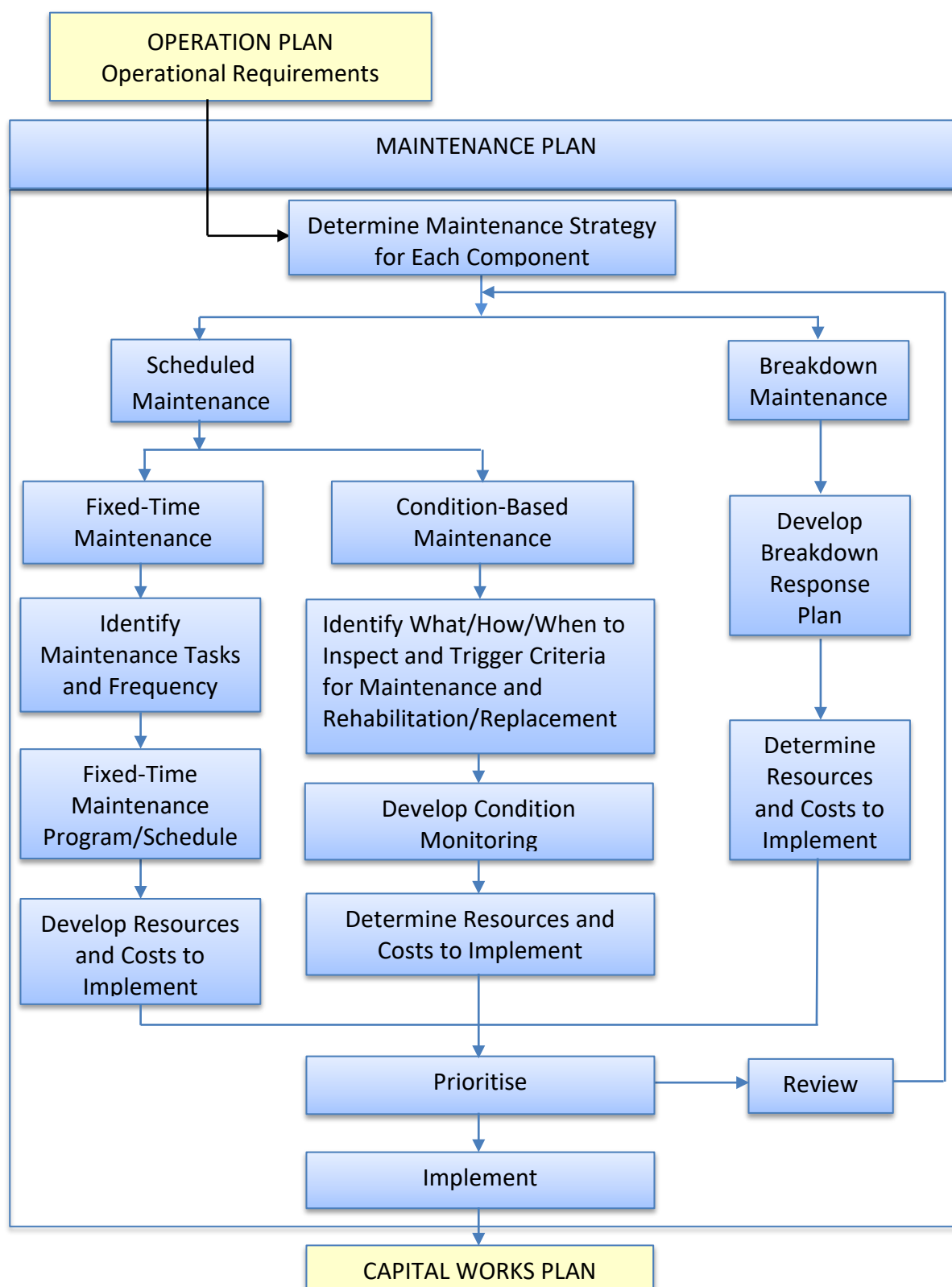
*Table 37: Performance requirements and processes for sewerage*

Sub-system	Performance requirements	Processes
Sewage treatment plant	Adherence to Environment Protection Licence and POEO in general Meets target service levels with respect to odour and noise	Operation in accordance with manuals. Breakdown mode - bypasses to storage for reprocessing once recovered Conduct risk reviews from a due diligence perspective.
Sewage pumping stations and rising mains	Adherence to Environment Protection Licence and POEO in general Meets target service levels with respect to odour and noise	Operation in accordance with manuals. Progressive upgrade of manuals based on consideration of NSW Water Directorate operations and maintenance manuals to establish industry practice and any particular regulatory requirements associated with the sewage treatment system implemented. Breakdown mode- use of installed standby pumps, connection to backup generator, temporary diesel pump, drainage using tanker transport to adjacent catchment as per Council's Overflow Investigations Report. Conduct risk reviews from a due diligence perspective.

Sub-system	Performance requirements	Processes
Gravity sewers and laterals to boundary riser	Adherence to Environment Protection Licence and POEO in general Meets target service levels with respect to failure rates, fault response times and odour.	Breakdown mode – system faults are managed in terms of immediate response, and triage for investigation and rectification. Use of level of service trigger to prioritise individual customers experiencing poor service. Conduct risk reviews from a due diligence perspective.

## 7.2 Maintenance Plan

The objective of the maintenance plan is to ensure that whole of life asset costs are minimised, while achieving the target level of service. Key elements of maintenance plan are shown in Figure 14.



**Figure 14: Maintenance Planning Process**

The maintenance plan seeks to achieve this through a combination of scheduled (preventative) maintenance for components critical to the provision of service, and breakdown maintenance for components where failure (within tolerable limits) does not lead to a failure to meet level of service targets. Scheduled maintenance is also used where this approach results in the lowest life cycle cost for an asset. An example of preventative maintenance would be the lubrication of a gearbox in a treatment plant. An example of breakdown maintenance would be the repair of a water pipe, with the pipe being programmed for renewal if the frequency of breaks makes it more cost effective to replace the line, or the frequency of customer interruptions due to pipe breaks is contributing to a failure to meet the target level of service.

Scheduled maintenance generally occurs in accordance with operation manuals for fixed plant or in accordance with general industry practice. Other assets are subject to breakdown maintenance. 'Breakdown' could be the direct observation of a failure of plant to operate correctly, or an indirect indicator such as control parameters degrading to 'alert' or 'critical' limits, triggering an investigation of the cause of failure.

There are no outstanding maintenance recommendations issued under section 61 of the Local Government Act 1993. However, there is scope for Council to develop its operation manuals with a view to minimising life cycle costs where there is potential for cost savings without compromising the capacity of the business to meet level of service targets. As plant ages, it will become more important for Council to utilise condition grading systems to efficiently manage its maintenance programme. Council will conduct a review of its maintenance strategy to ensure that its maintenance programmes and monitoring systems are fit for purpose, based on the combined objective of providing lowest life cycle cost provision while assuring the achievement of level of service targets.

### Objectives, Strategies and Actions-Maintenance

#### **Objective:**

System maintenance ensures facilities can deliver design quality, capacity and reliability requirements at the minimum long-term cost.

#### **Performance Targets:**

Achieve results comparable with other similar sized Councils in accordance with NSW Office of Water Performance Indicators (especially operating and treatment costs).

#### **Strategies:**

Develop detailed Maintenance Plan linked to asset condition assessments.

Comply with maintenance specifications.

**Actions:**

Review Scheduled Maintenance Program and Breakdown Response Plan to check the reliability and capacity requirements.

Review Maintenance Plan for cost savings and efficiency improvements.

Prepare an inventory to available and required spares and support equipment.

Monitor actual outputs, reliability and availability of facilities.

### 7.3 Capital Works

The objective of the capital works plan is to ensure that assets are created and renewed in a manner that provides services at target level while minimising life cycle costs.

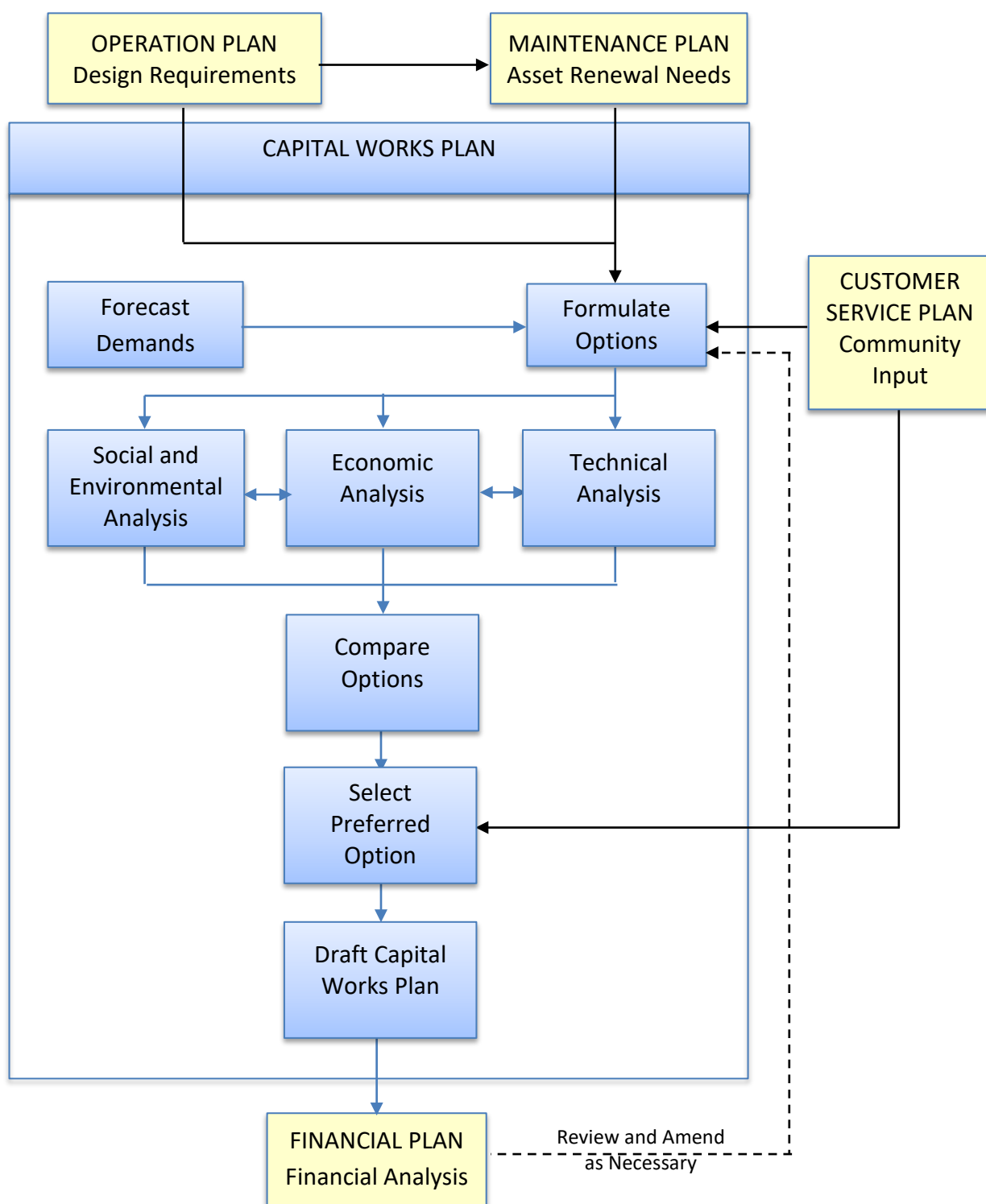
The Capital Works Plan is critical because water supply and sewerage infrastructure is capital intensive and the construction and renewal of facilities can have a significant impact on Council's overall finances.

Council's Capital Works Plan allows for growth, non-growth and rehabilitation works over a 30 year period. Council's 30 year Capital Expenditure Program is presented in Section 9 Financial Plan.

Following points have been considered in the process of preparing the Capital Works Plan:

- Development of water supply and sewerage schemes is a long-term investment, and must be integrated with Council's overall planning policies.
- Capital works strategy needs to be regularly updated to take account of changing conditions.
- Acceptance by the community of the development proposals and costs is important.

Key elements of capital works plan are shown in Figure 15



**Figure 15: Capital Works Planning Process**

### **7.3.1 Current Issues**

A large proportion of the Griffith City water supply and sewerage systems were constructed in the second half of the 20th century, in conjunction with the development of irrigated agriculture in the area. During the 30 year planning horizon it is projected that a significant proportion of water supply and sewerage mains will reach the end of their useful life. If mains are operated beyond the end of their useful life the potential for breaks and blockages increases significantly, leading to degraded service to customers.

Griffith experiences relatively high rates of growth. Growth is driven by a complex set of drivers, particularly internal migration and the development of secondary industry. There is significant potential for level of service failures to occur due to demand exceeding asset capacity.

### **7.3.2 Integrated Water Cycle Management**

An integrated water cycle management plan has been prepared in accordance with the guidelines applicable at the time. The current revision is dated April 2010. The plan identifies that, based on current growth projections; the existing water treatment plant may reach capacity by about 2024.

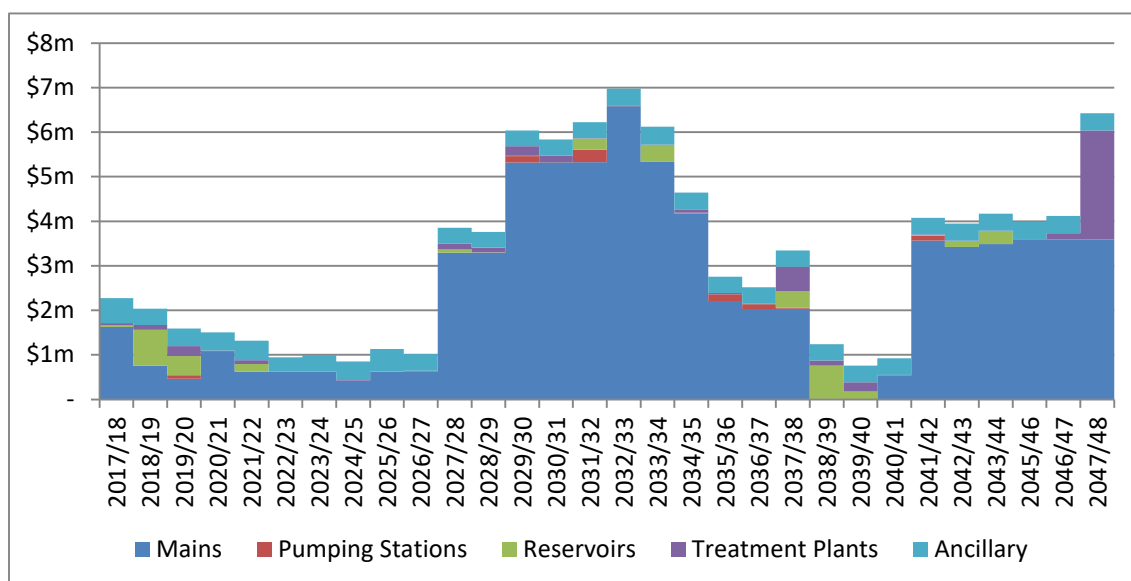
### **7.3.3 Asset Renewal Plan**

A summary of the asset renewals is provided as Figure 16 for water supply, and Figure 17 for sewerage. A more detailed profile is provided in Appendix D.

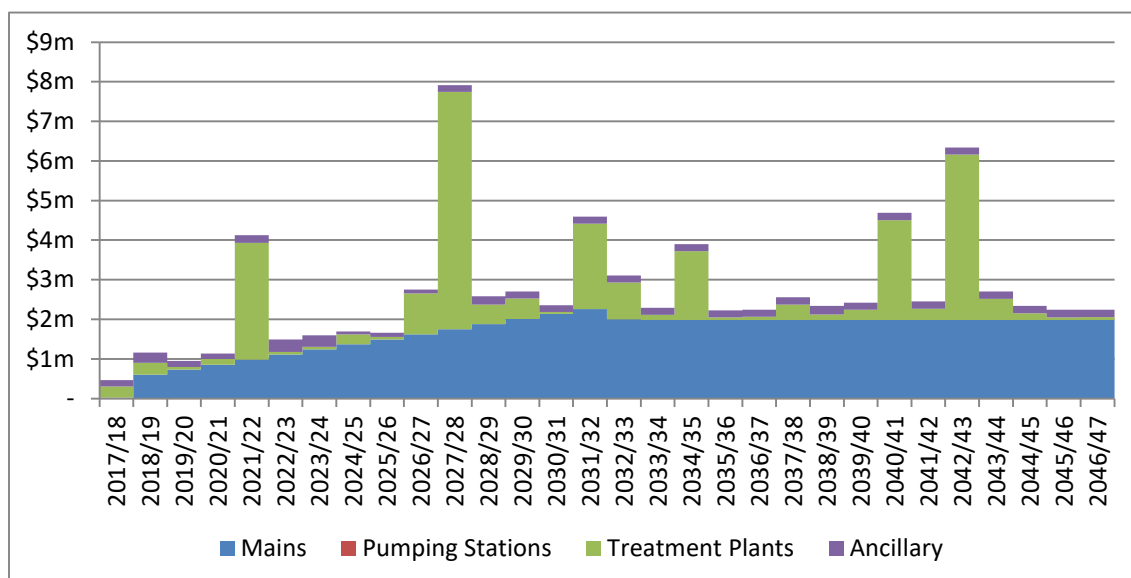
The asset renewal programme has been developed using a combination of Council's Long Term Financial Plan for the next ten years, with renewals for the remaining years based on Council's valuation of water supply and sewerage assets. The valuation based renewals projections represent a more volatile profile than a fully balanced works programme which would sequence work over several years. This is reasonable given it is only used for the more distant years in the model.

Given the lack of validated condition data for water supply and sewerage mains, works programmes have been smoothed to reflect more realistic investment profiles. The renewals programme will in practice be driven by performance monitoring of water mains and targeted CCTV inspections of sewer mains. For water supply, the primary renewals task will be the 1950s era ductile iron (cement lined) pipe network. The sewerage mains renewals programme will focus on rising mains and vitrified clay pipes although it is likely that CCTV inspection will reveal younger trunk sewers requiring renewals due to corrosion by industrial sewage.

## Strategic Business Plan for Water Supply and Sewerage Services



**Figure 16: Renewals plan - water supply**



**Figure 17 Renewals plan – sewerage**

All renewals are funded through a combination of cash reserves and borrowings.

### 7.3.4 New Works Plan

New works are funded through a combination of developer contributions, cash reserves and borrowings. It can be seen from Figure 18 and Figure that identified new works spending reduces substantially after the end of the 10 year long term financial period. Given that Griffith is expected to continue growing beyond this point, it will be necessary to invest in new capital works over the full 30 year period of this Total Asset Management Plan.



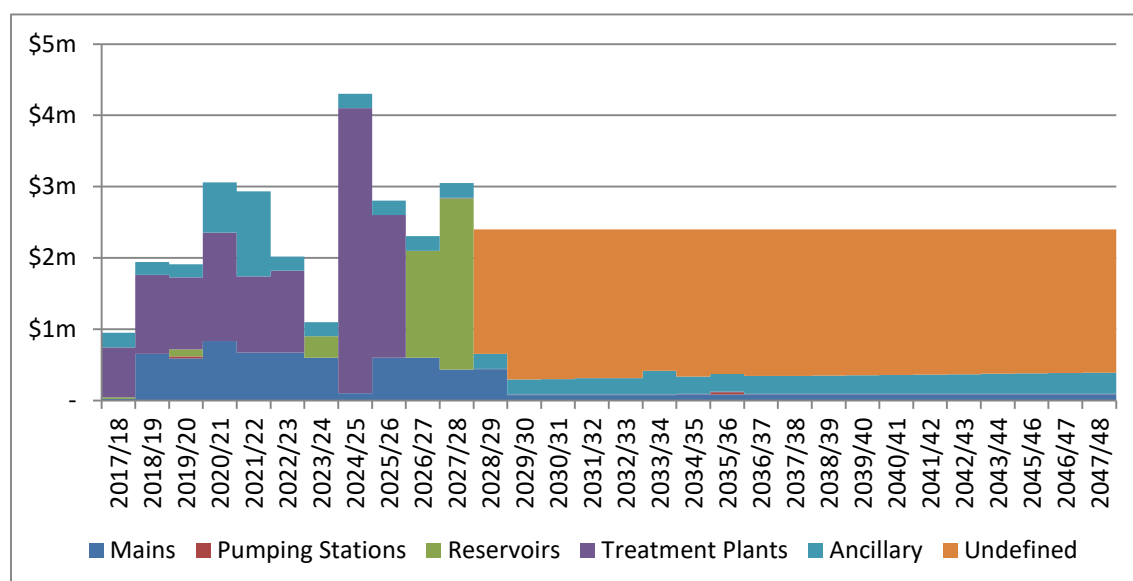
## Strategic Business Plan for Water Supply and Sewerage Services

Council will acquire knowledge about longer term capital works requirements through following actions:

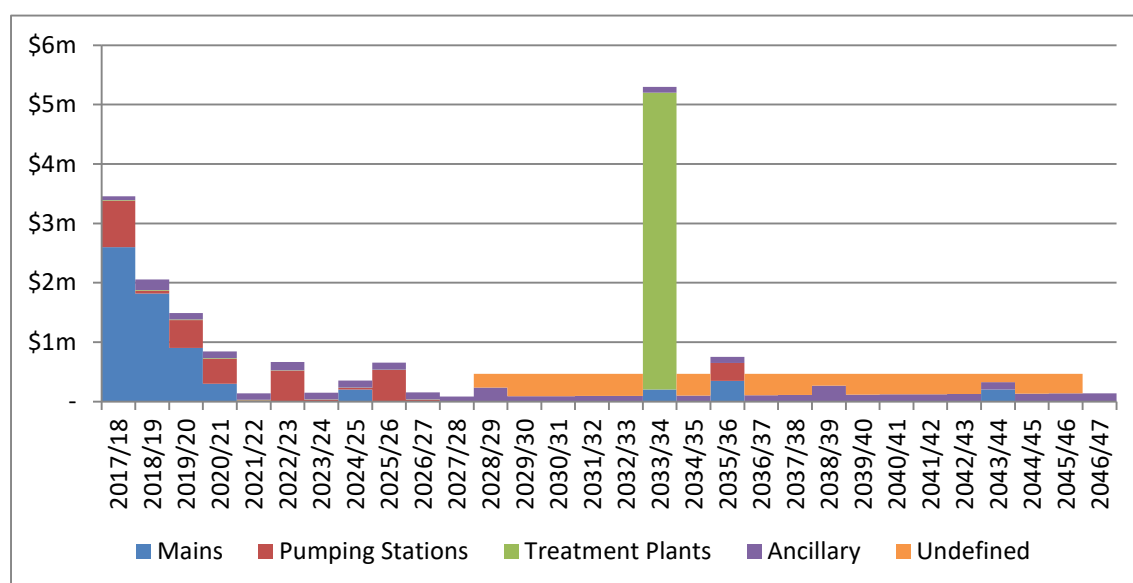
- Updating its Development Servicing Plan, which will identify longer term strategies for servicing development?
- Updating its Integrated Water Cycle Management Plan, which will identify any new works required to ensure water security.

In the interim this plan has used an allowance approach for the later years of the capital works plan based on the rate of spending proposed under the 10 year Long Term Financial Plan.

Detailed capital works programme is provided in Appendix D.



**Figure 18: New works plan - water supply**



**Figure 19: New works plan – sewerage**

### 7.3.5 Disposal Plan

No assets proposed for renewal will result in the creation of a saleable asset, other than a nominal scrap value.

## 7.4 Total Asset Management Action Plan

*Table 38 Asset Management Action Plan*

Objectives	Proposed measures	Provider, cost	Target date
Continue update of asset registry	Data collection and update Assectic database	In-house	Ongoing

## 8 Work Force Plan

Council has adopted Workforce Management Plan. The Workforce Plan is one of the key elements of Council's Integrated Reporting and Planning Framework (Figure 20).

The aim of the Workforce Plan is to ensure that Council is capable of providing an effective and efficient workforce to meet the objectives that are outlined in the Strategic Plan, the Delivery Program and the yearly Operational Plan and to identify changes in skills needs, demographics and emerging trends in the workforce.

The Workforce Plan focuses five key areas:-

- Employee Attraction and Retention;
- Employee Training, Learning and Development;
- Organisational Development;
- Performance Management;
- Risk Management, Work Health and Safety

The organisational structure is presented earlier in this Business Plan. The Director, Utilities is responsible for Water Supply and Sewerage operations.

Council is committed to having a productive, multi-skilled workforce with staff enjoying satisfying careers that are supported by relevant training and development to ensure a quality service to customers can be delivered.

Council has put in place following programs:

School Based Trainees Program

- Indigenous Employment Strategy
- Training and Development Program with Riverina Institute of TAFE and The Western Riverina Community College

- Cedric Hoare Scholarship program to undertake distance mode university education while being employed at Council

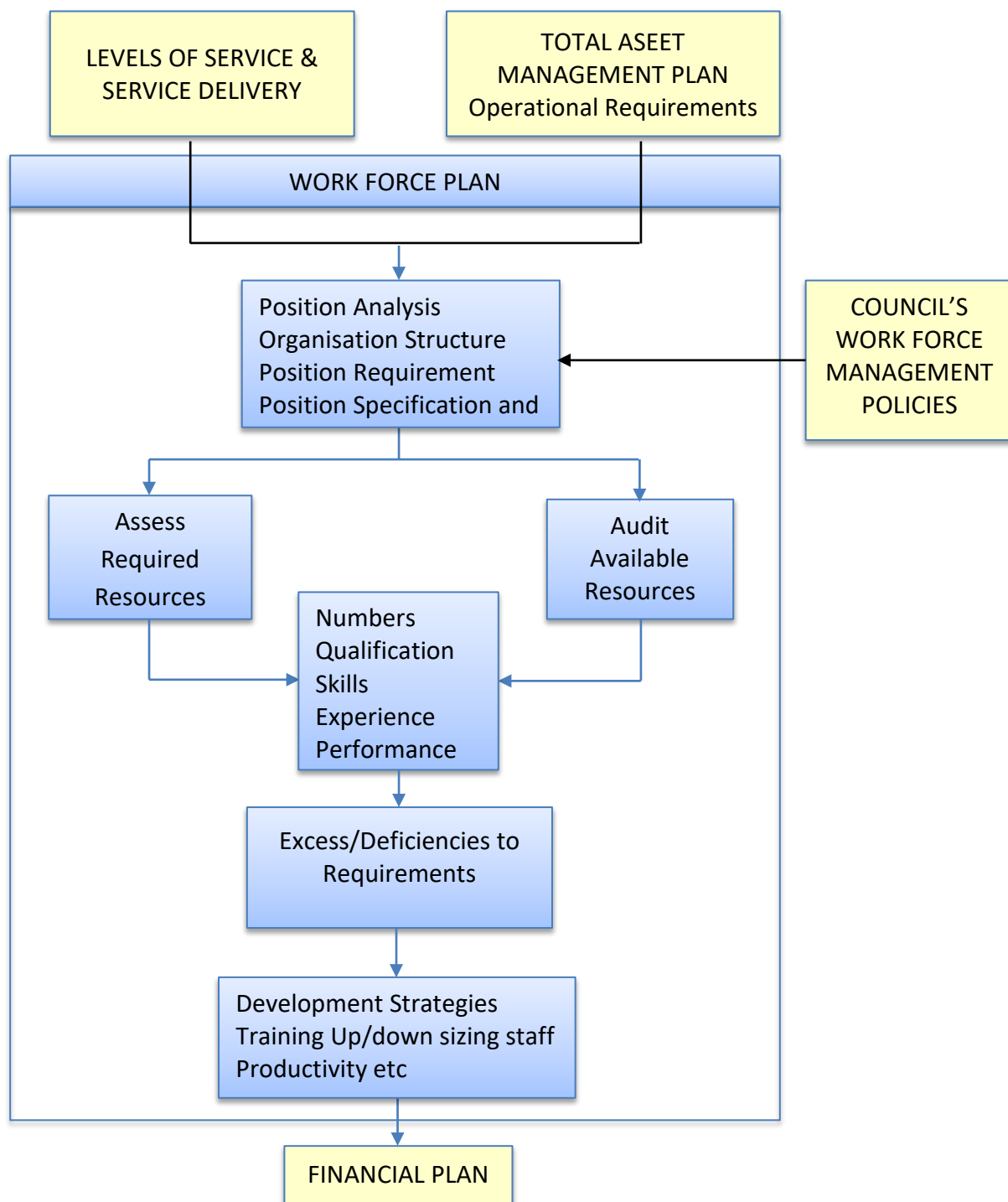
In accordance with the Local Government (State Award), Council has an established **Consultative Committee** with representation from staff and management to oversee implementation of award conditions and human resource policies and procedures.

Council continues to ensure that staffing policies and procedures including recruitment, selection processes and conditions of employment are in line with Best-Practice. Council remains committed to achieving improved work practices and efficiency through a consultative approach

Council continues to ensure that staffing policies and procedures including recruitment, selection processes and conditions of employment are in line with best practice. Council remains committed to achieving improved work practices and efficiency through a consultative approach.

Council has been focussing on: -

- Development of Council policies to ensure the workplace is a family friendly environment.
- Development of Council's Training Plan.
- Continuation of performance and skills appraisals at all levels of the organisation



**Figure 20 Work Force Planning Process**

Objectives and strategies of key focus areas of Council's Workforce Management Plan are summarised in Table 39

**Table 39 Objectives and Strategies of Key Focus Areas of Workforce Management Plan.**

Objective	Strategy
<b><i>Employee Recruitment, Attraction and Retention</i></b>	
To place Council as a preferred employer within the local community and beyond, through the creation of a welcoming and inclusive workplace and the provision of innovative employee benefits that both attract new staff and retain existing staff.	Implementation of the Trainee and Apprentice Progression Policy.
	Service delivery review and planned restructure to ensure Council will meet the resourcing needs of the Delivery Plan.
	Continued review and monitoring of Indigenous Employment Strategy.
	Enlist the services of recruiting agencies to assist with advertising and selection process.
	All recruitment requests must be approved by the Senior Management Team who evaluate the position and based on organisational need. The position is also evaluated to see if it can be made a traineeship, apprenticeship or identified as an ATSI position.
	Availability of a salary premium of up to 5% for those technical and management positions that are difficult to fill.
<b><i>Employee Training, Learning and Development</i></b>	
To identify and align the needs of Council in terms of the skill set it requires to deliver services and provide appropriate training to staff to ensure individuals have those skills to deliver the services accordingly	Skills Assessments
	<p>Skills assessments are conducted annually and staff skills shortages identified. It is also an opportunity for staff to discuss other professional development needs to assist with career progression or even possible changes in career paths. Training is programmed and arranged based on the following priorities:</p> <ul style="list-style-type: none"> <li>• Statutory or compliance requirements (tickets and licenses etc.)</li> <li>• Skill Steps</li> <li>• Corporate priorities and initiatives</li> <li>• Developmental Training</li> </ul> <p>and the following criteria:</p> <ul style="list-style-type: none"> <li>• Council's Management Plan and applicable policies</li> <li>• Availability of financial and physical resources</li> <li>• Workflow demands</li> </ul>

Objective	Strategy
	<ul style="list-style-type: none"> <li>Individual merit</li> </ul> <p>Where possible, employees who are eligible are able to access Existing Worker Trainees (EWT's) or New Worker Trainees (NWT's) with the assistance of Department of Education Employment and Training.</p>
	<p>Tertiary Education Assistance</p> <p>Staff are encouraged to apply for Tertiary Education assistance if they want to continue their professional development and increase their opportunities for promotion and career development.</p> <p>Assistance is offered with payment of fees and study leave.</p>
<b>Organisational Development – One Culture</b>	
To break down historical divisions within Council's workforce and to draw on the strengths and diversity of the workforce to optimise its potential to enhance service to the wider community.	Continued identification and implementation of improvement projects by Workplace Improvement Group.
	Council wide Social Club (formerly Indoor and Outdoor)
	Continued staff BBQ's and gatherings as an opportunity to break down silos.
	Continued roll out of staff values program.
	<p>Core values</p> <p>These 5 core values have been developed to improve the culture and guide us into making at Griffith City Council an excellent workplace.</p> <p>Passion: Fully giving myself to be the best I can be</p> <p>Honesty: Constructively sharing what I think, feel and do</p> <p>Integrity: I say what I mean, I do what I say, I accomplish what I intend</p>

Objective	Strategy
	<p>Inspiration: I lead by outstanding example</p> <p>Love: I give absolute positive regard to others</p>
<b>Performance Management</b>	
Effective use of inter-related strategies and activities to improve the performance of individuals and teams within Council.	Conduct annual performance reviews where staff have an opportunity to have a dedicated conversation with their Manager.
	Council encourages Team Leaders and Supervisors to undertake the Certificate IV in Frontline Management through Existing Worker Traineeships.
Recognise and reward good performance and to manage underperformance of staff.	Negotiating with Griffith TAFE to develop a core skill set of Leadership Competencies from the Certificate III in Frontline Management to be rolled out to team Leaders and Supervisors.
	Ongoing assistance from HR to help supervisors and team leaders conduct the performance appraisal
<b>Risk management, Work Health and Safety</b>	
Health and wellbeing of employees, enhancing physical, mental and emotional wellbeing through the promotion of work / life balance and healthy lifestyle programs.	Development of WHS Management system to meet requirements of new Work Health and Safety Legislation
	Staff trained on requirements of Work Health and Safety Legislation.
	Development of a Risk Management Program to identify and address shortfalls in public liability risk management e.g. Street trees, Footpaths, Event Management, Signs as Remote Supervision.
	Annual auditing of Council's OHS management system by StateWide.
	Annual auditing of Council's Public Liability Risks by StateCover.
	Implementation of a revised early warning audit program (formerly Safety Meter).
	Completion of Asbestos identification and awareness program.
	Promotion of Council's Employee Assistance Policy.

Issues of importance specific to water and sewerage operations include:

- That water supply and sewerage operators are trained, to NSW Office of Water) or other appropriate Certification;
- The need to ensure operators are familiar with all current practices including WH&S requirements; and
- The need to ensure an up-to-date training program is in place for all staff (in particular relief staff).
- The introduction of a Quality Management system based on ISO 22001.

## 9 Financial Plan

### 9.1 Overview of Financial Planning

Water supply and sewerage businesses are characterised by large variations in annual expenditure as capital assets are progressively purchased, maintained, rehabilitated and replaced. The long life cycle of these assets inevitably means that most water utilities will need to go through cycles of funds accumulation, spending and debt servicing.

The primary objective of financial planning is to model the costs of each of the preferred service options and to determine appropriate funding strategies to ensure that the services remain affordable in the long term.

From the customer's perspective, it is important that the cost of service is kept as low and as stable as possible. If the cost of service is consistent (in real terms) over the life cycle of the asset base, both current and future customers are treated in an equitable manner. Griffith Shire Council regularly updates its financial planning to ensure that the water supply and sewerage businesses are financially sustainable and prices its services in an equitable manner.

This Financial Plan seeks to meet the following objectives to support Council's water supply and sewerage businesses:

- The businesses are capable of funding new and replacement assets needed to provide the current level of service to its customers and the broader community.
- Over the long term, customer charges are kept as low and as stable as possible.

Input data for the model is sourced from the following areas:

- Special schedules 3 to 6, representing a summary of current operating costs and financial performance for the businesses, adjusted as per the notes below.
- Griffith Shire Council's 2017/18 Revenue Policy.
- Council's valuation of water supply and sewerage assets to 30 June 2017.
- Repayment schedules for existing loans.
- Forward Capital Works Plans, updated in October 2017.



All costs are expressed in 2017/18 prices.

## 9.2 Key Assumptions

All models require a number of key assumptions. These assumptions can have a significant impact on the model results. Because of this, the modelling process includes various sensitivity tests to identify which assumptions have a significant impact on the outcomes for the business. Key assumptions and sensitivity tests are provided in Table 40.

**Table 40: Key Modelling Assumptions**

Parameter	Assumed value 2017-2047 (average)	Sensitivity tests
Inflation (general)	2.5%pa	1998-2013 average of 2.85%
Inflation (capital works)	2.5%pa	1998-2013 average of 4.06% <sup>2</sup>
Interest rate for new borrowings	2017-2020: 4%pa 2020+: 6.5%pa <sup>3</sup>	2017-2020: 5%pa 2020+: 7.5%pa
Interest rate for investments	2017-2020: 3%pa 2020+: 5.5%pa	2017-2020: 2%pa 2020+: 4.5%pa
Capital works programme	As per section 7.4	-
Operating cost adjustments	FINMOD defaults	
Mean useful life of assets	Water supply - 90 years	-
Growth	Based on section 2.4	Growth rate $\pm 20\%$
Pensioners	Proportion remains constant	
Developer charges income	Water Supply: \$7369 per ET Sewerage: \$5165 per ET	-
Number of assessments	As per Special Schedules 3,5	-
Vacant assessments	Vacancy rate is constant Water Supply: Tariff 25% of TRB Sewerage: Tariff 80% of TRB	-

## 9.3 Adjustments and constraints

- The loading of new non-residential assessments is assumed to average 2 ET per assessment.
- Developer charges for new residential water assessments are assumed to be levied as 0.6ET of potable water and 0.4ET of raw water per assessment.

<sup>2</sup>Annualised increase in the producer price index for roads and bridges construction for Australia (ABS Catalogue 6427.0)

<sup>3</sup> This value is higher than the recommended interest rate to reflect the higher lending margins required by the financial sector following the global financial crisis. Indications are that this increased margin will be experienced over the medium term.

- The minimum cash and investments balance was set to be approximately 2% of the current replacement cost of the system (i.e. \$3.6m each for water supply and sewerage)
- The Economic Real Rate of Return (ERRR) was to be generally positive during the model period.

## 9.4 Modelling results and Sensitivity Analysis

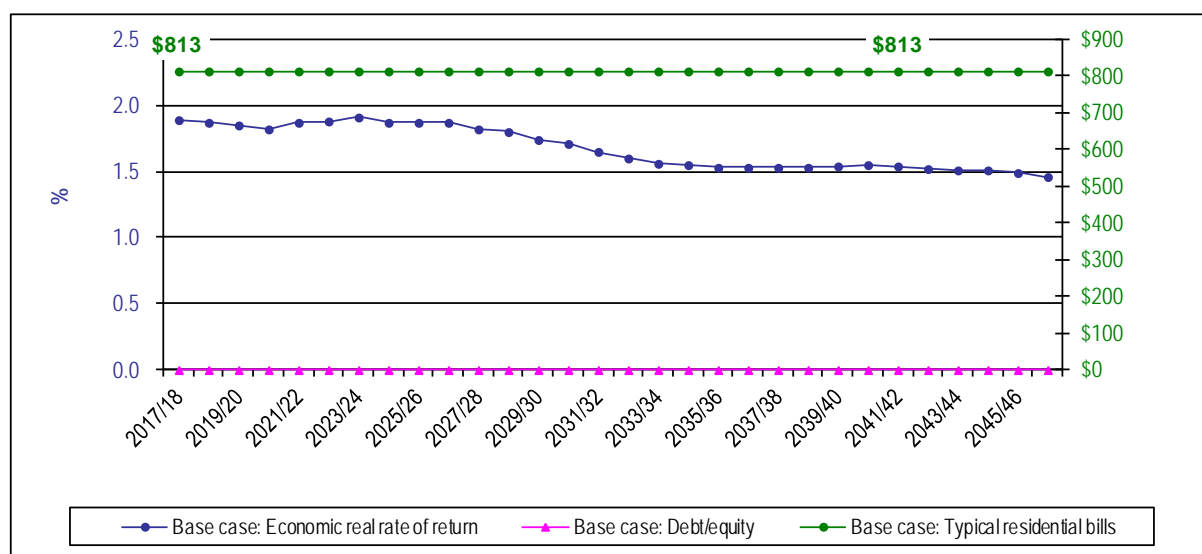
### 9.4.1 Modelling results of Water supply business

The key modelling results are summarised in Table 41. Detailed results are provided as Appendix D.

