



GOONDIWINDI REGIONAL COUNCIL



SEWERAGE SERVICES

ASSET MANAGEMENT PLAN



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ABBREVIATIONS

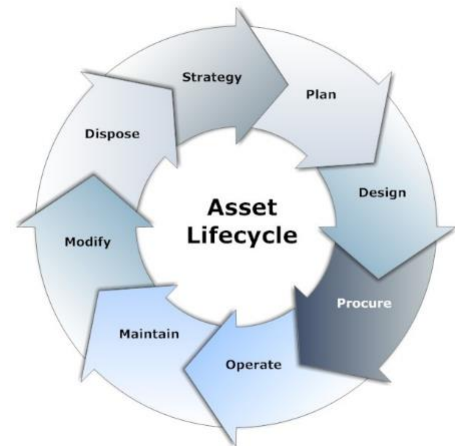
AAAC	Average annual asset consumption
AC	Asbestos Cement
AMP	Asset Management Plan
AMS	Asset Management Plan
CAPEX	Capital Investment Expenditure
CED	Common Effluent Drainage
CICL	Cast Iron Cement Lined
CoF	Consequences of Failure
CRC	Current replacement cost
CSS	Customer Service Standard
CWMS	Community wastewater management systems
DA	Depreciable amount
DEWS	Department of Energy and Water Supply
DICL	Ductile Iron Cement Lined
DNRM	Department of Natural Resources and Mines
DoH	Department of Health
EP	Equivalent Persons
GIS	Geographic Information System
GRP	Glass Fibre Reinforced Plastic
IRMP	Infrastructure risk management plan
KIM	Knowledge Information Mapping
LCE	Life Cycle Expenditure
LCC	Life Cycle Cost
LGIP	Local Government Infrastructure Plan
LoF	Likelihood of failure
LOS	Levels of Service
MMS	Maintenance management system
NPR	National Performance Reporting
PI	Performance Indicator
Poly	Polyethylene
PVC	Poly Vinyl Chloride
RCP	Reinforced Concrete Pipe
RV	Residual value
SPS	Sewage Pump Station
SS	Suspended solids
SWIM	State-wide Water Information Management
VSD	Variable Speed Drive

EXECUTIVE SUMMARY

ASSET MANAGEMENT

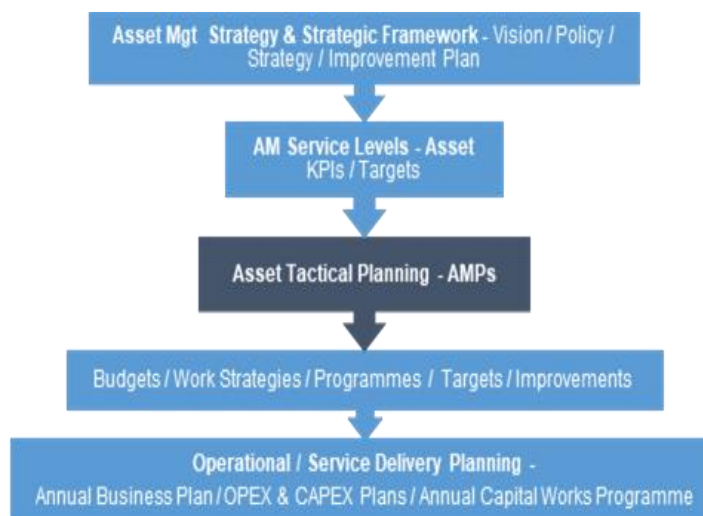
The objective of asset management is to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers. Effective asset management provides better accountability, sustainability, risk management, service management and financial efficiency

An Asset Management Plan (AMP) is usually for at least 10 years. It outlines the asset activities and programmes for each service area and resources applied (including technical and financial) to provide over the lifecycle of the assets a defined level of service in the most cost effective manner. A significant component of the plan is a long term cash flow projection for the activities, since the objective is to look at long-term costs (rather than short-term savings) when making decisions.



Asset lifecycle activities

Council is developing a strong planning coordination vertically through the business, from the strategic to the operational level, including AMPs for undertaking tactical asset management planning as shown in the Figure below. The AMP is also the means for driving strategic goals through to the day-to-day activities of Council in managing its assets.



BACKGROUND

The purpose of this plan is to document asset management planning information for the Council owned sewerage assets including recycled water assets for the schemes at the 3 principal towns, Goondiwindi, Inglewood, Texas, plus smaller townships, Yelarbon and Talwood, and a Common Effluent Drainage (CED) scheme at a section of Sandalwood Drive and Ullawanna Road, Goondiwindi. The plan includes the extent of assets, asset condition and performance against key indicators, long term financial forecasts for the 10 years 2018/19 to 2027/28 and an improvement plan. Financial implications for providing the required levels of service into the future are provided based on the separate spreadsheet model.

ASSETS

There are in total approximately 170 km of gravity mains, 1313 manholes, approximately 13 km of rising mains, 26 pumping stations and 5 treatment plants.

Value

Sewerage assets as at the 30th June 2017 have a provisional gross replacement cost of approximately \$49.4 million, fair value (written down value) of approximately \$27.6 million and annual depreciation approximately \$0.73 million. Underground assets comprising mainly mains comprise 58% of total gross replacement value.

Age

The average age of sewers is 43 years although a portion are relatively old. Approximately 25% (\$2.9 million) of the replacement cost is for sewers 17 years and younger, 50% for sewers 26 years and older and 25% for sewers 48 years and older.

The age profile for pump station assets indicates relatively new and some aged structures, electrical and mechanical assets. The average age is 19 years. 50% of the total replacement cost is for sewers 26 years and older.

The average age of treatment plant assets is 27 years. Approximately 25% (\$3.2 million) of the replacement cost is for assets 5 years and younger, 50% for assets 30 years and older and 25% for assets 32 years and older.

Condition and Remaining Life

It is critical that Council has it's "finger on the pulse" in relation to asset condition and the implication for future rehabilitation/replacement expenditure.

The majority (89%) of underground assets are in average or better condition based on age, 0.7% (\$0.19 million) are in poor condition and 10.2% (\$2.91 million) require replacement based on condition.

The majority (88%) of above ground assets are in average or better condition, 10% (\$2.1 million) in poor condition and 2% (\$0.4 million) require replacement based on condition.

The average remaining useful life is 70 years for underground assets and 25 years for above ground assets.

For the assets approaching the end of their useful life it is paramount that Council collects some condition and performance data for these categories and additionally for critical assets, since their failure is generally not acceptable.

LEVELS OF SERVICE

Council must meet many legislative requirements including Australian and State legislation, and State regulations. Council aims to provide an affordable and reliable sewerage service within the regulated guidelines. Sewerage assets are to be maintained in a reasonable usable condition and defects found or reported that are outside of service standards are repaired within defined maintenance response times.

The Water Supply (Safety and Reliability) Act 2008 and in 2014 specific changes enacted aimed to simplify regulatory requirements require the Council to collect data on a pre-determined list of key performance indicators. On or before 1 October the data for the previous financial year is submitted to the regulator in a performance report about each of the indicators. The results indicate all targets for 2017 were met.

Council prepared a legislated Customer Service Standard in 2009 to address day to day continuity of supply and adequacy and quality of normal service. A review of actual performance for the previous 3 years indicates all targets are being met.

Council has no set levels of service other than those proposed in the legislated Customer Service Standard prepared in 2009. Proposed measures and revised targets for consideration based on a review of recent data, regulatory requirements, affordability and financial viability are:

- Less than 5 sewage overflows to customer properties per 1,000 connections per year (i.e. <18 overflows per year)
- Less than 10 sewerage service complaints per 1000 connections per year (i.e. <35 complaints per year)
- Less than 60 mins in at least 90% of instances for response time to incidents (incl. main breaks/chokes)
- Less than 8 hours for restoration of service
- Less than 40 sewer main breaks and chokes per 100 km mains per year (i.e. <73 breaks and chokes per year)
- Greater than 90% compliance with license requirements for sewage treatment plant effluent.

DEMAND AND CAPACITY

In 2016 all treatment plants had sufficient capacity to meet annual demand, although the Goondiwindi plant was approaching its capacity (83% for 2016 load).

Future average day wastewater volumes derived from LGIP data of forecast equivalent persons (EP) indicate, in theory, average day loads for 2031 populations for all towns will be met by current plant capacities. Loads for the forecast ultimate population will exceed capacities at all plants except Inglewood and Talwood.

However, the planned abattoir and other possible enterprises at or near Goondiwindi in the coming years will impact the demand for sewerage services. An additional 1,000 EP in 2021 is likely to result in the load at the Goondiwindi plant increasing from 83 % to 98% of plant capacity.

Given that assessments of system capacities were done a long time ago it is timely to undertake a review of sewerage system and treatment capacities for all towns for future needs. Analyses of system deficiencies will confirm the current capital works proposed in the forward works program. In conjunction, a full CCTV survey of sewers at all towns (or priority areas based on type/age/performance issues), will confirm the required pipework renewals (relining program) and priority works.

OPERATIONS APPROACH

Each of the sewerage system assets is operated by Council to ensure the:

- Standard of the asset does not decline below a level at which the standard of service can be achieved
- Appropriate service objectives (i.e. Levels of service, statutory/regulatory requirements, and obligations, etc.) are achieved at the least cost and that the impact of any breakdowns or outages is minimised
- Consumers get value for money.

The individual sewerage systems are different. Council strives to operate each system to deliver the same levels of service.

Substantial investment in telemetry has occurred over the last 5 years at each sewerage system including at Yelarbon last year, to monitor and control assets. Council will continue changing over and upgrading controls and telemetry to ClearSCADA for pump stations. Now the whole sewerage system is connected and can be monitored by office staff and changes made

Council has been reviewing resourcing requirements and proposes a revised organisational structure for management of sewerage (and water supply) services.

INSPECTIONS AND MAINTENANCE

Council's maintenance policies and procedures are yet to be established. Planned maintenance is adhoc and in general not carried out for the majority of asset categories.

Council has the 'Reflect' software developed by Asset Edge which is slowly being used more often. Expanded use of 'Reflect' for fixed interval inspection and/or maintenance activities is required. There would appear capacity to undertake such as part of day to day activities.

OPERATIONS AND MAINTENANCE EXPENDITURE

Total spend in 2016/17 was approximately \$1.11 million (67% operations, 33% maintenance). Goondiwindi comprised the majority - 40% of operations and 65% of maintenance spend. Operations spend is increasing annually whilst maintenance spend is variable year to year.

Allowing for a nominal 10% increase in spend (not allowing for inflation) over the next 10 years due to increased demand, the annual operations expenditure is estimated to be \$1.07 million in 10 years (2027/28) and annual maintenance \$0.34 million (2017/18 budget plus 10% in current 2017/18 dollar values).

However, the current maintenance spend is only 0.6% of replacement value. A higher proportion, 1% at least say, is likely desirable. Thus, for \$0.9 million of proposed new and upgraded works over the 10-year period in the QTC model giving a total replacement value of \$50.3 million, adopting 1% of replacement value gives projected \$0.32 million annual maintenance in 2026/27 shown in the figure following.

Note that all costs are shown in current 2017/18 dollar values. Council is advised to monitor the operations and maintenance expenditure impacts for the new assets and increase expenditure if warranted.

CAPITAL WORKS EXPENDITURE

New and Upgrade Works

Little information is available as a basis for proposed new and upgrade projects on the forward works program – costs and scopes are yet to be confirmed. A rigorous planning and analysis approach (e.g. network analyses) is required to be implemented to identify, confirm and prioritise new and upgrade infrastructure projects.

Total planned expenditure for the next 10 years is \$0.9 million in the QTC model (excludes the Goondiwindi treatment plant upgrade). Additional depreciation of approximately \$14,000 and additional maintenance of approximately \$9,000 is forecast.