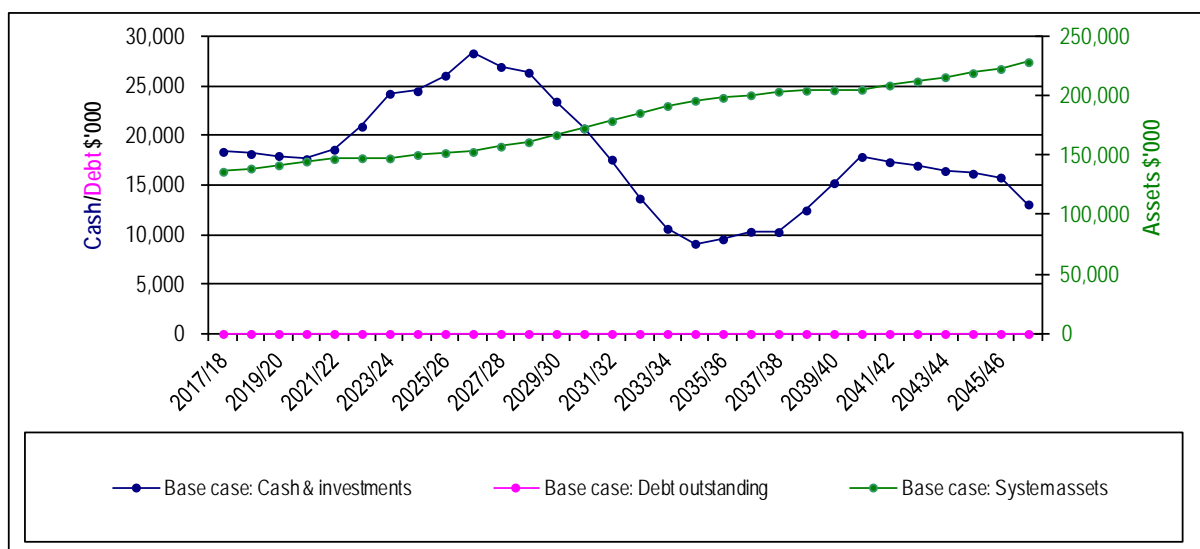
**Table 41: Summary of financial performance of base case, water supply business, 2017-2047**

Scenario	Median Typical Residential Bill (2017/18 \$)	Median ERRR	2046/47 Net Cash (\$'000)	2046/47 Total Equity (\$'000)
Base case	\$813	1.63%	+\$13,054	\$249,418

The financial model indicates that typical residential bills can be maintained at current levels in real terms (see Figure 21). The economic real rate of return progressively reduces during the model period, however remains strongly positive. The business will accumulate and deplete cash throughout the model period and is capable of funding all projected capital works without recourse to borrowings (see Figure 22). The result is that the value of system assets steadily increases consistent with the growth in the number of assessments, suggesting that the plan has an appropriate rate of investment in system assets over the model period.



**Figure 21: Prices and sustainability indicators, water supply business base case, 2017-2047**



**Figure 22: Cash, debt and equity, water supply business base case, 2017-2047**

#### 9.4.2 Sensitivity analysis of Water supply business

A sensitivity analysis was conducted by varying various financial and growth parameters in the model. The purpose of this analysis was to identify how vulnerable the business is to variations to input parameters.

The options tested consisted of:

- Variations to interest rates by 1% per annum
- Varying inflation rates from the recommended values to the 1998-2013 average values of 2.85% pa for CPI (Australia) and 4.06% for capital works inflation (PPI for Roads and Bridges Construction, Australia). Given this period is now regarded as a once-in-a-generation boom it reflects a reasonable stress test.
- Growth at 80% and 120% of the base forecast

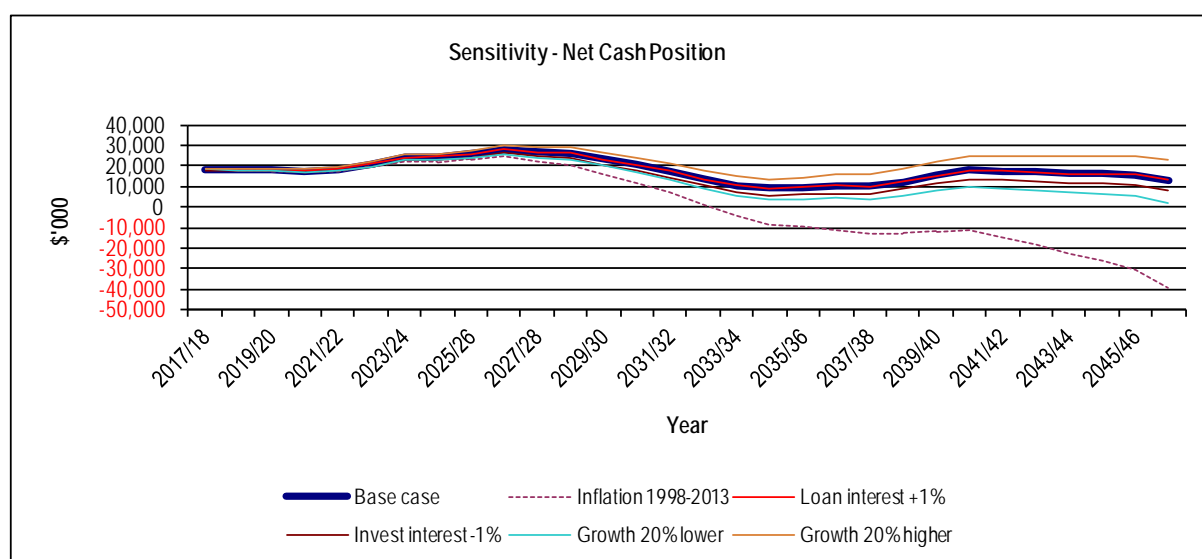
The results of the sensitivity analysis are summarised in Table 42, and are shown in Figure 23 and Figure 24.

**Table 42: Sensitivity analysis results – water supply business**

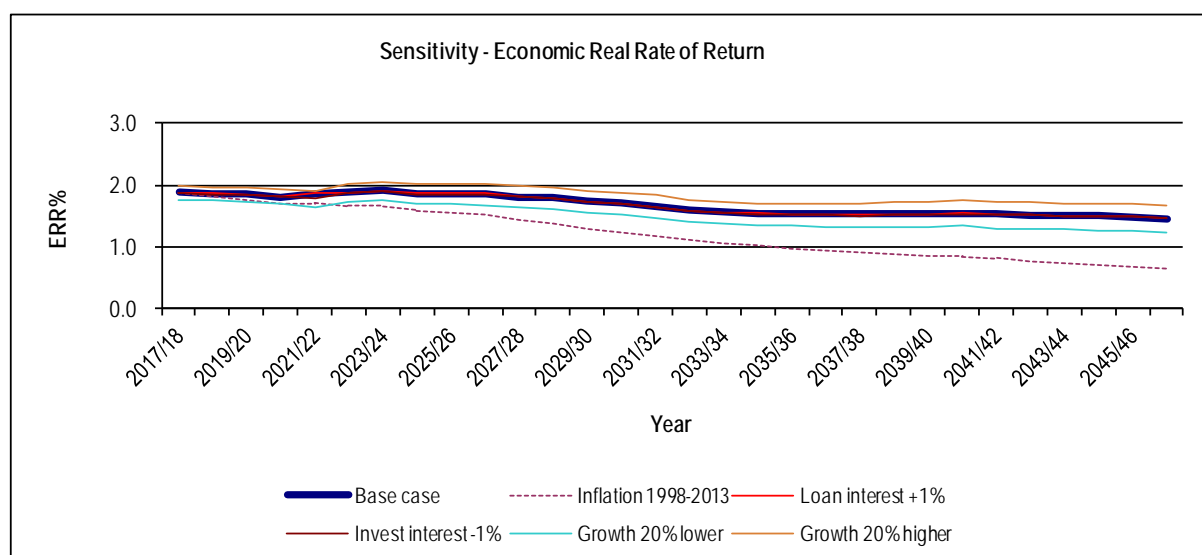
Scenario	Median Typical Residential Bill (2017/18 \$)	Median ERRR	2046/47 Net Cash (\$'000)	2046/47 Total Equity (\$'000)
Growth 20% higher	\$813	1.80%	+\$22,957	\$259,684
<b>Base case</b>	<b>\$813</b>	<b>1.63%</b>	<b>+\$13,054</b>	<b>\$249,418</b>
Sensitivity: Borrowing rates +1% pa	\$813	1.63%	+\$13,054	\$249,418
Sensitivity: Investment rates -1% pa	\$813	1.63%	+\$8,309	\$244,649
Growth 20% lower	\$813	1.45%	+\$1,927	\$237,885
Sensitivity: Inflation rates at 1998-2013 levels	\$813	1.14%	-\$39,157	\$289,424

The sensitivity analysis shows that a lower than forecast growth rate and inflation at recent historical averages have the most significant impact on the business. Under the low growth scenario the cash in the business depletes, however the business still is capable of delivering a positive economic real rate of return. The inflation case severely affects reserves, requiring large borrowings to fund renewals and new works. Given the lack of borrowings in the base case, variations in loan interest rates do not affect the results. None of the cases require a change in typical residential bills.

These results indicate that it will be important for Council to monitor actual rates of growth and regularly review the capital works programme to ensure that the business maintains a pricing path that allows the business to be financially sustainable.



**Figure 23: Sensitivity, cash performance, water supply business**



**Figure 24: Sensitivity, economic real rate of return, water supply business**

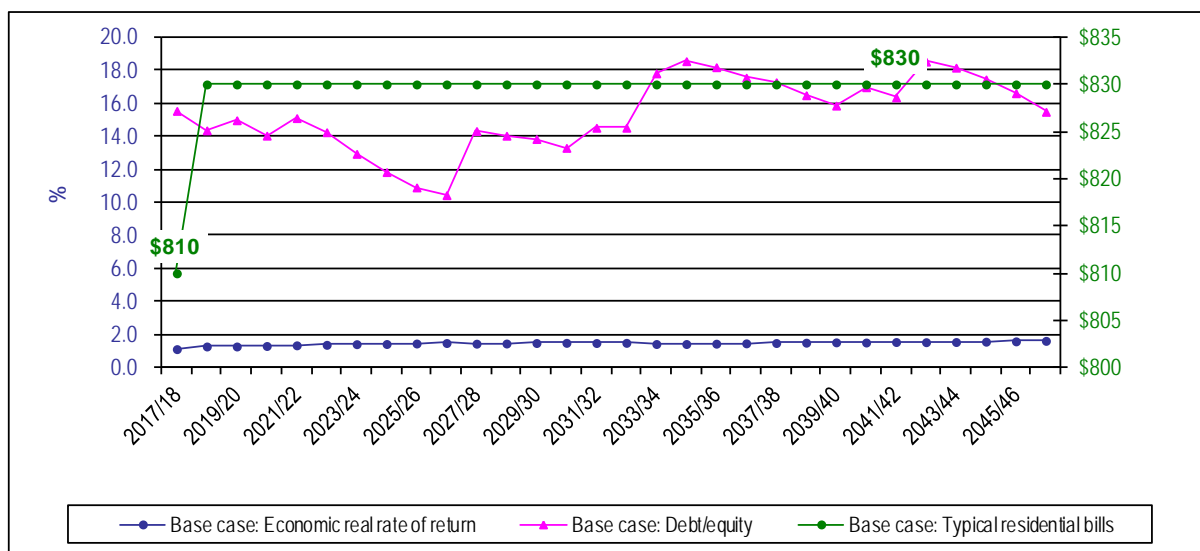
### 9.4.3 Modelling results of Sewerage business

The key modelling results are summarised in Table 43. Detailed results are provided as Appendix D.

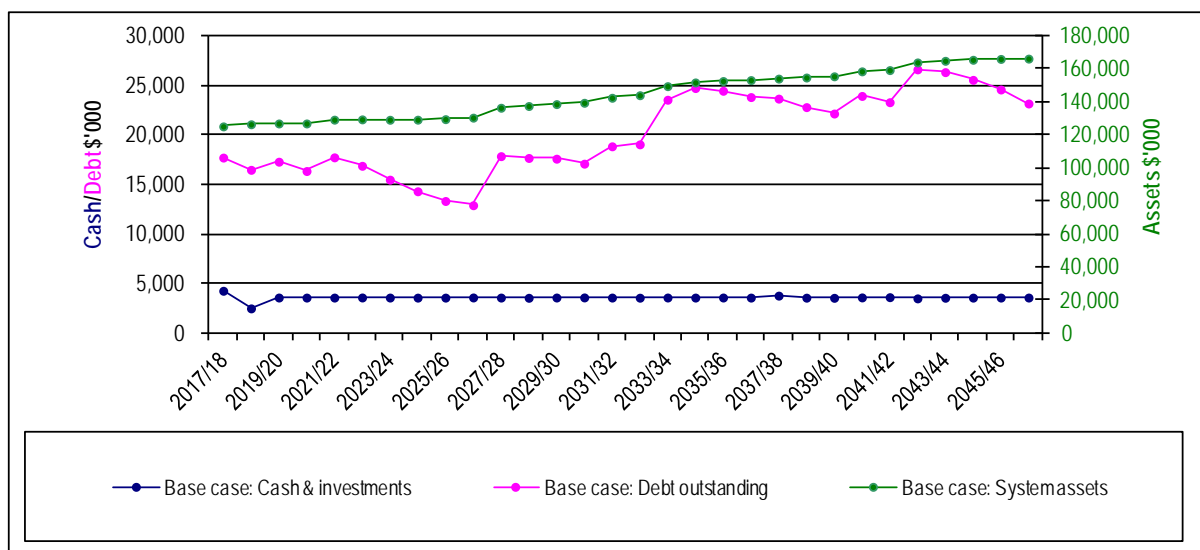
**Table 43: Summary of financial performance of base case, sewerage business, 2017-2047**

Scenario	Median Typical Residential Bill (2017/18 \$)	Median ERRR	2046/47 Net Cash (\$'000)	2046/47 Total Equity (\$'000)
Base case	\$830	1.49%	-\$19,562	\$149,566

The financial model indicates that rates and charges need to increase by 2.5% above inflation to allow future borrowing requirements to be serviced, but the significantly positive economic real rate of return indicates that the business is financially sustainable over the long term (see Figure 25), with the debt to equity ratio varying between 10% and 19%. During the model period the business continues to require loans to fund new assets and renewals, with peak borrowings occurring in 2033 and 2041. The result is that the value of system assets progressively increases consistent with the growth in the number of assessments, suggesting that the plan has an appropriate rate of investment in system assets over the model period (see Figure 26).



**Figure 25: Prices and sustainability indicators, sewerage business, 2015-2045**



**Figure 26: Cash, debt and equity, sewerage business, 2015-2045**

#### 9.4.4 Sensitivity analysis of Sewerage business

A sensitivity analysis was conducted by varying various financial and growth parameters in the model. The purpose of this analysis was to identify how vulnerable the business is to variations to input parameters.

The options tested consisted of:

- Investment interest rate reduced by 1% per annum (no loans are incurred by the sewerage business; hence a change in loan interest rates was not modelled).
- Varying inflation rates from the recommended values to the 1998-2013 average values of 2.85% pa for CPI (Australia) and 4.06% for capital works inflation (PPI for Roads and Bridges Construction, Australia). Given this period is now regarded as a once-in-a-generation boom it reflects a reasonable stress test.
- Growth at 80% and 120% of the base forecast

The results of the sensitivity analysis are summarised in Table 44, and are shown in Figure 27 to Figure 29.

**Table 44: Sensitivity analysis results – sewerage business**

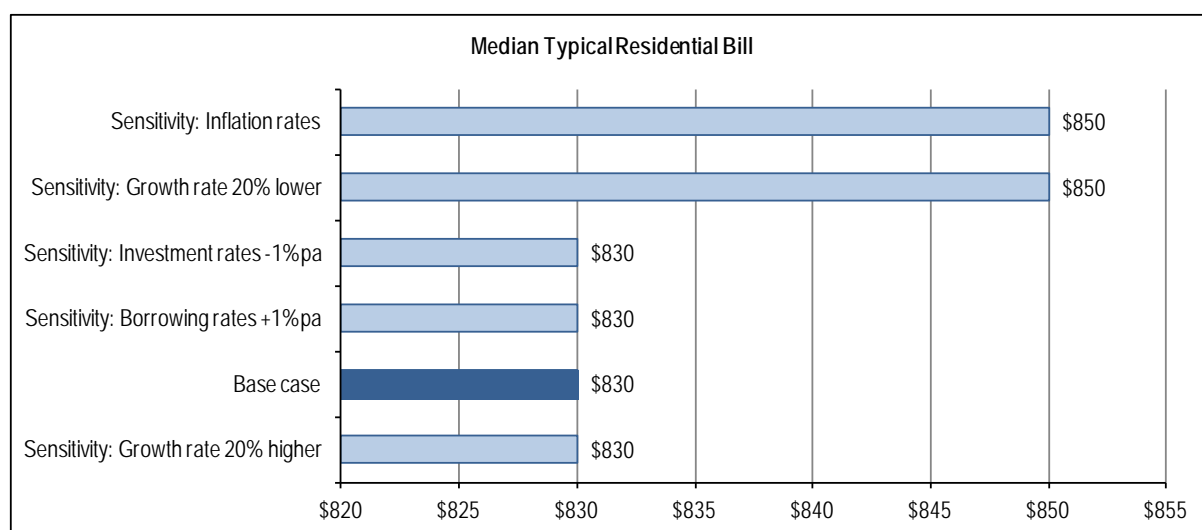
Scenario	Median Typical Residential Bill (2017/18 \$)	Median ERRR	2046/47 Net Cash (\$'000)	2046/47 Total Equity (\$'000)
Sensitivity: Growth rate 20% higher	\$830	1.66%	-\$5,978	\$163,301
<b>Base case</b>	<b>\$830</b>	<b>1.49%</b>	<b>-\$19,562</b>	<b>\$149,566</b>
Sensitivity: Investment rates -1%pa	\$830	1.49%	-\$21,328	\$147,800
Sensitivity: Borrowing rates +1%pa	\$830	1.49%	-\$29,158	\$139,969
Sensitivity: Growth rate 20% lower	<b>\$850</b>	1.41%	-\$21,811	\$147,155

Scenario	Median Typical Residential Bill (2017/18 \$)	Median ERRR	2046/47 Net Cash (\$'000)	2046/47 Total Equity (\$'000)
Sensitivity: Inflation rates	<b>\$850</b>	1.15%	<b>-\$37,863</b>	\$198,338

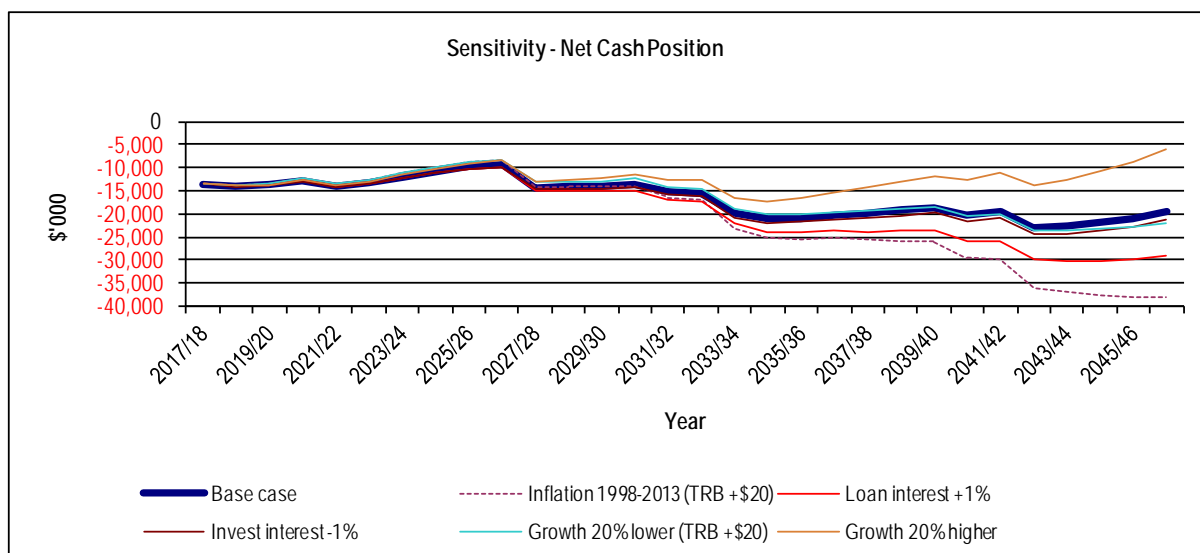
The sensitivity analysis shows that a lower than forecast growth rate and inflation at recent historical averages have the most significant impact on the business. Under these scenarios, typical residential bills need to be higher than for the base case, some 5% higher than the current typical residential bill for the business. Inflation in particular has a negative effect on cash, with a significant increase in debt required.

These results reinforce the need for Council to monitor actual rates of growth and regularly review the capital works programme to ensure that the business maintains a pricing level that allows the business to be financially sustainable.

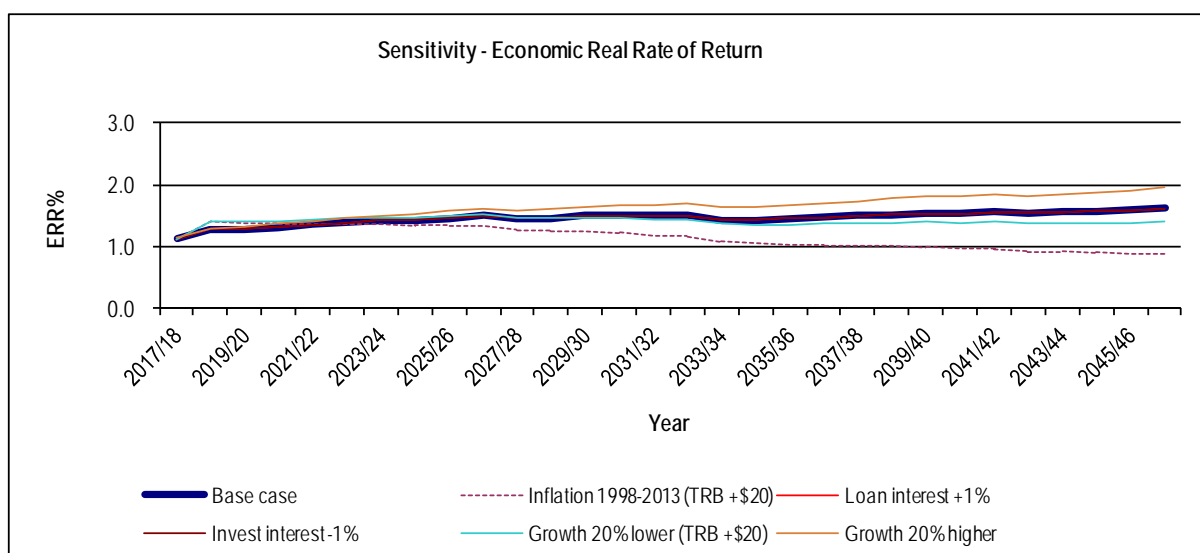
Other sensitivity tests degrade financial results to some extent, but do not require a variation to typical residential bills to meet minimum cash constraints. Given the level of debt in the business, there is a significant sensitivity to loan interest rates, meaning Council will need to monitor the financial markets and adjust its capital works programme accordingly.



**Figure 27: Sensitivity, impact on median typical residential bills, sewerage business**



**Figure 28: Sensitivity, cash performance, sewerage business**



**Figure 29: Sensitivity, economic real rate of return, sewerage business**

## 9.5 Recommended price path

Water supply bills can be maintained at current levels, with adjustments made to keep up with inflation. Sewerage bills need to be increased by 2.5% above inflation to fund capital works requirements and make future borrowings capable of being serviced. The level of debt in the sewerage business, while sustainable, will need to be carefully managed.

For both businesses it is important to regularly review capital works schedules and costings to ensure they are compatible with actual rates of growth.

The financial modelling results were presented to Council at Council Workshop on 19 September 2017.



## 10 Performance Management

Griffith City Council submits to the NSW Office of Water (on an annual basis) performance information about its water supply and sewerage operations; as part of the State-wide Performance Reporting process.

Council uses this information to compare its system performance against equivalent Councils and carries out benchmarking to identify areas for improvement.

Council's Performance Report for 2015/16 is appended as Appendix A.

## 11 Action Plan

The overall objective of this Strategic Business Plan is to provide Council with a clear framework for the ongoing operation and management of its water supply and sewerage services with a 30 year planning horizon.

The key elements of the Plan are the 30 year Forward Capital Works Programs and the associated Financial Management Plan.

The action plan is based on the review of operating environment, asset condition, and level of service, TBL performance review reports and financial modelling results.

Following Action Plan is for the short term operations of the water supply and sewerage systems. This Plan will be reviewed on an annual basis in conjunction with the annual review of Council's overall management plan.

**Table 45: Water Supply & Sewerage Services Action Plan**

Issue	Area for resolution	Timing
<b>Water Supply</b>		
<b>Population growth &amp; provision of services</b>	Planning for infrastructure and inclusion in Capital Works Plans.  <i>Review Griffith Growth Strategy 2030, Guiding Griffith 2040, Griffith Land Use Strategy, <a href="http://Profile.id.com.au/griffith">Profile.id.com.au/griffith</a></i>	<b>Ongoing</b>
Customer Service	Meeting target levels of service  Community Feedback Survey Water Pressure, Monitor mains break including past performance and trends, Odour/Taste issue	Ongoing achievement of 95% Pressure reduction program, Upgrade of filtration and carbon dosing system by 2020/21
Services to Villages	Meeting Community need, population growth demand	Ongoing
Developer Servicing Plans	Review & update	2018/19; thereafter every 4 years
Capital Works	Pressure reduction program, water	Achievement on annual

## Strategic Business Plan for Water Supply and Sewerage Services

Issue	Area for resolution	Timing
Program	loss and leak detection program, Upgrade of filtration unit and carbon dosing system at Griffith Water Treatment Plant,	basis.  By 2020/21
Maintenance	Reporting on breakdowns and costs	Annually
Staff	Staff training program	Annually
Water Security	Sufficient raw water allocation from Murrumbidgee Irrigation to meet the current and future demand, Maintenance of Water Reservoirs and Hayes Lease raw water Reservoir, Lake Wyangan water supply and water quality	Ongoing
Water supply availability and pressures	Design and operations, Water loss/leak detection program, pressure reduction program,  Investigate water pressure at Yenda water supply system Investigate trunk mains capacity	Ongoing – in conjunction with water loss, water demand, community expectations, population growth investigations
Raw Water Storage	Investigate the need for an additional raw water storage facility (similar to Hayes Lease) which has a minimum capacity of 300 ML.	To be included in the next review of the Strategic Business Plan for Water and Sewerage Services.
Water Quality Management Plan	Best practice planning, Adoption of Risk Based Drinking Water Quality Management System	Ongoing review and improvements of RBDWQMS
Water conservation	Water loss/leak detection program, Pressure reduction program, Recycled Water Management Plan for effluent reuse at Sales Yard  Encourage use of non-potable supplies (Institutions & rural residents)	Review Demand Management Plan, residential consumption by 2019/20 as part of IWCM Strategy
Finance & Pricing	Equitable Pricing Policy  Financial management modelling	Best Practice compliance  Review Finmod annually
Integrated water planning	IWCM Evaluation Study completed, Complete IWCM Strategy	By 2019/20
Asset Management	Assetic Asset Management Plan & System developed, Update asset registry and utilise the latest techniques	Ongoing
<b>Sewerage</b>		
Population growth & provision of services	Planning for infrastructure and inclusion in Capital Works Plans Review <i>Griffith Growth Strategy 2030</i> , <i>Guiding Griffith 2040</i> , <i>Griffith Land</i>	Ongoing

## Strategic Business Plan for Water Supply and Sewerage Services

Issue	Area for resolution	Timing
	<i>Use Strategy, <a href="http://Profile.id.com.au/griffith">Profile.id.com.au/griffith</a></i>	
Griffith Water Reclamation Plant	Compliance with requirements of the environmental regulator for effluent discharge Upgrade UV Unit to link into SCADA system for continuous monitoring of recycled water quality to Sales Yard. Commission recycled water reuse to Sales Yard.	Ongoing  By 2017/18
Services to Villages	Meet level of service to all villages Extend sewerage services to Lake Wyangan and Nericon, Tharbogang villages	Ongoing  By 2019/20
Developer Servicing Plans	Review & update	2018/19; thereafter every 4 years
Capital Works Program	Sewer lining and asset renewal, Condition assessment and asset replacement, Installation of low pressure sewerage system at Lake Wyangan, Nericon and Tharbogang Investigate and upgrade critical assets e.g. G3 pump, sewer rising mains	Achievement on annual basis.  2019/20 2018/19
Sewer relining/refurbishment program	Commitment to ongoing program	Annually
Customer Service	Meeting target levels of service  Community awareness	Ongoing achievement of 95%  Annual report to community. Provide Lake Wyangan sewerage scheme
Integrated water cycle management	IWCM Evaluation Study completed. Complete IWCM Strategy	By 2019/20
Asset Management	Assetic Asset Management Plan & System developed, Update asset registry and utilise the latest techniques	Ongoing

In addition, Council has completed Energy Audits of water and sewage treatment plants, and Council will implement the recommendations of the audit in asset replacement or renewal works to reduce the operating cost.

## References

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NSW Office of Water, NSW Water and Sewerage Strategic Business Planning Guidelines, 2011

# Appendices

## **Appendix A: Performance Indicators**

# Strategic Business Plan for Water Supply and Sewerage Services

## Griffith City Council TBL Water Supply Performance 2015-16

**WATER SUPPLY SYSTEM** - Griffith City Council serves a population of 25,700 (8,360 connected properties). Water is drawn from Murrumbidgee Irrigation Area Main Canal to supply Griffith. The water supply network comprises dissolved air flotation and microfiltration treatment works, 4 service reservoirs (55 ML), 4 pumping stations, 62 ML/d delivery capacity into the distribution system, 6 km of transfer and trunk mains and 550 km of reticulation. 90% of water supplied is potable and 10% nonpotable.

**BPM IMPLEMENTATION** - Griffith City Council achieved 100% implementation of the outcomes required by the NSW BPM Framework, however, Council needs to prepare a 30-year IWCW Strategy, Financial Plan and Report in accordance with the July 2014 IWCW Check List ([www.water.nsw.gov.au](http://www.water.nsw.gov.au)) to maintain 100% BPM Implementation.

**PERFORMANCE** - The 2016-17 typical residential bill was \$759 which was above the statewide median of \$625 (Indicator 14). The economic real rate of return was 1.4% which was less than the statewide median (Indicator 43). The operating cost (OMA) per property was \$713 which was well above the statewide median of \$440 (Indicator 49). Water quality complaints were negligible compared to the statewide median of 3 (Indicator 25). Compliance with ADWG was achieved for microbiological water quality (100% of the population, 2 of 2 zones compliant), chemical water quality and physical water quality. There were no failures of the chlorination system or the treatment system. Griffith City Council reported no water supply public health incidents. Council has a risk-based Drinking Water Management System (DWMS) and had 0 days of water restrictions. Current replacement cost of system assets was \$182M (\$18,500 per assessment). Cash and investments were \$13.8M and revenue was \$9.9M (excluding capital works grants).

IMPLEMENTATION OF OUTCOMES REQUIRED BY THE NSW BEST-PRACTICE MANAGEMENT (BPM) FRAMEWORK				
(1) Complete Current Strategic Business Plan & Financial Plan	YES	(3) Sound water conservation implemented	YES	
(2) (2a) Pricing - Full Cost Recovery, without significant cross subsidies	Yes	(4) Sound drought management implemented	YES	
(2b,2c) Pricing - Appropriate Residential Charges	Yes	(5) Complete performance reporting (by 15 September)	YES	
(2d) Pricing - Appropriate Non-residential Charges	Yes	(6) Integrated water cycle management strategy	YES*	
(2e) Pricing - DSP with Commercial Developer Charges	Yes			
IMPLEMENTATION OF ALL OUTCOMES			100%	

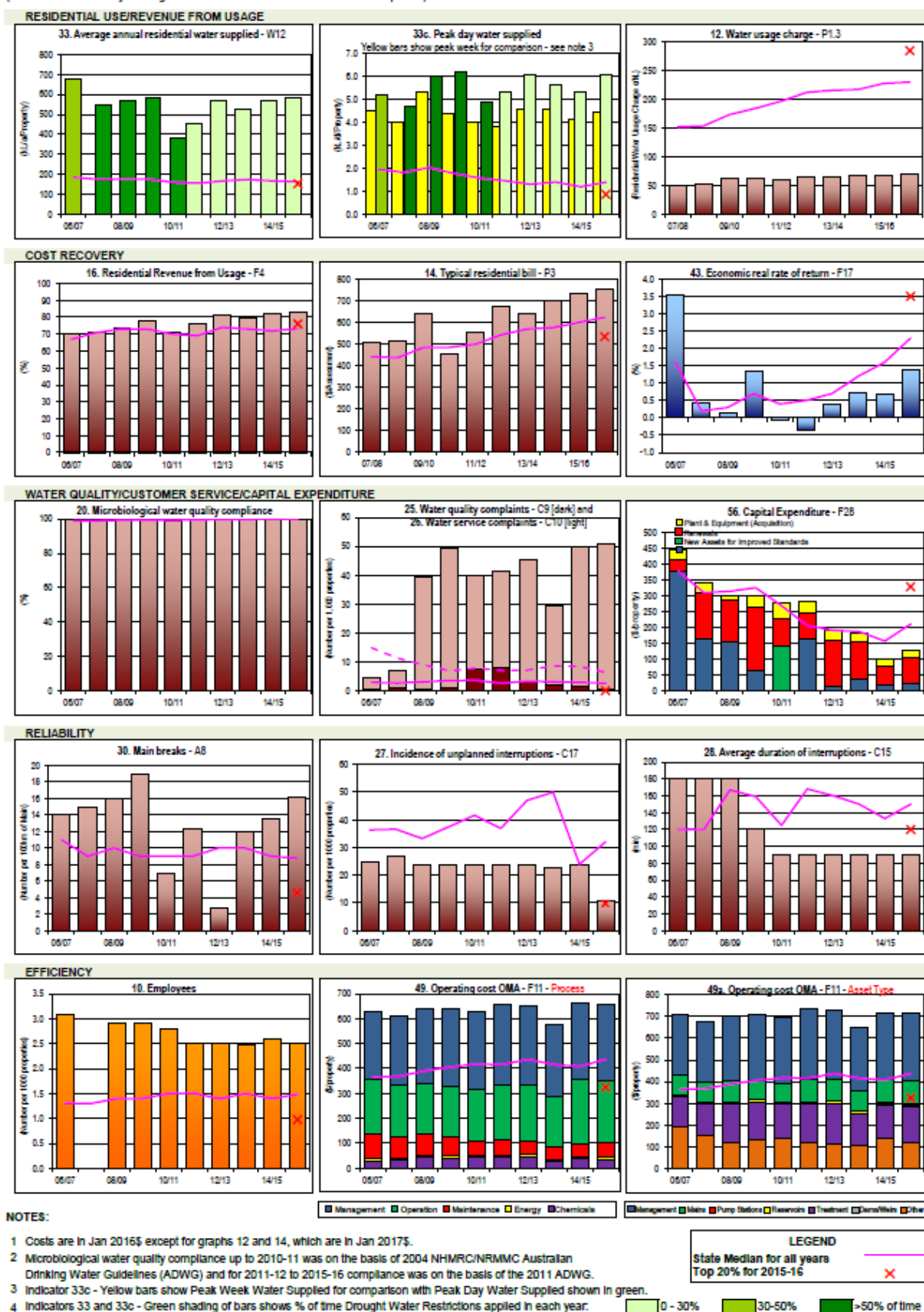
TRIPLE BOTTOM LINE (TBL) PERFORMANCE INDICATORS				RESULT		RANKING		MEDIAN\$	
NWI No.				Col 1	Col 2	Col 3	Col 4	Col 5	
UTILITY	CHARACTERISTICS	C1	1 Population served: 25,700	(Number of assessments: 9,830)					
		C4	2 Number of connected properties:	Council is within Size Group 2: (4,001 to 10,000 properties)	8,360				
		3	Residential connected properties	% of total	84			91	
		4	New residences connected to water supply	%	1.5	1	1	1.0	
		A3	5 Properties served	prop/km	15			33	34
		6	Rainfall	% median annual rainfall	134	1	1	104	
		W11	7 Total urban water supplied at master meters	ML	7,320			6,900	9,770
		8	Peak week to average consumption	%	209	5	5	142	
		9	Renewals expenditure	% CRC	0.4	4	4	0.6	
		10	Employees	per 1,000 prop	2.5	5	4	1.5	
SOCIAL	CHARGES & BILLS	P1	Residential tariff structure for 2016-17: Involving block; Independent of land value; access charge \$132						
		P1.3	12a Residential water usage charge for 2015-16 for usage <200 kL	c/kL (2015-16)	67	5	5	228	190
		12	Residential water usage charge for 2016-17 for usage <200 kL	c/kL (2016-17)	69	5	5	230	
		P3	14a Typical residential bill for 2015-16	\$/assessment (2015-16)	734	5	4	601	623
		14	Typical residential bill for 2016-17	\$/assessment (2016-17)	759	5	4	625	
		15	Typical developer charge for 2016-17	\$/ET (2016-17)	6,630	3	2	5,600	
		F4	16 Residential revenue from usage charges	% residential bills	83	1	1	73	66
		F5	17 Revenue - Water	\$/prop	1,180	2	2	928	921
		18	Water Supply Coverage (% of Urban Population with reticulated WS)	% of population	99.2	1	2	99.2	
		H4	19b % population with chemical compliance	% of population	100	1	1	100	
SOCIAL	HEALTH	H3	20a % population with microbiological compliance	% of population	100	1	1	100	100
		C9	25 Water quality complaints	per 1,000 prop	0.7	1	2	3	2
		C10	26 Water service complaints	per 1,000 prop	50	5	5	4	0.5
		C17	27 Incidence of unplanned interruptions	per 1,000 prop	11	3	3	32	90
		A8	30 Number of water main breaks	per 100km main	16	4	4	9	13
		32	Total days lost	%	0.6	1	2	3.5	
		W12	33 Average annual residential water supplied - STATEWIDE result	KL/prop	585	5	5	162	181
		33a	Average annual residential water supplied - INLAND LWUs	KL/prop	585	5	5	248	
		A10	34 Real losses (leakage)	L/connection/day	110	4	4	70	76
		35	Energy consumption	kWh/ML	366	2	2	660	
ENVIRON- MENTAL	NATURAL RESOURCE MANAGEMENT	E12	36a Net greenhouse gas emissions - WS & Sge	t CO2 eq per 1,000 prop	440	4	4	390	402
		42	Current replacement cost	\$/assessment	18,500	2	2	17,400	
		F17	43 Economic real rate of return - Water	%	1.4	4	3	2.3	2.8
		44	Return on assets - Water	%	1.7	4	3	1.7	
		F22	45 Net Debt to equity - WS & Sge	%	0	2	2	-3	7
		F23	46 Interest cover - WS & Sge		5	1	1	34	2
		47	Loan payment - Water	\$/prop	0	3	3	11	
		F24	47b Net profit after tax - WS & Sge	\$/prop	3,230	1	2	3,800	9300
		48	Operating cost (OMA) per 100km of main	\$/1000	988	2	2	1,120	
		F11	49 Operating cost (OMA) per property - Note 8	\$/prop	713	5	5	440	485
ECONOMIC	FINANCE	50	Operating cost (OMA) per kilolitre	c/kL	75	1	1	120	
		51	Management cost	\$/prop	308	5	5	148	
		52	Treatment cost	\$/prop	162	5	4	59	
		53	Pumping cost	\$/prop	11	1	1	28	
		54	Energy cost	\$/prop	8	1	2	17	
		55	Water main cost	\$/prop	109	4	4	71	
		F28	56 Capital Expenditure	\$/prop	130	4	4	212	193

### NOTES:

- Col 2 rankings are on a % of LWUs basis - best reveals performance compared to LWUs in a similar Size Group (ie. Result in Col 1 is compared with LWUs in Size Group 2).
- Col 3 rankings are on a % of LWUs basis - best reveals performance compared to all NSW LWUs (ie. Result in Col 1 is compared with all NSW LWUs).
- Col 4 (Statewide Median) is on a % of connected properties basis - best reveals statewide performance (gives due weight to larger LWUs & reduces effect of smaller LWUs).
- Col 5 (National Median) is the median value for the 75 utilities reporting water supply performance in the National Performance Report 2015-16 ([www.bom.gov.au](http://www.bom.gov.au)).
- LWUs are required to annually review key projections & actions in the later of their IWCW Strategy and financial plan and their Strategic Business Plan and to annually 'roll forward', review and update their 30-year total asset management plan (TAMP) and 30-year financial plan.
- 2016-17 Non-res tariff: Access Chg based on Meter Size\*(\$528), Inc Block; Usage up to 200 kL: Usage Chg 69 c/kL; Usage >200 kL: 135 c/kL.
- Non-residential water supplied was 34% of potable water supplied (excluding non-revenue water).
- Non-residential revenue was 31% of annual rates and charges. This indicates fair pricing of services between the residential and non-residential sectors.
- Operating cost (OMA/ property) was \$713, components were bulk supply (\$57), management (\$308), operation (\$247), maintenance (\$60), energy (\$8) & chemical (\$34).
- Rehabilitations included 0.9% of water mains, 0.24% of service connections and 13.6% of water meters. Renewals expenditure was \$122,000/100km of main.
- Griffith City Council has 2 fully qualified water treatment operators who meet the requirements of the National Certification Framework.