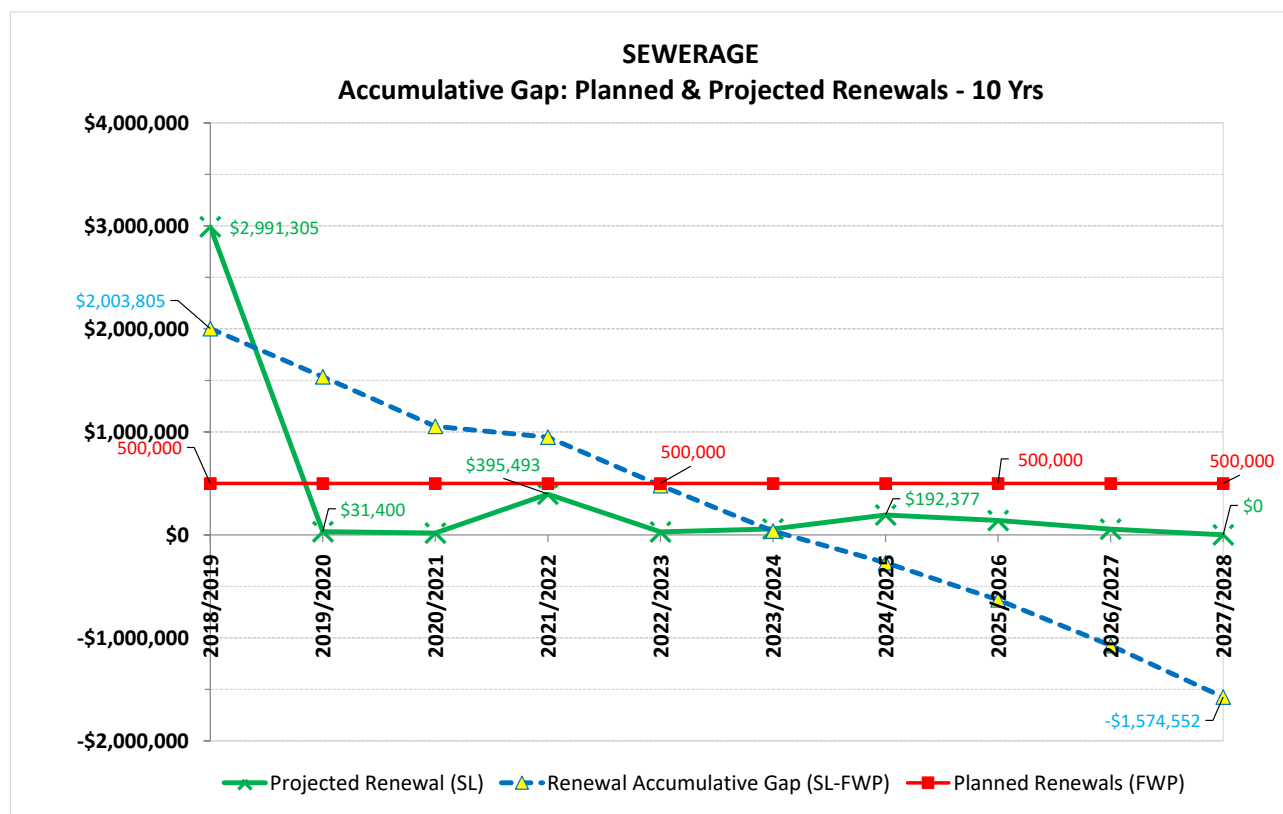
Renewal Works

Council's 'planned' renewals expenditure for the 10 years 2018/19 to 2027/28 totals \$5 million. This exceeds the 'projected' required expenditure of \$3,912,900 determined from the predicted remaining useful lives of assets used in the 2017 asset valuations.

Renewals due in the next 5 years from the valuations need to be considered for the immediate renewals program.

Over the longer term, next 20 years, 'projected' required renewals expenditure is \$15.7 million (\$9.2 million for underground and \$6.5 million for above ground).

The figure below indicates the accumulative gap in renewal funding between what Council plans to spend and projections of required renewals over the next 10 years (allowing for 2017/18 spends). A positive gap indicates underspending on renewals, although the gap is negative at 10 years indicating sufficient spending on renewals over the period.



It is concluded that Council needs to undertake the necessary evaluations and condition assessments where possible, to confirm replacements planned and projected for the next 10 years are warranted or otherwise. This will be aimed at avoiding unnecessary/too early replacements or replacements that if not carried out in time will result in adverse LOS impacts.

It should be noted that at this is a newly developed Asset Management Plan, the planned renewals referenced in the Plan are primarily based upon modelling using age profiles, condition assessments and some planned upgrade works. These planned works don't include new works, such as additions to the network, and upgrades for such things as aligning with current standards and increases to capacity. It is hoped that as the Plan matures over time these items, wherever possible, will also be included to give a more complete financial projection moving forward.

SUSTAINABILITY

Life Cycle Cost versus Expenditure

The Life Cycle Cost (LCC) from valuation data projections is the average cost required to operate and maintain the asset over its life including renewal. The Life Cycle Expenditure (LCE) is Council's planned average cost for this. An acceptable target ratio, named the life cycle sustainability index, of Council's planned versus projected (LCE:LCC) is 0.90 or greater in order to maintain service levels.

The index average of 1.10 over 10 years indicates Council is adequately funding the required renewals.

Asset Sustainability Ratio

This ratio (net capital expenditure on replacements as a percentage of the depreciation) indicates whether the amount of replacement exceeds or is less than the amount of depreciation, that is, whether assets are being replaced at the rate they are wearing out.

An index of less than 1.0 on an ongoing basis indicates that capital expenditure levels are not being optimised so as to minimise whole of life cycle costs of assets, or that assets may be deteriorating at a greater rate than spending on their renewal.

The index averages 0.69 for 'planned' and 0.53 for 'projected' renewals over the next 10 years indicating asset sustainability may not be achieved and may result in not meeting service levels.

IMPROVEMENT ACTIONS

The high priority improvement actions mainly aimed at improving processes and procedures to capture and input to corporate systems sufficient asset data for informed decision making are:

High Priority Improvement Action	Description
Establishing Service Levels	
Confirm Key Performance Measures	Consider KPIs provided in this AMP
Confirm targets for LOS	Consider targets provided in this AMP
Asset Risk Management	
Critical Spares	Identify, list and procure if necessary spares for critical assets and components.
Asset Life Cycle Management	
Develop Maintenance Management Plans	Develop as a minimum routine maintenance management plans with activities/jobs that align with technical service measures - 'Reflect'
Confirm assets for short term renewal programs for asset categories	Adopt asset renewal profiles for asset categories from valuations used for this AMP. Examine 5 yr. renewal profile and confirm assets for short term (3 yr.) renewal programs for categories from condition/performance assessment, e.g. CCTV of sewers.
New/upgrade capital works projects confirmed from system analyses/ planning reports	Planning Reports including system analyses provide the information for verifying the need, extent, timing and cost of proposed new/upgrade capital works projects
Implement project prioritisation method for new and upgrade projects	Confirm the project prioritisation tool in this AMP aligns with the principles of the asset management policy and implement for all new and upgrade projects.
Develop clear work scope for projects at planning stages	Scope of works are required - necessary for complex projects
Complete as constructed and project completion documentation	As constructed and project completion documentation to be completed in a timely manner so as project capitalization and mapping updates can occur before knowledge is lost
Measuring and Managing Asset Performance	
Improve field capture and input to corporate systems for the inspection, maintenance activities and condition information for facilities / asset classes	Inspections results and maintenance works should be formally documented. Implement on mobile devices ('Reflect') where appropriate to capture data for corporate use, e.g. Sewer failures - asset ID, material and location, routine inspections/maintenance activities.
Update mapping and map pipework failures on GIS	Mapping needs to be updated. Map sewer failures on GIS (previous from operational knowledge and future from new collection measures)

1. INTRODUCTION

1.1 Background

The objective of asset management is to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers. Effective asset management provides better accountability, sustainability, risk management, service management and financial efficiency

An Asset Management Plan (AMP) is usually for at least 10 years. It outlines the asset activities and programmes for each service area and resources applied (including technical and financial) to provide over the lifecycle of the assets a defined level of service in the most cost effective manner. A significant component of the plan is a long term cash flow projection for the activities, since the objective is to look at long-term costs (rather than short-term savings) when making decisions.