(Results shown for 10 years together with Statewide Median and 2015-16 Top 20%)





# Strategic Business Plan for Water Supply and Sewerage Services

## Griffith City Council TBL Sewerage Performance 2015-16

**SEWERAGE SYSTEM** - Griffith City Council serves a population of 25,700 (7,070 connected properties) and has 3 sewage treatment works providing primary, secondary and tertiary treatment. The system comprises 71,810 EP treatment capacity (Membrane Biological Reduction, Oxidation Pond and Aerated Lagoon), 30 pumping stations (14 ML/d), 63 km of rising mains and 172 km of gravity trunk mains and reticulation. 9% of effluent was recycled (Indicator 27) and the treated effluent is discharged to land and river. Griffith City Council has 2 Pollution Incident Response Management Plans (PIRMPs) for their sewage treatment works.

**BPM IMPLEMENTATION** - Griffith City Council achieved 100% implementation of the outcomes required by the NSW BPM Framework, however, Council needs to prepare a 30-year IWCW Strategy, Financial Plan and Report in accordance with the July 2014 IWCW Check List ([www.water.nsw.gov.au](http://www.water.nsw.gov.au)) to maintain 100% BPM Implementation.

**PERFORMANCE** - Residential growth for 2015-16 was 1.7% which is higher than the statewide median. The 2016-17 typical residential bill was \$792 which was above the statewide median of \$718 (Indicator 12). The economic real rate of return was 1.7% which was less than the statewide median (Indicator 46). The operating cost per property (OMA) was \$611 which was above the statewide median of \$470 (Indicator 50). Sewage odour complaints were less than the statewide median of 0.9 (Indicator 21). Griffith Council reported no public health incidents. 2 of 3 sewage treatment works were compliant at all times. Council did not comply with the SS & Faecal Coliforms requirements of the environmental regulator for effluent discharge. The current replacement cost of system assets was \$180M (\$21,600 per assessment), cash and investments were \$6M and revenue was \$8.4M (excluding capital works grants).

### IMPLEMENTATION OF OUTCOMES REQUIRED BY THE NSW BEST-PRACTICE MANAGEMENT (BPM) FRAMEWORK

(1) Complete current strategic business plan & financial plan	YES	(2e) Pricing - DSP with commercial developer charges	Yes
(2) (2a) Pricing - Full Cost Recovery without significant cross subsidies	Yes	(2f) Pricing - Liquid trade waste approvals & policy	Yes
(2b) Pricing - Appropriate Residential Charges	Yes	(3) Complete performance reporting (by 15 September)	YES
(2c) Pricing - Appropriate Non-Residential Charges	Yes	(4) Integrated water cycle management strategy	YES*
(2d) Pricing - Appropriate Trade Waste Fees and Charges	Yes	<b>IMPLEMENTATION OF ALL OUTCOMES</b>	<b>100%</b>

### TRIPLE BOTTOM LINE (TBL) PERFORMANCE INDICATORS

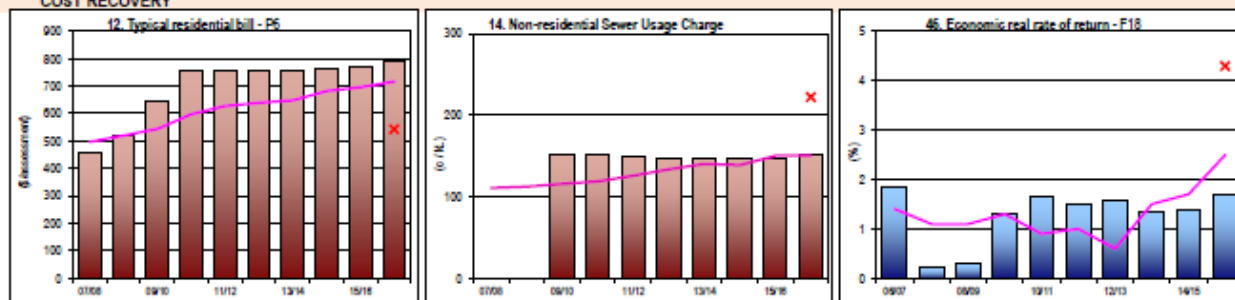
	NWL	No.	RESULT	RANKING			MEDIAN	
				Size Group 2	All LWUs	Statewide	Statewide	National
UTILITY	CHARACTERISTICS	C5 1 Population served: 25,700	(Number of assessments: 8,310)	Col 1	Col 2	Col 3	Col 4	Col 5
		C8 2 Number of connected properties:	Council is within Size Group 2: (4,001 to 10,000 properties)	7,070				
		C6 3 Residential connected properties	No.	6,240				
		4 New residences connected to sewerage	%	1.7	1	2	1.2	
		A6 5 Properties served	prop/km main	30			38	40
		W18 6 Volume of sewage collected	ML	2,415			4,900	6,810
		7 Renewals expenditure	% CRC	0.4	5	4	0.5	
		8 Employees	per 1,000 prop	3.0	5	5	1.7	
SOCIAL	CHARGES & BILLS	P4 Description of residential tariff structure for 2016-17:	access charge/prop; independent of land value					
		P6 12a Typical residential bill for 2015-16	\$/assessment (2015-16)	774	4	4	697	703
		12 Typical residential bill for 2016-17	\$/assessment (2016-17)	792	4	4	718	
		13 Typical developer charge for 2016-17	\$/ET (2016-17)	4,650	3	3	4,700	
		14 Non-residential sewer usage charge for 2016-17	c/kL (2016-17)	151	4	3	159	
		F6 15 Revenue - Sge	\$/prop	1,190	1	1	1,095	1032
	HEALTH	16 Sewerage Coverage (% of Urban Population with Reticulated Sge Service)	% of population	97.5	1	2	97.8	
		E3 17 Percent of sewage treated to a tertiary level	%	96	2	3	95	85
		18 Percent of sewage volume treated that was compliant	%	98	2	3	100	
	SERVICE LEVELS	21 Odour complaints	per 1,000 prop	0.0	1	1	0.9	
		C11 22 Service complaints - Sge	per 1,000 prop	37.3	5	5	5	1
		C16 23a Average sewerage interruption	min	60	1	1	108	101
		25 Total days lost	%	0.2	2	2	3.5	
		W19 26 Volume of sewage collected	kL/prop	342	5	5	234	202
ENVIRONMENTAL	NATURAL RESOURCE MANAGEMENT	W26 26a Total recycled water supplied	ML	250	2	2	740	1,580
		W27 27 Recycled water	% of effluent	9	3	3	11	17
		E8 28 Biosolids reuse	%				100	90
		30 Energy consumption	kWh/ML	693	3	3	810	
		E12 32 Net greenhouse gas emissions - WS & Sge	t CO2 eq per 1,000 prop	440	4	4	390	402
		33 90 <sup>th</sup> Percentile licence limits for effluent discharge: BOD 10 mg/L; SS 15 mg/L						
	ENVIRONMENTAL PERFORMANCE	34 Compliance with BOD in licence	%	100	1	1	100	
		35 Compliance with SS in licence	%	99	3	4	100	
		A14 36 Sewer main breaks and chokes	per 100km main	106	5	5	38	20
		37a Sewer overflows	per 100km main	6	2	3	14	
		E13 37b Sewer overflows reported to environmental regulator	per 100km main	0.0	1	1	0.9	0.8
		39 Non residential & trade waste sewage volume	% of sewage	14	4	3	20	
		43 Revenue from non-residential & trade waste charges	% of revenue	22	3	2	19	
ECONOMIC	FINANCE	44 Revenue from trade waste charges	% of revenue	2.5	1	2	1.0	
		F18 46 Economic real rate of return - Sge	%	1.7	3	2	2.5	2.9
		46a Return on assets - Sge	%	0.7	4	4	1.8	
		48a Loan payment - Sge	\$/prop	203	1	1	83	
		49 Operating cost (OMA) per 100 km of main	\$/100	1,840	4	5	1,700	
	EFFICIENCY	F12 50 Operating cost (OMA) per property - Note 9	\$/prop	611	5	5	470	429
		51 Operating cost (OMA) per kL	c/kL	179	2	2	208	
		52 Management cost	\$/prop	204	4	4	164	
		53 Treatment cost	\$/prop	179	5	4	159	
		54 Pumping cost	\$/prop	124	5	5	59	
		55 Energy cost	\$/prop	51	5	5	34	
		56 Sewer main cost	\$/prop	84	5	5	51	
		F29 57 Capital Expenditure	\$/prop	130	4	3	186	212

#### NOTES :

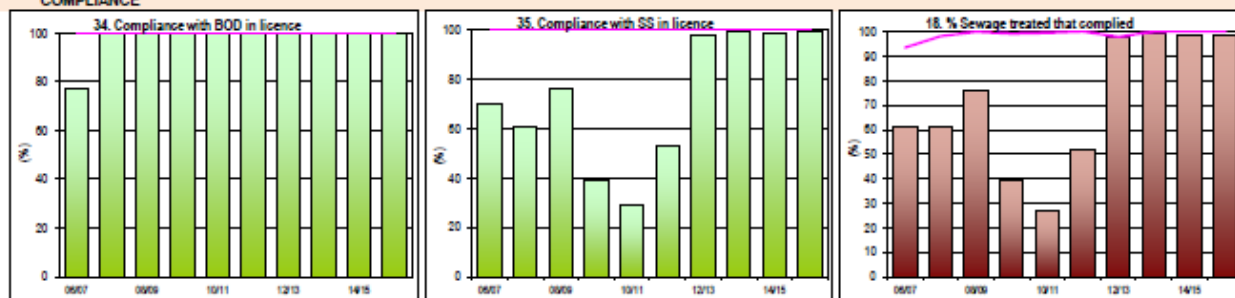
- Col 2 rankings are on a % of LWUs basis - best reveals performance compared to similar sized LWUs (ie. Result in Col 1 is compared with LWUs in Size Group 2).
- Col 3 rankings are on a % of LWUs basis - best reveals performance compared to all NSW LWUs (ie. Result in Col 1 is compared with all NSW LWUs).
- Col 4 (Statewide Median) is on a % of connected properties basis - best reveals statewide performance (gives due weight to larger LWUs & reduces effect of smaller LWUs).
- Col 5 (National Median) is the median value for the 74 utilities reporting sewerage performance in the National Performance Report 2015-16 ([www.bom.gov.au](http://www.bom.gov.au)).
- LWUs are required to annually review key projections and actions in the later of their IWCW Strategy and financial plan and their Strategic Business Plan and to annually 'roll forward', review and update their 30-year total asset management plan (TAMP) and 30-year financial plan.
- Non-residential access charge - \$453, proportional to square of size of service connection. Sewer usage charge - 151 c/kL.
- Non-residential and trade waste volume was 14% of total sewage collected.
- Non-residential revenue was 22% of revenue from access, usage & trade waste charges.
- Compliance with Total N in Licence was 100%. Compliance with Total P in Licence was 100%.
- Operating cost (OMA)/property was \$611. Components were: management (\$204), operation (\$268), maintenance (\$47), energy (\$51), chemical (\$38) & effluent/biosolids (\$3).
- Griffith City Council rehabilitations included 0.9% of its sewerage mains and 0.8% of its service connections. Renewals expenditure was \$270,000/100km of main.
- Council has 3 fully qualified wastewater treatment operators who meet the NSW Certification requirements.

(Results shown for 10 years together with Statewide Median and 2015-16 Top 20%)

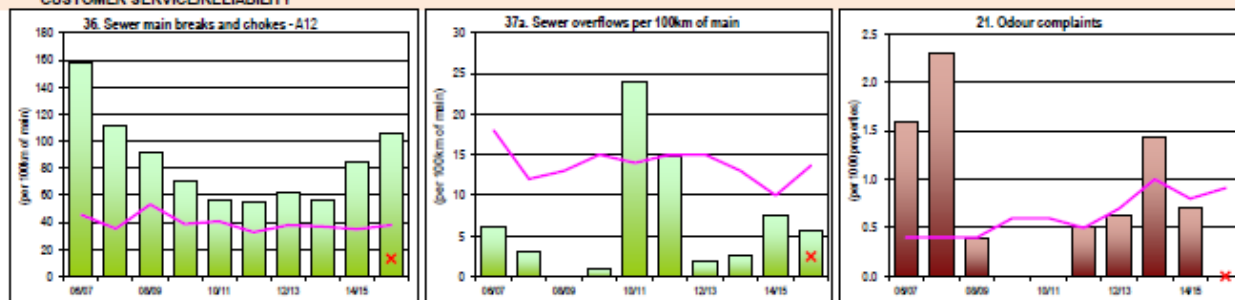
### COST RECOVERY



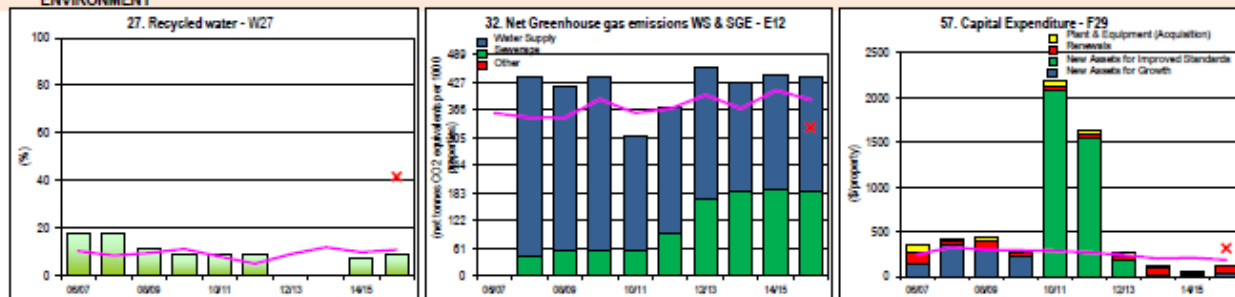
### COMPLIANCE



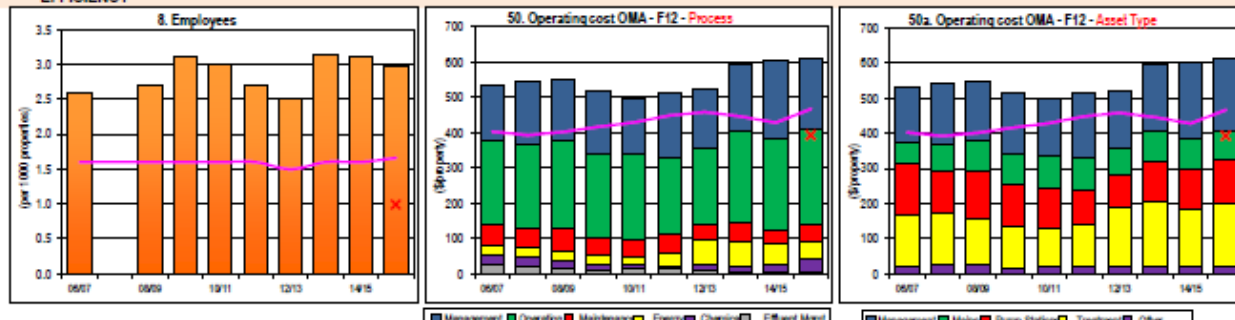
### CUSTOMER SERVICE/RELIABILITY



### ENVIRONMENT



### EFFICIENCY



#### NOTES:

1 Costs are in Jan 2016\$ except for graphs 12 and 14, which are in Jan 2017\$.

LEGEND  
State Median for all years  
Top 20% for 2015-16

EXPLANATORY NOTES<sup>1</sup>

## TBL Performance Reports and Action Plans – Understanding and Using Your Report

### 1. Introduction

This appendix has been prepared to assist Councillors with their Council's 2015-16 *Triple Bottom Line (TBL) Performance Reports* for water supply and sewerage. It will also help the Water and Sewerage Manager prepare a sound Action Plan to Council. Action plans should include a strategy for addressing any areas of under-performance. A sample Action Plan is shown on page 78 of the 2014-15 *NSW Water Supply and Sewerage Performance Monitoring Report*<sup>2</sup>. DPI Water prepares the annual TBL report for each Local Water Utility's water supply business and for its sewerage business together with an Action Plan template for completion by the Water and Sewerage Manager. A copy of the TBL report is also provided to IPART, NSW Health and Office of Local Government.

The TBL reports show your LWU's key performance indicators (column 1), your ranking compared to other LWUs in your size range (column 2) and your ranking relative to all NSW LWUs (column 3). Column 4 shows the **Statewide medians** which are calculated from the 50 percentile result for all connected properties (statewide). This best reveals Statewide performance by giving due weight to larger LWUs and reducing the effect of smaller LWUs.

There are four size ranges: > 10,000, 4,000 to 10,000, 1,500 to 4,000 and 200 to 1,500 connected properties. Rankings shown in Columns 2 and 3 of the TBL Report are based on the top 20% of LWUs for each indicator being ranked 1 and the bottom 20% being ranked 5 (LWUs in the range 40% to 60% are ranked 3).

### 2. Factors Impacting on Performance

When comparing reported performance with other utilities, LWUs should take account of the wide range of factors which can impact on effectiveness and efficiency of a business. An indicator with a low ranking may not necessarily imply poor performance, for example, business efficiencies and effectiveness are functions of:

- **Number of connected properties** - there are significant economies of scale for large LWUs,
- **Type of services provided** - eg. whether the LWU provides a full water supply system or whether is a reticulator or bulk supplier,
- **Provision of bulk storage and/or long transfer systems** - these costs are not incurred by LWUs relying on groundwater or those receiving a regulated supply from a Water NSW dam.
- **Regional topography and soil types** affects pumping costs, frequency of main breaks and useful life,
- **Regional rainfall and evaporation,**
- **Water quality at the source** – for example, a good quality groundwater will require minimal water treatment,
- **Standard of nutrient removal facilities** at the sewage treatment works,

<sup>1</sup> This attachment is an update of Appendix G of the *NSW Water and Sewerage Strategic Business Planning Guidelines*, July 2011 (available at [http://www.water.nsw.gov.au/ArticleDocuments/36/utilities\\_nsw\\_water\\_sewerage\\_strategic\\_planning\\_guidelines.pdf.aspx](http://www.water.nsw.gov.au/ArticleDocuments/36/utilities_nsw_water_sewerage_strategic_planning_guidelines.pdf.aspx)).

<sup>2</sup> The 2014-15 *NSW Water Supply and Sewerage Performance Monitoring Report* is available at <http://www.water.nsw.gov.au/urban-water/country-town-water/best-practice-management/performance-monitoring>.



An understanding of such factors is essential for valid interpretation of performance data. Utilities are encouraged to compare and contrast their performance with other LWUs having similar characteristics. Further factors to assist your LWU in its assessment of performance are listed below.

### 2.1 UTILITY CHARACTERISTICS

- **Properties served per km** – lower density of urban development significantly increases the infrastructure cost, particularly for those LWUs with very low densities (ie. < 20 properties per km).
- **Renewals** – each LWU should ensure that its Typical Residential Bill (see below) is adequate and consistent with the projection in its 30 year strategic business plan to ensure it is raising sufficient revenue for developing, maintaining and renewing the required infrastructure. It should also examine its total asset management policy and ensure that the necessary funds are directed to maintenance and renewals.
- **Employees per 1000 properties** – this is a good indicator of operating and management costs. As noted on page 23 of the *2014-15 NSW Water Supply and Sewerage Benchmarking Report* ([www.water.nsw.gov.au](http://www.water.nsw.gov.au)), the number of employees per 1,000 properties is a good indicator of operating and management costs. However, it is important to note that a higher number of employees per 1,000 properties is needed for small non-contiguous water supply systems and for small water or sewage treatment works.

### 2.2 SOCIAL FACTORS – Bills and Charges

- **Typical Residential Bill (TRB)** – is the principal indicator of the overall cost of a water supply or sewerage system (it is the annual bill paid by a residential customer using the utility's average annual residential water supplied). The main element of the TRB is the operating cost (OMA – operation, maintenance and administration). The TRB should be consistent with the projection in your LWU's 30 year strategic business plan.

Review and comparison of the 2016-17 Typical Residential Bill (Indicator 14) with the projection in your Strategic Business Plan is mandatory. In addition, if both the economic real rate of return and the return on assets (indicators 43 and 44 for water supply and indicators 46 and 46a for sewerage) are negative, you must report your proposed 2017-18 typical residential bill to achieve full cost recovery.

- **Residential Water Usage Charge (c/kL)** – Highest charges are automatically ranked "1" and lowest charges as "5". These rankings however, should be compared with your TRB and whether your LWU is achieving full cost recovery, and the required residential revenue from water usage charges, in which case a low water usage charge may be a good result.

Please note that Circular LWU 11 of March 2011 has removed the need for LWUs to use inclining block tariffs. In addition, the NSW Government encourages LWUs to use a two-part tariff with a uniform water usage charge per kL for all water use (see page 6 of the *2014-15 NSW Performance Monitoring Report*).

- **Residential revenue from usage charges (%)** – The *Best Practice Management Guidelines 2007* require LWUs with 4,000 or more properties to raise at least 75% of residential revenue from water usage charges, while LWUs with under 4,000 properties, including LWUs with a dual supply must raise at least 50% of residential revenue from usage charges. The strategic benefits of providing such strong pricing signals are highlighted on page 5 of the *2014-15 NSW Performance Monitoring Report*.

## 2.3 SOCIAL FACTORS - Health

- **Risk based drinking water management system** – each LWU should review the effectiveness of the management system and its implementation, at least annually, to ensure that it maintains currency with the drinking water supply. A record of this review should be kept. A complete review of all management systems should occur every four years in line with the review of the IWC Strategy or Strategic Business Plan. Tools and assistance are available from DPI Water - see pages 7 and 8 of the *2014-15 NSW Performance Monitoring Report*.
- **Microbiological water quality compliance** is a high priority for each NSW LWU – This is the most important water supply health indicator and all LWUs should aim for a value of 100%. LWUs with less than 98% do not comply with the *Australian Drinking Water Guidelines, 2011* and must develop and implement a corrective strategy (see page 7 of the *2014-15 NSW Performance Monitoring Report*). If your LWU failed to achieve microbiological compliance in either of the last 2 financial years, the corrective action implemented and whether it was successful must be reported in your LWU's annual Action Plan to Council.
- **'Boil water alerts'** – if your LWU has issued any 'boil water alerts' in the last 18 months, the corrective action implemented and whether it was successful must be reported in your LWU's annual Action Plan to Council.

Assistance is available to your LWU from your DPI Water Regional Water and Sewerage Treatment Officer (page 36 of the *2014-15 NSW Benchmarking Report*).

## 2.4 SOCIAL FACTORS - Customer Service

- **Water quality complaints** – water quality may depend for example, on whether the supply is unfiltered, good quality groundwater or whether a fully treated supply is provided.
- **Odour complaints** – This is an important indicator of the effectiveness of sewage treatment and transfer. LWUs with a high number of complaints (ranking of 5) should investigate the reasons for the complaints, including past performance, as indicated in page two of their TBL Report.
- **Number of water main breaks** – water mains with a high incidence of breaks (say over 30 per 100km of main) may indicate that renewals are warranted. Assistance is available for such utilities from DPI Water (Dilip Dutta 02 9842 8499).

## 2.5 ENVIRONMENTAL FACTORS

- **Average annual residential water supplied** – is influenced by the number of connected properties, geographic location, climate, strength of the utility's pricing signals (NWI Indicator F4 – percent of residential revenue from usage charges – see 2.6 below) and the presence of drought water restrictions. Inland LWUs have significantly higher residential water supplied due to their hotter and drier climate and the use of evaporative air coolers. The weighted median value for inland LWUs was 225 kL/connected property (percentage of connected properties basis). The weighted median for coastal LWUs was 150 kL/property.
- **Sewer main chokes and collapses** – sections of sewer main with a high incidence of chokes and collapses (say treble the statewide median) require close attention.
- **Sewer overflows to the environment** – are untreated sewage spills and may increase during wet weather due to infiltration of sewage mains and flooding. They do not include discharges or overflows contained within emergency storages.

## 2.6 ECONOMIC FACTORS - Financial

- **Economic real rate of return (ERRR)** – reflects the rate of return from operating activities (ie. excluding interest income, grants for acquisition of assets and gain/loss on disposal of assets). Water and sewerage charges should be sufficiently high to achieve full cost recovery. All LWUs should aim to achieve a positive ERRR. LWUs which have met all the Best-Practice Management required outcomes are strongly encouraged to pay an 'efficiency dividend' from the surplus of their water and sewerage businesses to the Council's general revenue (see page 13 of the *2014-15 NSW Performance Monitoring Report*). Refer also to Circular LWU 11 of March 2011 (available by logging in to the NSW Performance Monitoring System).
- **Net Debt to equity** – LWUs facing significant capital investment are encouraged to make greater use of borrowings to reduce their TRB. This avoids unfairly burdening existing customers and facilitates inter-generational equity (see page 13 of the *2014-15 NSW Performance Monitoring Report*).
- **Loan payment (\$/property)** – A high loan payment per property indicates a relatively high capital cost per property, recent construction of significant capital works or use of short-term loans. 20-year loans are generally optimal (see page 14 of the *2014-15 NSW Performance Monitoring Report*).
- **Interest cover** – this ratio provides an indicator of the LWU's ability to meet interest commitments. The interest cover is nil for a business incurring a loss. As a general guide, an interest cover >2 is a good interest cover position. This should be considered in conjunction with the comment on making greater use of borrowings for capital investment.
- **Net profit after tax (NPAT) ratio** – this is NPAT divided by the revenue. LWUs should have a positive NPAT ratio. LWUs facing major capital expenditure for expanding system capacity may need a relatively high value for this indicator in order to help fund this investment.

## 2.7 ECONOMIC FACTORS - Efficiency

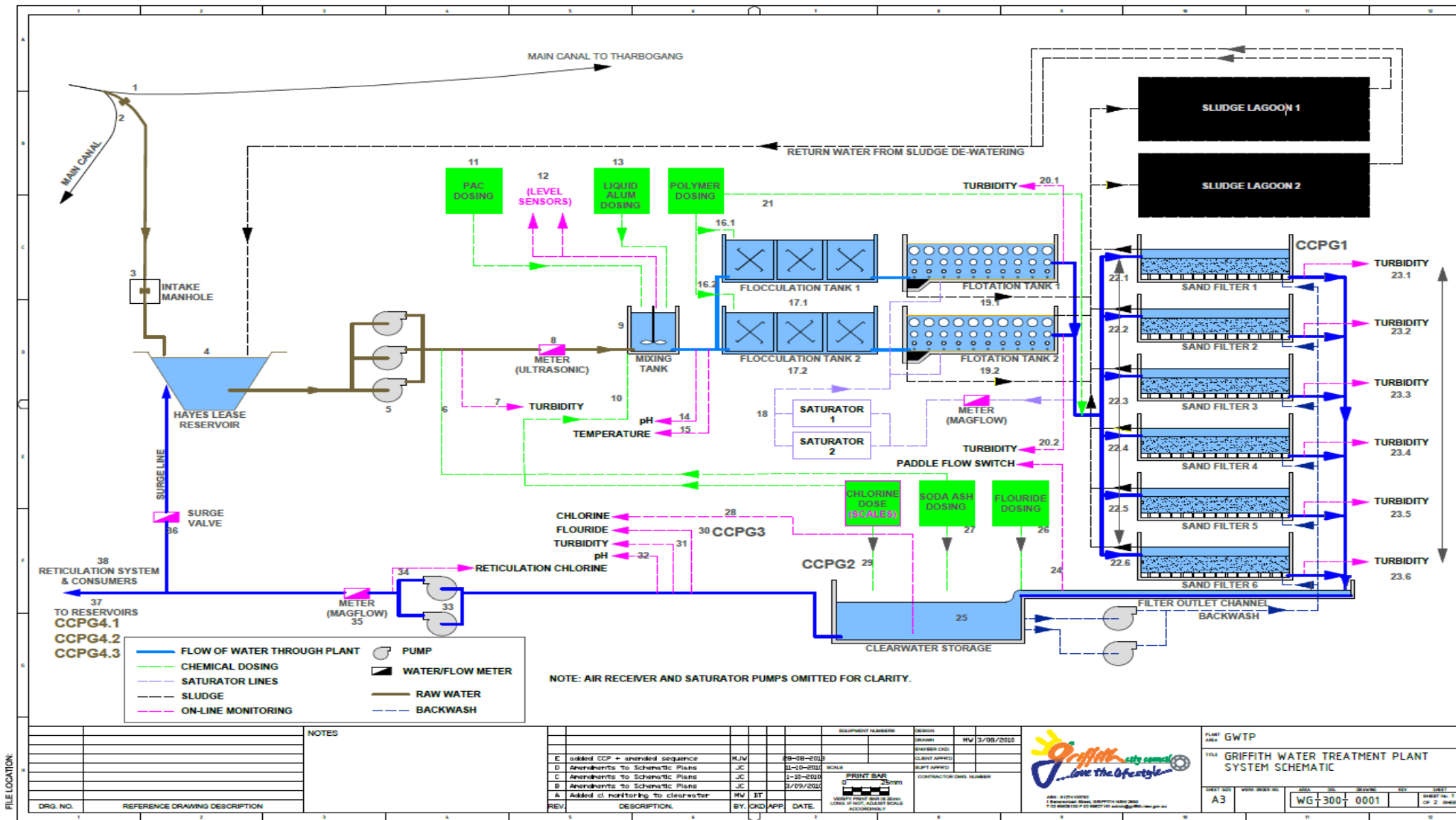
Operating cost (OMA – operation, maintenance and administration) per property is a prime indicator of the performance of an LWU. The components of operating cost are:

- **Management cost** – includes administration, engineering and supervision and is typically almost 40% of the total operating cost. The number of employees per 1,000 properties can be a useful indicator of the operating and management costs and hence the efficiency of an LWU. LWUs with a number of separate water supply schemes and those with smaller water or sewage treatment works will need a higher level of employees per 1000 properties in order to effectively manage their systems.
- **Treatment cost (water)** – is dependent on the type and quality of the water source and the types of treatment used. In addition, there are great economies of scale for the operation of larger water treatment works (ie. facilities involving at least filtration and disinfection).
- **Treatment cost (sewage)** – is dependent on type of treatment and discharge requirements. Where the discharge licence conditions are stringent involving for example, a low level of phosphorus, treatment costs will be high. There are significant economies of scale for operation of larger treatment works.
- **Pumping cost (water)** – is influenced by topography and distance to the water source. For example, Essential Energy and Goldenfields Water have a high pumping cost due to the distance required to pump from the water source, while Fish River Water Supply is almost a fully gravitational supply, with negligible pumping costs. For water supply, there are significant economies of scale in pumping cost per connected property.

## **Appendix B: Water Supply and Sewerage System Schematic Diagrams**

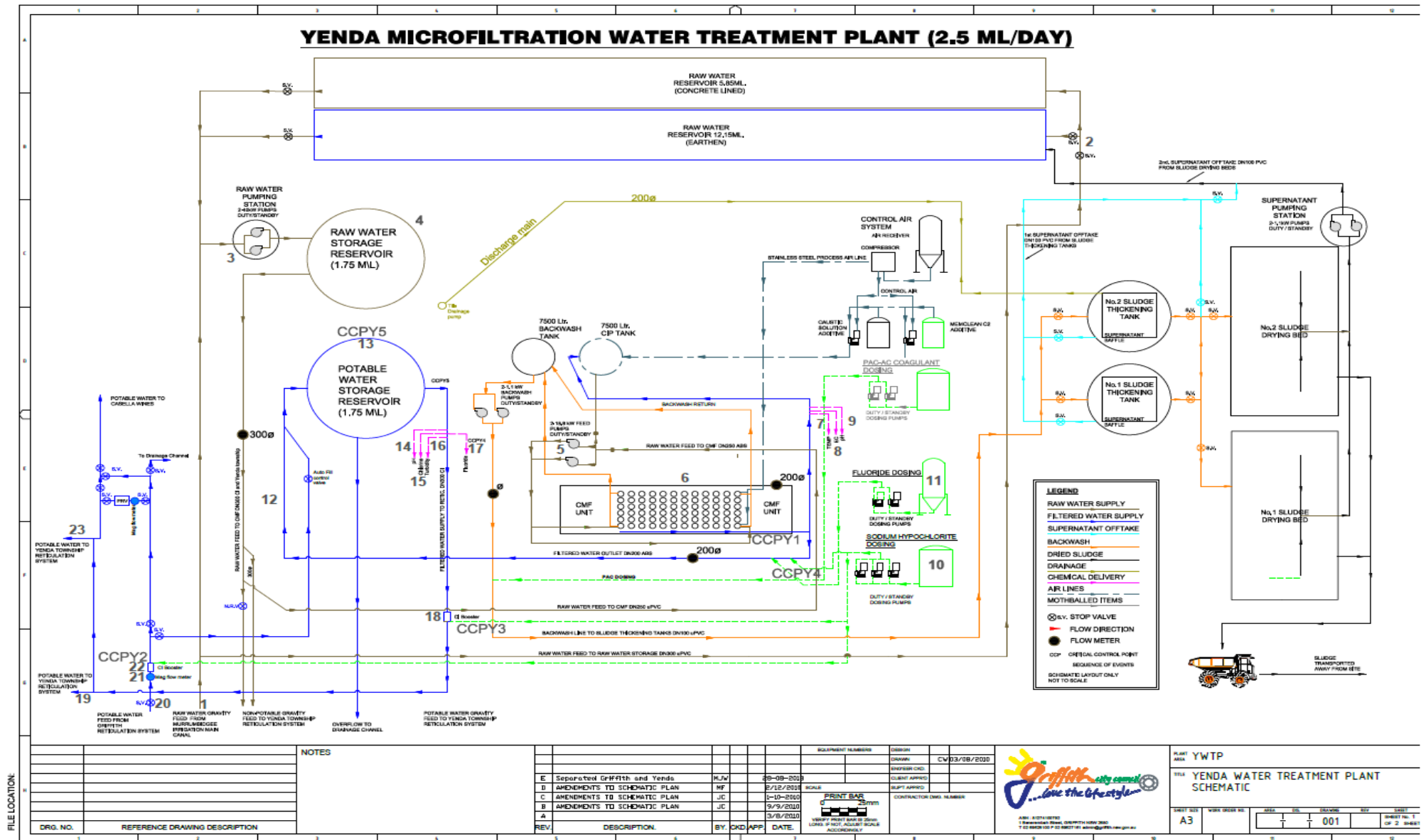


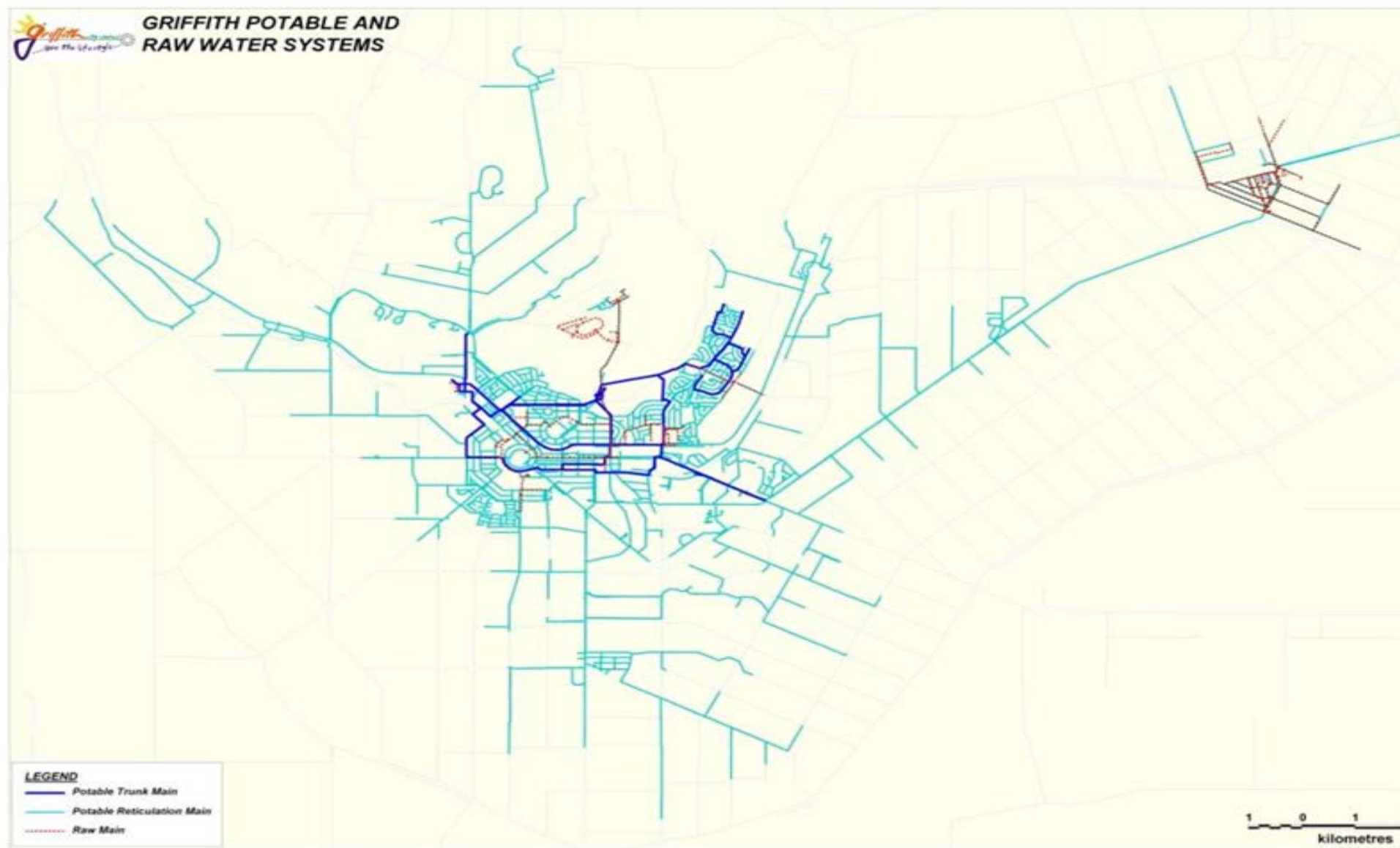
# Strategic Business Plan for Water Supply and Sewerage Services



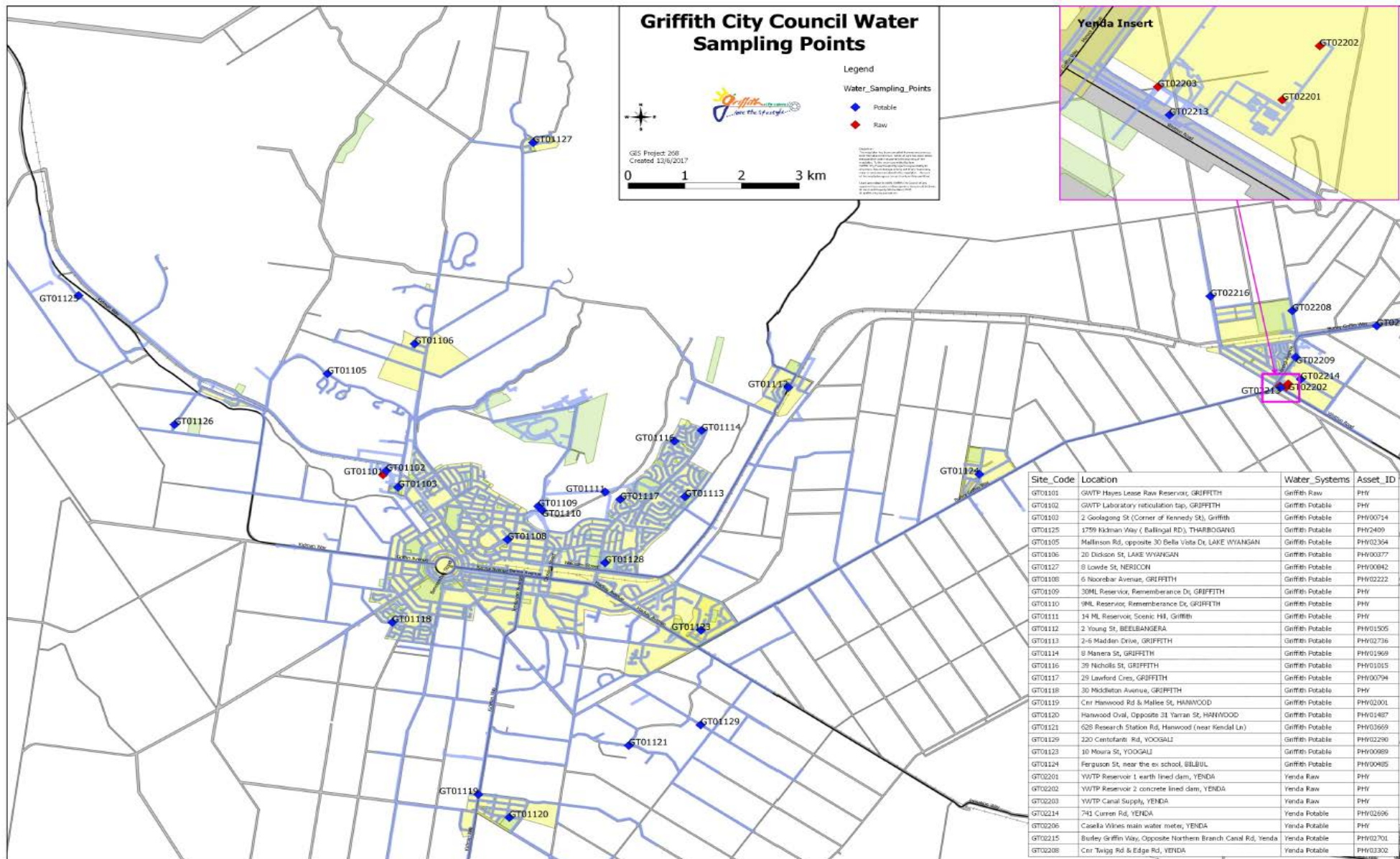


# Strategic Business Plan for Water Supply and Sewerage Services



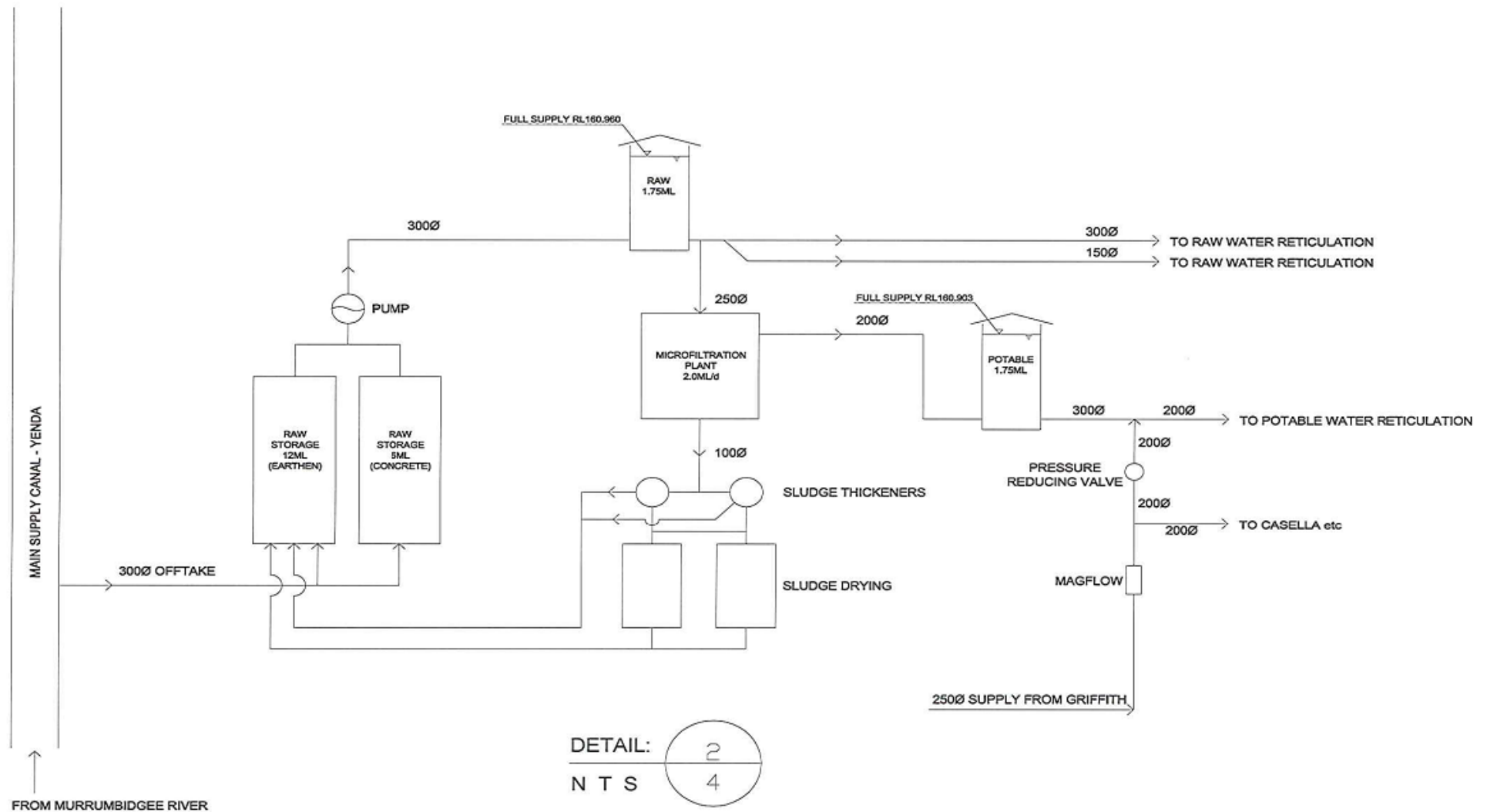


# Strategic Business Plan for Water Supply and Sewerage Services





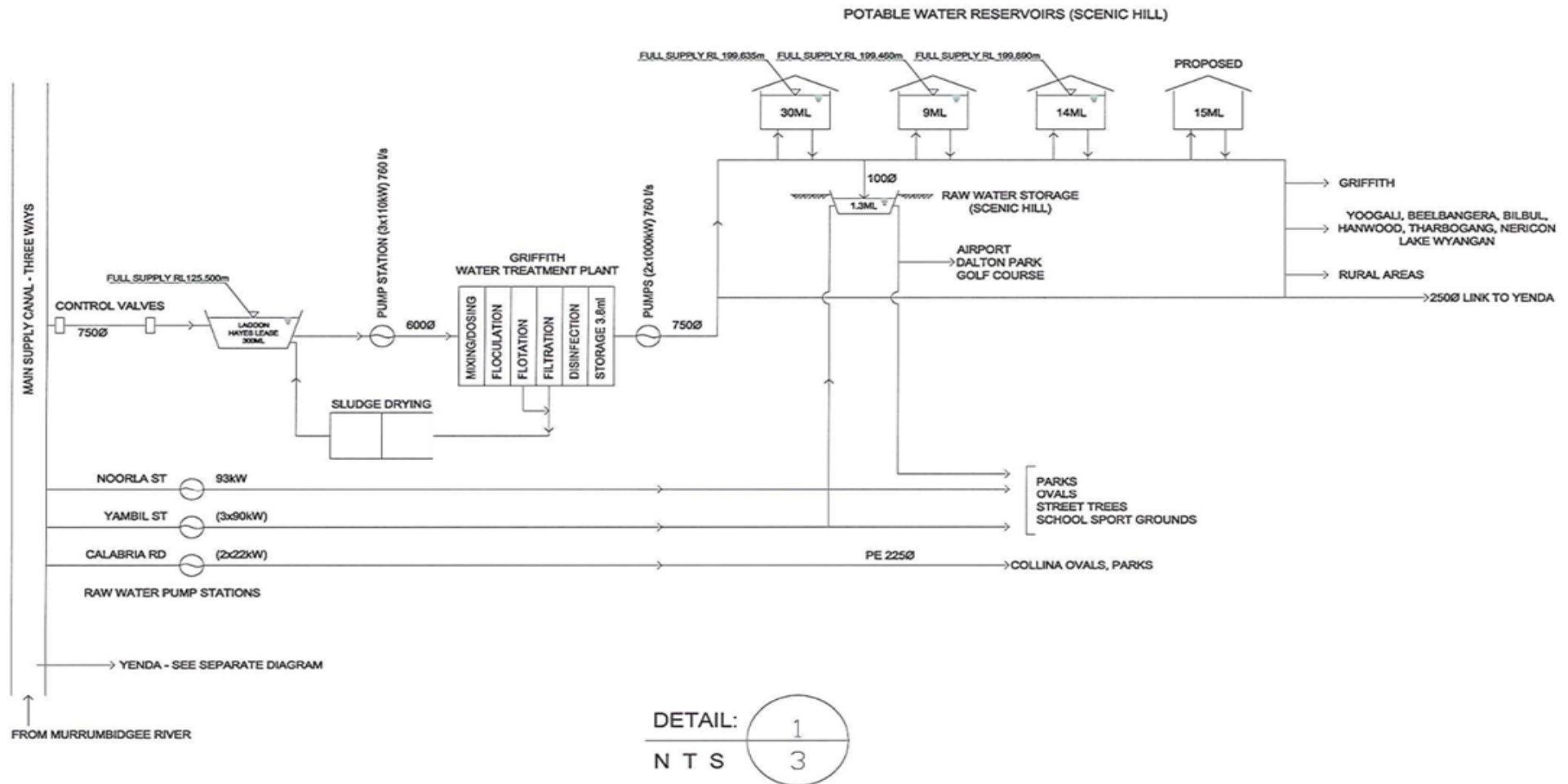
## SCHEMATIC LAYOUT OF YENDA WATER SUPPLY





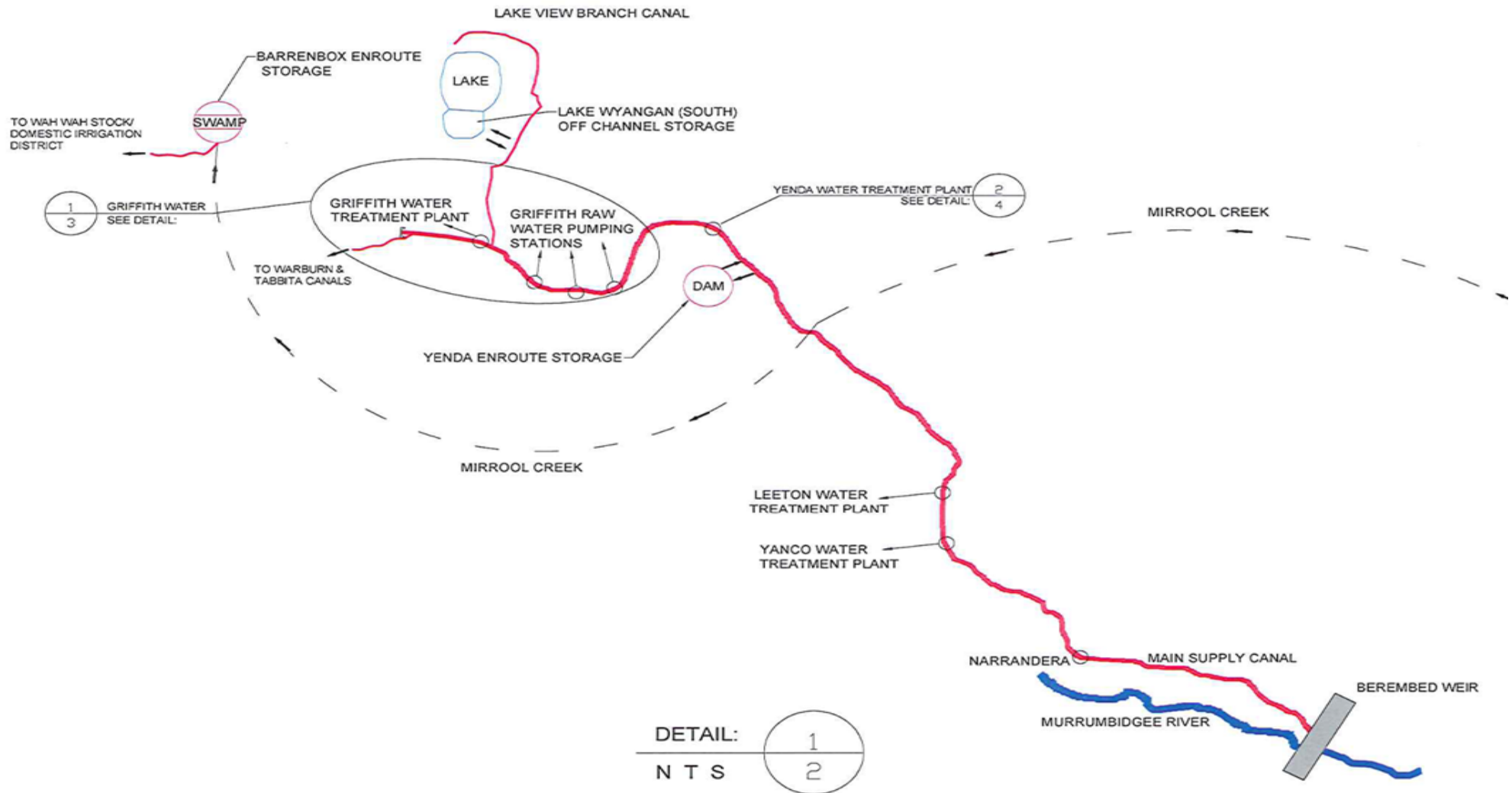


## SCHEMATIC LAYOUT OF GRIFFITH WATER SUPPLY



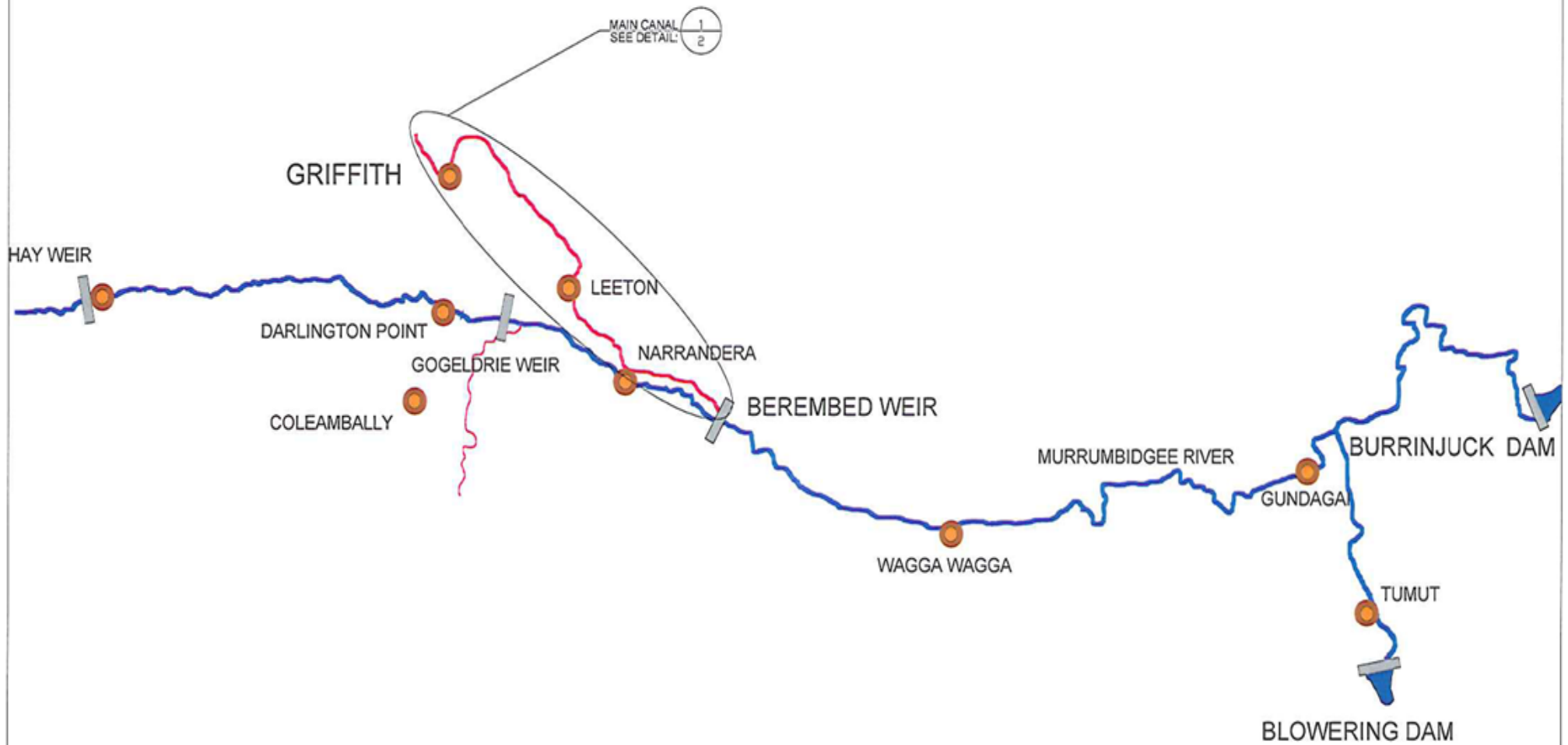


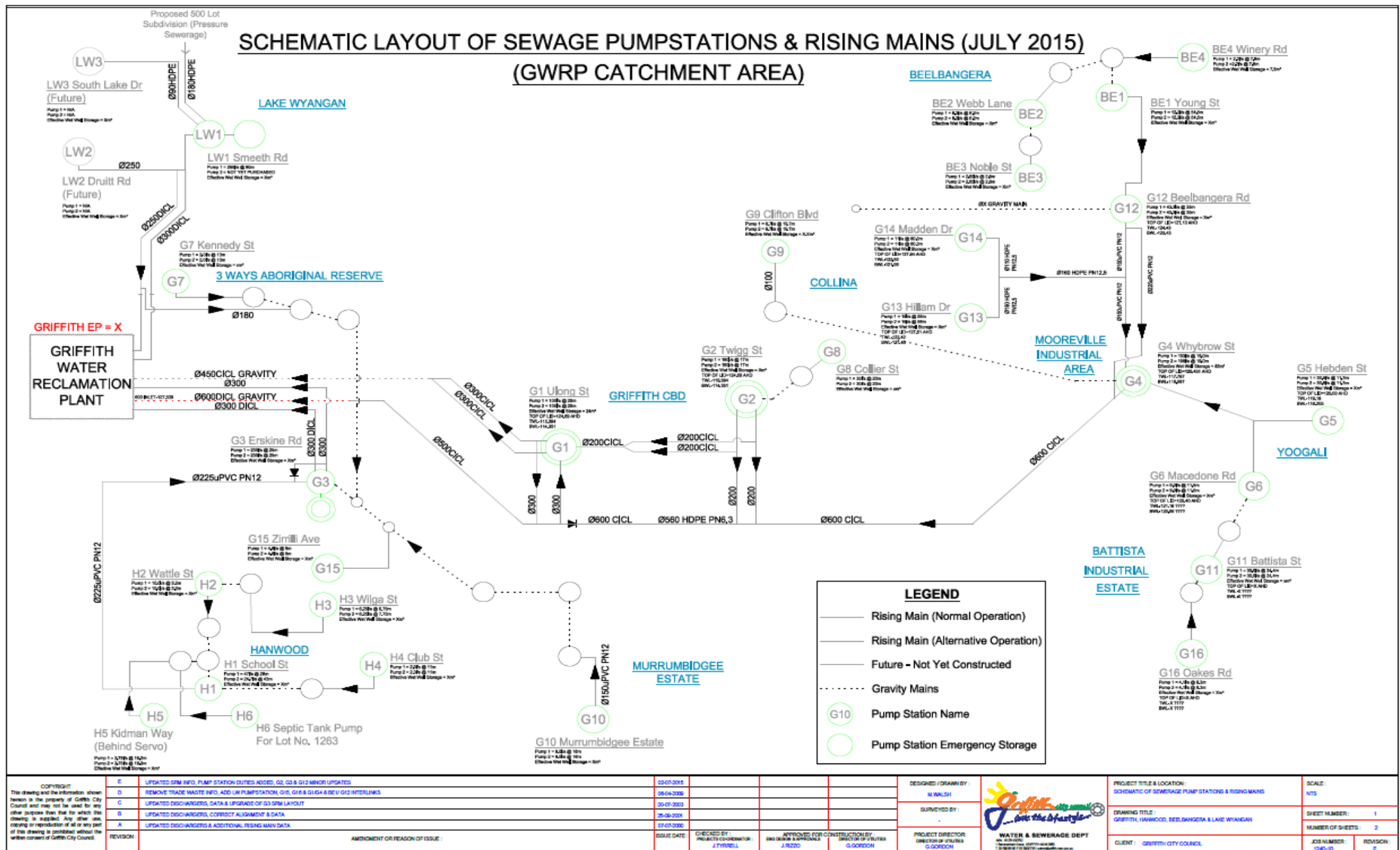
## SCHEMATIC LAYOUT OF MAIN CANAL



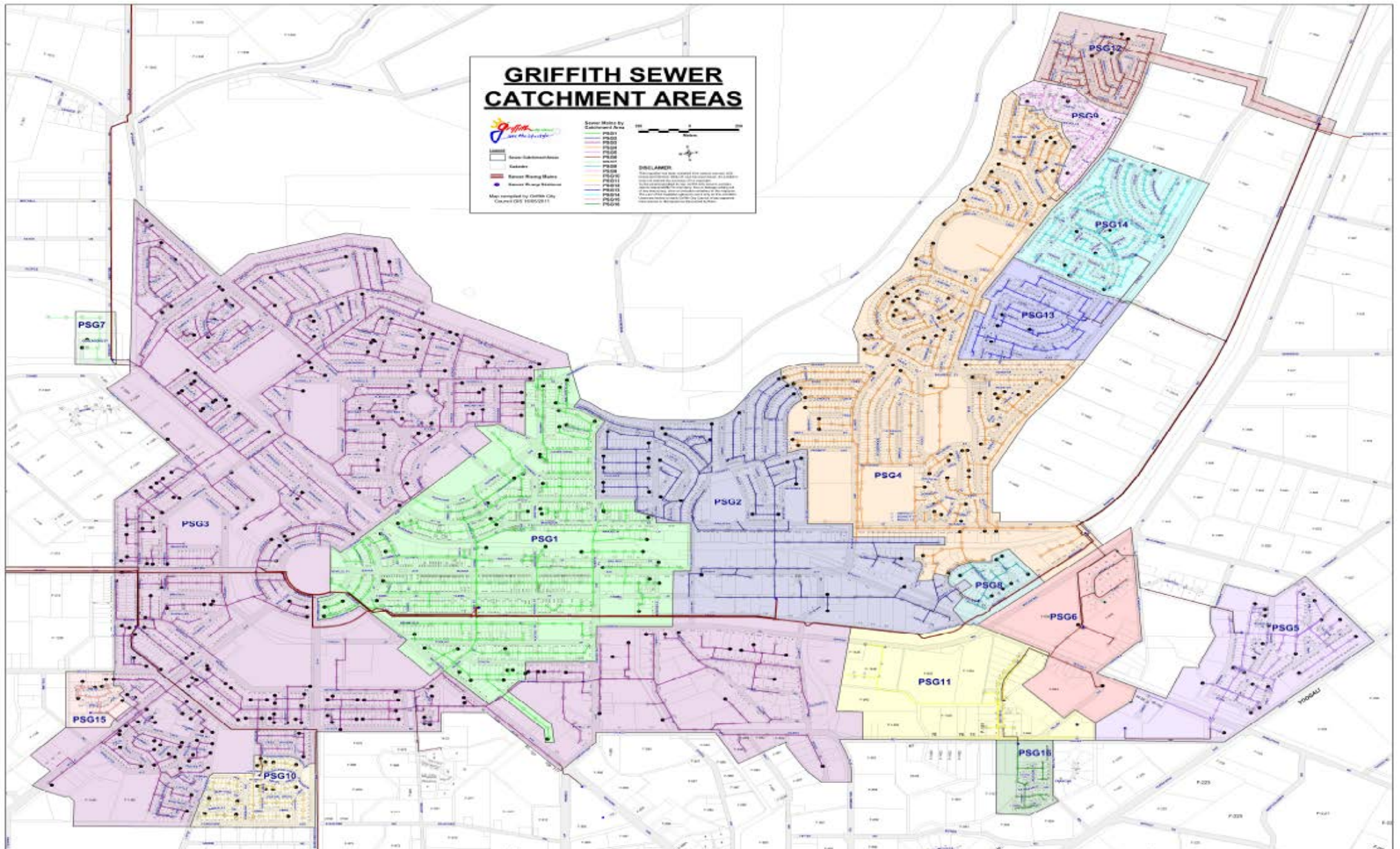


## SCHEMATIC LAYOUT OF WATER SUPPLY

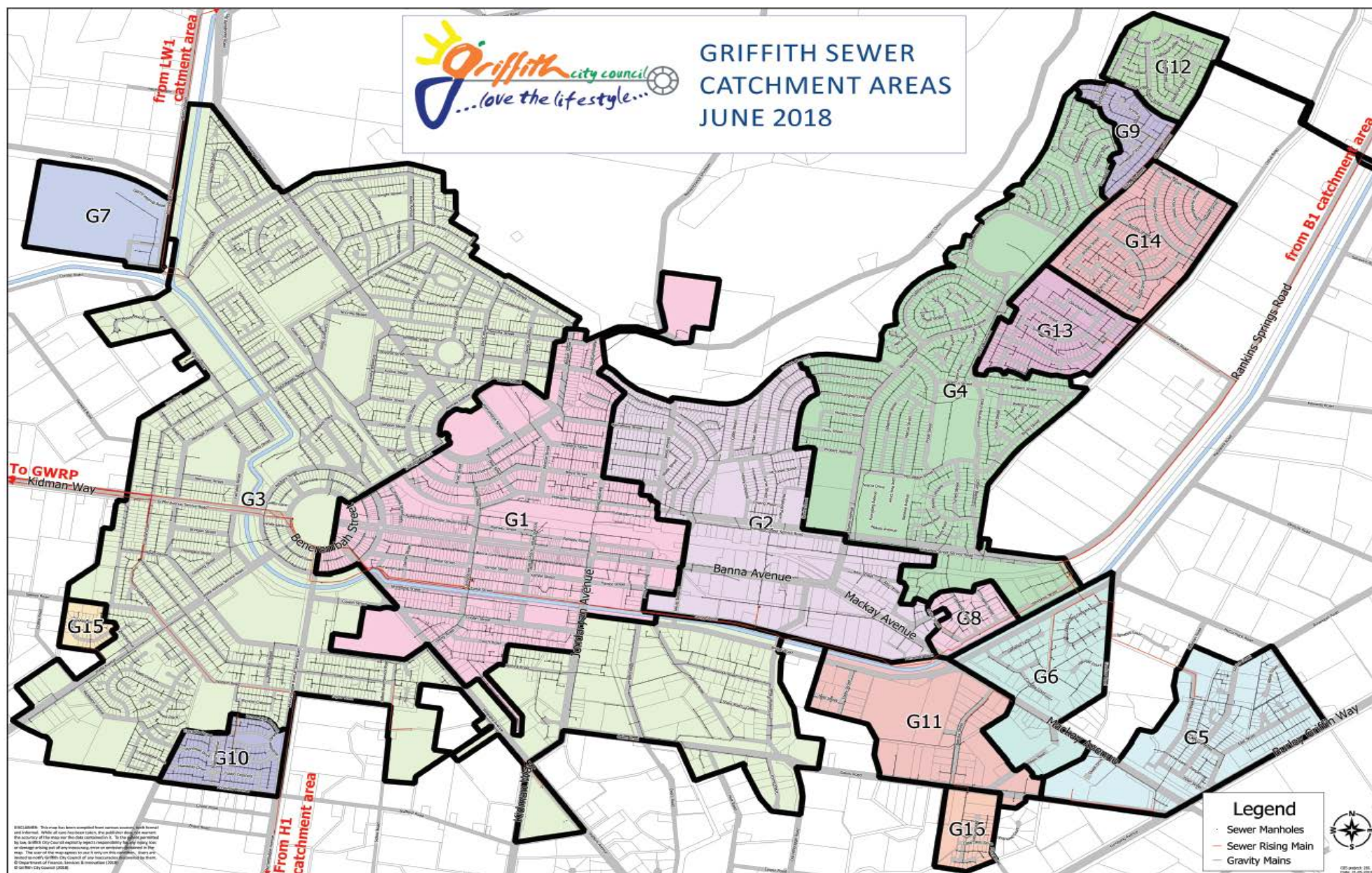


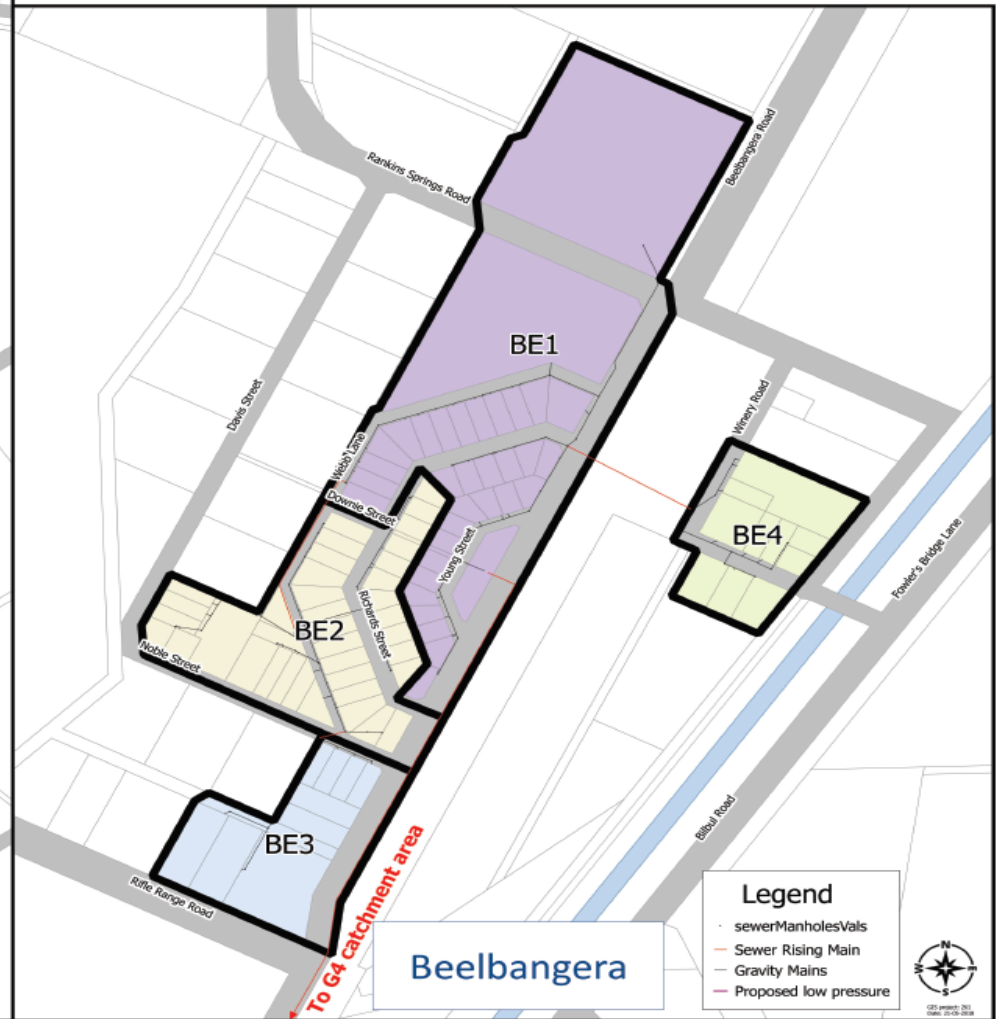
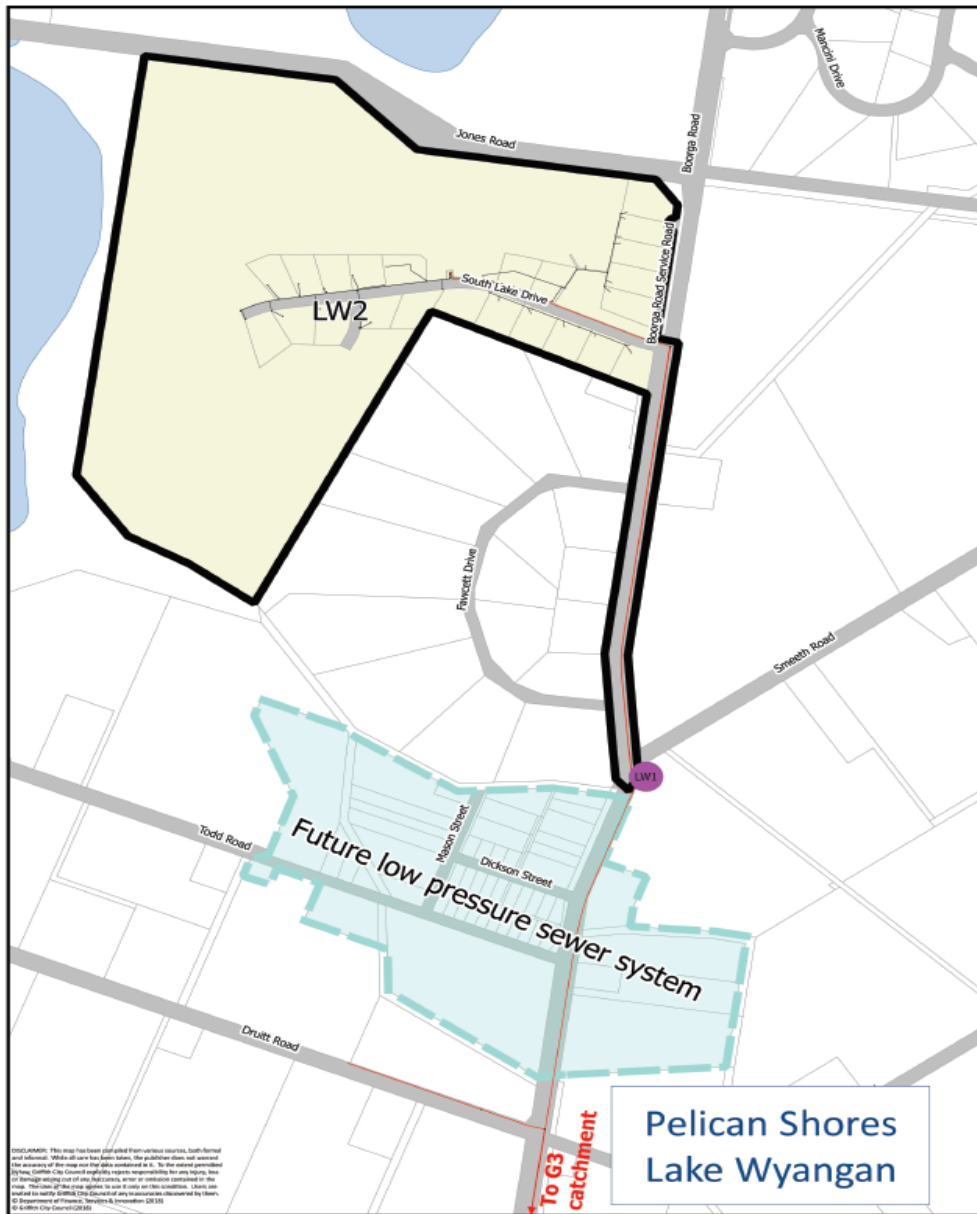




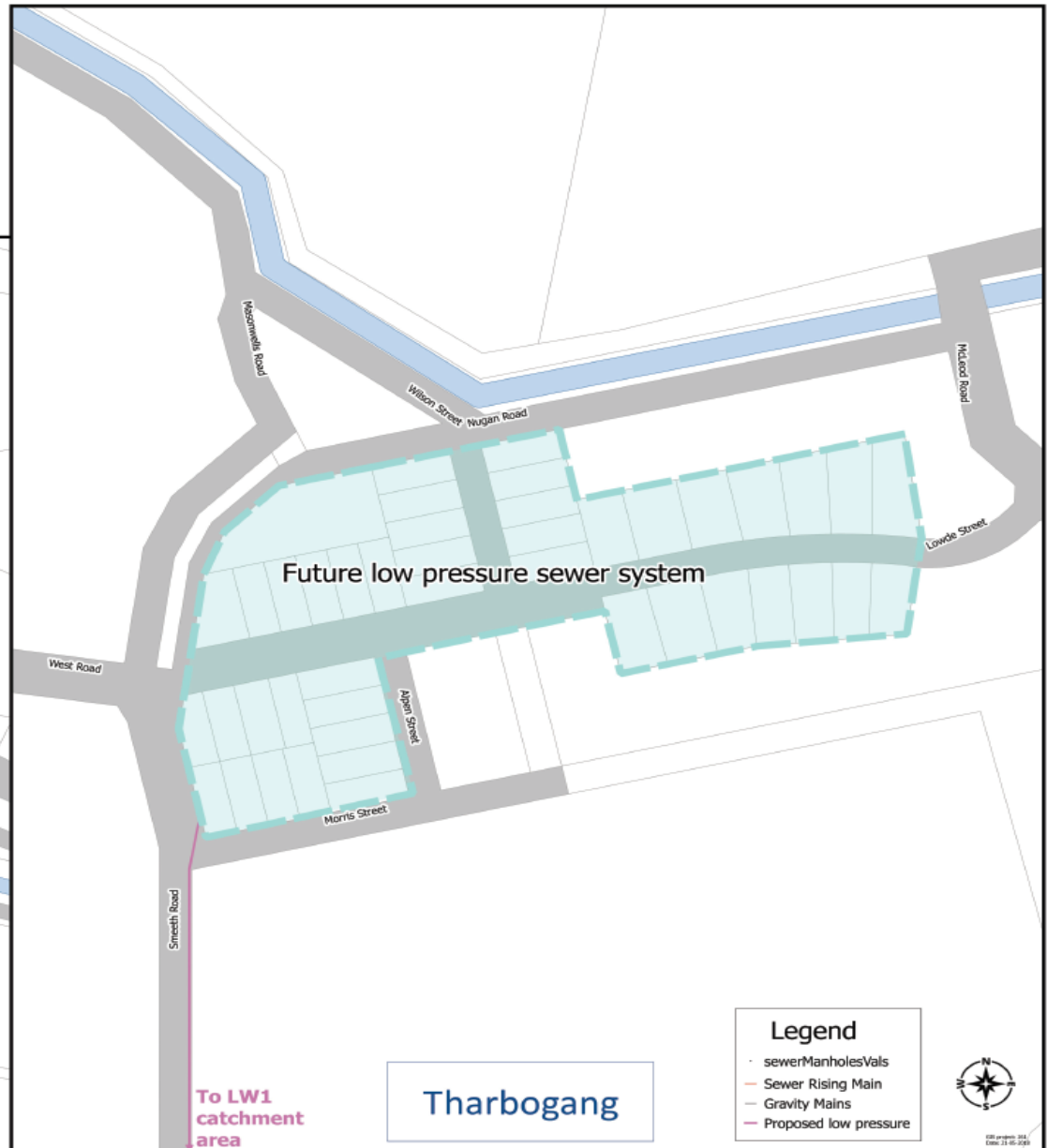




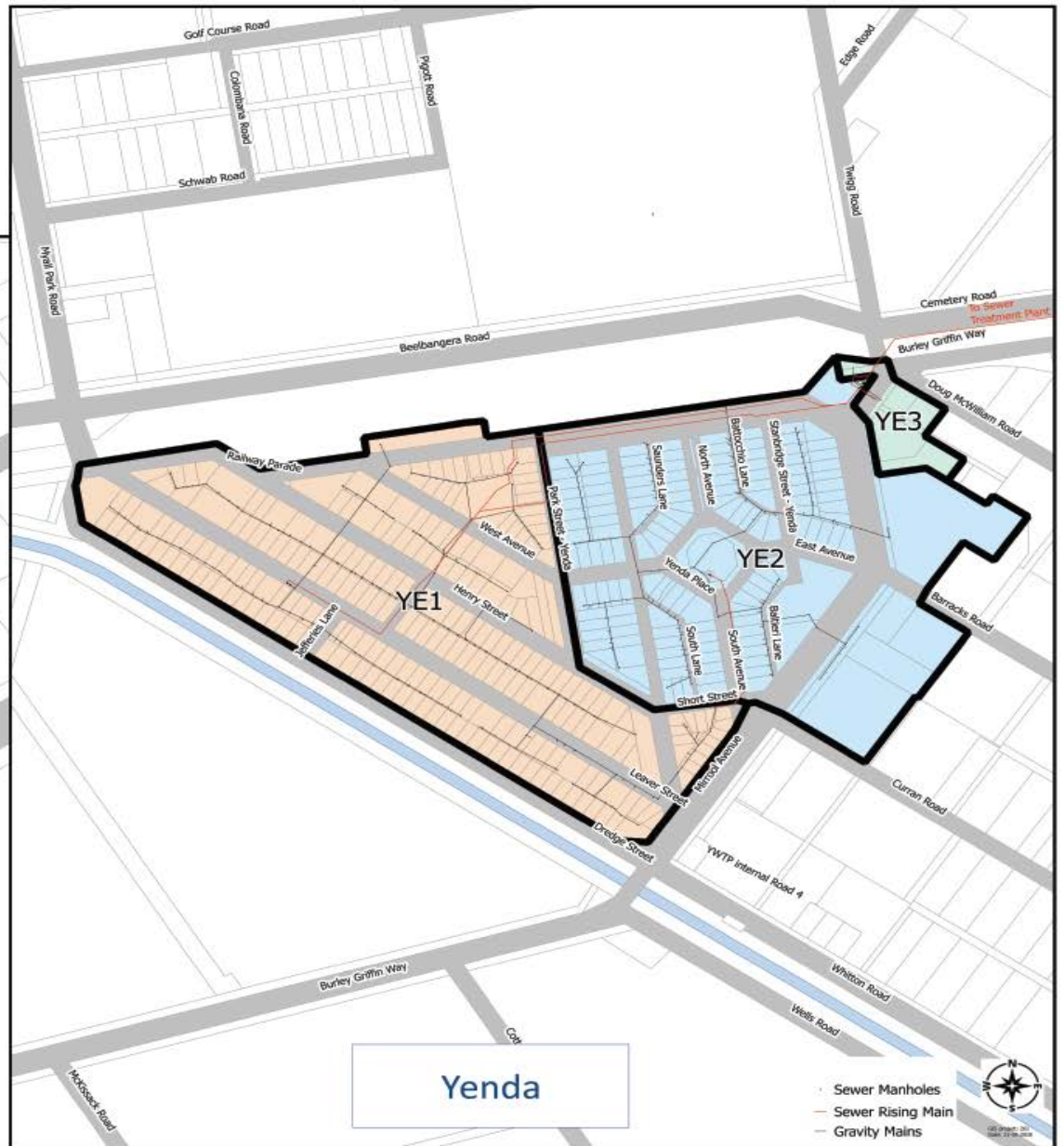
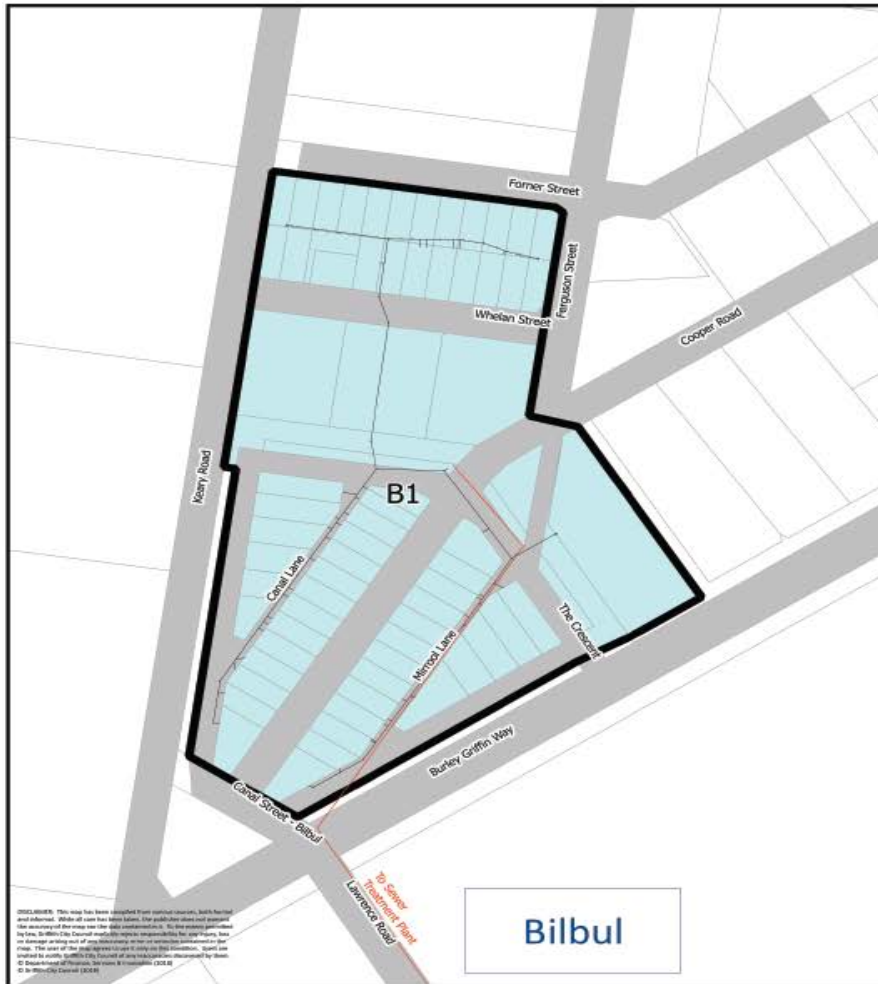