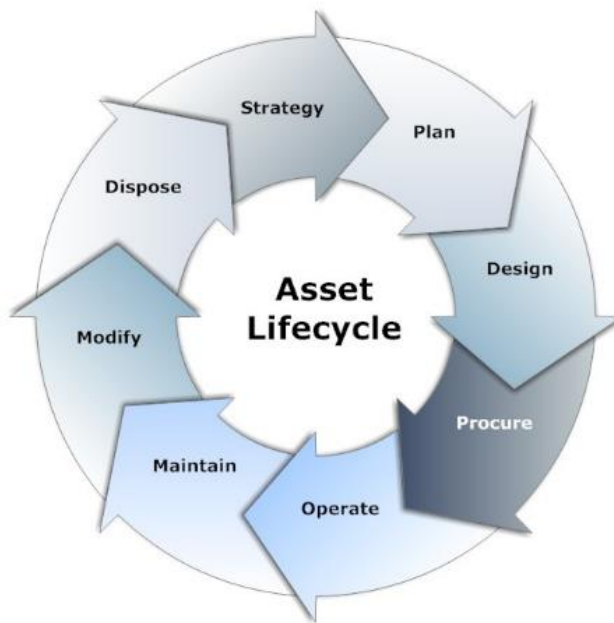


Figure 1.1.a Asset lifecycle activities

Council is developing a strong planning coordination vertically through the business, from the strategic to the operational level, including AMPs for undertaking tactical asset management planning as shown in the Figure below. The AMP is also the means for driving strategic goals through to the day-to-day activities of Council in managing its assets.

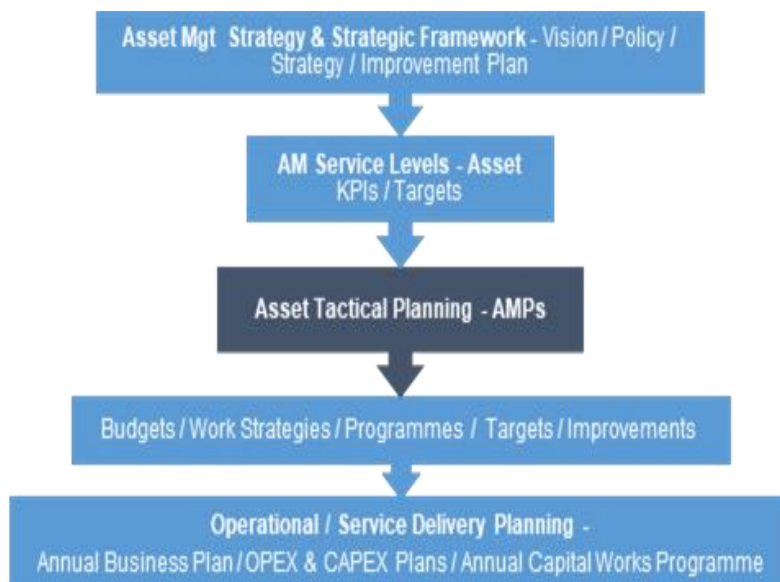


Figure 1.1.b Asset planning hierarchy

The Council exists to provide services to its community. Some of these services are provided by infrastructure assets. Council has acquired sewerage infrastructure assets by 'purchase', by contract, construction by council staff and by donation of assets constructed by developers and others to meet increased levels of service.

This AMP is to demonstrate responsive management of sewerage assets (and services provided from these assets), compliance with regulatory requirements, and to communicate forecast funding required to provide the required levels of service.

The infrastructure assets covered in this AMP comprise sewer gravity and rising mains, manholes, structures, electrical and mechanical, pipework and fittings including valves and miscellaneous.

The AMP is to be read with the following associated Council planning documents:

- Valuations 2017
- Corporate Plan 2014 – 2019
- Operational Budget 2017/2018
- Operational Plan 2017/2018
- Annual Report 2015-16
- Asset Management Strategy 2016
- Customer Service Standards for Water Supply and Sewerage Services May 2009.

Key stakeholders in the preparation and implementation of this AMP are:-

- | | |
|-----------------------------|--|
| • Government | Provision of various grants and subsidies |
| • Councillors | Review and approval of Asset Management Plan |
| • Community | End users of services provided |
| • Staff | Implementation of Asset Management Plan |
| • Utility Service Providers | Interaction in service delivery |
| • Developers | Investing new assets |
| • Insurers | Risk management |

1.2 Goals and Objectives

This AMP is prepared under the direction of Council's vision, mission, goals and objectives as provided in the Goondiwindi Regional Council Corporate Plan 2014 – 2019. Relevant Council corporate goals and objectives and how these are addressed in this AMP are provided in Table 1.2.a.

Table 1.2.a Council Corporate Goals and how these are addressed in this Plan

Goal	Objectives	How Goal and Objectives are addressed in AMP
1.0 COMMUNITY A vibrant, inclusive and healthy community with access to services and facilities reflecting the unique character, role and needs of communities throughout the Regional Council area	1.1.3 Implement and enforce community health regulations whilst ensuring the timely and effective response to emerging health issues.	A safe and effective sewerage system is an integral part of this plan.
	1.2.1 Plan and provide community infrastructure and support services to best meet community needs throughout the Regional Council area.	This plan will assist in developing 10-year forward works programs.
2.0 ECONOMY A strong and sustainable regional economy that supports the growth of new and existing industry and business activities that enhance local lifestyle and provide long term employment opportunities.	2.2.3 Encourage strong and sustainable business to expand or establish in the region.	An adequate sewerage system is a key requirement of business expansion.
	2.4.1 Develop an integrated approach to local planning and infrastructure provision to reflect the needs and aspirations of our communities.	This plan considers all sewerage infrastructure and whole of life costs

Goal	Objectives	How Goal and Objectives are addressed in AMP
3.0 ENVIRONMENT A sustainable, well managed and healthy environment that provides a balance between the development of built infrastructure and the conservation of the regions diverse natural and cultural resources.	3.3.1 Ensure a coordinated and integrated approach to infrastructure planning, implementation, maintenance and renewal.	This plan will be a key driver of achieving these objectives.
	3.3.2 Maintain integrated asset management systems that enable adequate recording, maintenance and replacement of community assets.	This plan is supported by Councils asset management system.
	3.3.3 Use financial sustainability principles in planning, funding, creating and maintaining infrastructure with consideration given to the impacts on future generations.	This plan develops its financial strategies around optimising levels of service and affordability. It will provide significant input to Councils 10-year financial sustainability plan
4.0 GOVERNANCE A proactive, ethical and efficient organisation providing best practice service delivery through exemplary leadership and policy making together with effective management of people, assets and finances.	4.3.1 Establish, implement and manage long term financial planning strategies to ensure the future sustainability of Council.	This plan will support the 10-year financial sustainability plan.
	4.3.2 Minimise Council's financial risks while acknowledging the requirements of our communities.	This plan incorporates the principles of risk management.
	4.3.3 Ensure effective financial, asset and risk management practices to ensure the efficient and accountable delivery of Council's operations.	This plan provides a mechanism to assess the efficiency and accountability of Councils operations.