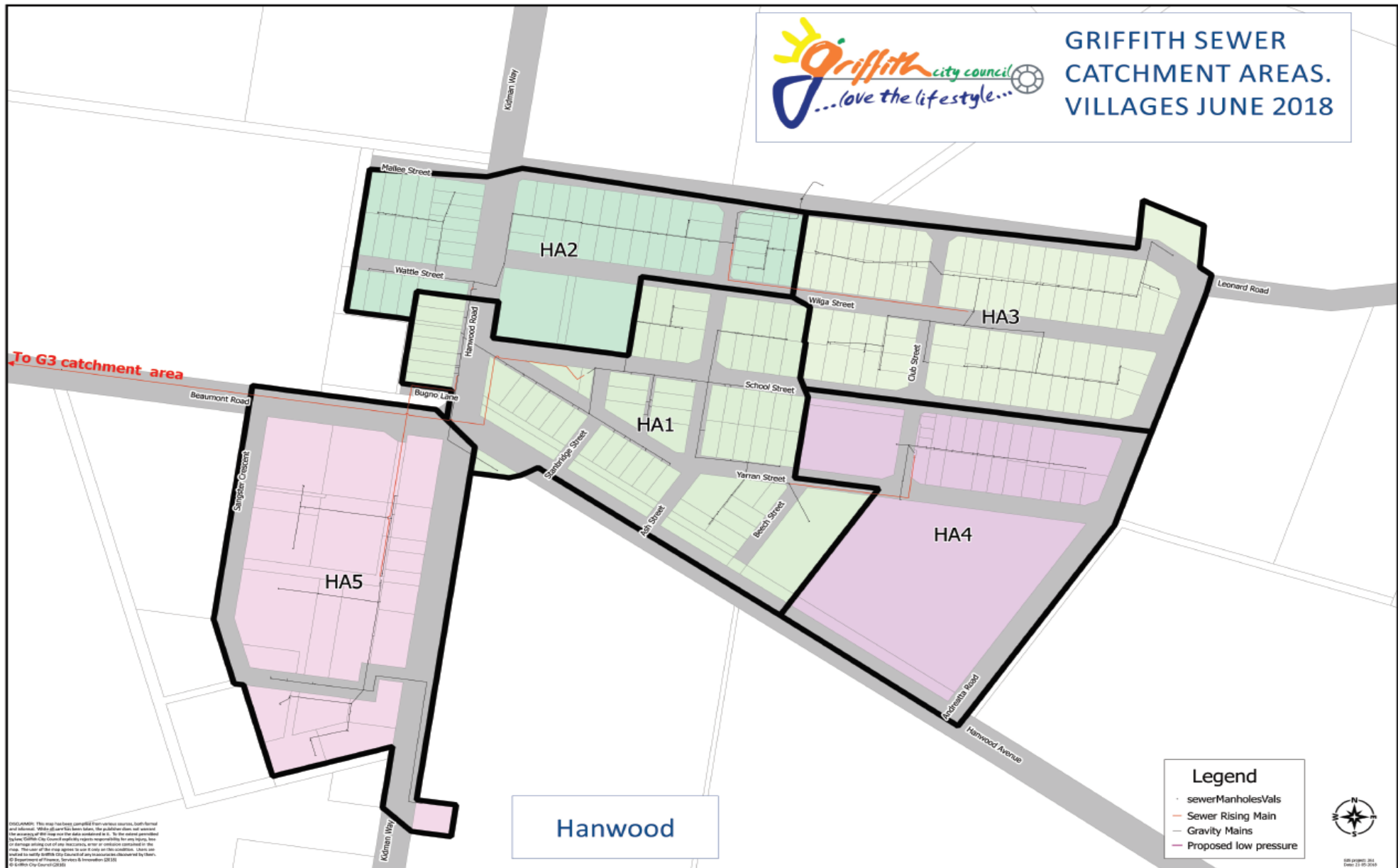




# Strategic Business Plan for Water Supply and Sewerage Services



# Strategic Business Plan for Water Supply and Sewerage Services



## **Appendix C: 2017 Drinking Water Monitoring Program**

Strategic Business Plan for Water Supply and Sewerage Services

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE C						
	Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday				
	Date	01-Jan-17	02-Jan-17	03-Jan-17	04-Jan-17	05-Jan-17	06-Jan-17	07-Jan-17	08-Jan-17	09-Jan-17	10-Jan-17	11-Jan-17	12-Jan-17	13-Jan-17	14-Jan-17	15-Jan-17	16-Jan-17	17-Jan-17	18-Jan-17	19-Jan-17	20-Jan-17	21-Jan-17	22-Jan-17	23-Jan-17	24-Jan-17	25-Jan-17	26-Jan-17	27-Jan-17	28-Jan-17	29-Jan-17	30-Jan-17	31-Jan-17				
GWTP Hayes Lease raw reservoir, Griffith	GT01101				Symbio	pH, Turb																														
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb					
Cnr Kennedy and Goolagong Streets, Griffith	GT01103																Cl, Bacto			Cl, pH, Turb																
2 Dunn St, Tharbogang	GT01104			Bacto																				Cl, Bacto	Cl, pH, Turb											
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105									Bacto															Cl, pH, Turb						Cl, Bacto					
20 Dickson St, Lake Wyangan	GT01106			Bacto													Cl, Bacto								Cl, pH, Turb											
(Near) 11 Lowde St, Nericon	GT01107									Bacto	Cl, pH, Turb													Cl, Bacto	Cl, pH, Turb											
6 Noorebar Av, Griffith	GT01108										Cl, pH, Turb						Bacto														Cl, Bacto	Cl, pH, Turb				
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb					
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb					
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb					
2 Young St, Beelbangara	GT01112										Cl, pH, Turb													Cl, Bacto								Cl, pH, Turb				
2 Madden Dr, Griffith	GT01113			Cl, Bacto							Cl, pH, Turb																				Bacto	Cl, pH, Turb				
8 Manera St, Griffith	GT01114									Cl, Bacto			Cl, F, Turb																			Cl, pH, Turb				
4 Sanders St, Griffith	GT01115												Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb				
39 Nichols St, Griffith	GT01116			Cl, Bacto									Cl, pH, Turb											Cl, Bacto												
29 Lawford Cr, Griffith	GT01117									Cl, Bacto			Cl, pH, Turb																		Bacto					
30 Middleton Av, Griffith	GT01118																Cl, Bacto	Cl, pH, Turb																		
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119																	Cl, pH, Turb						Cl, Bacto												
Hanwood Oval- Opposite 31 Yarran Street	GT01120			Cl, Bacto														Cl, pH, Turb													Cl, Bacto					
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121									Cl, Bacto								Cl, pH, Turb																		
668 Murray Rd, Yoogali	GT01122																Cl, Bacto			Cl, F, Turb																
10 Moura St, Yoogali	GT01123			Cl, Bacto																Cl, pH, Turb				Cl, Bacto												
Ferguson St, (near School), Bilbul	GT01124									Cl, Bacto										Cl, pH, Turb											Cl, Bacto					
YWTP Reservoir earth dam, Yenda	GT02201																																			
YWTP Reservoir concrete dam, Yenda	GT02202																																			
YWTP Canal supply, Yenda	GT02203				Symbio	pH, Turb																														
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																							Cl, Bacto								Cl, pH, Turb				
Casella Wines, Mains Water Meter, Yenda	GT02206																														Cl, Bacto					
Temora Rd, Yenda (Terrel Estate service)	GT02207										Cl, pH, Turb																									
Cnr Twigg Rd & Edge Rd, Yenda	GT02208												Cl, F, Turb																							
22 East Av, Yenda	GT02209			Cl, Bacto														Cl, pH, Turb																		
33 Park Street, Yenda	GT02210									Cl, Bacto										Cl, F, Turb																
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																Cl, Bacto								Cl, pH, Turb											
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb					
Wastewater Routine Monitoring																																				
Weekly Micro Sample	[Weekly]	EPA ID 1			Micro (Int)							Micro (Int)													Micro (Int)											
Griffith EPA	[Monthly]	EPA ID 1	Symbio Chem/Micro																																	
GWRP Influent	[Monthly]	Inlet works	SW Chem																																	
Yenda EPA	[2 Monthly: Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Symbio Chem/Micro																																	
Cat C	[Weekly in vintage rest Month]	Wineries	Symbio Chem																																	
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Symbio Chem																																	
Piezometer, pH, EC, depth	[Mar, Jun,Sep, Dec]	See map	Internal																																	
	Who by	Who to																																		
Send to Sydney Water ^ (includes algae)	Analyst	SW																																		
Send to Sydney Water	Analyst	SW																																		
	Analyst	GCC																																		
Send Bacto to Wagga	Analyst	Health																																		
Send Chem to FASS in Sydney	Analyst	Health																																		
	Operator	GCC																																		
Note: Only send YWTP samples to Symbio if YWTP is operating																																				



Total Routine Monitoring Water Testing Schedule			Cl = FREE Chlorine					Cl = FREE Chl					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine							
	Day	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	
	Date	01-Feb-17	02-Feb-17	03-Feb-17	04-Feb-17	05-Feb-17	06-Feb-17	07-Feb-17	08-Feb-17	09-Feb-17	10-Feb-17	11-Feb-17	12-Feb-17	13-Feb-17	14-Feb-17	15-Feb-17	16-Feb-17	17-Feb-17	18-Feb-17	19-Feb-17	20-Feb-17	21-Feb-17	22-Feb-17	23-Feb-17	24-Feb-17	25-Feb-17	26-Feb-17	27-Feb-17	28-Feb-17	
GWTP Hayes Lease raw reservoir, Griffith	GT01101	Symbio Chem^	pH, Turb																											
GWTP Lab Reticulation Tap	GT01102	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103						Cl, Bacto								Cl, pH, Turb															
2 Dunn St, Tharbogang	GT01104													Cl, Bacto	Cl, pH, Turb															
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105																Cl, F, Turb				Cl, Bacto									
20 Dickson St, Lake Wyangan	GT01106						Cl, Bacto										Cl, pH, Turb										Cl, Bacto			
(Near) 11 Lowde St, Nericon	GT01107													Cl, Bacto			Cl, pH, Turb													
6 Noorebar Av, Griffith	GT01108																Cl, pH, Turb				Cl, Bacto									
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb
2 Young St, Beelbangara	GT01112						Cl, Bacto															Cl, pH, Turb						Cl, Bacto		
2 Madden Dr, Griffith	GT01113													Cl, Bacto								Cl, pH, Turb								
8 Manera St, Griffith	GT01114						Bacto														Cl, Bacto	Cl, pH, Turb								
4 Sanders St, Griffith	GT01115							Cl, pH, Turb						Bacto								Cl, pH, Turb						Cl, Bacto		
39 Nichols St, Griffith	GT01116							Cl, pH, Turb													Bacto			Cl, F, Turb						
29 Lawford Cr, Griffith	GT01117							Cl, pH, Turb																Cl, pH, Turb				Bacto		
30 Middleton Av, Griffith	GT01118						Bacto	Cl, pH, Turb																Cl, pH, Turb						
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119									Cl, F, Turb				Bacto										Cl, pH, Turb						
Hanwood Oval- Opposite 31 Yarran Street	GT01120									Cl, pH, Turb											Bacto								Cl, pH, Turb	
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121						Cl, Bacto			Cl, pH, Turb																		Bacto	Cl, pH, Turb	
668 Murray Rd, Yoogali	GT01122									Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb	
10 Moura St, Yoogali	GT01123														Cl, pH, Turb						Cl, Bacto								Cl, pH, Turb	
Ferguson St, (near School), Bilbul	GT01124														Cl, pH, Turb													Cl, Bacto		
YWTP Reservoir earth dam, Yenda	GT02201																													
YWTP Reservoir concrete dam, Yenda	GT02202																													
YWTP Canal supply, Yenda	GT02203	Symbio Chem^	pH, Turb																											
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																												Cl, pH, Turb	
Casella Wines, Mains Water Meter, Yenda	GT02206							Cl, pH, Turb																						
Temora Rd, Yenda (Terrel Estate service)	GT02207						Cl, Bacto			Cl, pH, Turb																				
Cnr Twigg Rd & Edge Rd, Yenda	GT02208													Cl, Bacto	Cl, pH, Turb															
22 East Av, Yenda	GT02209																Cl, pH, Turb				Cl, Bacto									
33 Park Street, Yenda	GT02210																					Cl, pH, Turb						Cl, Bacto		
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																						Cl, pH, Turb							
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb
Wastewater Routine Monitoring																														
Weekly Micro Sample	[Weekly]	EPA ID 1	Symbio Chem/Micro						Micro (Int)							Micro (Int)							Micro (Int)							
Griffith EPA	[Monthly]	EPA ID 1	SW Chem																											
GWRP Influent	[Monthly]	Inlet works	Symbio Chem/Micro																											
Yenda EPA	[2 Monthly: Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Symbio Chem																											
Cat C	[Weekly in vintage rest Month]	Wineries	Symbio Chem																											
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Internal																											
Piezometer, pH, EC, depth	[Mar, Jun,Sep, Dec]	See map	Internal																											
	Who by	Who to																												
Send to Symbior ^ (includes algae)	Analyst	SW																												
Send to Symbio Water	Analyst	SW																												
	Analyst	GCC																												
Send Bacto to Wagga	Analyst	Health																												
Send Chem to FASS in Sydney	Analyst	Health																												
	Operator	GCC																												
Note: Only send YWTP samples to Symbio if YWTP is operating																														

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine					Cl = FREE Chl Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine											
	Day	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	
	Date	01-Mar-17	02-Mar-17	03-Mar-17	04-Mar-17	05-Mar-17	06-Mar-17	07-Mar-17	08-Mar-17	09-Mar-17	10-Mar-17	11-Mar-17	12-Mar-17	13-Mar-17	14-Mar-17	15-Mar-17	16-Mar-17	17-Mar-17	18-Mar-17	19-Mar-17	20-Mar-17	21-Mar-17	22-Mar-17	23-Mar-17	24-Mar-17	25-Mar-17	26-Mar-17	27-Mar-17	28-Mar-17	29-Mar-17	30-Mar-17	31-Mar-17	
GWTP Hayes Lease raw reservoir, Griffith	GT01101	Symbio Chem^	pH, Turb																														
GWTP Lab Reticulation Tap	GT01102	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103						Bacto			Cl, pH, Turb																		Cl, Bacto	Cl, pH, Turb				
2 Dunn St, Tharbogang	GT01104									Cl, pH, Turb				Bacto															Cl, pH, Turb				
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105									Cl, pH, Turb											Bacto								Cl, pH, Turb				
20 Dickson St, Lake Wyangan	GT01106														Cl, pH, Turb														Bacto	Cl, pH, Turb			
(Near) 11 Lowde St, Nericon	GT01107						Cl, Bacto								Cl, pH, Turb																	Cl, F, Turb	
6 Noorebar Av, Griffith	GT01108													Cl, Bacto	Cl, pH, Turb																	Cl, pH, Turb	
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
2 Young St, Beelbangara	GT01112						Cl, Bacto								Cl, pH, Turb													Cl, Bacto				Cl, pH, Turb	
2 Madden Dr, Griffith	GT01113													Cl, Bacto			Cl, F, Turb														Cl, pH, Turb		
8 Manera St, Griffith	GT01114																Cl, pH, Turb				Cl, Bacto												
4 Sanders St, Griffith	GT01115																Cl, pH, Turb										Cl, Bacto						
39 Nichols St, Griffith	GT01116						Cl, Bacto										Cl, pH, Turb																
29 Lawford Cr, Griffith	GT01117													Cl, Bacto								Cl, pH, Turb											
30 Middleton Av, Griffith	GT01118																				Cl, Bacto	Cl, pH, Turb											
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119						Bacto															Cl, pH, Turb						Cl, Bacto					
Hanwood Oval- Opposite 31 Yarran Street	GT01120							Cl, pH, Turb						Bacto								Cl, pH, Turb											
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121							Cl, pH, Turb													Bacto			Cl, F, Turb									
668 Murray Rd, Yoogali	GT01122						Bacto	Cl, pH, Turb																Cl, pH, Turb				Bacto					
10 Moura St, Yoogali	GT01123							Cl, pH, Turb						Bacto										Cl, pH, Turb									
Ferguson St, (near School), Bilbul.	GT01124									Cl, F, Turb											Bacto			Cl, pH, Turb									
YWTP Reservoir earth dam, Yenda	GT02201																																
YWTP Reservoir concrete dam, Yenda	GT02202																																
YWTP Canal supply, Yenda	GT02203	Symbio Chem^	pH, Turb																														
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205							Cl, pH, Turb						Cl, Bacto																		Cl, F, Turb	
Casella Wines, Mains Water Meter, Yenda	GT02206										Cl, F, Turb										Cl, Bacto												
Temora Rd, Yenda (Terrel Estate service)	GT02207														Cl, pH, Turb												Cl, Bacto						
Cnr Twigg Rd & Edge Rd, Yenda	GT02208															Cl, F, Turb																	
22 East Av, Yenda	GT02209																					Cl, pH, Turb											
33 Park Street, Yenda	GT02210																							Cl, F, Turb									
Cnr Myall Park & Golf Course Rd, Yenda	GT02211						Cl, Bacto																	Cl, F, Turb					Cl, pH, Turb				
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
Wastewater Routine Monitoring																																	
Weekly Micro Sample	[Weekly] EPA ID 1	Symbio Chem/Micro								Micro (Int)							Micro (Int)							Micro (Int)								Micro (Int)	
Griffith EPA	[Monthly] EPA ID 1	SW Chem																															
GWRP Influent	[Monthly] Inlet works	Symbio Chem/Micro																															
Yenda EPA [2 Monthly: Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Symbio Chem																															
Cat C [Weekly in vintage rest Monthly]	Wineries	Symbio Chem																															
Upstream & Downstream [6 monthly Feb, Aug]	See map	Internal																															
Piezometer, pH, EC, depth [Mar, Jun,Sep, Dec]	See map	Internal																															
	Who by	Who to																															
Send to Symbior ^ (includes algae)	Analyst	SW																															
Send to Symbio Water	Analyst	SW																															
	Analyst	GCC																															
Send Bacto to Wagga	Analyst	Health																															
Send Chem to FASS in Sydney	Analyst	Health																															
	Operator	GCC																															
Note: Only send YWTP samples to Symbio if YWTP is operating																																	

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine					Cl = FREE Chl Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine				
	Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday					
	Date	01-Apr-17	02-Apr-17	03-Apr-17	04-Apr-17	05-Apr-17	06-Apr-17	07-Apr-17	08-Apr-17	09-Apr-17	10-Apr-17	11-Apr-17	12-Apr-17	13-Apr-17	14-Apr-17	15-Apr-17	16-Apr-17	17-Apr-17	18-Apr-17	19-Apr-17	20-Apr-17	21-Apr-17	22-Apr-17	23-Apr-17	24-Apr-17	25-Apr-17	26-Apr-17	27-Apr-17	28-Apr-17	29-Apr-17	30-Apr-17					
GWTP Hayes Lease raw reservoir, Griffith	GT01101				pH, Turb	Symbio																														
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb					
Cnr Kennedy and Goolagong Streets, Griffith	GT01103													Cl, pH, Turb					Cl, Bacto																	
2 Dunn St, Tharbogang	GT01104			Bacto																	Cl, F, Turb						Cl, Bacto									
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105										Bacto										Cl, pH, Turb															
20 Dickson St, Lake Wyangan	GT01106																		Bacto		Cl, pH, Turb															
(Near) 11 Lowde St, Nericon	GT01107			Bacto																	Cl, pH, Turb							Cl, Bacto								
6 Noorebar Av, Griffith	GT01108										Bacto																		Cl, F, Turb							
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
2 Young St, Beelbangara	GT01112																		Cl, Bacto										Cl, pH, Turb							
2 Madden Dr, Griffith	GT01113			Cl, Bacto																							Cl, Bacto	Cl, pH, Turb								
8 Manera St, Griffith	GT01114						Cl, F, Turb				Cl, Bacto																	Cl, pH, Turb								
4 Sanders St, Griffith	GT01115						Cl, pH, Turb												Cl, Bacto																	
39 Nichols St, Griffith	GT01116			Cl, Bacto			Cl, pH, Turb																				Cl, Bacto									
29 Lawford Cr, Griffith	GT01117						Cl, pH, Turb				Cl, Bacto																									
30 Middleton Av, Griffith	GT01118											Cl, pH, Turb							Cl, Bacto																	
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119											Cl, pH, Turb															Cl, Bacto									
Hanwood Oval- Opposite 31 Yarran Street	GT01120			Cl, Bacto								Cl, pH, Turb																								
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121										Cl, Bacto	Cl, pH, Turb																								
668 Murray Rd, Yoogali	GT01122												Cl, F, Turb						Cl, Bacto																	
10 Moura St, Yoogali	GT01123			Bacto									Cl, pH, Turb														Cl, Bacto									
Ferguson St, (near School), Bilbul.	GT01124										Bacto		Cl, pH, Turb																							
YWTP Reservoir earth dam, Yenda	GT02201																																			
YWTP Reservoir concrete dam, Yenda	GT02202																																			
YWTP Canal supply, Yenda	GT02203				pH, Turb	Symbio																														
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																																			
Casella Wines, Mains Water Meter, Yenda	GT02206						Cl, F, Turb																													
Temora Rd, Yenda (Terrel Estate service)	GT02207											Cl, pH, Turb																								
Cnr Twigg Rd & Edge Rd, Yenda	GT02208			Cl, Bacto									Cl, F, Turb																							
22 East Av, Yenda	GT02209										Cl, Bacto										Cl, F, Turb															
33 Park Street, Yenda	GT02210																		Cl, Bacto																	
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																										Cl, Bacto	Cl, F, Turb	Cl, pH, Turb							
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb					
Wastewater Routine Monitoring																																				
Weekly Micro Sample	[Weekly]	EPA ID 1	Symbio Chem/Micro			Micro (Int)							Micro (Int)							Micro (Int)																
Griffith EPA	[Monthly]	EPA ID 1	SW Chem																																	
GWRP Influent	[Monthly]	Inlet works	Symbio Chem/Micro																																	
Yenda EPA	[2 Monthly: Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Symbio Chem																																	
Cat C	[Weekly in vintage rest Month]	Wineries	Symbio Chem																																	
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Internal																																	
Piezometer, pH, EC, depth	[Mar, Jun, Sep, Dec]	See map	Internal																																	
	Who by	Who to																																		
Send to Symbior ^ (includes algae)	Analyst	SW																																		
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	Analyst	GCC																																		
Send Bacto to Wagga	Analyst	Health																																		
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	Operator	GCC																																		
Note: Only send YWTP samples to Symbio if YWTP is operating																																				

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine							Cl = FREE Cl Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine										
	Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	
	Date	01-May-17	02-May-17	03-May-17	04-May-17	05-May-17	06-May-17	07-May-17	08-May-17	09-May-17	10-May-17	11-May-17	12-May-17	13-May-17	14-May-17	15-May-17	16-May-17	17-May-17	18-May-17	19-May-17	20-May-17	21-May-17	22-May-17	23-May-17	24-May-17	25-May-17	26-May-17	27-May-17	28-May-17	29-May-17	30-May-17	31-May-17	
GWTP Hayes Lease raw reservoir, Griffith	GT01101		pH, Turb	Symbio																													
GWTP Lab Reticulation Tap	GT01102	Bacto/Chem	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103								Cl, Bacto			Cl, pH, Turb																		Cl, pH, Turb			
2 Dunn St, Tharabogang	GT01104											Cl, pH, Turb				Cl, Bacto														Cl, pH, Turb			
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105	Cl, Bacto															Cl, pH, Turb					Cl, Bacto								Cl, pH, Turb			
20 Dickson St, Lake Wyangan	GT01106								Cl, Bacto								Cl, pH, Turb												Cl, Bacto				
(Near) 11 Lowde St, Nericon	GT01107															Cl, Bacto	Cl, pH, Turb																
6 Noorebar Av, Griffith	GT01108	Cl, Bacto															Cl, pH, Turb					Cl, Bacto											
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	
2 Young St, Beelbangara	GT01112								Cl, Bacto										Cl, F, Turb										Cl, Bacto				
2 Madden Dr, Griffith	GT01113															Cl, Bacto			Cl, pH, Turb														
8 Manera St, Griffith	GT01114	Bacto																	Cl, pH, Turb			Cl, Bacto											
4 Sanders St, Griffith	GT01115				Cl, F, Turb				Bacto										Cl, pH, Turb										Cl, Bacto				
39 Nichols St, Griffith	GT01116				Cl, pH, Turb											Bacto								Cl, pH, Turb									
29 Lawford Cr, Griffith	GT01117	Bacto			Cl, pH, Turb																	Bacto	Cl, pH, Turb										
30 Middleton Av, Griffith	GT01118				Cl, pH, Turb				Bacto															Cl, pH, Turb					Bacto				
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119									Cl, pH, Turb						Bacto								Cl, pH, Turb									
Hanwood Oval- Opposite 31 Yarran Street	GT01120	Cl, Bacto								Cl, pH, Turb												Bacto				Cl, F, Turb							
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121								Cl, Bacto	Cl, pH, Turb																Cl, pH, Turb			Bacto				
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10 Moura St, Yoogali	GT01123											Cl, F, Turb										Cl, Bacto				Cl, pH, Turb							
Ferguson St, (near School), Bilbul.	GT01124	Cl, Bacto										Cl, pH, Turb														Cl, pH, Turb				Cl, Bacto	Cl, pH, Turb		
YWTP Reservoir earth dam, Yenda	GT02201																																
YWTP Reservoir concrete dam, Yenda	GT02202																																
YWTP Canal supply, Yenda	GT02203		pH, Turb	Symbio																													
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205	Cl, Bacto			Cl, F, Turb																									Cl, F, Turb			
Casella Wines, Mains Water Meter, Yenda	GT02206								Cl, Bacto	Cl, pH, Turb																							
Temora Rd, Yenda (Terrel Estate service)	GT02207											Cl, F, Turb				Cl, Bacto																	
Cnr Twigg Rd & Edge Rd, Yenda	GT02208																Cl, F, Turb					Cl, Bacto											
22 East Av, Yenda	GT02209																		Cl, F, Turb										Cl, Bacto				
33 Park Street, Yenda	GT02210																						Cl, F, Turb										
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																								Cl, F, Turb								
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Bacto	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	
Wastewater Routine Monitoring																																	
Weekly Micro Sample	[Weekly]	EPA ID 1	Internal		Micro (Int)							Micro (Int)							Micro (Int)						Micro (Int)							Micro (Int)	
Griffith EPA	[Monthly]	EPA ID 1	Symbio Chem/Micro																														
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Note: Only send YWTP samples to Symbio if YWTP is operating																																	

Total Routine Monitoring Water Testing Schedule			Cl = FREE Chlorine					Cl = FREE Chl Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine												
	Day	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday				
	Date	01-Jun-17	02-Jun-17	03-Jun-17	04-Jun-17	05-Jun-17	06-Jun-17	07-Jun-17	08-Jun-17	09-Jun-17	10-Jun-17	11-Jun-17	12-Jun-17	13-Jun-17	14-Jun-17	15-Jun-17	16-Jun-17	17-Jun-17	18-Jun-17	19-Jun-17	20-Jun-17	21-Jun-17	22-Jun-17	23-Jun-17	24-Jun-17	25-Jun-17	26-Jun-17	27-Jun-17	28-Jun-17	29-Jun-17	30-Jun-17				
GWTP Hayes Lease raw reservoir, Griffith	GT01101	pH, Turb						Symbio																											
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb					
Cnr Kennedy and Goolagong Streets, Griffith	GT01103					Bacto																Cl, F, Turb					Cl, Bacto								
2 Dunn St, Tharabogang	GT01104													Bacto									Cl, pH, Turb												
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105																			Bacto			Cl, pH, Turb												
20 Dickson St, Lake Wyangan	GT01106						Cl, pH, Turb																Cl, pH, Turb				Bacto								
(Near) 11 Lowde St, Nericon	GT01107					Cl, Bacto	Cl, pH, Turb																					Cl, pH, Turb							
6 Noorebar Av, Griffith	GT01108						Cl, pH, Turb							Cl, Bacto														Cl, pH, Turb							
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
2 Young St, Beelbangara	GT01112						Cl, pH, Turb													Cl, Bacto								Cl, pH, Turb							
2 Madden Dr, Griffith	GT01113					Cl, Bacto			Cl, F, Turb																		Cl, Bacto	Cl, pH, Turb							
8 Manera St, Griffith	GT01114								Cl, pH, Turb				Cl, Bacto																		Cl, F, Turb				
4 Sanders St, Griffith	GT01115								Cl, pH, Turb											Cl, Bacto											Cl, pH, Turb				
39 Nichols St, Griffith	GT01116					Cl, Bacto			Cl, pH, Turb																		Cl, Bacto				Cl, pH, Turb				
29 Lawford Cr, Griffith	GT01117												Cl, Bacto		Cl, F, Turb															Cl, pH, Turb					
30 Middleton Av, Griffith	GT01118														Cl, pH, Turb				Cl, Bacto																
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119					Bacto										Cl, pH, Turb										Cl, Bacto									
Hanwood Oval- Opposite 31 Yarran Street	GT01120													Bacto		Cl, pH, Turb																			
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121																			Bacto	Cl, pH, Turb														
668 Murray Rd, Yoogali	GT01122					Bacto															Cl, pH, Turb					Cl, Bacto									
10 Moura St, Yoogali	GT01123													Bacto								Cl, pH, Turb													
Ferguson St, (near School), Bilbul	GT01124																			Cl, Bacto	Cl, pH, Turb														
YWTP Reservoir earth dam, Yenda	GT02201																																		
YWTP Reservoir concrete dam, Yenda	GT02202																																		
YWTP Canal supply, Yenda	GT02203	pH, Turb						Symbio																											
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																			Cl, Bacto										Cl, F, Turb					
Casella Wines, Mains Water Meter, Yenda	GT02206						Cl, pH, Turb																				Cl, Bacto								
Temora Rd, Yenda (Terrel Estate service)	GT02207								Cl, F, Turb																										
Cnr Twigg Rd & Edge Rd, Yenda	GT02208															Cl, F, Turb																			
22 East Av, Yenda	GT02209																				Cl, pH, Turb														
33 Park Street, Yenda	GT02210					Cl, Bacto																	Cl, F, Turb												
Cnr Myall Park & Golf Course Rd, Yenda	GT02211													Cl, Bacto														Cl, pH, Turb							
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb				
Wastewater Routine Monitoring																																			
Weekly Micro Sample	[Weekly]	EPA ID 1	Internal					Micro (Int)							Micro (Int)							Micro (Int)							Micro (Int)						
Griffith EPA	[Monthly]	EPA ID 1	Symbio Chem/Micro																																
GWRP Influent	[Monthly]	Inlet works	Symbio Chem																																
Yenda EPA [2 Monthly: Jan, Mar, May, Jul, Sep, Nov]		EPA ID 2	Symbio Chem/Micro																																
Cat C	[Weekly in vintage rest Monthly]	Wineries	Symbio Chem																																
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Internal																																
Piezometer, pH, EC, depth	[6 monthly Mar, Sep]	See map	Internal																																
	Who by	Who to																																	
Send to Symbior ^ (includes algae)	Analyst	Symbio																																	
Send to Symbio Water	Analyst	Symbio																																	
	Analyst	Internal																																	
Send Bacto to Wagga	Analyst	NSW Health																																	
Send Chem to FASS in Sydney	Analyst	NSW Health																																	
	Operator	Internal																																	
Note: Only send YWTP samples to Symbio if YWTP is operating																																			



Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine					Cl = FREE CCl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine					Cl = FREE Chlorine										
	Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
	Date	01-Jul-17	02-Jul-17	03-Jul-17	04-Jul-17	05-Jul-17	06-Jul-17	07-Jul-17	08-Jul-17	09-Jul-17	10-Jul-17	11-Jul-17	12-Jul-17	13-Jul-17	14-Jul-17	15-Jul-17	16-Jul-17	17-Jul-17	18-Jul-17	19-Jul-17	20-Jul-17	21-Jul-17	22-Jul-17	23-Jul-17	24-Jul-17	25-Jul-17	26-Jul-17	27-Jul-17	28-Jul-17	29-Jul-17	30-Jul-17	31-Jul-17
GWTP Hayes Lease raw reservoir, Griffith	GT01101				pH, Turb	Symbio																										
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103											Cl, pH, Turb													Cl, Bacto			Cl, pH, Turb				
2 Dunn St, Tharbogang	GT01104			Cl, Bacto										Cl, F, Turb														Cl, pH, Turb			Cl, Bacto	
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105										Cl, Bacto			Cl, pH, Turb																		
20 Dickson St, Lake Wyangan	GT01106													Cl, pH, Turb			Cl, Bacto															
(Near) 11 Lowde St, Nericon	GT01107			Cl, Bacto										Cl, pH, Turb											Cl, Bacto							
6 Noorebar Av, Griffith	GT01108										Cl, Bacto								Cl, pH, Turb												Cl, Bacto	
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	
2 Young St, Beelbangara	GT01112			Cl, Bacto													Cl, Bacto	Cl, pH, Turb														
2 Madden Dr, Griffith	GT01113										Bacto								Cl, pH, Turb						Cl, Bacto							
8 Manera St, Griffith	GT01114																Bacto	Cl, pH, Turb													Cl, Bacto	
4 Sanders St, Griffith	GT01115			Cl, Bacto																												
39 Nichols St, Griffith	GT01116										Bacto														Cl, Bacto							
29 Lawford Cr, Griffith	GT01117																Bacto															Cl, Bacto
30 Middleton Av, Griffith	GT01118			Cl, Bacto			Cl, F, Turb														Cl, pH, Turb											
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119						Cl, pH, Turb				Cl, Bacto														Bacto	Cl, pH, Turb						
Hanwood Oval- Opposite 31 Yarran Street	GT01120						Cl, pH, Turb										Cl, Bacto									Cl, pH, Turb						Bacto
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121			Cl, Bacto			Cl, pH, Turb																			Cl, pH, Turb						
668 Murray Rd, Yoogali	GT01122										Cl, Bacto	Cl, pH, Turb													Bacto	Cl, pH, Turb						
10 Moura St, Yoogali	GT01123											Cl, pH, Turb					Cl, Bacto											Cl, F, Turb			Bacto	
Ferguson St, (near School), Bilbul	GT01124			Cl, Bacto								Cl, pH, Turb															Cl, pH, Turb					
YWTP Reservoir earth dam, Yenda	GT02201																															
YWTP Reservoir concrete dam, Yenda	GT02202																															
YWTP Canal supply, Yenda	GT02203				pH, Turb	Symbio																										
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																											Cl, F, Turb				
Casella Wines, Mains Water Meter, Yenda	GT02206						Cl, F, Turb																									
Temora Rd, Yenda (Terrel Estate service)	GT02207			Cl, Bacto								Cl, pH, Turb																				
Cnr Twigg Rd & Edge Rd, Yenda	GT02208										Cl, Bacto			Cl, F, Turb																		
22 East Av, Yenda	GT02209																Cl, Bacto	Cl, pH, Turb														
33 Park Street, Yenda	GT02210																				Cl, F, Turb				Cl, Bacto							
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																									Cl, pH, Turb						Cl, Bacto
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	
Wastewater Routine Monitoring																																
Weekly Micro Sample	[Weekly]	EPA ID 1	Internal			Micro (Int)							Micro (Int)							Micro (Int)							Micro (Int)					
Griffith EPA	[Monthly]	EPA ID 1	Symbio Chem/Micro																													
GWRP Influent	[Monthly]	Inlet works	Symbio Chem																													
Yenda EPA	[2 Monthly: Jan, Mar, May, Jul, Sep, Nov]	EPA ID 2	Symbio Chem/Micro																													
Cat C	[Weekly in vintage rest Monthly]	Wineries	Symbio Chem																													
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Internal																													
Piezometer, pH, EC, depth	[6 monthly Mar, Sep]	See map	Internal																													
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Note: Only send YWTP samples to Symbio if YWTP is operating																																

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine										
	Day	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	
	Date	01-Aug-17	02-Aug-17	03-Aug-17	04-Aug-17	05-Aug-17	06-Aug-17	07-Aug-17	08-Aug-17	09-Aug-17	10-Aug-17	11-Aug-17	12-Aug-17	13-Aug-17	14-Aug-17	15-Aug-17	16-Aug-17	17-Aug-17	18-Aug-17	19-Aug-17	20-Aug-17	21-Aug-17	22-Aug-17	23-Aug-17	24-Aug-17	25-Aug-17	26-Aug-17	27-Aug-17	28-Aug-17	29-Aug-17	30-Aug-17	31-Aug-17	
GWTP Hayes Lease raw reservoir, Griffith	GT01101	pH, Turb	Symbio Chem^																														
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Symbio Chem^	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103																Cl, pH, Turb											Cl, Bacto				Cl, pH, Turb	
2 Dunn St, Tharbogang	GT01104							Bacto									Cl, pH, Turb															Cl, pH, Turb	
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105														Bacto			Cl, F, Turb										Cl, Bacto				Cl, pH, Turb	
20 Dickson St, Lake Wyangan	GT01106							Bacto										Cl, pH, Turb				Cl, Bacto											
(Near) 11 Lowde St, Nericon	GT01107														Bacto			Cl, pH, Turb															
6 Noorebar Av, Griffith	GT01108			Cl, F, Turb														Cl, pH, Turb				Cl, Bacto											
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	
2 Young St, Beelbangara	GT01112			Cl, pH, Turb																			Cl, pH, Turb						Bacto				
2 Madden Dr, Griffith	GT01113			Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb										
8 Manera St, Griffith	GT01114			Cl, pH, Turb											Cl, Bacto								Cl, pH, Turb						Bacto				
4 Sanders St, Griffith	GT01115								Cl, pH, Turb													Bacto	Cl, pH, Turb										
39 Nichols St, Griffith	GT01116							Cl, Bacto	Cl, pH, Turb																Cl, F, Turb			Cl, Bacto					
29 Lawford Cr, Griffith	GT01117								Cl, pH, Turb						Cl, Bacto									Cl, pH, Turb									
30 Middleton Av, Griffith	GT01118								Cl, pH, Turb													Bacto		Cl, pH, Turb									
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119							Cl, Bacto			Cl, F, Turb													Cl, pH, Turb			Cl, Bacto						
Hanwood Oval- Opposite 31 Yarran Street	GT01120										Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb			
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121										Cl, pH, Turb											Cl, Bacto								Cl, pH, Turb			
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YWTP Reservoir earth dam, Yenda	GT02201	pH, Turb																															
YWTP Reservoir concrete dam, Yenda	GT02202																																
YWTP Canal supply, Yenda	GT02203	pH, Turb	Symbio Chem^																														
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205	Cl, pH, Turb																							Cl, F, Turb								
Casella Wines, Mains Water Meter, Yenda	GT02206			Cl, F, Turb																									Cl, pH, Turb				
Temora Rd, Yenda (Terrel Estate service)	GT02207							Cl, Bacto	Cl, pH, Turb																							Cl, F, Turb	
Cnr Twigg Rd & Edge Rd, Yenda	GT02208										Cl, F, Turb				Cl, Bacto																		
22 East Av, Yenda	GT02209															Cl, pH, Turb						Cl, Bacto											
33 Park Street, Yenda	GT02210																Cl, F, Turb											Cl, Bacto					
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																						Cl, pH, Turb										
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	
Wastewater Routine Monitoring																																	
Weekly Micro Sample	[Week]	EPA ID 1	Micro (Int)	Micro (Int)							Micro (Int)							Micro (Int)							Micro (Int)							Micro (Int)	
Griffith EPA	[Month]	EPA ID 1	Sym Chem/Micro																													Micro (Int)	
GWRP Influent	[Month]	Inlet works	Sym Chem																														
Yenda EPA	[Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Sym Chem/Micro																														
Cat C	[Weekly in vintage rest Monthly]	Wineries	Sym Chem																														
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Sym Chem																														
Piezometer, pH, EC, depth	[Mar, Jun, Sep, Dec]	See map	Internal																														
	Who by	Who to																															
Send to Symbio ^ (Algae) monthly in algae season	Analyst	SW																															
Send to Symbio [Jul, Sep, Nov, Jan, Mar, May]	Analyst	SW																															
	Analyst	GCC																															
Send Bacto to Wagga	Analyst	Health																															
Send Chem to FASS in Sydney	Analyst	Health																															
	Operator	GCC																															
Note: Only send YWTP samples to SW if YWTP is operating																																	

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine								
	Day	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Date	01-Sep-17	02-Sep-17	03-Sep-17	04-Sep-17	05-Sep-17	06-Sep-17	07-Sep-17	08-Sep-17	09-Sep-17	10-Sep-17	11-Sep-17	12-Sep-17	13-Sep-17	14-Sep-17	15-Sep-17	16-Sep-17	17-Sep-17	18-Sep-17	19-Sep-17	20-Sep-17	21-Sep-17	22-Sep-17	23-Sep-17	24-Sep-17	25-Sep-17	26-Sep-17	27-Sep-17	28-Sep-17	29-Sep-17	30-Sep-17
GWTP Hayes Lease raw reservoir, Griffith	GT01101					pH, Turb	Symbio Chem^																								
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio Chem^	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb
Cnr Kennedy and Goolagong Streets, Griffith	GT01103																		Cl, Bacto			Cl, F, Turb									
2 Dunn St, Tharbogang	GT01104				Cl, Bacto																	Cl, pH, Turb				Cl, Bacto					
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105											Cl, Bacto										Cl, pH, Turb									
20 Dickson St, Lake Wyangan	GT01106				Cl, Bacto			Cl, F, Turb														Cl, pH, Turb									
(Near) 11 Lowde St, Nericon	GT01107							Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb				
6 Noorebar Av, Griffith	GT01108							Cl, pH, Turb											Cl, Bacto								Cl, pH, Turb				
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb
2 Young St, Beelbangara	GT01112							Cl, pH, Turb											Cl, Bacto								Cl, pH, Turb				
2 Madden Dr, Griffith	GT01113				Bacto								Cl, pH, Turb													Cl, Bacto	Cl, pH, Turb				
8 Manera St, Griffith	GT01114											Bacto	Cl, pH, Turb																Cl, F, Turb		
4 Sanders St, Griffith	GT01115				Bacto								Cl, pH, Turb																Cl, pH, Turb		
39 Nichols St, Griffith	GT01116											Bacto	Cl, pH, Turb																Cl, pH, Turb		
29 Lawford Cr, Griffith	GT01117				Bacto										Cl, F, Turb														Cl, pH, Turb		
30 Middleton Av, Griffith	GT01118											Bacto			Cl, pH, Turb																
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119														Cl, pH, Turb				Bacto												
Hanwood Oval- Opposite 31 Yarran Street	GT01120				Cl, Bacto										Cl, pH, Turb											Bacto					
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121											Cl, Bacto							Bacto	Cl, pH, Turb											
668 Murray Rd, Yoogali	GT01122																			Cl, pH, Turb						Bacto					
10 Moura St, Yoogali	GT01123																		Cl, Bacto	Cl, pH, Turb											
Ferguson St, (near School), Bilbul.	GT01124																			Cl, pH, Turb						Cl, Bacto					
YWTP Reservoir earth dam, Yenda	GT02201																														
YWTP Reservoir concrete dam, Yenda	GT02202																														
YWTP Canal supply, Yenda	GT02203					pH, Turb	Symbio Chem^																								
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205											Cl, Bacto										Cl, F, Turb									
Casella Wines, Mains Water Meter, Yenda	GT02206																		Cl, Bacto								Cl, pH, Turb				
Temora Rd, Yenda (Terrel Estate service)	GT02207																									Cl, Bacto			Cl, F, Turb		
Cnr Twigg Rd & Edge Rd, Yenda	GT02208							Cl, F, Turb																							
22 East Av, Yenda	GT02209												Cl, pH, Turb																		
33 Park Street, Yenda	GT02210														Cl, F, Turb																
Cnr Myall Park & Golf Course Rd, Yenda	GT02211				Cl, Bacto															Cl, pH, Turb											
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb
Wastewater Routine Monitoring																															
Weekly Micro Sample	[Week]	EPA ID 1	Micro (Int)				Micro (Int)							Micro (Int)							Micro (Int)							Micro (Int)			
Griffith EPA	[Month]	EPA ID 1	Sym Chem/Micro																												
GWRP Influent	[Month]	Inlet works	Sym Chem																												
Yenda EPA	[Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Sym Chem/Micro																												
Cat C	[Weekly in vintage rest Monthly]	Wineries	Sym Chem																												
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Sym Chem																												
Piezometer, pH, EC, depth	[Mar, Jun, Sep, Dec]	See map	Internal																												
	Who by	Who to																													
Send to Symbio ^ (Algae) monthly in algae season	Analyst	SW																													
Send to Symbio [Jul, Sep, Nov, Jan, Mar, May]	Analyst	SW																													
	Analyst	GCC																													
Send Bacto to Wagga	Analyst	Health																													
Send Chem to FASS in Sydney	Analyst	Health																													
	Operator	GCC																													
Note: Only send YWTP samples to SW if YWTP is operating																															



Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine										
	Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	
	Date	01-Oct-17	02-Oct-17	03-Oct-17	04-Oct-17	05-Oct-17	06-Oct-17	07-Oct-17	08-Oct-17	09-Oct-17	10-Oct-17	11-Oct-17	12-Oct-17	13-Oct-17	14-Oct-17	15-Oct-17	16-Oct-17	17-Oct-17	18-Oct-17	19-Oct-17	20-Oct-17	21-Oct-17	22-Oct-17	23-Oct-17	24-Oct-17	25-Oct-17	26-Oct-17	27-Oct-17	28-Oct-17	29-Oct-17	30-Oct-17	31-Oct-17	
GWTP Hayes Lease raw reservoir, Griffith	GT01101					pH, Turb						Symbio Chem^																					
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio Chem^	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb		
Cnr Kennedy and Goolagong Streets, Griffith	GT01103												Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb	
2 Dunn St, Tharabogang	GT01104																	Cl, pH, Turb												Bacto	Cl, pH, Turb		
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105			Cl, Bacto													Cl, Bacto	Cl, pH, Turb															
20 Dickson St, Lake Wyangan	GT01106									Bacto								Cl, pH, Turb															
(Near) 11 Lowde St, Nericon	GT01107			Cl, Bacto													Cl, Bacto	Cl, pH, Turb															
6 Noorebar Av, Griffith	GT01108									Bacto										Cl, F, Turb				Cl, Bacto									
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	
2 Young St, Beelbangara	GT01112			Cl, Bacto																Cl, pH, Turb													
2 Madden Dr, Griffith	GT01113																			Cl, pH, Turb				Bacto									
8 Manera St, Griffith	GT01114			Cl, Bacto																Cl, pH, Turb											Cl, Bacto		
4 Sanders St, Griffith	GT01115																							Cl, Bacto	Cl, pH, Turb								
39 Nichols St, Griffith	GT01116			Cl, Bacto																					Cl, pH, Turb						Cl, Bacto		
29 Lawford Cr, Griffith	GT01117																Bacto								Cl, pH, Turb								
30 Middleton Av, Griffith	GT01118									Cl, Bacto	Cl, pH, Turb													Bacto	Cl, pH, Turb								
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119										Cl, pH, Turb																Cl, F, Turb				Cl, Bacto		
Hanwood Oval- Opposite 31 Yarran Street	GT01120									Cl, Bacto	Cl, pH, Turb																Cl, pH, Turb						
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121										Cl, pH, Turb												Bacto			Cl, pH, Turb							
668 Murray Rd, Yoogali	GT01122									Cl, Bacto			Cl, F, Turb														Cl, pH, Turb						
10 Moura St, Yoogali	GT01123												Cl, pH, Turb																		Bacto	Cl, pH, Turb	
Ferguson St, (near School), Bilbul.	GT01124												Cl, pH, Turb				Cl, Bacto															Cl, pH, Turb	
YWTP Reservoir earth dam, Yenda	GT02201																																
YWTP Reservoir concrete dam, Yenda	GT02202																																
YWTP Canal supply, Yenda	GT02203					pH, Turb						Symbio Chem^																					
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																								Cl, pH, Turb						Cl, Bacto		
Casella Wines, Mains Water Meter, Yenda	GT02206																										Cl, F, Turb						
Temora Rd, Yenda (Terrel Estate service)	GT02207																															Cl, pH, Turb	
Cnr Twigg Rd & Edge Rd, Yenda	GT02208			Cl, Bacto							Cl, pH, Turb																						Cl, pH, Turb
22 East Av, Yenda	GT02209									Cl, Bacto			Cl, F, Turb																				
33 Park Street, Yenda	GT02210																Cl, Bacto	Cl, pH, Turb															
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																			Cl, F, Turb				Cl, Bacto									
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb		
Wastewater Routine Monitoring																																	
Weekly Micro Sample	[Weekly]	EPA ID 1	Micro (Int)									Micro (Int)								Micro (Int)						Micro (Int)							
Griffith EPA	[Monthly]	EPA ID 1	Sym Chem/Micro																														
GWRP Influent	[Monthly]	Inlet works	Sym Chem																														
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Note: Only send YWTP samples to SW if YWTP is operating																																	

Total Routine Monitoring Water Testing Schedule		Cl = FREE Chlorine						Cl = FREE Chlorine						Cl = FREE Chlorine						Cl = FREE Chlorine						Cl = FREE Chlorine							
	Day	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday		
	Date	01-Nov-17	02-Nov-17	03-Nov-17	04-Nov-17	05-Nov-17	06-Nov-17	07-Nov-17	08-Nov-17	09-Nov-17	10-Nov-17	11-Nov-17	12-Nov-17	13-Nov-17	14-Nov-17	15-Nov-17	16-Nov-17	17-Nov-17	18-Nov-17	19-Nov-17	20-Nov-17	21-Nov-17	22-Nov-17	23-Nov-17	24-Nov-17	25-Nov-17	26-Nov-17	27-Nov-17	28-Nov-17	29-Nov-17	30-Nov-17		
GWTP Hayes Lease raw reservoir, Griffith	GT01101	Symbio Chem^	pH, Turb																														
GWTP Lab Reticulation Tap	GT01102	Symbio Chem^	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb		
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2 Dunn St, Tharbogang	GT01104														Cl, pH, Turb													Bacto	Cl, pH, Turb				
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105								Bacto						Cl, pH, Turb																Cl, F, Turb		
20 Dickson St, Lake Wyangan	GT01106													Bacto	Cl, pH, Turb																Cl, pH, Turb		
(Near) 11 Lowde St, Nericon	GT01107														Cl, pH, Turb						Bacto										Cl, pH, Turb		
6 Noorebar Av, Griffith	GT01108																Cl, F, Turb											Bacto			Cl, pH, Turb		
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
2 Young St, Beelbangara	GT01112																Cl, pH, Turb												Cl, Bacto				
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Cnr Hanwood Road & Mallee Street, Hanwood	GT01119																							Cl, F, Turb									
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628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121													Cl, Bacto										Cl, pH, Turb									
668 Murray Rd, Yoogali	GT01122																				Cl, Bacto			Cl, pH, Turb									
10 Moura St, Yoogali	GT01123																				Cl, Bacto									Cl, pH, Turb			
Ferguson St, (near School), Bilbul	GT01124								Bacto	Cl, pH, Turb																				Cl, pH, Turb			
YWTP Reservoir earth dam, Yenda	GT02201																																
YWTP Reservoir concrete dam, Yenda	GT02202																																
YWTP Canal supply, Yenda	GT02203	Symbio Chem^	pH, Turb																														
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																												Cl, pH, Turb				
Casella Wines, Mains Water Meter, Yenda	GT02206								Cl, Bacto																							Cl, F, Turb	
Temora Rd, Yenda (Terrel Estate service)	GT02207									Cl, F, Turb				Cl, Bacto																			
Cnr Twigg Rd & Edge Rd, Yenda	GT02208														Cl, pH, Turb						Cl, Bacto												
22 East Av, Yenda	GT02209																Cl, F, Turb											Cl, Bacto					
33 Park Street, Yenda	GT02210																					Cl, pH, Turb											
Cnr Myall Park & Golf Course Rd, Yenda	GT02211																							Cl, F, Turb									
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	
Wastewater Routine Monitoring																																	
Weekly Micro Sample	[Week]	EPA ID 1	Micro (Int)													Micro (Int)								Micro (Int)							Micro (Int)		
Griffith EPA	[Month]	EPA ID 1	Sym Chem/Micro																														
GWRP Influent	[Month]	Inlet works	Sym Chem																														
Yenda EPA	[Jan, Mar, May, Jul, Sep, Nov]	EPA ID 3	Sym Chem/Micro																														
Cat C	[Weekly in vintage rest Monthly]	Wineries	Sym Chem																														
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Sym Chem																														
Piezometer, pH, EC, depth	[Mar, Jun, Sep, Dec]	See map	Internal																														
	Who by	Who to																															
Send to Symbio ^ (Algae) monthly in algae season	Analyst	SW																															
Send to Symbio [Jul, Sep, Nov, Jan, Mar, May]	Analyst	SW																															
	Analyst	GCC																															
Send Bacto to Wagga	Analyst	Health																															
Send Chem to FASS in Sydney	Analyst	Health																															
	Operator	GCC																															
Note: Only send YWTP samples to SW if YWTP is operating																																	

Total Routine Monitoring Water Testing Schedule	Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine							Cl = FREE Chlorine										
	Day	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	Date	01-Dec-17	02-Dec-17	03-Dec-17	04-Dec-17	05-Dec-17	06-Dec-17	07-Dec-17	08-Dec-17	09-Dec-17	10-Dec-17	11-Dec-17	12-Dec-17	13-Dec-17	14-Dec-17	15-Dec-17	16-Dec-17	17-Dec-17	18-Dec-17	19-Dec-17	20-Dec-17	21-Dec-17	22-Dec-17	23-Dec-17	24-Dec-17	25-Dec-17	26-Dec-17	27-Dec-17	28-Dec-17	29-Dec-17	30-Dec-17	31-Dec-17
GWTP Hayes Lease raw reservoir, Griffith	GT01101					pH, Turb	Symbio Chem^																									
GWTP Lab Reticulation Tap	GT01102	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto/Chem	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	
Cnr Kennedy and Goolagong Streets, Griffith	GT01103							Cl, F, Turb											Bacto			Cl, pH, Turb										
2 Dunn St, Tharbogang	GT01104							Cl, pH, Turb										Cl,pH, Turb										Cl, F, Turb				
1817 Mallison Rd, opposite 15 Bella Vista Dr, Lake	GT01105				Bacto			Cl, pH, Turb																				Cl, pH, Turb				
20 Dickson St, Lake Wyangan	GT01106							Cl, pH, Turb				Bacto																Cl, pH, Turb				
(Near) 11 Lowde St, Nericon	GT01107												Cl, pH, Turb					Bacto										Cl, pH, Turb				
6 Noorebar Av, Griffith	GT01108												Cl, pH, Turb																			
30 ML Reservoir, Remembrance Dr, Griffith	GT01109	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	
9 ML Reservoir, Remembrance Dr, Griffith	GT01110	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	
14 ML Reservoir, Scenic Hill, Griffith	GT01111	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb	
2 Young St, Beelbangara	GT01112												Cl, pH, Turb																			
2 Madden Dr, Griffith	GT01113												Cl, pH, Turb																			
8 Manera St, Griffith	GT01114														Cl, F, Turb																	
4 Sanders St, Griffith	GT01115				Cl, Bacto										Cl, pH, Turb																	
39 Nichols St, Griffith	GT01116				Cl, Bacto										Cl, pH, Turb																	
29 Lawford Cr, Griffith	GT01117				Cl, Bacto										Cl, pH, Turb																	
30 Middleton Av, Griffith	GT01118				Cl, Bacto															Cl, pH, Turb												
Cnr Hanwood Road & Mallee Street, Hanwood	GT01119											Bacto								Cl, pH, Turb												
Hanwood Oval- Opposite 31 Yarran Street	GT01120											Bacto								Cl, pH, Turb												
628 Research Station Rd, Hanwood (near Kendal Lane)	GT01121											Bacto								Cl, pH, Turb												
668 Murray Rd, Yoogali	GT01122										Cl, Bacto																Cl, F, Turb					
10 Moura St, Yoogali	GT01123																	Bacto									Cl, pH, Turb					
Ferguson St, (near School), Bilbul.	GT01124																	Bacto									Cl, pH, Turb					
YWTP Reservoir earth dam, Yenda	GT02201																															
YWTP Reservoir concrete dam, Yenda	GT02202																															
YWTP Canal supply, Yenda	GT02203					pH, Turb	Symbio Chem^																									
Cnr Curren Rd & Cremasco Rd, Yenda	GT02205																	Cl, Bacto											Cl, F, Turb			
Casella Wines, Mains Water Meter, Yenda	GT02206																															
Temora Rd, Yenda (Terrel Estate service)	GT02207							Cl, F, Turb																								
Cnr Twigg Rd & Edge Rd, Yenda	GT02208												Cl, pH, Turb																			
22 East Av, Yenda	GT02209													Cl, F, Turb																		
33 Park Street, Yenda	GT02210				Cl, Bacto														Cl, pH, Turb													
Cnr Myall Park & Golf Course Rd, Yenda	GT02211										Cl, Bacto											Cl, F, Turb										
Yenda Post Chlorine Booster Whitton Rd, Yenda	GT02213	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Symbio Chem	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Bacto	Cl, pH, Turb	Cl,pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, pH, Turb	Cl, Bacto	Cl, pH, Turb	Cl, pH, Turb		
Wastewater Routine Monitoring																																
Weekly Micro Sample	[Week]	EPA ID 1	Micro (Int)				Micro (Int)							Micro (Int)							Micro (Int)											
Griffith EPA	[Month]	EPA ID 1	Sym Chem/Micro																													
GWRP Influent	[Month]	Inlet works	Sym Chem																													
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Cat C	[Weekly in vintage rest Monthly]	Wineries	Sym Chem																													
Upstream & Downstream	[6 monthly Feb, Aug]	See map	Sym Chem																													
Piezometer, pH, EC, depth	[Mar, Jun, Sep, Dec]	See map	Internal																													
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Send to Symbio ^ (Algae) monthly in algae season	Analyst	SW																														
Send to Symbio [Jul, Sep, Nov, Jan, Mar, May]	Analyst	SW																														
	Analyst	GCC																														
Send Bacto to Wagga	Analyst	Health																														
Send Chem to FASS in Sydney	Analyst	Health																														
	Operator	GCC																														
Note: Only send YWTP samples to SW if YWTP is operating																																

## **Appendix D: Capital Works Programs and Financial Modelling Input Data**

# Strategic Business Plan for Water Supply and Sewerage Services

## Capital Works Plans

## Water Supply Operations

[illegible]

**Capital Works Plans**  
Sewerage Operations

[illegible]



## Water supply

## Statement of Financial Position

Griffith CC Water SBP Water 2017 : Base case

### Performance Indicators

Griffith City Council

Griffith CC Water SBP Water 2017 : Base case

Cash flow statement

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
<b>Cash flow From Operating Activities</b>																																
<i>Receipts</i>																																
Rates and Charges	10911	12584	9361	9453	9551	9656	9748	9859	9964	10062	10178	10278	10392	10501	10605	10722	10830	10934	11050	11160	11274	11390	11501	11623	11739	11855	11968	12089	12213	12339	12458	12584
Interest Income	676	1199	520	536	517	901	897	959	1073	1119	1138	1199	1171	1106	993	858	720	562	426	346	337	352	349	399	476	549	532	509	482	462	440	357
Other Revenues	503	574	437	441	445	449	453	457	461	465	469	474	479	484	489	494	499	504	509	514	519	524	529	534	539	544	549	554	559	564	569	574
Grants	56	69	69	67	67	65	65	64	63	62	61	60	59	58	57	57	56	55	54	53	52	52	51	50	49	49	48	47	46	46	45	44
Contributions	1038	1160	843	851	858	857	983	975	997	997	1012	1027	1020	1042	1042	1056	1034	1049	1050	1071	1064	1071	1093	1093	1108	1108	1123	1123	1130	1160	1145	1145
Total Receipts from Operations	13183	14704	11230	11347	11438	11928	12146	12313	12558	12706	12858	13037	13121	13190	13187	13187	13140	13104	13089	13144	13245	13389	13523	13699	13911	14105	14220	14322	14429	14570	14657	14704
<i>Payments</i>																																
Management	2884	3288	2515	2537	2559	2582	2605	2629	2654	2679	2704	2730	2755	2783	2810	2836	2863	2891	2918	2946	2972	3000	3028	3056	3084	3112	3141	3170	3199	3229	3259	3288
Operations (plus WC Inc)	4227	4810	3689	3720	3752	3784	3825	3862	3900	3935	3973	4009	4047	4084	4122	4162	4196	4235	4273	4311	4350	4387	4429	4470	4512	4552	4596	4637	4680	4726	4768	4810
Interest Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Expenses	95	109	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109
Total Payments from Operations	7206	8208	6284	6338	6393	6448	6514	6575	6641	6702	6765	6828	6893	6958	7024	7092	7154	7222	7287	7354	7420	7486	7557	7627	7698	7768	7841	7912	7985	8062	8135	8208
Net Cash from Operations	5978	6522	4946	5010	5045	5480	5632	5738	5917	6004	6092	6210	6228	6233	6163	6096	5986	5882	5801	5790	5826	5903	5966	6071	6212	6337	6379	6410	6445	6508	6522	6497
<b>Cash flow from Capital Activities</b>																																
<i>Receipts</i>																																
Proceeds from Disposal of Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Payments</i>																																
Acquisition of Assets	5673	9376	3224	4777	4798	5366	4250	2962	2092	5155	3931	3324	6905	6160	8435	8232	8621	9376	8521	7041	5150	4914	5743	3640	3158	3321	6476	6342	6565	6382	6513	8823
Net Cash from Capital Activities	-5673	-2092	-3224	-4777	-4798	-5366	-4250	-2962	-2092	-5155	-3931	-3324	-6905	-6160	-8435	-8232	-8621	-9376	-8521	-7041	-5150	-4914	-5743	-3640	-3158	-3321	-6476	-6342	-6565	-6382	-6513	-8823
<b>Cash flow from Financing Activities</b>																																
<i>Receipts</i>																																
New Loans Required	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Payments</i>																																
Principal Loan Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Cash from Financing Activities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL NET CASH	304	3825	1722	233	247	113	1382	2776	3825	849	2161	2886	-677	72	-2272	-2136	-2635	-3494	-2720	-1251	675	990	223	2432	3054	3015	-97	67	-120	127	9	-2326
Current Year Cash	304	3825	1722	233	247	113	1382	2776	3825	849	2161	2886	-677	72	-2272	-2136	-2635	-3494	-2720	-1251	675	990	223	2432	3054	3015	-97	67	-120	127	9	-2326
Cash & Investments @Year Start	17497	27593	16630	17904	17695	17504	17188	18117	20384	23619	23871	25397	27593	26260	25690	22846	20205	17141	13315	10336	8864	9307	10045	10017	12145	14829	17409	16890	16544	16023	15756	15380
Cash & Investments @Year End	17801	28283	18352	18138	17942	17617	18570	20893	24209	24467	26032	28283	26916	26332	23418	20710	17570	13648	10595	9086	9539	10296	10268	12449	15199	17844	17312	16957	16424	16150	15765	13054
<b>Capital Works Funding</b>																																
Internal Funding for New Works (\$'000)	2397	4301	949	1941	1910	3061	2933	2018	1099	4301	2803	2305	3049	2398	2397	2398	2397	2397	2397	2397	2397	2398	2397	2398	2397	2397	2397	2398	2398	2398	2397	2397
Internal Funding for Renewals	3276	6979	2275	2835	2888	2306	1316	944	993	854	1129	1019	3856	3763	6038	5835	6224	6979	6124	4643	2753	2516	3346	1242	761	924	4079	3945	4167	3984	4116	6425
New Loans	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Works	5673	9376	3224	4777	4798	5366	4250	2962	2092	5155	3931	3324	6905	6160	8435	8232	8621	9376	8521	7041	5150	4914	5743	3640	3158	3321	6476	6342	6565	6382	6513	8823

Griffith CC Water SBP Water 2017 : Sensitivity: Inflation rates

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
Typical Residential Bills	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813	813
Average Residential Bills (base year\$)	780	787	772	772	773	774	775	775	776	776	777	777	778	778	779	780	780	781	781	781	782	783	783	783	784	784	785	785	785	786	786	787
Mgmt Cost / Assessment (base year\$)	251	251	250	251	251	250	250	250	250	251	250	250	251	250	251	251	250	251	251	251	251	250	251	251	251	250	251	251	250	251	250	251
OMA Cost per Assessment (base year\$)	546	547	547	546	546	547	547	547	547	547	546	547	547	547	547	547	547	546	547	546	546	546	546	546	546	546	546	546	546	546	546	546
Operating Sales Margin (%)	19.64	23.83	23.83	23.58	23.38	22.98	23.42	23.06	22.97	22.39	22.06	21.79	21.29	21.01	20.67	20.44	19.87	19.56	19.21	18.94	18.49	18.19	17.89	17.49	17.19	16.77	16.44	16	15.64	15.39	14.91	14.49
Economic Real Rate of Return (%)	1.22	1.87	1.87	1.81	1.76	1.69	1.71	1.67	1.67	1.59	1.55	1.52	1.44	1.39	1.31	1.25	1.17	1.11	1.05	1.02	0.98	0.95	0.92	0.89	0.87	0.85	0.82	0.78	0.75	0.72	0.69	0.65
Debt Service Ratio	0.08	0.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0.06	0.09	0.1	0.11	0.13	0.13	0.12	0.12	0.15	0.18	0.21	0.24	0.27	0.33
Debt/Equity Ratio	0.04	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.04	0.05	0.06	0.06	0.07	0.06	0.06	0.06	0.07	0.08	0.09	0.11	0.12	0.15
Interest Cover	1.47	13.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.87	4.73	3.24	2.83	2.57	2.19	2.2	2.33	2.42	1.92	1.57	1.31	1.12	0.96	0.76
Return on capital (%)	1.31	1.96	1.91	1.87	1.81	1.96	1.96	1.92	1.93	1.88	1.82	1.79	1.7	1.61	1.49	1.38	1.24	1.13	1.06	1.02	0.98	0.95	0.92	0.9	0.88	0.85	0.82	0.78	0.75	0.73	0.69	0.66
Cash and Investments (base year \$'000)	11058	24791	18312	17940	17526	16886	17510	19512	22510	22147	23122	24791	22316	20623	16165	11835	6884	3618	3582	3563	3581	3606	3603	3598	3542	3580	3607	3609	3594	3613	3362	3600
Debt outstanding (base year \$'000)	9597	42757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2843	8177	13342	14571	16959	16603	15505	14692	18298	21899	26003	30078	34307	42757	
Net Debt (base year \$'000)	7834	39157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4595	8316	9761	10965	13356	13005	11963	11112	14691	18290	22409	26465	30945	39157
Net Cash Position (base year \$'000)	1461	24791	18312	17940	17526	16886	17510	19512	22510	22147	23122	24791	22316	20623	16165	11835	6884	775	-4595	-8316	-9761	-10965	-13356	-13005	-11963	-11112	-14691	-18290	-22409	-26465	-30945	-39157



## Performance Indicators

Griffith CC Water SBP Water 2017 : Growth 20% lower

## Performance Indicators

Griffith CC Water SBP Water 2017 : Growth 20% higher

## Performance Indicators

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Griffith CC Sewerage SBP 2017 : Base case

Statement of Financial Position

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
ASSETS																																
Cash and Investments	3587	4281	4281	2507	3601	3596	3596	3606	3598	3591	3592	3607	3597	3574	3602	3611	3598	3584	3603	3597	3603	3595	3793	3587	3572	3613	3638	3516	3578	3592	3598	3600
Receivables	2577	2949	2234	2257	2279	2301	2326	2350	2376	2401	2427	2453	2479	2504	2531	2558	2584	2610	2637	2664	2690	2718	2746	2774	2802	2831	2860	2890	2919	2949	2979	3009
Inventories	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property, Plant & Equipment	142960	165414	125118	126400	126884	126893	129187	129363	129126	129180	129496	130403	136399	137441	138597	139403	142436	143974	149457	151706	152558	153138	154020	154681	155420	158418	159170	163806	164794	165414	165929	166118
System Assets (1)	142960	165414	125118	126400	126884	126893	129187	129363	129126	129180	129496	130403	136399	137441	138597	139403	142436	143974	149457	151706	152558	153138	154020	154681	155420	158418	159170	163806	164794	165414	165929	166118
Plant & Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL ASSETS	149124	171955	131633	131164	132763	132791	135108	135319	135100	135172	135515	136463	142475	143520	144729	145572	148618	150168	155696	157967	158851	159451	160559	161042	161795	164862	165669	170212	171291	171955	172506	172728
LIABILITIES																																
Bank Overdraft	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Creditors	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Borrowings	19906	26602	17708	16474	17293	16353	17732	16880	15483	14312	13333	12905	17853	17670	17597	17095	18846	19044	23540	24718	24443	23809	23652	22796	22150	23923	23292	26602	26323	25544	24573	23162
Provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL LIABILITIES	19906	26602	17708	16474	17293	16353	17732	16880	15483	14312	13333	12905	17853	17670	17597	17095	18846	19044	23540	24718	24443	23809	23652	22796	22150	23923	23292	26602	26323	25544	24573	23162
NET ASSETS COMMITTED																																
NET ASSETS COMMITTED	129218	146411	113925	114690	115470	116438	117376	118439	119618	120860	122182	123558	124622	125851	127132	128476	129772	131124	132156	133249	134409	135642	136907	138246	139645	140939	142376	143610	144968	146411	147933	149566
EQUITY																																
Accumulated Operating Result	57366	65647	65647	64538	63458	62600	61756	61025	60449	59985	59641	59384	58833	58339	57915	57566	57191	56840	56172	55473	54830	54283	53797	53406	53102	52716	52442	51986	51584	51286	51093	51041
Asset Revaluation Reserve	71852	95126	48278	50152	52012	53838	55620	57414	59169	60875	62541	64174	65789	67512	69218	70910	72580	74284	75984	77776	79579	81359	83110	84840	86543	88223	89935	91623	93384	95126	96840	98525
TOTAL EQUITY	129218	146411	113925	114690	115470	116438	117376	118439	119618	120860	122182	123558	124622	125851	127132	128476	129772	131124	132156	133249	134409	135642	136907	138246	139645	140939	142376	143610	144968	146411	147933	149566
(1) Notes to System Assets																																
Current Replacement Cost	198137	207277	187613	189670	191160	192002	192141	192809	192960	193311	193965	194119	194202	194670	195139	195607	196074	196542	201842	202310	203064	203532	204000	204468	204936	205404	205872	206340	206809	207277	207745	207884
Less: Accumulated Depreciation	55177	65109	62495	63270	64277	65109	62955	63447	63833	64131	64469	63716	57803	57229	56542	56204	53639	52569	52384	50603	50505	50394	49979	49786	49516	46986	46702	42534	42015	41863	41816	41766
Written Down Current Cost	142960	165414	125118	126400	126884	126893	129187	129363	129126	129180	129496	130403	136399	137441	138597	139403	142436	143974	149457	151706	152558	153138	154020	154681	155420	158418	159170	163806	164794	165414	165929	166118

Griffith CC Sewerage SBP 2017 : Base case

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	
Typical Residential Bills	829	830	810	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	
Average Residential Bills (base year\$)	814	819	789	810	810	811	811	811	812	813	813	813	812	813	813	814	815	815	815	816	816	816	816	816	817	817	817	818	817	818	818	818	819
Mgmt Cost / Assessment (base year\$)	203	204	203	203	203	203	203	203	204	204	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	
OMA Cost per Assessment (base year\$)	581	582	581	581	581	581	581	582	581	581	581	581	581	582	581	581	581	581	581	581	580	580	580	580	580	580	581	580	580	581	581	581	
Operating Sales Margin (%)	21.47	23.63	17.34	19.19	19.17	19.36	20	20.17	20.47	20.53	20.78	21.09	21.17	21.32	21.63	21.75	21.86	21.97	21.51	21.7	21.79	22.04	22.2	22.38	22.54	22.64	22.91	23.06	23.13	23.31	23.45	23.63	
Economic Real Rate of Return (%)	1.47	1.63	1.13	1.29	1.29	1.32	1.36	1.39	1.43	1.44	1.47	1.5	1.46	1.47	1.5	1.51	1.5	1.51	1.44	1.44	1.46	1.48	1.5	1.52	1.54	1.53	1.56	1.55	1.56	1.58	1.6	1.63	
Debt Service Ratio	0.28	0.34	0.23	0.24	0.25	0.24	0.26	0.26	0.25	0.25	0.25	0.25	0.31	0.32	0.33	0.34	0.25	0.21	0.26	0.28	0.28	0.28	0.29	0.29	0.28	0.3	0.29	0.32	0.33	0.33	0.33	0.32	
Debt/Equity Ratio	0.15	0.19	0.16	0.14	0.15	0.14	0.15	0.14	0.13	0.12	0.11	0.1	0.14	0.14	0.14	0.13	0.15	0.15	0.18	0.19	0.18	0.18	0.17	0.16	0.16	0.17	0.16	0.19	0.18	0.17	0.17	0.15	
Interest Cover	1.65	2.30	1.27	1.4	1.4	1.59	1.55	1.65	1.83	1.99	2.18	2.3	1.72	1.77	1.82	1.9	1.82	1.82	1.46	1.41	1.43	1.49	1.52	1.59	1.66	1.56	1.64	1.45	1.48	1.55	1.62	1.74	
Return on capital (%)	1.50	1.62	1.2	1.32	1.3	1.4	1.43	1.45	1.49	1.5	1.53	1.55	1.5	1.51	1.54	1.55	1.53	1.54	1.47	1.47	1.48	1.5	1.52	1.54	1.55	1.54	1.57	1.55	1.56	1.58	1.6	1.62	
Cash and Investments (base year \$'000)	3588	4281	4281	2507	3601	3596	3596	3606	3598	3591	3592	3607	3597	3574	3602	3611	3598	3584	3603	3597	3603	3595	3793	3587	3572	3613	3638	3516	3578	3592	3598	3600	
Debt outstanding (base year \$'000)	20170	26602	17708	16474	17293	16353	17732	16880	15483	14312	13333	12905	17853	17670	17597	17095	18846	19044	23540	24718	24443	23809	23652	22796	22150	23923	23292	26602	26323	25544	24573	23162	
Net Debt (base year \$'000)	16583	23086	13427	13967	13692	12757	14136	13274	11885	10721	9741	9298	14256	14096	13995	13484	15248	15460	19937	21121	20840	20214	19859	19209	18578	20310	19654	23086	22745	21952	20975	19562	
Net Cash Position (base year \$'000)	-16583	-9298	-13427	-13967	-13692	-12757	-14136	-13274	-11885	-10721	-9741	-9298	-14256	-14096	-13995	-13484	-15248	-15460	-19937	-21121	-20840	-20214	-19859	-19209	-18578	-20310	-19654	-23086	-22745	-21952	-20975	-19562	