2. ASSET DESCRIPTION

2.1 Schemes

This AMP is for the sewerage and recycled water assets located at the Council operated sewerage schemes at the 3 principal towns, Goondiwindi, Inglewood, Texas, plus smaller townships, Yelarbon and Talwood, and a CED scheme at a section of Sandalwood Drive and Ullawanna Road, Goondiwindi. The end section of Sandalwood Drive and one property at the end of Ullawanna Road comprising 11 properties are serviced by a Common Effluent Drainage (CED) system that pumps into Council's sewerage system. Schematic layouts of the sewerage systems and treatment plants are provided in the Appendix. Portions of the layouts are incorrect and need to be updated.

2.2 Physical Parameters

The passive and active sewerage assets included in this Asset Management Plan based on 2017 valuations data are shown in the following tables. Active assets are above ground, in most instances accessible and visible.

The extent of key assets for sewerage systems at towns are listed as follows:

Goondiwindi

- Sewage treatment capable of serving 6,500 equivalent persons (2,600 connections) with effluent storage pond
- An effluent pump station with one pump of 19 L/s design capacity delivering to the golf course
- Ten operational raw sewage pump stations, all of which are equipped with dual pumps (pump station 3 decommissioned). The outputs from pump stations which discharge to a common rising main are inhibited when two or more stations operate concurrently. The nominal single pump capacities are –
 - 24 L/sec (Pump Station 1)
 - 52 L/sec (Pump Station 2)
 - 12 L/sec (Pump Station 4)
 - 12.3 L/sec (Pump Station 5)
 - 8 L/sec (Pump Station 6)
 - 10 L/sec (Pump Station 7)
 - 8 L/sec (Pump Station 8)
 - 8 L/sec (Pump Station 9)
 - 10 L/sec (Pump Station 10)
 - 10 L/sec (Pump Station 11)
- Approximately 7.1 km of rising mains ranging in size from 100 mm to 225 mm diameter and 100.8 km of gravity mains, ranging in size from 150 mm to 225 mm diameter
- 751 sewer manholes.

Inglewood

- Sewage treatment plant capable of serving 1,500 EP (650 connections)
- Six raw sewage pump stations each equipped with dual pumps. The nominal pump capacities are 18.0 L/sec (Pump Station delivering to the plant) and 1.5 L/sec (Pump Stations 2, 3, 4, 5 and 6)
- Approximately 2.3 km of rising mains ranging in size from 100 mm to 150 mm diameter and 25.5 km of gravity mains, ranging in size from 100 mm to 225 mm diameter
- 202 sewer manholes

Texas

- Sewage treatment plant capable of servicing 1,500 EP (650 connections)
- Two raw sewage pump stations. The design pump capacities are 18 L/sec for each for the 2 pumps in Station 2 delivering to the plant and 6 L/sec for each for the 2 pumps in Station 1.
- Approximately 2.2 km of rising mains ranging in size from 100 mm to 150 mm diameter and 29.6 km of gravity mains, ranging in size from 100 mm to 225 mm diameter
- 250 sewer manholes.

Talwood

- Sewage treatment plant capable of servicing 250 EP (110 connections)
- Raw sewage pump station equipped with dual pumps each with single pump capacity of 7.0 L/sec
- Approximately 0.4 km of 100 mm diameter rising mains and 5.2 km of 150 mm diameter gravity mains
- 37 sewer manholes.

Yelarbon

- Sewage treatment plant capable of servicing 500 EP (220 connections)
- Four raw sewage pump stations, of which only Pump Station 1 is equipped with dual pumps. The nominal single pump capacities in each pump station is 7.0 L/sec. Common spare units are held in store.
- Approximately 1.0 km of rising mains ranging in size from 63 mm to 150 mm diameter and 8.8 km of gravity mains, ranging in size from 150 mm to 225 mm diameter
- 73 sewer manholes.

2.2.1 Extent of pipework assets

There are approximately a total 182.7 km of gravity sewers and rising mains with the majority of the sewers being AC (37%) and PVC types (26%). Details of the pipe assets are shown in Table 2.3.a. There are 1,308 manholes.

Table 2.2.1.a Details of sewer main assets

Diameter (mm)	Material							Total Length (m)
	AC	CONC	CI & CICL	EW	FRC	PVC types	POLY	
Gravity Mains								
100	636.6	229.8		238.9				1,105.3
150	57,184.0	23,785.5	52.8	28,799.3	6,534.6	39,599.6		155,955.9
225	5,460.4	976.8		2,011.4		4,294.1		12,742.7
Subtotal	63,281.0 (37%)	24,992.1 (15%)	52.8 (0.03%)	31,049.7 (18%)	6,534.6 (4%)	43,893.7 (26%)		169,803.9
Rising Mains								
63							232.3	232.3
100	2,888.3					1,716.5		4,604.7
150	2,850.8		2,265.6					5,116.3
200	1,380.3							1,380.3
225			1,581.4					1,581.4
Subtotal	7,119.3 (55%)		3,847.0 (30%)			1,716.5 (13%)	232.3 (2%)	12,915.0
Total	70,400.3	24,992.1	3,899.8	31,049.7	6,534.6	45,610.1	232.2	182,719.0

2.3 Asset Valuations

Sewerage including effluent recycling assets as at the 30th June 2017 have a gross replacement cost of \$49,427,571 a fair value (written down value) of \$27,605,859 and annual depreciation \$727,786. Passive assets comprise 58% of total gross replacement value. Details for asset categories are provided in Table 2.4.a.

Table 2.3.a Asset valuations at 30th June 2017

Type	Current Replacement Costs (\$)	Written Down Value (\$)	Annual Depreciation (\$)
Passive (below ground)			
Gravity Mains	\$20,093,759	\$11,963,663	\$198,352
Access Chambers	\$5,506,978	\$2,463,464	\$73,102
Rising Mains	\$2,993,019	\$873,569	\$44,530
Subtotal	\$28,593,757	\$15,300,696	\$315,984
Active (above ground)			
Pump Stations	\$8,129,325	\$4,835,424	\$175,126
Treatment Plant	\$10,233,740	\$5,095,144	\$188,566
Treatment Plant DAF	\$2,470,749	\$2,374,595	\$48,110

Type	Current Replacement Costs (\$)	Written Down Value (\$)	Annual Depreciation (\$)
Passive (below ground)			
Subtotal	\$20,833,814	\$12,305,163	\$411,802
Total	\$49,427,571	\$27,605,859	\$727,786

2.4 Age Profiles

The age profiles for underground assets (passives) are illustrated in the flowing figures. A portion of the gravity sewers are relatively old. The average age of sewers is 43 years. Approximately 25% (\$2.9 million) of the replacement cost is for sewers 17 years and younger, 50% for sewers 26 years and older and 25% for sewers 48 years and older.