Griffith CC Sewerage SBP 2017 : Base case

Cash flow statement

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
Cash flow From Operating Activities																																
Receipts																																
Rates and Charges	9196	10713	7617	7897	7980	8070	8159	8253	8351	8445	8535	8637	8728	8828	8926	9027	9128	9224	9324	9425	9530	9629	9731	9836	9943	10051	10155	10267	10374	10489	10598	10713
Interest Income	135	183	164	100	89	183	178	175	171	167	163	159	155	151	148	145	141	137	135	131	128	125	128	120	116	114	113	107	106	104	102	99
Other Revenues	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Grants	49	60	59	60	58	58	56	56	55	54	53	52	52	51	51	50	49	48	48	47	46	46	45	44	44	43	43	42	42	41	40	40
Contributions	582	652	482	482	483	491	544	549	554	544	564	575	569	569	590	585	580	580	590	595	590	606	611	616	621	616	642	642	642	647	652	652
Total Receipts from Operations	9992	11533	8352	8568	8640	8831	8967	9062	9161	9240	9345	9453	9534	9629	9744	9837	9927	10019	10127	10229	10324	10436	10545	10646	10754	10855	10982	11088	11193	11310	11422	11533
Payments																																
Management	1978	2286	1699	1715	1731	1749	1768	1786	1806	1824	1843	1862	1883	1903	1923	1943	1963	1983	2003	2023	2043	2063	2084	2105	2127	2149	2171	2194	2217	2240	2263	2286
Operations (plus WC Inc)	3768	4349	3233	3264	3296	3329	3367	3404	3440	3477	3514	3552	3590	3628	3666	3704	3740	3778	3816	3854	3891	3931	3970	4009	4050	4091	4134	4177	4220	4263	4307	4349
Interest Expenses	1392	1815	1244	1233	1233	1168	1253	1192	1099	1019	951	922	1244	1230	1225	1189	1251	1266	1566	1652	1640	1608	1602	1555	1515	1637	1591	1815	1805	1756	1698	1608
Other Expenses	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Total Payments from Operations	7144	8272	6181	6218	6265	6250	6393	6388	6349	6325	6313	6341	6722	6766	6818	6841	6959	7031	7389	7534	7579	7606	7661	7674	7698	7882	7902	8191	8247	8265	8272	8247
Net Cash from Operations	2848	3286	2171	2350	2375	2581	2574	2675	2812	2915	3032	3112	2812	2863	2925	2996	2968	2988	2738	2695	2745	2830	2884	2972	3056	2972	3080	2898	2946	3045	3149	3286
Cash flow from Capital Activities																																
Receipts																																
Proceeds from Disposal of Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Payments																																
Acquisition of Assets	3499	7996	3921	3218	2440	1979	4265	2157	1746	2042	2313	2907	7996	3050	3169	2826	5060	3572	7592	4364	2979	2712	3022	2807	2892	5158	2919	6810	3167	2806	2708	2384
Net Cash from Capital Activities	-3499	-1746	-3921	-3218	-2440	-1979	-4265	-2157	-1746	-2042	-2313	-2907	-7996	-3050	-3169	-2826	-5060	-3572	-7592	-4364	-2979	-2712	-3022	-2807	-2892	-5158	-2919	-6810	-3167	-2806	-2708	-2384
Cash flow from Financing Activities																																
Receipts																																
New Loans Required	2061	6963	0	0	2130	443	2866	738	226	490	730	1353	6963	2082	2330	2038	3357	1525	6012	2917	1579	1294	1854	1239	1424	3968	1551	5641	2249	1838	1710	1284
Payments																																
Principal Loan Payments	1430	2111	717	802	910	961	1087	1158	1212	1283	1360	1456	1701	1830	1972	2111	1190	867	1052	1165	1252	1332	1430	1518	1514	1654	1598	1763	1880	1975	2058	2096
Net Cash from Financing Activities	631	5262	-717	-802	1220	-518	1778	-420	-986	-792	-630	-102	5262	252	358	-73	2168	658	4961	1752	327	-38	424	-279	-91	2314	-48	3878	369	-137	-348	-812
TOTAL NET CASH	-20	1155	-2467	-1669	1155	84	87	98	80	81	89	102	78	65	115	97	75	74	106	83	93	80	286	-114	73	128	113	-34	148	102	93	90
Current Year Cash	-20	1155	-2467	-1669	1155	84	87	98	80	81	89	102	78	65	115	97	75	74	106	83	93	80	286	-114	73	128	113	-34	148	102	93	90
Cash & Investments @Year Start	3608	6748	6748	4177	2446	3513	3509	3508	3518	3511	3504	3505	3519	3510	3487	3514	3523	3510	3497	3515	3510	3515	3507	3701	3499	3485	3525	3550	3430	3491	3505	3510
Cash & Investments @Year End	3588	4281	4281	2507	3601	3596	3596	3606	3598	3591	3592	3607	3597	3574	3602	3611	3598	3584	3603	3597	3603	3595	3793	3587	3572	3613	3638	3516	3578	3592	3598	3600
Capital Works Funding																																
Internal Funding for New Works (\$'000)	544	3458	3458	2058	0	841	140	668	150	352	653	155	83	468	468	468	468	468	0	468	500	468	468	468	468	90	468	468	468	468	468	139
Internal Funding for Renewals	895	1580	463	1160	310	695	1260	750	1370	1200	930	1400	950	500	370	320	1235	1580	1580	980	900	950	700	1100	1000	1100	900	700	450	500	530	961
New Loans	2061	6963	0	0	2130	443	2866	738	226	490	730	1353	6963	2082	2330	2038	3357	1525	6012	2917	1579	1294	1854	1239	1424	3968	1551	5641	2249	1838	1710	1284
Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Works	3499	7996	3921	3218	2440	1979	4265	2157	1746	2042	2313	2907	7996	3050	3169	2826	5060	3572	7592	4364	2979	2712	3022	2807	2892	5158	2919	6810	3167	2806	2708	2384

Griffith CC Sewerage SBP 2017 : Sensitivity: Inflation rates

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	
Typical Residential Bills	849	850	810	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	
Average Residential Bills (base year\$)	833	839	789	829	830	831	831	832	832	832	832	833	834	834	834	835	835	835	836	836	836	837	836	837	837	837	838	838	838	838	838	839	839
Mgmt Cost / Assessment (base year\$)	203	204	203	203	203	203	203	203	204	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	
OMA Cost per Assessment (base year\$)	581	582	581	581	581	581	581	581	581	582	581	581	581	581	581	581	581	581	581	581	581	580	580	580	580	580	580	581	580	581	580	581	
Operating Sales Margin (%)	19.37	20.77	17.34	20.68	20.43	20.4	20.77	20.64	20.63	20.47	20.47	20.53	20.39	20.27	20.34	20.19	20	19.88	19.04	18.97	18.76	18.76	18.66	18.6	18.47	18.3	18.33	18.2	18.06	17.93	17.84	17.75	
Economic Real Rate of Return (%)	1.15	1.40	1.13	1.4	1.38	1.37	1.38	1.37	1.37	1.35	1.35	1.35	1.28	1.26	1.25	1.23	1.19	1.17	1.08	1.06	1.04	1.03	1.02	1.01	1	0.97	0.97	0.93	0.92	0.91	0.9	0.89	
Debt Service Ratio	0.31	0.48	0.23	0.23	0.24	0.23	0.25	0.24	0.24	0.23	0.23	0.23	0.29	0.3	0.31	0.32	0.25	0.22	0.28	0.3	0.31	0.32	0.33	0.34	0.34	0.38	0.38	0.44	0.45	0.46	0.47	0.48	
Debt/Equity Ratio	0.15	0.21	0.16	0.14	0.14	0.13	0.14	0.13	0.11	0.1	0.09	0.09	0.12	0.12	0.12	0.12	0.13	0.17	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.21	0.21	0.21	0.21	0.2	
Interest Cover	1.40	2.46	1.27	1.54	1.55	1.75	1.68	1.79	1.99	2.17	2.36	2.46	1.72	1.72	1.73	1.76	1.61	1.56	1.17	1.09	1.07	1.08	1.06	1.06	1.05	0.94	0.94	0.8	0.78	0.77	0.77	0.78	
Return on capital (%)	1.19	1.45	1.2	1.42	1.38	1.45	1.45	1.43	1.43	1.41	1.4	1.39	1.32	1.3	1.29	1.27	1.23	1.2	1.11	1.09	1.07	1.06	1.05	1.04	1.02	0.99	0.99	0.95	0.93	0.92	0.9	0.89	
Cash and Investments (base year \$'000)	3432	4273	4273	2638	3649	3594	3595	3580	3504	3572	3561	3594	3567	3596	3599	3598	3605	3580	3590	3623	3608	3605	3606	3612	3602	3600	3593	3510	3216	2783	2245	1675	
Debt outstanding (base year \$'000)	24358	40320	17708	16418	16965	15785	17112	16095	14483	13288	12248	11892	17587	17622	17757	17471	19950	20631	26574	28638	28944	28913	29303	29425	29654	33090	33507	39445	40198	40320	40191	39538	
Net Debt (base year \$'000)	20926	37946	13435	13780	13316	12191	13517	12515	10979	9716	8687	8298	14020	14026	14158	13873	16345	17051	22984	25015	25336	25308	25697	25813	26052	29490	29914	39935	36982	37537	37946	37863	
Net Cash Position (base year \$'000)	-20926	-8298	-13435	-13780	-13316	-12191	-13517	-12515	-10979	-9716	-8687	-8298	-14020	-14026	-14158	-13873	-16345	-17051	-22984	-25015	-25336	-25308	-25697	-25813	-26052	-29490	-29914	-35935	-36982	-37537	-37946	-37863	

Griffith CC Sewerage SBP 2017 : Sensitivity: Investment rates -1%pa

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
Typical Residential Bills	829	830	810	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830
Average Residential Bills (base year\$)	814	819	789	810	810	811	811	811	812	813	813	813	812	813	813	814	815	815	815	816	816	816	816	816	817	817	817	818	817	818	818	819
Mgmt Cost / Assessment (base year\$)	203	204	203	203	203	203	203	203	204	204	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203
OMA Cost per Assessment (base year\$)	581	582	581	581	581	581	581	582	581	581	581	581	581	582	581	581	581	581	581	581	580	580	580	580	580	580	581	580	580	581	581	581
Operating Sales Margin (%)	21.47	23.63	17.34	19.19	19.17	19.36	20	20.17	20.47	20.53	20.78	21.09	21.17	21.32	21.63	21.75	21.86	21.97	21.51	21.7	21.79	22.04	22.2	22.38	22.54	22.64	22.91	23.06	23.13	23.31	23.45	23.63
Economic Real Rate of Return (%)	1.47	1.63	1.13	1.29	1.29	1.32	1.36	1.39	1.43	1.44	1.47	1.5	1.46	1.47	1.5	1.51	1.5	1.51	1.44	1.44	1.46	1.48	1.5	1.52	1.54	1.53	1.56	1.55	1.56	1.58	1.6	1.63
Debt Service Ratio	0.29	0.35	0.24	0.24	0.25	0.24	0.26	0.26	0.26	0.25	0.25	0.26	0.31	0.32	0.33	0.34	0.25	0.22	0.27	0.29	0.29	0.29	0.3	0.3	0.3	0.32	0.31	0.34	0.35	0.35	0.35	0.34
Debt/Equity Ratio	0.16	0.20	0.16	0.14	0.15	0.14	0.15	0.14	0.13	0.12	0.11	0.11	0.15	0.15	0.14	0.14	0.15	0.15	0.19	0.19	0.19	0.18	0.18	0.17	0.17	0.18	0.17	0.2	0.19	0.19	0.18	0.17
Interest Cover	1.58	2.21	1.23	1.37	1.37	1.55	1.51	1.61	1.78	1.93	2.1	2.21	1.66	1.7	1.75	1.81	1.74	1.74	1.4	1.35	1.37	1.42	1.45	1.51	1.56	1.47	1.54	1.37	1.39	1.45	1.51	1.61
Return on capital (%)	1.48	1.61	1.16	1.29	1.28	1.37	1.41	1.43	1.47	1.48	1.51	1.53	1.48	1.49	1.52	1.53	1.52	1.52	1.45	1.46	1.47	1.49	1.51	1.52	1.54	1.53	1.56	1.54	1.55	1.57	1.59	1.61
Cash and Investments (base year \$'000)	3592	4226	4226	2420	3606	3619	3629	3588	3592	3604	3619	3612	3625	3618	3601	3595	3616	3615	3636	3604	3626	3626	3631	3590	3609	3600	3596	3617	3619	3614	3621	3594
Debt outstanding (base year \$'000)	20938	28107	17708	16474	17419	16535	17962	17097	15753	14644	13721	13317	18336	18218	18148	17683	19523	19789	24347	25557	25362	24800	24512	23891	23351	25148	24565	28107	27853	27143	26268	24922
Net Debt (base year \$'000)	17346	24490	13482	14054	13813	12916	14333	13509	12161	11040	10102	9705	14711	14600	14547	14088	15907	16174	20711	21953	21736	21174	20881	20301	19742	21548	20969	24490	24234	23529	22647	21328
Net Cash Position (base year \$'000)	-17346	-9705	-13482	-14054	-13813	-12916	-14333	-13509	-12161	-11040	-10102	-9705	-14711	-14600	-14547	-14088	-15907	-16174	-20711	-21953	-21736	-21174	-20881	-20301	-19742	-21548	-20969	-24490	-24234	-23529	-22647	-21328

Griffith CC Sewerage SBP 2017 : Sensitivity: Growth rate 20% lower

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
Typical Residential Bills	849	850	810	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
Average Residential Bills (base year\$)	832	838	789	829	830	830	831	831	831	831	832	833	833	833	833	834	834	834	835	835	835	835	835	836	836	836	836	837	837	837	837	838
Mgmnt Cost / Assessment (base year\$)	210	215	204	204	205	205	206	206	206	207	207	207	208	208	209	209	209	210	210	210	211	211	212	212	213	213	213	214	214	214	215	215
OMA Cost per Assessment (base year\$)	599	614	583	583	584	586	587	589	590	591	593	593	595	596	597	598	599	600	602	602	603	604	605	606	607	608	609	610	611	612	614	613
Operating Sales Margin (%)	20.83	21.32	17.16	20.63	20.49	20.46	20.94	20.97	21.07	20.93	21.13	21.24	21.19	21.15	21.32	21.32	21.27	21.26	20.67	20.69	20.65	20.78	20.82	20.87	20.86	20.84	20.99	21.01	20.97	21.02	21.05	21.24
Economic Real Rate of Return (%)	1.41	1.52	1.12	1.41	1.4	1.41	1.44	1.46	1.48	1.48	1.5	1.52	1.46	1.46	1.47	1.47	1.45	1.45	1.37	1.36	1.36	1.38	1.38	1.39	1.4	1.38	1.4	1.37	1.37	1.38	1.39	1.42
Debt Service Ratio	0.28	0.35	0.24	0.23	0.24	0.23	0.25	0.25	0.24	0.24	0.24	0.24	0.3	0.31	0.32	0.32	0.23	0.2	0.25	0.27	0.27	0.27	0.28	0.28	0.28	0.3	0.3	0.33	0.34	0.35	0.35	0.35
Debt/Equity Ratio	0.15	0.19	0.16	0.14	0.15	0.14	0.15	0.14	0.12	0.11	0.1	0.1	0.13	0.13	0.13	0.12	0.14	0.14	0.17	0.18	0.17	0.17	0.17	0.16	0.16	0.17	0.17	0.19	0.19	0.19	0.18	0.17
Interest Cover	1.64	2.50	1.26	1.52	1.53	1.72	1.67	1.79	1.98	2.15	2.37	2.5	1.82	1.86	1.9	1.97	1.87	1.86	1.45	1.38	1.39	1.43	1.45	1.49	1.52	1.41	1.45	1.27	1.27	1.29	1.33	1.4
Return on capital (%)	1.45	1.57	1.19	1.43	1.41	1.49	1.51	1.52	1.54	1.54	1.56	1.57	1.5	1.5	1.51	1.51	1.49	1.48	1.4	1.39	1.39	1.4	1.41	1.41	1.42	1.4	1.41	1.38	1.38	1.39	1.4	1.42
Cash and Investments (base year \$'000)	3593	4268	4268	2655	3606	3609	3601	3602	3593	3604	3607	3604	3597	3602	3597	3602	3599	3600	3605	3593	3610	3601	3602	3615	3608	3601	3613	3593	3605	3604	3598	3600
Debt outstanding (base year \$'000)	19856	27351	17708	16474	16994	15920	17161	16178	14674	13436	12374	11863	16762	16576	16453	15947	17732	17984	22527	23780	23624	23117	22908	22451	22023	23987	23616	27341	27351	26938	26374	25411
Net Debt (base year \$'000)	16263	23748	13440	13819	13388	12311	13560	12576	11081	9832	8767	8259	13165	12974	12856	12345	14133	14384	18922	20187	20014	19516	19306	18836	18415	20386	20003	23748	23746	23334	22776	21811
Net Cash Position (base year \$'000)	-16263	-8259	-13440	-13819	-13388	-12311	-13560	-12576	-11081	-9832	-8767	-8259	-13165	-12974	-12856	-12345	-14133	-14384	-18922	-20187	-20014	-19516	-19306	-18836	-18415	-20386	-20003	-23748	-23746	-23334	-22776	-21811

Griffith CC Sewerage SBP 2017 : Sensitivity: Growth rate 20% higher

Performance Indicators

	30y mean	30y peak	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47
Typical Residential Bills	829	830	810	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830	830
Average Residential Bills (base year\$)	814	819	789	810	810	811	811	811	812	813	813	814	813	814	814	815	815	815	815	816	816	816	817	817	817	818	818	818	818	819	818	819
Mgmt Cost / Assessment (base year\$)	198	203	203	203	202	202	201	202	201	200	200	199	199	199	199	198	198	197	197	197	196	196	196	195	195	195	195	194	194	194	194	194
OMA Cost per Assessment (base year\$)	566	580	580	579	578	577	576	575	574	573	572	571	570	569	568	567	566	565	564	563	562	561	560	559	558	558	557	556	555	554	554	553
Operating Sales Margin (%)	23.44	27.16	17.47	19.48	19.61	19.94	20.68	20.99	21.43	21.64	22.01	22.46	22.66	22.95	23.37	23.61	23.87	24.1	23.76	24.06	24.26	24.61	24.88	25.15	25.41	25.62	25.97	26.21	26.39	26.66	26.88	27.16
Economic Real Rate of Return (%)	1.64	1.96	1.15	1.31	1.33	1.37	1.42	1.46	1.51	1.54	1.59	1.63	1.59	1.62	1.65	1.68	1.68	1.7	1.64	1.65	1.67	1.71	1.74	1.78	1.81	1.81	1.85	1.83	1.85	1.89	1.92	1.96
Debt Service Ratio	0.23	0.31	0.23	0.24	0.25	0.24	0.26	0.25	0.24	0.24	0.24	0.24	0.29	0.3	0.3	0.31	0.21	0.18	0.22	0.23	0.23	0.22	0.22	0.21	0.2	0.21	0.19	0.22	0.21	0.2	0.19	0.18
Debt/Equity Ratio	0.12	0.16	0.16	0.14	0.15	0.14	0.15	0.14	0.13	0.11	0.1	0.1	0.13	0.13	0.12	0.11	0.12	0.12	0.15	0.15	0.15	0.13	0.13	0.12	0.1	0.11	0.1	0.11	0.1	0.09	0.08	0.07
Interest Cover	2.33	4.44	1.28	1.42	1.45	1.65	1.62	1.76	1.98	2.2	2.46	2.67	2	2.09	2.21	2.38	2.33	2.41	1.91	1.88	1.98	2.15	2.3	2.51	2.77	2.65	2.99	2.61	2.84	3.28	3.79	4.44
Return on capital (%)	1.67	1.97	1.21	1.33	1.34	1.45	1.49	1.52	1.57	1.6	1.64	1.67	1.63	1.65	1.69	1.71	1.71	1.72	1.66	1.67	1.69	1.72	1.75	1.78	1.81	1.8	1.84	1.82	1.84	1.9	1.93	1.97
Cash and Investments (base year \$'000)	3637	4769	4290	2543	3598	3599	3611	3611	3598	3592	3600	3602	3590	3607	3600	3575	3604	3595	3582	3591	3593	3595	3584	3595	3603	3598	3599	3599	3595	3648	3954	4769
Debt outstanding (base year \$'000)	16109	20937	17708	16474	17207	16209	17519	16553	15027	13708	12559	11916	16629	16225	15823	14960	16393	16193	20222	20937	20138	18947	17961	16660	15324	16281	14799	17352	16060	14262	12482	10747
Net Debt (base year \$'000)	12472	17346	13418	13931	13609	12610	13908	12942	11429	10116	8959	8314	13039	12618	12223	11385	12789	12598	16640	17346	16545	15352	14377	13065	11721	12683	11200	13753	12465	10614	8528	5978
Net Cash Position (base year \$'000)	-12472	-5978	-13418	-13931	-13609	-12610	-13908	-12942	-11429	-10116	-8959	-8314	-13039	-12618	-12223	-11385	-12789	-12598	-16640	-17346	-16545	-15352	-14377	-13065	-11721	-12683	-11200	-13753	-12465	-10614	-8528	-5978

## **APPENDIX E: 10 Year Capital Works Program Water & Sewer**

Strategic Business Plan for Water Supply and Sewerage Services

10 Year Capital Works Programme  
Water Fund

Ver 14 March 2018

Ver 14 March 2018

Item	Project	Linkage to Delivery Program/ Community Strategic Plan	Type of Works			Year 1 Funding					Project Totals	1	2	3	4	5	6	7	8	9	10
			Improved LOS	Growth Works	Asset Renewals	Rates / Charges/Fees	Grants/ Contributions	Reserves	Loans	2018/19		2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	
Griffith WTP																					
1	Upgrade (Elec/Mech/Civil) Griffith W.T.P	8.1.1	40%		60%	20,000				140,000	20,000	20,000	50,000	50,000							
2	Upgrade Capacity Griffith W.T.P (15MI)	8.1.1		100%		0				4,150,000					150,000			4,000,000			
3	Construction of a Second Outlet from GWTP to Trunk Main	8.1.1			100%	100,000				100,000	100,000										
4	Upgrade Sand Filters & Water T/Plant	8.1.1			100%	1,500,000				10,500,000	1,500,000	3,000,000	3,000,000	3,000,000							
Griffith Reservoirs																					
5	Refurbish Reservoir 30MI (1986)	8.1.1			100%	0				177,000				177,000							
6	Refurbish Reservoir 14MI (1977)	8.1.1			100%	0				800,000			800,000								
7	Refurbish Reservoir 9MI (1949)	8.1.1			100%	0				332,000		332,000									
8	Refurbish Reservoir (Scenic Hill)-Raw Water	8.1.1	50%		50%	0				200,000		200,000									
9	New 15 ML Storage (Scenic Hill)	8.1.1		100%		0				3,000,000						3,000,000					
Yenda																					
10	Upgrade (Elec/Mech) Yenda W.T.P	8.1.1	25%	25%	50%	0				100,000				100,000							
11	Membrane Replacement	8.1.1			100%	100,000				100,000	100,000										
Reticulation Renewals																					
12	Potable Reticulation Mains Renewals	8.1.1			100%	607,800				3,177,030	607,800	130,950	538,280	300,000	300,000	300,000	100,000	300,000	300,000	300,000	300,000
13	Potable Trunk Mains Renewal	8.1.1			100%	252,000				2,271,700	252,000	211,200	408,500	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
14	Raw Mains Renewals	8.1.1			100%	506,000				1,406,000	506,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
15	Raw Water Pump Stations	8.1.1			100%	0				40,000		40,000									
16	Potholing for Forward Design of Water Mains	8.1.1			100%	20,000				200,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Water Meter Etc Renewals																					
17	Water Meter Etc Renewals Program	8.1.1			100%	75,000				750,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
18	New Water Meters/ RPZ's (Purchase)	8.1.1	50%	50%		45,000				450,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000
19	New Water Meters/ RPZ's (Install)	8.1.1	50%	50%		45,000				450,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000	45,000
20	Electronic Water Meter Reading Program	8.1.1	100%			-1,500,000		1,500,000		1,500,000					1,500,000						
Mains Extensions - Potable																					
21	New Reticulation Mains (Potable)	8.1.1		100%		0				795,000		235,000		80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
22	Miscellaneous New/Replacement Mains	8.1.1	100%			20,000				180,000	20,000	20,000		20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
New Trunk Mains																					
23	New Trunk Mains (Potable)	8.1.1		100%		0				2,690,000		336,000	714,000	570,000	570,000	500,000					
Miscellaneous																					
24	Replace Elec/ Mech Equip P/Stations	8.1.1	40%		60%	0				65,000		65,000									
25	Scada/Telemetry System	8.1.1	40%	30%	30%	10,000				120,000	10,000	10,000	30,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
26	Capital Salaries	8.1.1	20%	50%	30%	78,975				894,751	78,975	81,429	83,465	85,551	87,776	90,146	92,670	95,357	98,218	101,164	104,116
27	Plant Replacement Program - Water (Net)	8.1.1			100%	167,000				2,331,400	167,000	222,900	285,000	155,750	69,000	324,000	213,000	302,000	230,000	362,750	362,750
28	Sundry Tools	8.1.1	50%		50%	14,000				148,000	14,000	14,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
29	Additional Unforeseen Capital Requirements	8.1.1	20%	30%	50%	40,000				520,000	40,000	50,000	50,000	50,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000
30	Investigation & Forward Planning	8.1.1	50%		50%	10,000				100,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
31	Chlorine Probes Replace	8.1.1	50%		50%	0				62,500		12,500						12,500	12,500	12,500	12,500
			Total Capital			2,110,775	0	1,500,000	0	37,750,381	3,610,775	5,275,979	6,269,245	5,108,301	3,351,776	4,889,146	5,093,170	1,384,857	1,315,718	1,451,414	1,451,414

Improved LOS	2,823,200	112,795	247,536	116,193	153,610	1,610,055	110,529	117,284	117,821	118,394	118,983
Growth Works	11,749,376	99,488	674,715	824,733	780,776	908,388	3,689,573	4,190,835	192,179	193,609	195,082
Renewals	23,177,805	3,398,493	4,353,729	5,328,320	4,173,915	833,333	1,089,044	785,051	1,074,857	1,003,715	1,137,349
<b>Total</b>	<b>37,750,381</b>	<b>3,610,775</b>	<b>5,275,979</b>	<b>6,269,245</b>	<b>5,108,301</b>	<b>3,351,776</b>	<b>4,889,146</b>	<b>5,093,170</b>	<b>1,384,857</b>	<b>1,315,718</b>	<b>1,451,414</b>

<b>Summary</b>											
Total Capital Expenditure	37,750,381	3,610,775	5,275,979	6,269,245	5,108,301	3,351,776	4,889,146	5,093,170	1,384,857	1,315,718	1,451,414
New Loans	0	0	0	0	0	0	0	0	0	0	0
Funded from Unspent Loans	0	0	0	0	0	0	0	0	0	0	0
Funded from Grants/ Contributions	0	0	0	0	0	0	0	0	0	0	0
Funded from Reserve	7,500,000	1,500,000	3,000,000	3,000,000	0	0	0	0	0	0	0
Funded by Rates, Fees & Charges	30,250,381	2,110,775	2,275,979	3,269,245	5,108,301	3,351,776	4,889,146	5,093,170	1,384,857	1,315,718	1,451,414
<b>Total Capital Spend funded</b>	<b>37,750,381</b>	<b>3,610,775</b>	<b>5,275,979</b>	<b>6,269,245</b>	<b>5,108,301</b>	<b>3,351,776</b>	<b>4,889,146</b>	<b>5,093,170</b>	<b>1,384,857</b>	<b>1,315,718</b>	<b>1,451,414</b>



			Type of Works			Year 1 Funding														1	2	3	4	5	6	7	8	9	10
Item	Project	Linkage to Delivery Program/ Community Strategic Plan	Improved LOS	Growth Works	Asset Renewals	Rates / Charges/Fees	Grants/ Contributions	Reserves	Loans	Project Totals	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28									
Griffith																													
1	Griffith WRP Membrane Replacement	-			100%	0				1,900,000				1,900,000															
2	Replacement of GWRP Elec /Mech Equipment	8.1.2			100%	30,000				300,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000									
3	Griffith WRP - Various, landscaping	8.1.2	50%		50%	20,000				140,000	20,000	20,000	20,000	20,000	10,000	10,000	10,000	10,000	10,000	10,000									
4	Upgrade of Pump Stations (Civil & Electrical)	8.1.2			100%	30,000				370,000	30,000	30,000	100,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000									
New Pump Stations																													
5	Pump Station G21 (Murrumbidgee Av)	8.1.2		100%		0				350,000			300,000	50,000															
6	Pump Station (Farm 12 Collina)	8.1.2		100%		0				450,000		450,000																	
7	Pump Station G32 ( South of GWRP)	8.1.2		100%		0				500,000					500,000														
Yenda																													
8	Pump Station YE4	8.1.2		100%		300,000				300,000	300,000																		
Lake Wyangan																													
9	New Rising Main (G7 To GWRP)	8.1.4		100%		0				900,000		900,000																	
10	Pump Station (LW1, LW2)	8.1.4		100%		40,000				440,000	40,000		400,000																
11	Trunk Reticulation	8.1.4		100%		0				500,000		200,000	300,000																
Tharbogang																													
12	Sewerage for Tharbogang Village	8.1.4		100%		937,260	678,720			1,616,000	1,616,000																		
Sewer Renewals & New Sewers																													
13	Renewals of Gravity Sewers	8.1.2			100%	100,000				1,500,000	100,000	100,000	100,000	100,000	100,000	200,000	200,000	200,000	200,000	200,000									
14	Renewals of Rising Mains	8.1.2			100%	600,000				3,750,000	600,000	600,000	600,000	600,000	600,000	150,000	150,000	150,000	150,000	150,000									
Miscellaneous																													
15	Upgrade SCADA & Telemetry Systems	8.1.1	80%		20%	50,000				180,000	50,000	10,000	10,000	10,000	50,000	10,000	10,000	10,000	10,000	10,000									
16	Plant Replacement Program - Sewer (Net)	8.1.2			100%	214,000				1,419,500	214,000	47,000	94,000	66,500	259,000	309,000	73,000	22,000	186,000	149,000									
17	Purchase Low Pressure Grinder Pumps	8.1.2		100%		0				90,000	0	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000									
18	Miscellaneous - Capital	8.1.2	80%		20%	50,000				500,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000									
19	Capital Salaries	8.1.2	20%	60%	20%	58,839				671,054	58,839	61,110	62,638	64,204	65,873	67,651	69,546	71,563	73,709	75,921									
20	Sundry Tools	8.1.2	40%	20%	40%	15,000				150,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000									
21	Investigation & Forward Planning	8.1.2	50%		50%	10,000				100,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000									
				Total Capital		2,455,119	678,720	0	0	16,126,554	3,133,839	2,533,110	2,101,638	2,955,704	1,729,873	891,651	657,546	608,563	774,709	739,921									

Improved LOS	858,211	112,768	81,222	81,528	81,841	109,175	77,530	77,909	76,313	78,742	79,184
Growth Works	5,578,632	1,994,303	1,599,666	1,050,583	101,522	552,524	53,591	54,728	55,938	57,225	58,553
Renewals	9,689,711	1,026,768	852,222	969,528	2,772,341	1,068,175	760,530	524,909	474,313	638,742	602,184
<b>Total</b>	<b>16,126,554</b>	<b>3,133,839</b>	<b>2,533,110</b>	<b>2,101,638</b>	<b>2,955,704</b>	<b>1,729,873</b>	<b>891,651</b>	<b>657,546</b>	<b>608,563</b>	<b>774,709</b>	<b>739,921</b>

<b>Summary</b>											
Total Capital Expenditure	16,126,554	3,133,839	2,533,110	2,101,638	2,955,704	1,729,873	891,651	657,546	608,563	774,709	739,921
New Loans	0	0	0	0	0	0	0	0	0	0	0
Funded from Unspent Loans	0	0	0	0	0	0	0	0	0	0	0
Funded from Grants/ Contributions	678,720	678,720	0	0	0	0	0	0	0	0	0
Funded from Reserve	0	0	0	0	0	0	0	0	0	0	0
Funded by Rates, Fees & Charges	15,447,834	2,455,119	2,533,110	2,101,638	2,955,704	1,729,873	891,651	657,546	608,563	774,709	739,921
<b>Total Capital Spend funded</b>	<b>16,126,554</b>	<b>3,133,839</b>	<b>2,533,110</b>	<b>2,101,638</b>	<b>2,955,704</b>	<b>1,729,873</b>	<b>891,651</b>	<b>657,546</b>	<b>608,563</b>	<b>774,709</b>	<b>739,921</b>

## **APPENDIX F: Raw Water Storage Report**



## **Resolution of Council from the meeting minutes 27 March 2018**

### **CL08 INVESTIGATION OF ADDITIONAL RAW WATER STORAGE FACILITY**

18/110

**RESOLVED** on the motion of Councillors Mike Neville and Christine Stead that:

- (a) Council not proceed with the construction of an additional raw water storage facility based on the information provided in this report.
- (b) The option of an additional raw water storage facility is included in the next review of the Strategic Business Plan for Water Supply and Sewerage Services.

**CLAUSE**      **CL08****TITLE**            **Investigation of Additional Raw Water Storage Facility****FROM**            **Graham Gordon, Director Utilities****TRIM REF**        **18/21936**

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### SUMMARY

At the Ordinary Meeting of Council on the 26 September 2017, Councillor Anne Napoli raised a Notice of Motion calling for Council to prepare a report on the construction of an additional raw water storage facility (similar to Hayes Lease) which has a capacity of 300 ML and could supply the city of Griffith for approximately 10-15 days during the winter period.

This report provides a response to that motion addressing the feasibility, estimated costing, availability of any subsidies from the State Government and the potential effect on the water rates and charges going forward and a proposed timeline for the project.

### RECOMMENDATION

**(a) Council not proceed with the construction of an additional raw water storage facility based on the information provided in this report.**

### REPORT

At the Ordinary Meeting of Council on the 26 September 2017, Councillor Anne Napoli raised a Notice of Motion calling for Council to prepare a report on the construction of an additional raw water storage facility (similar to Hayes Lease) which has a capacity of 300 ML and could supply the city of Griffith for approximately 10-15 days during the winter period. Report to include: feasibility and estimated costing, availability of any subsidies from the State Government, potential effect on the water rates and charges going forward and proposed timeline for the project.

This report covers the preliminary investigation and planning work carried out on the feasibility of construction of an additional raw water storage facility at the existing Griffith Water Treatment Plant (GWTP) site.

#### 1. Feasibility And Estimated Costing

Griffith City Council accesses raw water through the Murrumbidgee Irrigation (MI) supply network that is then treated and used for potable town water supply. It is secured under a High Security Town water allocation; therefore it is extremely protected in relation to all other raw water supply priorities.

During the winter months of 2017, Murrumbidgee Irrigation and WaterNSW had to carry out programmed major works which created planned interruptions to the regular water supply network; the major works schedule was due to the following reasons:

**Berembed Weir works:** This weir creates a river pool so as to divert water (from the Murrumbidgee River) into the Offtake Regulator and into the Main Irrigation Canal to provide water for the Murrumbidgee Irrigation Area. The Main Weir and the Offtake Regulator were constructed in 1910.

WaterNSW scheduled works at Berembed Weir in 2017 as there was a need to replace the Offtake Regulator's gates and components, to upgrade its working platform, and replace the Main Weir's gear boxes, which had reached the end of their useful life (107 years old). Works were programmed for June 2017 and were expected to take 11 weeks to complete. This meant that the Murrumbidgee Irrigation network had no access to Murrumbidgee River water during this 11 week period and therefore only water in the MI network was available for town supply.

To take advantage of this major shutdown by WaterNSW, Murrumbidgee Irrigation also planned Infrastructure upgrades across their network to improve the efficiency of their integrated water delivery system. Some of the essential works to the Main Canal included the installation of over 80 regulator gates and the installation of over 15 offtake gates. After speaking with Murrumbidgee Irrigation management it is reasonable to say that the major works carried out in 2017 will not have to be done again for a very long time given the track record of the existing infrastructure, i.e. 107 years old.

Given that 2017 was a very dry winter period the water supply within the MI network needed to be topped up by using water from the North Lake at Lake Wyangan. The North Lake holds approximately 3,500 ML (conservative estimate) and was purposely filled by MI to be used as a secure backup for water supply during these winter works. Over the past 20 years Griffith City Council has only needed to use Lake Wyangan water for the Town Supply twice including winter 2017.

The motion has been raised as a response to using Lake Wyangan water as a raw water source that is treated and then supplied into the potable water reticulation network for human consumption. The community of Griffith have concerns with the current quality of the water in Lake Wyangan with the Blue Green Algae presence and therefore expressed their concerns when they were notified of the waters use for treatment and distribution as

potable / drinking water. An additional raw water storage facility was raised as a safe guard for our town's raw water source.

The most feasible location of an additional storage is shown in Map 1 (attachment a) as Option 1 as the land it would occupy is owned by Griffith City Council. The available space by the side of the existing 300 ML raw water storage facility, known as Hayes Lease, is 340m x 150m in area. The depth has to be limited to 4.8 metres which matches the existing depth of Hayes Lease. If we exceed the existing basin depth of 4.8m then we need to provide lift pumps which will incur higher capital and operational costs.

Currently, there is limited space for the construction of an additional raw water storage facility to duplicate a 300 ML capacity. The available space is adequate for a capacity of approximately 160 ML.

If the required additional storage is around 300 ML, additional land will need to be acquired from the adjoining Crown land and private land as shown in Map 2 (attachment b), this would be Option 2.

The estimated cost for Option 2 is around \$12 million dollars, a breakdown of this estimated cost is listed in attachment (d). This shows different items of works or activities that will need to be carried out and the estimated amount for each item.

The cost to design, acquire additional land and construct a new 300 ML raw water storage facility that will only provide the town with a water supply for 6 to 8 days in summer and approximately 20 days in winter is not feasible and is therefore not recommended.

The community have an expectation that the water quality in Lake Wyangan must be improved so as to reduce or eliminate the risk of Blue Green Algae and provide a better guarantee that the water is safe for recreational use and therefore minimise the health risks to humans. Once the best solutions to improve water quality in Lake Wyangan are determined, funded and actioned, Council and the community can have confidence that the 3,500 ML of raw water in Lake Wyangan could be used as a back-up water supply.

## 2. Availability Of Subsidies From The State Government

Griffith City Council can apply for funding for the above works under the NSW Government Safe and Secure Water Program, the details of which are provided in attachment (e). Please refer to page 6 of attachment (e) for eligibility and funding arrangements.

Page 10 of Attachment B lists the Assessment Process. In detailed applications, economic analysis has to be carried out. The infrastructure project needs to demonstrate a benefit cost ratio (BCR) greater than 1 for consideration. In this project, benefits are not so high value.

Griffith City Council has already submitted an EOI (estimate cost \$10 million) for funding of Griffith Water Treatment Plant upgrade works under the above program.

If Griffith City Council succeeds in the EOI for the above program, the Council will need to concentrate on strategic planning work, cost estimation and apply for part funding approval. This may take another couple of years to do the above work.

If Council apply for EOI for additional water storage facilities, this may delay the other project or risk both being rejected.

Since commissioning in 1986, the Council has not carried out any major capital works or process units improvement for the Treatment Plant.

### 3. Potential Effect On Water Rates And Changes Going Forward

The construction of an additional raw water storage is not considered as a priority nor is it included in any of Council's long term infrastructure plans i.e. 30 year infrastructure plan and ten year long term financial plan. Even if Council were to be successful in obtaining the grant (maximum subsidy - about 50%), the Council has to identify \$6-7 million to execute the project. Rates and charges would need to be significantly increased to fund major capital works that are not provided for in the budget.

### 4. Proposed Timeline For The Project

Attachment (d) shows the estimated minimum and reasonable duration for each item of work. From this, it can be said the timeline for the project shall be around four to five years.

### 5. Advantages And Disadvantages Of This Project

#### **Advantages**

- Increase the winter storage of raw water by 15-20 days.
- The additional storage may improve the inflow quality
- Security of the supply to customers. This mainly depends on the Treatment Plant performance.

#### **Disadvantages**

- Capital cost of project does not guarantee town water security for more than 20 days.
- The requirement for the additional storage may only occur once or twice every twenty years therefore the project is an over capitalisation of essential infrastructure and is duplicating the existing operational efficiency of Hayes Lease.
- Water quality may be compromised due to an additional raw water storage facility and lower circulation of water.
- Significant increase in operational cost from operating a second raw water storage facility.

#### 6. Available Raw Bulk Water Storage At Lake Wyangan

The existing Lake Wyangan (north and south) has a storage capacity around 3,500 ML. The Murrumbidgee Irrigation Authority had used this storage via an existing pumping station to feed the main canal and transfer the bulk water in winter time to feed the Hay Lease storage. The Lake Wyangan storage is about 3 to 4 km distance, refer attachment (c).

#### Value For Money

Griffith City Council does not have any perennial problems of obtaining raw water supply for its Water Treatment Plant. During the past 28 years, only once or twice a small portion of Lake Wyangan water has been transferred for Griffith town water supply. Therefore it may be a difficult task to meet the eligibility criteria (attachment (e), page 6).

#### OPTIONS

Option 1

As per recommendation

Option 2

Another resolution of Council.

#### **POLICY IMPLICATIONS**

Water – Supply Levels of Service – Policy – WS CP-210

#### FINANCIAL IMPLICATIONS

Council currently has approximately \$16 million in the water fund reserve. A project of this nature would require use of this reserve money. This would therefore require a significant increase in the typical residential bill for water as an additional raw water storage facility of this scale is not in Council's 30 year financial model for water.

#### **LEGAL/STATUTORY IMPLICATIONS**

Not Applicable

#### ENVIRONMENTAL IMPLICATIONS

A Review of Environmental Factors (REF) would need to be carried out on this project.

#### COMMUNITY IMPLICATIONS

Higher typical residential bill for water use as a result of the large scale project not currently in Council's 30 year financial model for water assets.

### **LINK TO STRATEGIC PLAN**

This item links to Council's Strategic Plan item 10.1 Manage Griffith's water resources and water quality responsibly.