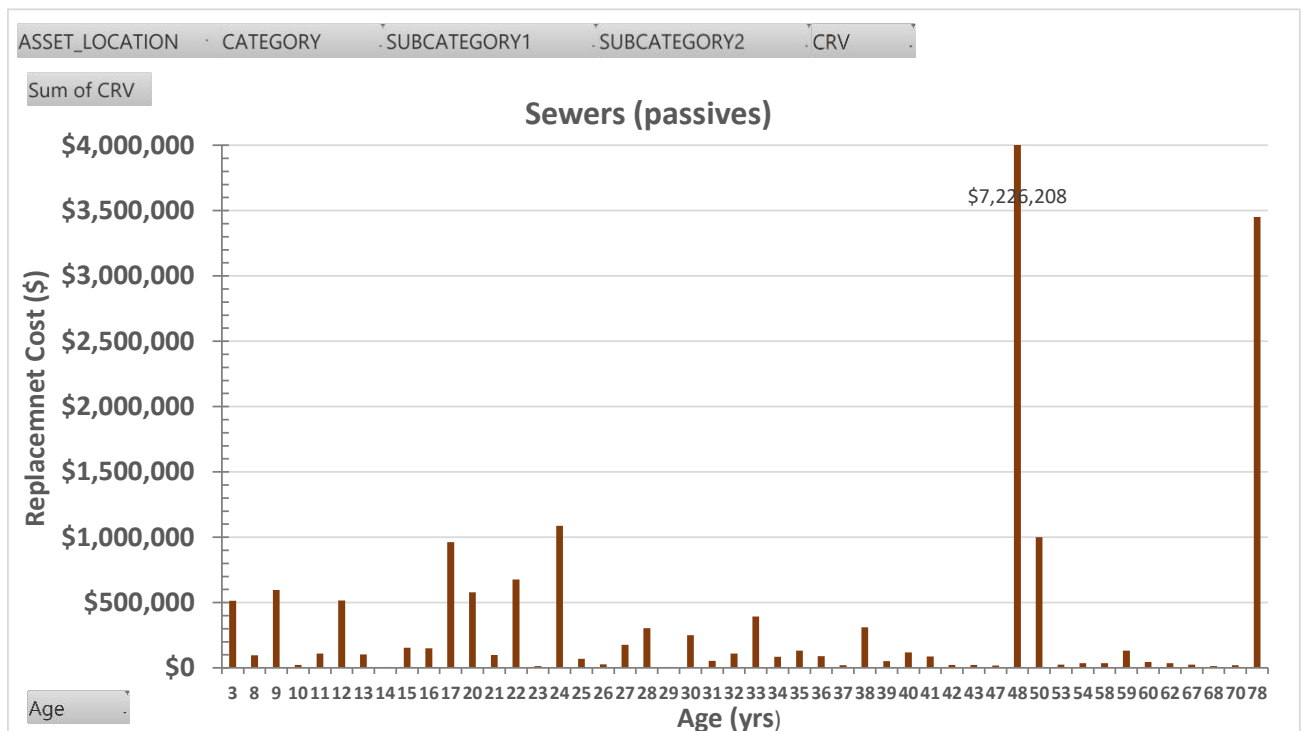


Figure 2.4.a Gravity sewers age profile

The average age of manholes is 44 years. 212 manholes (16%) with replacement cost approximately \$1 million are 60 years of age or older. Approximately 50% of the total replacement cost is for manholes 47 years and older.

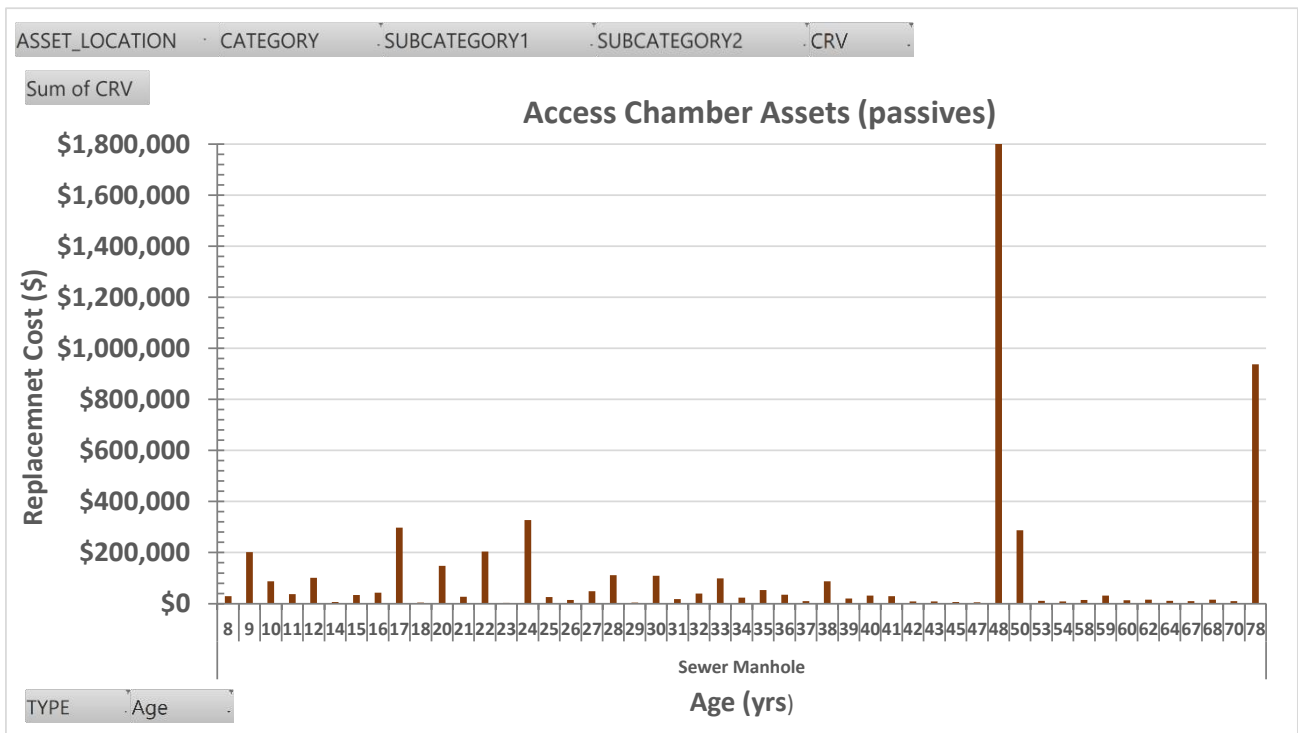


Figure 2.4.b Manholes (access chambers) age profile

Rising mains are comprised of relatively young PVC and relatively aged AC, poly and CICI pipework. The average age is 42 years. More than 50% of the total replacement cost is for rising mains 50 years and older.