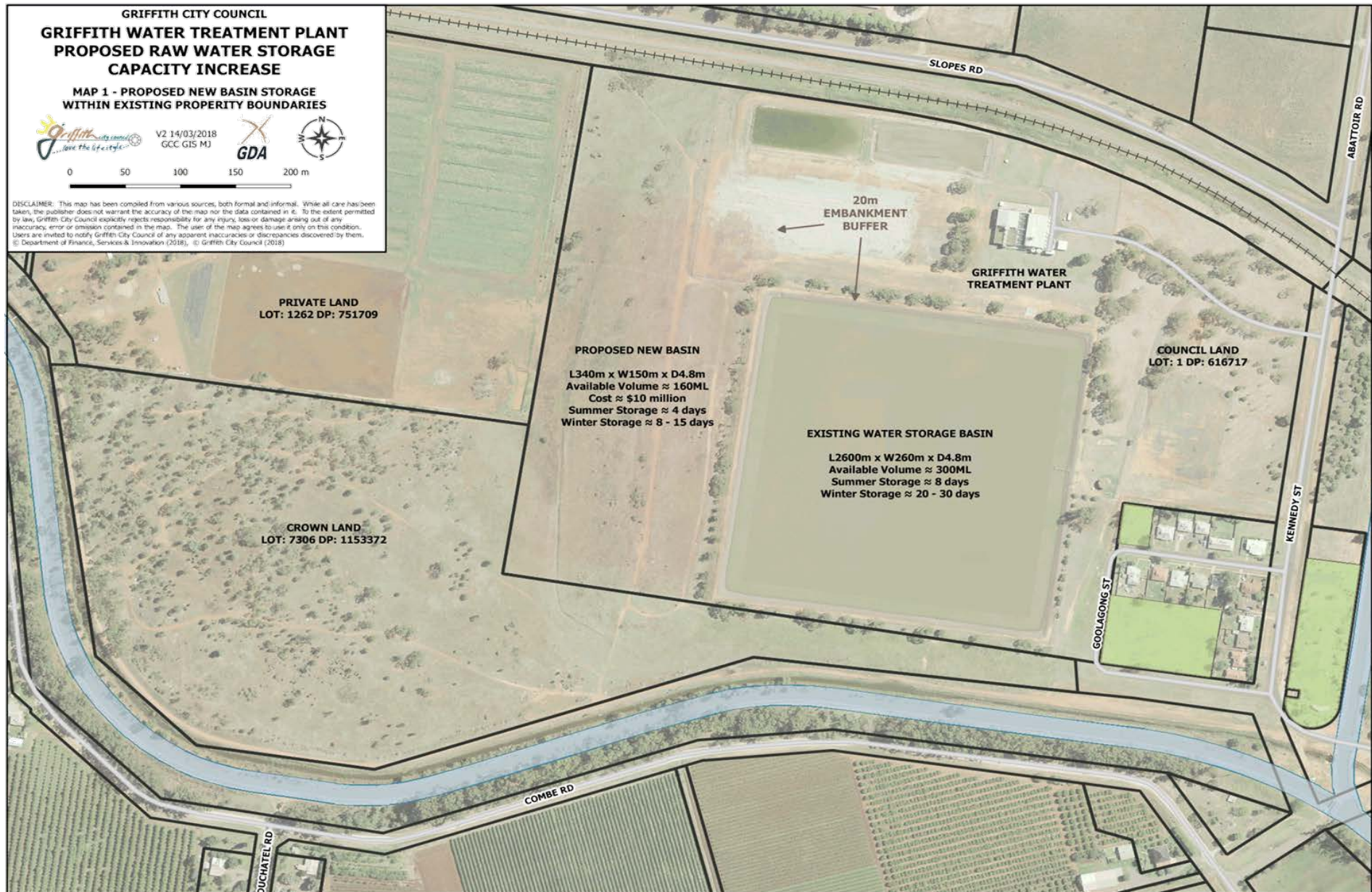
### **CONSULTATION**

Senior Management Team

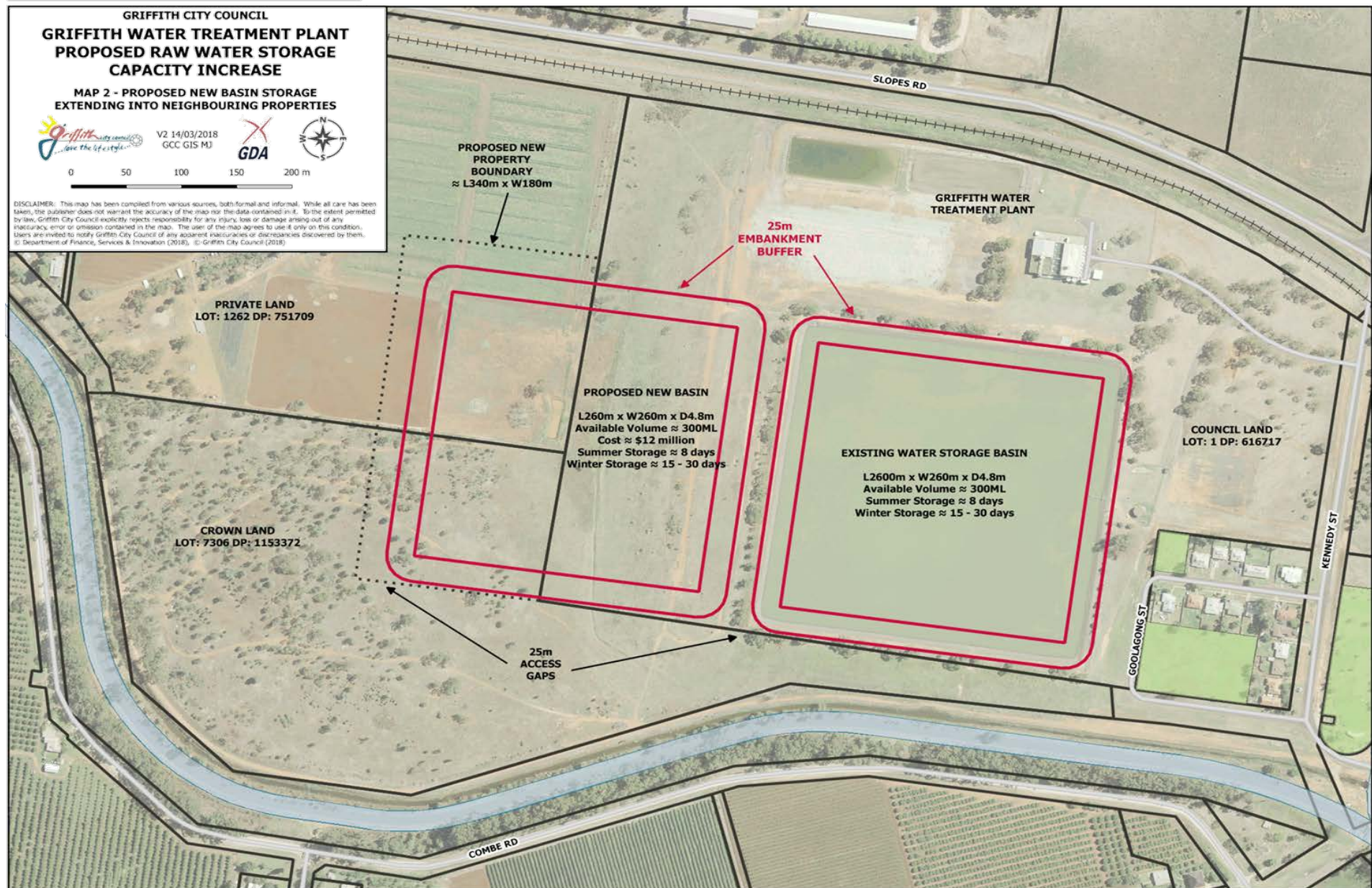
### **ATTACHMENTS**

- (a) Proposed New Raw Water Storage Facility - Option 1
- (b) Proposed New Raw Water Storage Facility - Option 2
- (c) Proposed New Raw Storage Facility - Lake Wyangan Locality
- (d) Proposed New Raw Water Storage Facility - costings
- (e) Safe & Secure Water Program

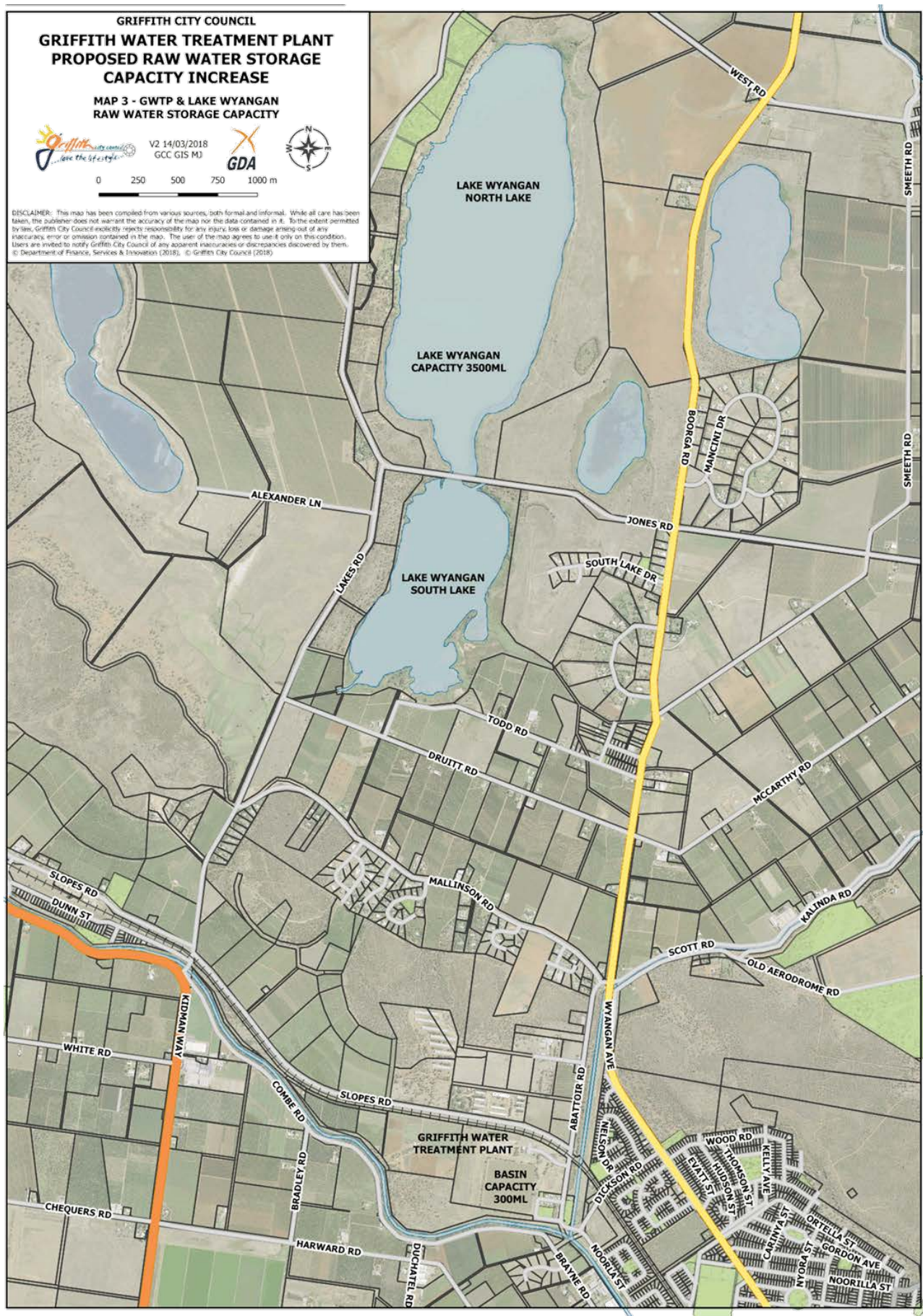












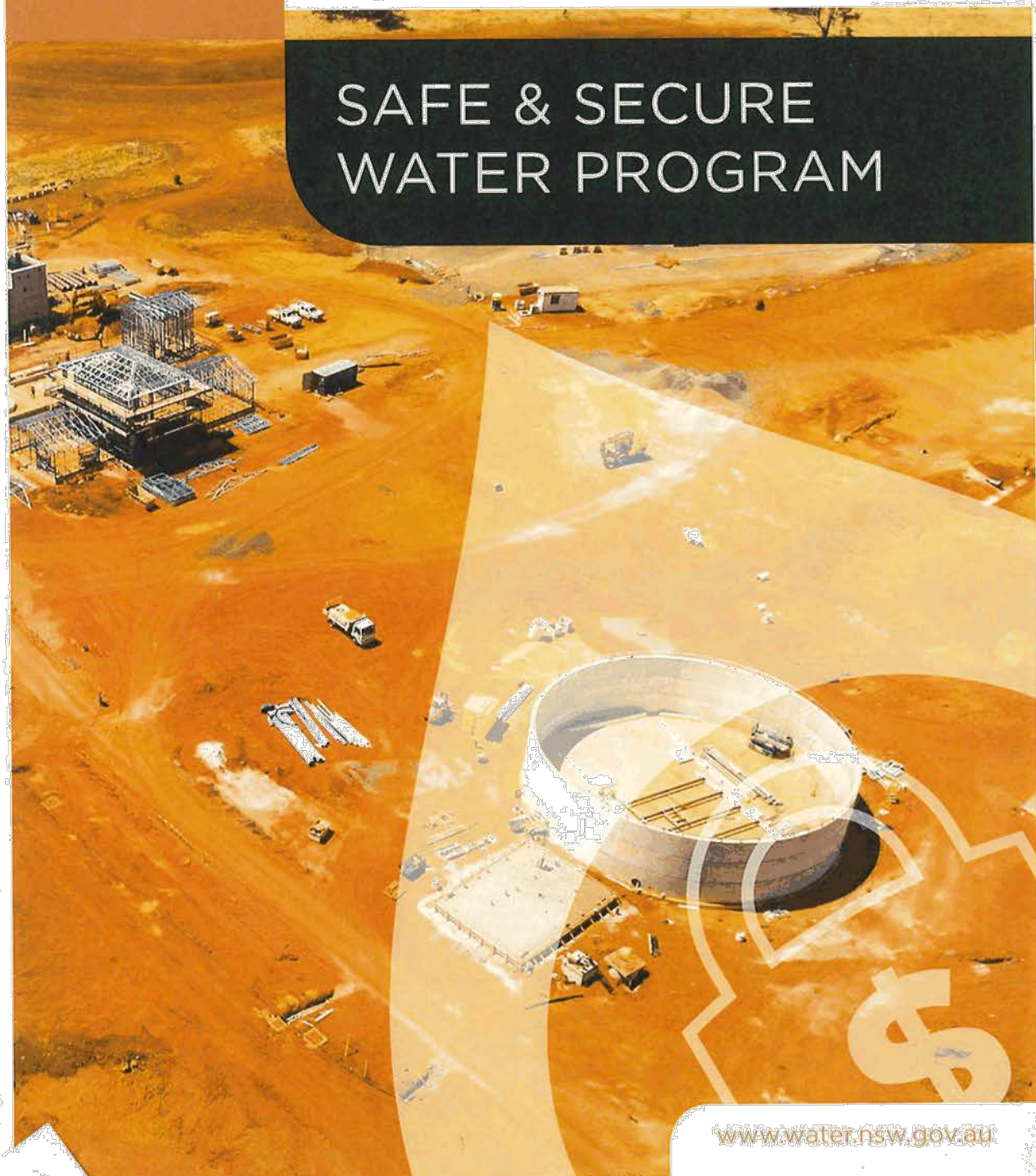
Additional Raw Water Storage Facility Costings							
	Items of works	units	rate	Qty	cost	Min duration Weeks	Duration Weeks
1	Negotiate and buy additional land	Item	Lump sum		\$ 400,000	4	12
2	Construct fence around the new boundary	m	40	400	\$ 16,000	2	4
3	Preliminary concept design, investigation , take off quantities and estimation and Expression of Interest -EOI	item	Lump sum		\$ 50,000	4	12
4	If EOI success, Survey and Geotechnical survey	Item	lump sum		\$ 90,000	3	6
5	Design, Economic analysis, cost benefit analysis and prepare detailed application	item	lump sum		\$ 90,000	3	9
6	Follow up and provided required additional infor	item	lump sum		\$ 20,000	12	48
7	If funding approval is success , tender preparation for calling tender for detailed design and prepare tender drawings and specification	Item	lump sum		\$ 50,000	4	12
8	Tender analysis and selection of consultant	Item	lump sum		\$ 20,000	6	12
9	Detailed design and prepare tender drawings, specification , REF, design documentation etc and calling for tender for construction				\$ 400,000	26	48
10	Documentation and Section 60 application	Item	lump sum		\$ 10,000	4	8
11	Tender Evaluation and documentation	Item	lump sum		\$ 20,000	6	10
12	Construction work-earth work	m^3	400,000	20	\$ 8,000,000	12	24
13	Constuction of pipe work and chambers	Item	lump sum		\$ 100,000	8	16
14	Project Management of construction works				\$ 320,000		
	Total				\$ 9,586,000	94	221
	Add 25 % contingencies				\$ 2,396,500		
	<b>Grand Total</b>				<b>\$ 11,982,500</b>		





Expression of Interest August 2017

# SAFE & SECURE WATER PROGRAM



[www.water.nsw.gov.au](http://www.water.nsw.gov.au)

© State of New South Wales through Department of Industry [2017]. The information contained in this publication is based on knowledge and understanding at the time of writing [August 2017]. However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the Department of Industry or the user's independent adviser.

jn 14415



Expression of Interest Guidelines August 2017

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Safe and Secure Water Program









### DEPUTY PREMIER'S MESSAGE

NSW communities depend on access to clean, reliable and affordable water, and waste-water infrastructure that meets environmental and health standards.

The NSW Government understands the importance of having adequate and contemporary water and waste-water services in regional communities, and the pivotal role they play in regional prosperity and long-term growth.

This Government's commitment to regional water issues and security of supply is something we take very seriously.

In 2014 we initiated 'Water Security for Regions' – a \$366 million program under the Restart NSW fund to assist communities prepare for future droughts.

Projects including augmenting dams, pipeline and bore works and water efficiency mechanisms are being funded to help farmers and regional industries deal with drier conditions.

Furthering our commitment to regional water and waste-water needs, in October 2016 the NSW Government provided \$110 million for a range of infrastructure upgrades to help clear a backlog of water and sewerage projects in regional areas.

The recent launch of the \$1 billion Safe and Secure Water Program is another key component of the NSW Government's commitment to regional water issues and security of supply.

Secure water supplies and adequate wastewater services are vital for both residential and commercial activities alike – these fundamentals are paramount to make our regional communities vibrant and viable places to live and do business.

Through the Safe and Secure Water Program the NSW Government is pleased to support regional communities and help foster increased economic and social outcomes across NSW.

John Barilaro  
Deputy Premier



Safe and Secure Water Program

p3





### MINISTER'S MESSAGE

Access to safe and secure water supply and sewerage services is fundamental for the health and wellbeing of regional communities and for regional growth and investment.

Across regional NSW, 1.9 million people living in more than 500 urban communities depend on safe, secure, affordable and sustainable water and sewerage services.

Secure water also supports agriculture and other industries that drive economic growth in regional NSW.

The Safe and Secure Water Program is a \$1 billion NSW Government co-funding program through Restart NSW, which will target water and sewerage projects in regional NSW to ensure infrastructure meets contemporary standards for water security, public health, environmental and safety outcomes into the future.

The Program will provide co-funding to successful applicants such as local councils, water utilities, water corporations and prescribed dam owners for detailed planning and construction activities to install, augment or decommission water and sewerage infrastructure.

Everyone in NSW deserves access to reliable and high-quality water and the Safe and Secure Water Program has been established to enable communities to reach their potential.

This new program includes the existing Rebuilding NSW commitment for the Broken Hill Water Supply project.

The Safe and Secure Water Program will prioritise key water infrastructure projects – from local drought backup systems through to new or upgraded dams to secure water supplies for our regions.

The NSW Government will draw on an innovative new catchment-wide framework to guide the prioritisation of projects based on security of supply, health and infrastructure risks and emerging issues that can impact on supply and demand.

Regional councils, water utilities, water corporations, and prescribed dam owners are invited to apply for funding under the Safe and Secure Water Program.

The NSW Government encourages proponents to work together through their relevant regional organisations to identify projects that involve more than one LGA and/or have been identified as regional priorities. Proposals should also seek to maximise co-investment by the applicant and potentially, by the Commonwealth or other industry contributions.

With Expressions Of Interest submissions now open, I encourage water authorities in regional NSW to work together and bring their best ideas to the table.

Niall Blair

NSW Minister for Regional Water

## OVERVIEW

The Safe and Secure Water Program (SSWP) has been established under the NSW Government's Restart NSW fund, which was set up to improve economic growth and productivity in NSW.

The program will fund eligible water and sewerage projects that will deliver public health, environmental and/or social benefits to regional communities.

The Safe and Secure Water Program supports one of the key strategic objectives of the NSW Government, as highlighted in the State Infrastructure Strategy: *Support the critical needs of regional industries and communities by ensuring water security and quality of supply.*

### How can my organisation submit an EOI

Eligible proponents should complete the 'SSWP EOI Application Form' available on the Department of Primary Industries – Water (DPI Water) website at [www.water.nsw.gov.au/sswp](http://www.water.nsw.gov.au/sswp)

Completed forms and all necessary material must be emailed to the Safe and Secure Water Program team at DPI- Water.

Email: [sswp.water@dpi.nsw.gov.au](mailto:sswp.water@dpi.nsw.gov.au)

Telephone: (02) 6763 1401

EOI's can be submitted at any time until further notice. Always check that you have the most up-to-date guidelines and application form by checking on the DPI Water website.

Incomplete applications or applications that use a format other than the prescribed form will not be assessed.

Key SSWP dates will be updated on the DPI Water website as details become available.

The Safe and Secure Water Program provides \$1 billion funding for water and sewerage infrastructure projects in regional NSW. The Program is funded from the Restart NSW fund and is scheduled to run for 10 years or until all funding is committed.

DPI Water is the lead agency for the Program and is responsible for the initial assessment of the applications, providing technical advice and support to Infrastructure NSW for the monitoring and evaluation of the overall program and individual projects. Those applications which are selected to proceed will be formally considered by Infrastructure NSW under the *Restart NSW Fund Act 2017*. They will in turn make recommendation to the Treasurer, again under the terms of the Act. Successful proponents will be required to enter into funding deeds with the Treasurer which will set the terms and conditions of funding.

## ELIGIBILITY

### Who can apply

Applications are invited from:

- » local councils, Regional Organisation of Councils, joint organisations
- » local water utilities
- » water corporations
- » prescribed dam owners as defined in the Dams Safety Act (NSW)

The NSW Government encourages proponents to work together through their relevant regional organisations to identify projects that involve more than one Local Government Area (LGA) and/or have been identified as regional priorities.

Applications involving public-private partnerships or leveraging other funding streams (such as Commonwealth, NSW or local government funding) are encouraged.

### Projects that are eligible for funding

Projects that consider innovative approaches to solving water and sewerage infrastructure solutions are encouraged and will be favourably considered.

Projects that will be considered for funding must align with one of the following categories:

- » **Town water security** – Local water utilities need to respond to the pressures of climate variability, provision of environmental flows, and contemporary standards.
- » **Catchment-scale water security solutions** - Projects that deliver water security for multiple beneficiaries across a catchment or catchments are eligible for consideration.
- » **Drinking water quality and wastewater management projects** - Effective water supply and sewerage services that meet contemporary standards and regulatory requirements are key factors for the protection of public health in regional communities
- » **Safety of high-risk dams** - There are a small number of dams prescribed in the Dams Safety Act where the risk to public safety and other community interests are classified as above the 'limit of tolerability'. Repair or decommissioning of eligible dams will be considered for funding.

### Projects that are not eligible for funding

The following projects will not be eligible for funding under the Safe and Secure Water Program.

- » flood mitigation projects
- » projects primarily for water recreation
- » projects not directly and predominately contributing to water or sewerage services or the safety of prescribed dams
- » projects involving land purchase only
- » projects with exclusive private benefits

- » projects from the Greater Sydney metropolitan area, Greater Newcastle metropolitan area, or Wollongong and surrounds as defined by NSW Department of Planning and Environment
- » projects exclusively within the areas of operation of Sydney Water and Hunter Water
- » Metropolitan dam safety projects
- » Operation Maintenance and Administration costs (OMA or recurrent costs) except under exceptional circumstances

## FUNDING ARRANGEMENTS

The Safe and Secure Water Program aims to achieve the best outcomes for the communities of regional NSW by seeking co-investment from proponents and third parties.

### Grants available

Restart NSW funding is available for the three project phases below:

- » scoping study phases
- » business case phase
- » construction phase

### Funding limitations

- » Funding for one project phase does not automatically qualify the project for funding for a subsequent phase.
- » It is expected that a funding deed will be signed within six months of an offer of funding. If the proponent is unable to commit to a funding deed within that timeframe, the funding offer may be withdrawn.





#### Funding calculation

Restart NSW funding for both planning and construction phase projects will be calculated based on the annual revenue of the proponent as detailed below. Additional funding will be considered for hardship cases, or when an economic analysis shows that a higher level Government contribution is justified to maximise public benefits.

Annual Revenue of Proponent	Safe and Secure Water Program Funding
> \$20m	Up to 25%
\$5m to \$20m	Up to 50%
< \$5m	Up to 75%

Note: for local water utilities, revenue is defined in the NSW Water and Sewerage Performance Monitoring Report published annually by DPI Water. The revenue shown above is for combined water and sewerage. Where an organisation provides either water or sewerage services only, the annual revenue amounts shown are reduced by 50%.

## HOW TO APPLY

Applications for funding follow a two-stage process.

### Stage 1 – Expression of Interest

All proponents are required to complete an Expression of Interest (EOI) application form providing basic information to describe the project. EOI application forms are available at: [www.water.nsw.gov.au/sswp](http://www.water.nsw.gov.au/sswp)

Please ensure that you have read these guidelines and the Frequently Asked Questions sheet to establish whether your project is eligible before applying.

### Stage 2 – Detailed application

Proponents whose applications are assessed to meet Program criteria at the EOI stage will be invited to submit a detailed application. Information requirements and evaluation criteria for detailed applications will depend on the type of project proposed.

An outline of the type of information required at the 'detailed application phase' is provided in Appendix 1. Additional details will be provided when detailed applications are invited.

### Information sessions

DPI Water will host regional information sessions that will be aimed at providing advice and assistance to prospective proponents. Further advice to proponents is available on request.

See [www.water.nsw.gov.au/sswp](http://www.water.nsw.gov.au/sswp) for the most recent information on dates and locations.



## ASSESSMENT PROCESS

The assessment process has two stages:

### Stage 1 – Expression of Interest (EOI) assessment

EOI applications will be assessed by a Technical Review Panel, chaired by DPI Water.

The EOI assessment phase will provide a high level review of eligible projects that will determine which projects should proceed to the detailed application stage.

EOI's will be assessed on the whether the project is eligible and whether the need for the project is adequately described in the application form.

### Stage 2 – Detailed application assessment

Proponents shortlisted at the EOI Stage will be requested to provide further information as part of the detailed application stage.

In general, detailed applications will be assessed against criteria based on the affordability of the project, ability to deliver the project and the project's contribution to improving economic growth and productivity in the State. In addition, projects will be subject to strategic and economic assessments, including a requirement for infrastructure projects to demonstrate a benefit cost ratio (BCR) greater than 1.

Proponents may be requested to clarify information during the detailed application assessment process.

Detailed applications will be assessed by a Technical Review Panel, chaired by DPI Water. Recommended projects will then be formally reviewed by Infrastructure NSW in accordance with the *Restart NSW Fund Act 2011* before making any final funding recommendations to the Treasurer.

Some of the key principles that will be considered as part of funding decisions are summarised in Appendix 2.





## PROGRAM ADMINISTRATION

### Confidentiality and disclosure

All information submitted by the proponent may be provided to other organisations for the purposes of appraisal.

Summary information about the project applications will be posted on NSW Government websites unless you advise that you do not agree to its publication.

Proponents should identify any information submitted which they wish to be considered as confidential, supported by reasons for the request. Except as disclosed, DPI Water and Infrastructure NSW will keep all information confidential and secure.

Any request made under the *Government Information (Public Access) Act 2009* for access to an application, including information marked 'confidential' will be determined in accordance with the Act.

### Unsuccessful proposals

Project proponents will be notified in writing where an EOI is ineligible or unsuccessful. Proponents may contact DPI Water to obtain feedback on their EOI.

### Complaint handling process

If a proponent is dissatisfied with the way an EOI has been assessed, they can contact the SSWP team at [sswp.water@dpi.nsw.gov.au](mailto:sswp.water@dpi.nsw.gov.au) to register their concerns.

### Probity

The NSW State Government is committed to ensuring that the process for providing funding under the SSWP is transparent and in accordance with published guidelines. The NSW Government intends to provide information sessions to councils intending to apply for funding. All information provided at the information sessions and any change or clarification of the guidelines will be published on the website at <http://www.water.nsw.gov.au/urban-water/safe-secure>

### Responsibilities

DPI Water is the lead agency for the Program and is responsible for the initial assessment of the applications, providing technical advice and support to Infrastructure NSW for the monitoring and evaluation of the overall program and individual projects.

Infrastructure NSW will undertake the formal review of the projects submitted by DPI Water for Restart Funding and review projects greater than \$10M as part of the Investor Assurance function.

Successful proponents will be required to enter into a funding deed with the NSW Treasurer, which will set the terms and conditions of funding. Infrastructure NSW is the Treasurers' representative on funding deeds.

Proponents will be responsible for the preparation and submission of applications, compliance with funding deed agreements and progress reporting.

DPI Water will undertake a regular evaluation of the program, which will aim to improve the delivery of the subsequent phases. As part of this process, application requirements may change as the program evolves over time.

## APPENDIX 1

### Overview of requirements for a Stage 2 (detailed) application

Project phase	Type of information required to support a Stage 2 (detailed) application
Project Scoping Studies	<ul style="list-style-type: none"> <li>» Clearly defined problem / project justification</li> <li>» Statement of eligibility in accordance with the guidelines</li> </ul>
Business Case Development	<ul style="list-style-type: none"> <li>» Project scoping documentation such as needs assessment, feasibility study, and/or options assessment</li> <li>» Demonstrated alignment with sound strategic planning, such as an Integrated Water Cycle Management (IWCM) strategy</li> </ul>
Design and Construction	<ul style="list-style-type: none"> <li>» Detailed Business Case that compares options including cost benefit analysis (CBA) showing a Benefit Cost Ratio (BCR) &gt; 1. Also would include items such as the following, where applicable: <ul style="list-style-type: none"> <li>- concept design for recommended option,</li> <li>- environmental assessment, implementation timeframes, risk management and procurement approach, statutory approvals etc.</li> </ul> </li> </ul>

Information requirements for a detailed application for one of the above phases will be clarified when detailed applications are requested.

## APPENDIX 2

### Principles for funding infrastructure phases

Funding for construction of infrastructure works will be considered under the Safe and Secure Water Program where: the problem is adequately defined; all options have been adequately assessed; and, the choice of the preferred infrastructure option is appropriate and the proponent can demonstrate a commitment to best practice management principles.

#### Growth

It is recognised that water and sewerage infrastructure is highly capital intensive, and must be designed to incorporate predicted future demand growth. However, proposed projects are expected to address minimum service needs such as security, reliability, quality and regulatory requirements, rather than just growth in demand.

#### Asset replacement

A fundamental aspect of best practice management is planning for replacement of assets based on total asset management and financial management principles. In general the SSWP will not fund 'like for like' asset replacement, unless the project is substantially for meeting minimum service needs such as security, reliability, quality and regulatory requirements, and the proponent can demonstrate why these needs could not be reasonably planned for.

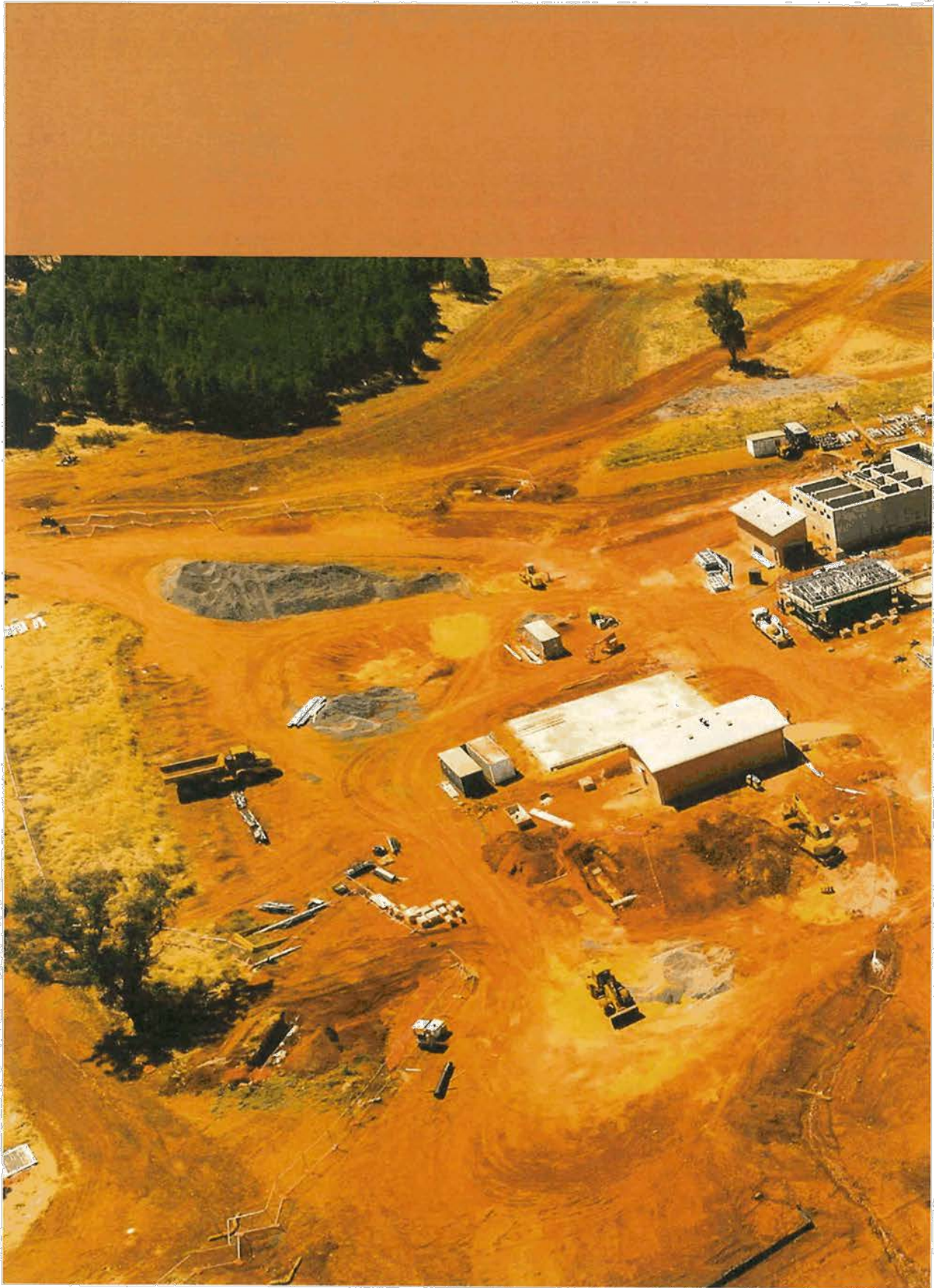
#### Public benefit

The outcomes from the SSWP may result in both public and private benefits. In other words, each project will have outcomes that provide value to the broader community, which is considered a public benefit, and outcomes that provide a commercial benefit to the infrastructure manager/owner, which is considered a private benefit in this context. At the detailed application phase proponents will need to describe the public benefits expected to be delivered from the project to support the request for a funding contribution from the NSW Government.

As a minimum requirement, successful construction phase projects must show a benefit cost ratio greater than 1.











## SAFE AND SECURE WATER PROGRAM

### FREQUENTLY ASKED QUESTIONS

#### AFFORDABILITY

Proponent must demonstrate affordability of the project relative to the available funding, taking into account net life-cycle cost impacts and allowing for on-going operating and maintenance requirements.

#### DELIVERABILITY

Proponent must demonstrate that they have the capacity to deliver the project through robust strategies for procurement, project management and risk management.

Applications for funding follow a two-stage process.

Expressions Of Interest (EOI) (Stage 1) will be assessed on whether the project is eligible and whether the project need is adequately demonstrated.

Detailed applications (Stage 2) will be assessed against criteria based on the affordability and deliverability of the project, in addition to strategic and economic assessments. In particular, the projects will be assessed against their public health, economic, environmental and social benefits for regional communities.

#### When do I need to lodge my application?

Applications open in August 2017. The grant program will remain open for applications until funding has been fully allocated.

#### Will there be technical assistance with funding submissions?

DPI Water will hold regional information sessions that will be aimed at providing advice and assistance to prospective applicants. Further advice to applicants is available on request.

#### Confidentiality and Disclosure

All information submitted by the Applicant may be provided to other organisations for the purposes of eligibility and project appraisal.

Summary information about the project application will be posted on NSW Government websites.

Applicants should identify any information submitted which they wish to be considered as confidential, supported by reasons for the request.

Any request made under the *Government Information (Public Access) Act 2009* for access to an application, including information marked 'confidential' will be determined in accordance with the Act.

#### How do I know my application will be fairly assessed?

Applications will be reviewed by a Technical Advisory Panel chaired by DPI Water. All detailed project applications proposed for funding will also be assessed by Infrastructure NSW against the objectives of Restart NSW funding.

#### Is a Cost Benefit analysis required?

Only projects that have been shortlisted and invited to submit a 'stage two' detailed application must complete a cost benefit analysis (CBA). DPI Water can provide advice on CBA requirements.

#### What information do I need to lodge?

Information will be required in two stages:

1. All applicants are required to initially complete the EOI application form with basic information describing the project. The EOI application form is available from the DPI Water website.
2. Proponents whose applications are assessed to meet program criteria at the EOI stage will be invited to submit a detailed application. Specific information requirements for detailed applications will depend on the type of project proposed and will be described in more detail at the time detailed applications are invited.

#### Where do I get more information?

Website: [www.water.nsw.gov.au/sswp](http://www.water.nsw.gov.au/sswp)

Email: [sswp.water@dpi.nsw.gov.au](mailto:sswp.water@dpi.nsw.gov.au)



[www.water.nsw.gov.au](http://www.water.nsw.gov.au)



FAQS: AUGUST 2017



## SAFE AND SECURE WATER PROGRAM

### FREQUENTLY ASKED QUESTIONS

#### What is the Safe and Secure Water Program?

The Safe and Secure Water Program is a program established as part of Restart NSW to fund eligible water and sewerage projects that will deliver public health, environmental and social benefits to regional communities which in turn support economic growth and productivity in the State.

#### Who is eligible to apply for funding?

Councils, water utilities, water corporations, and prescribed dam owners are invited to apply.

The NSW Government encourages proponents to work together through their relevant regional organisations to identify projects that involve more than one LGA and/or have been identified as regional priorities.

Applications involving public-private partnerships or leveraging other funding streams (such as Commonwealth, NSW or local government funding) are encouraged.

#### What types of projects will the Safe and Secure Water Program support?

The Safe and Secure Water Program is open to water and sewerage infrastructure projects, focusing on:

- Town water security
- Catchment scale water security
- Drinking water quality, wastewater management and public health
- Safety of prescribed dams as defined in the Dams Safety Act.

NSW Government co-funding is available for both planning and construction projects as follows:

- preliminary planning
- business case development
- detailed design and construction

#### How will the funding be administered and how will payments be made?

The Department of Primary Industries -Water (DPI Water) and Infrastructure NSW are responsible for the overall management and administration of the Program.

DPI Water is responsible for initial assessment of the applications and the monitoring and evaluation of projects.

Infrastructure NSW will review projects proposed for Restart Funding and coordinate gateway reviews of the program, execute funding deeds with successful applicants and make payments to funding recipients.

Applicants will be responsible for the preparation and submission of applications. Successful applicants are responsible for ensuring compliance with funding deed agreements and progress reporting.

A sample deed will be available on the DPI Water website.

#### How will the NSW Government determine which projects will receive funding?

##### STRATEGIC ASSESSMENT

Alignment of the project with strategic priorities of the NSW Government.

##### ECONOMIC ASSESSMENT

Proponent must demonstrate how a project would have a positive impact on productivity and economic growth in the State through the creation or enhancement of publicly owned assets.

Proposals must describe how this infrastructure will provide an economic benefit to the proposed location, including a Benefit Cost Ratio higher than 1.0.

[www.water.nsw.gov.au](http://www.water.nsw.gov.au)