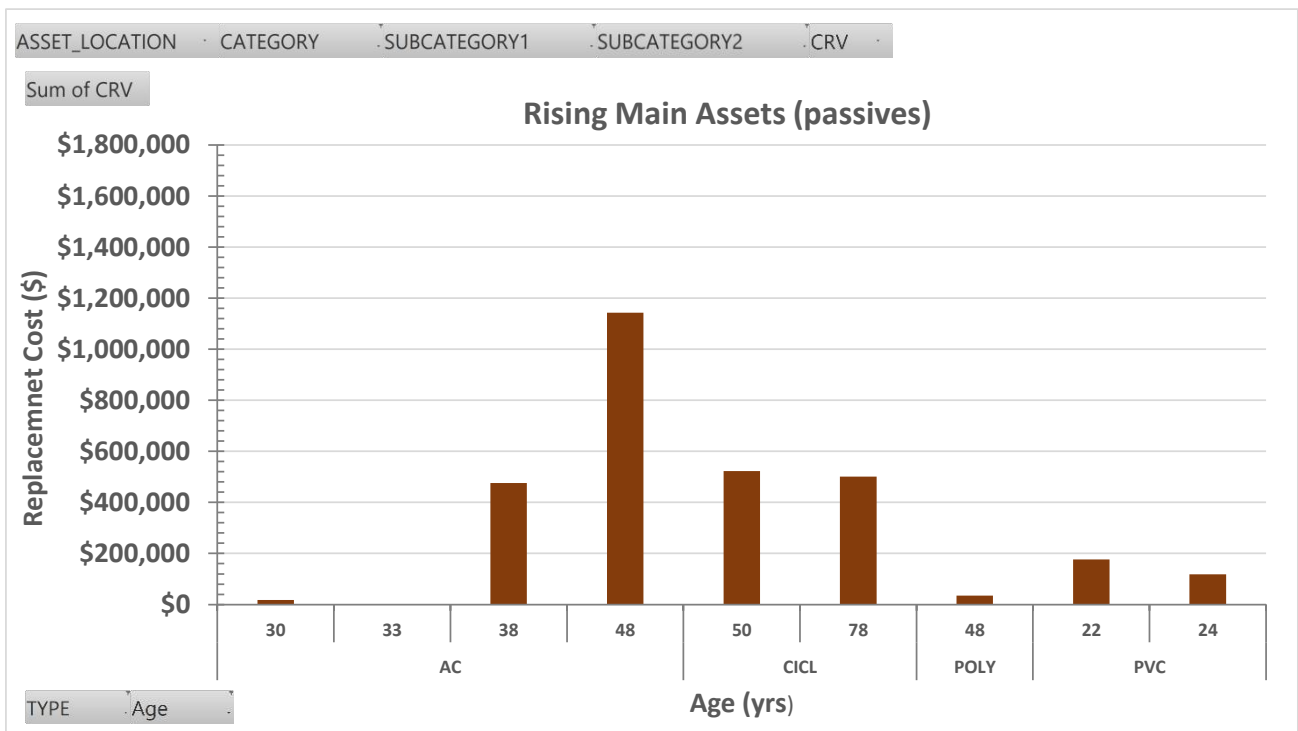


Figure 2.4.c Rising mains age profile

The age profile for pump station assets indicates relatively new and some aged structures, electrical and mechanical assets. The average age is 18.5 years. 50% of the total replacement cost is for assets 26 years and older.

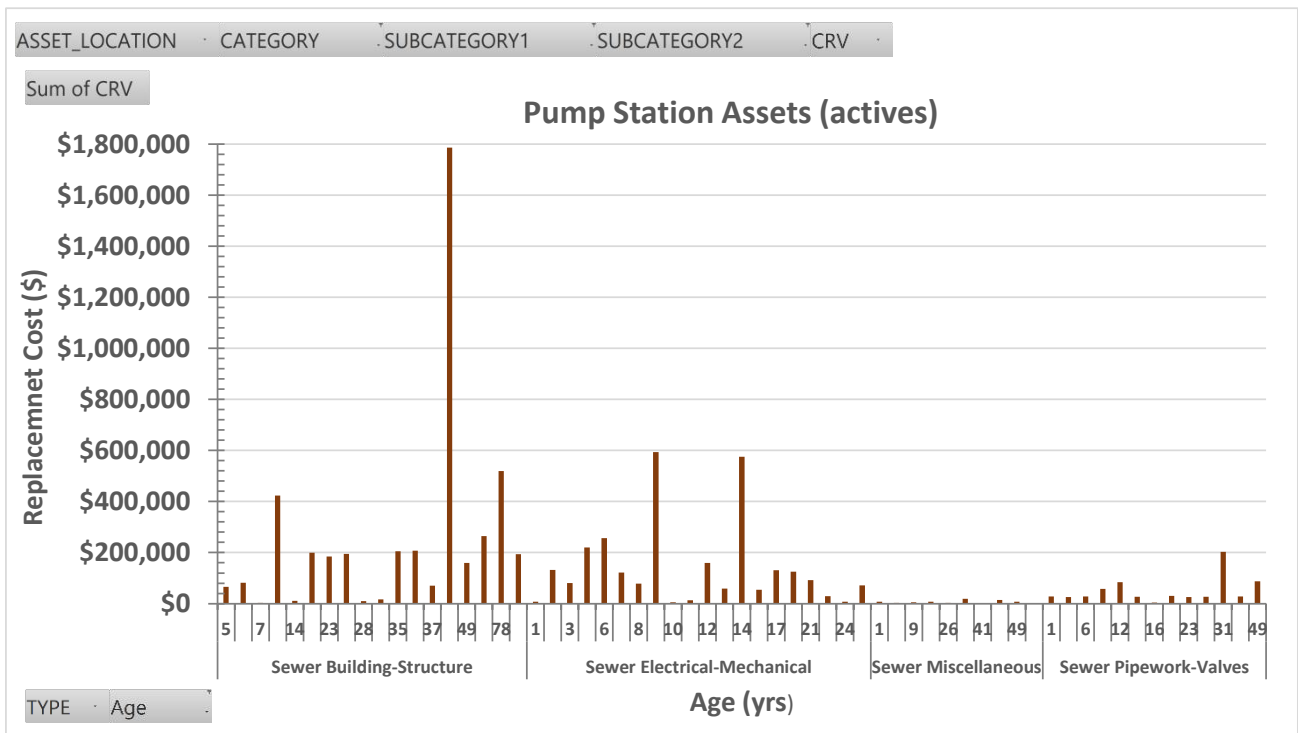


Figure 2.4.d Sewage Pump Station assets age profile

The profiles for all assets and asset types at treatment plants are provided below. The average age of assets is 27 years. Approximately 25% (\$3.2 million) of the replacement cost is for assets 5 years and younger, 50% for assets 30 years and older and 25% for assets 32 years and older.

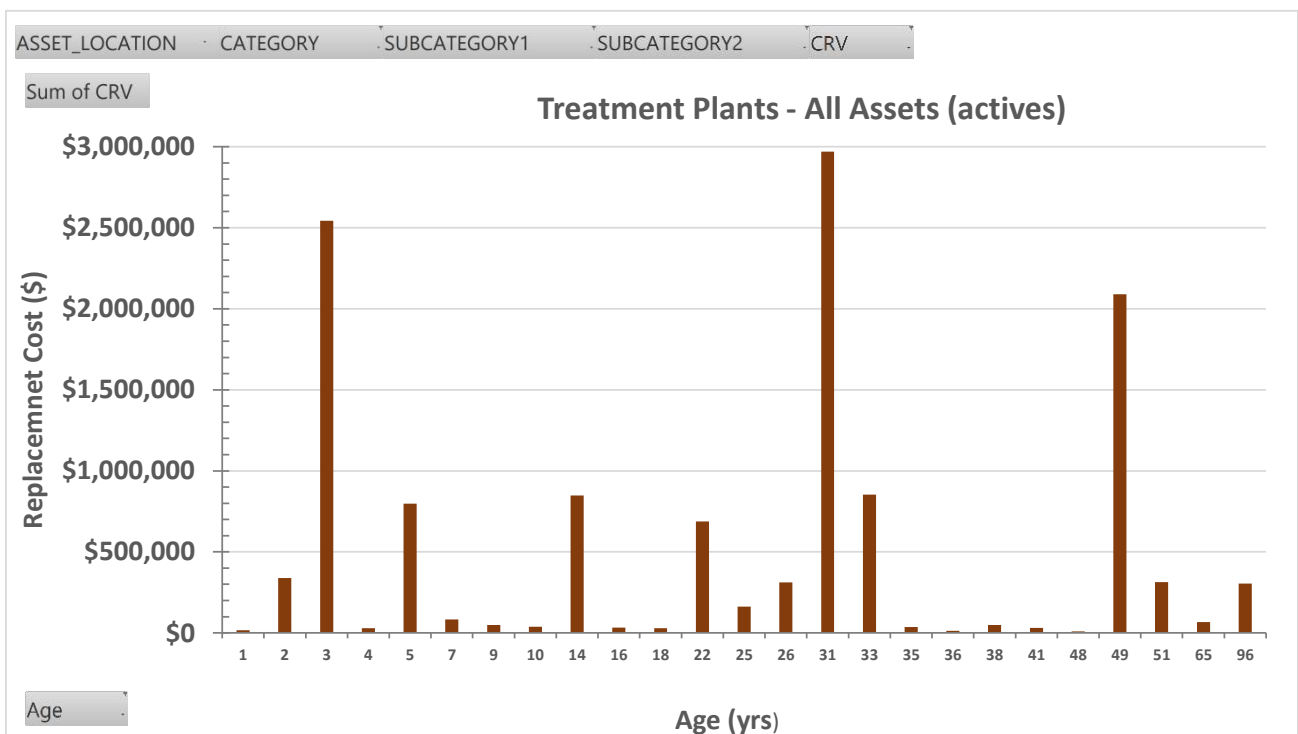


Figure 2.4.e Treatment plants – all assets age profile

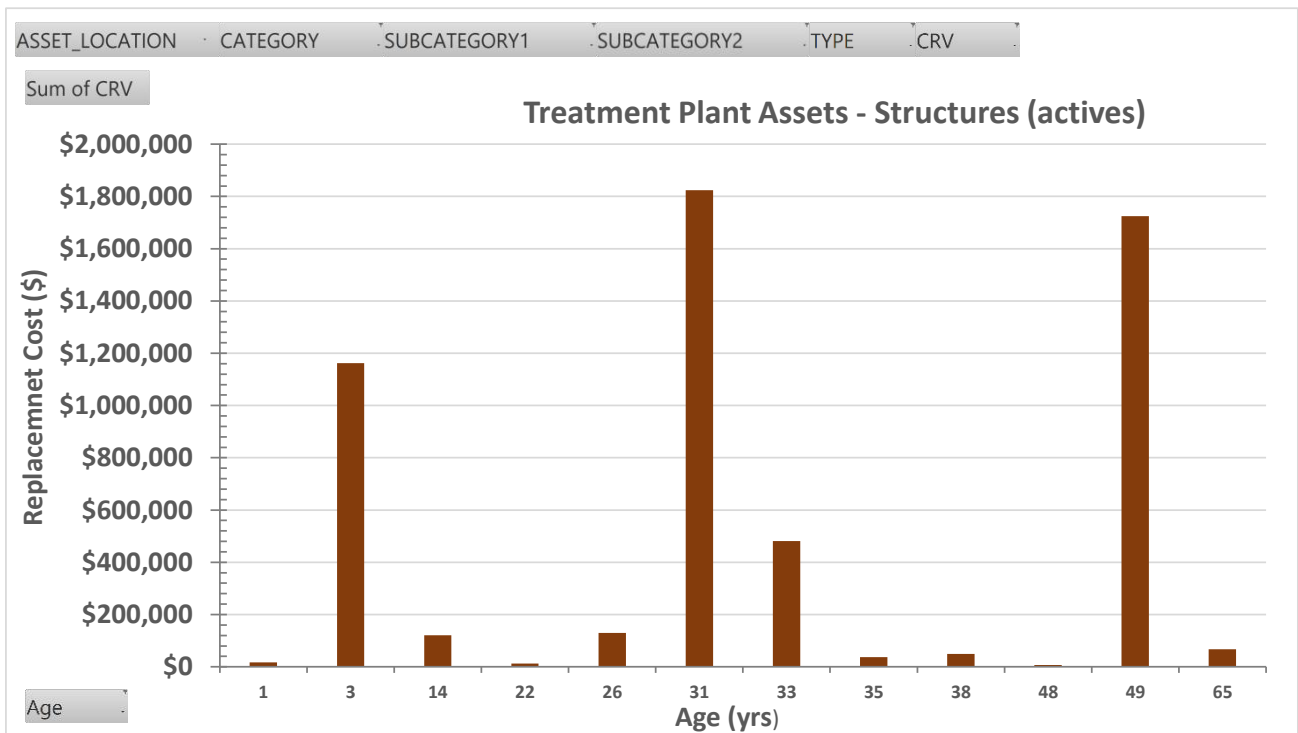


Figure 2.4.f Treatment plants assets – structures age profile

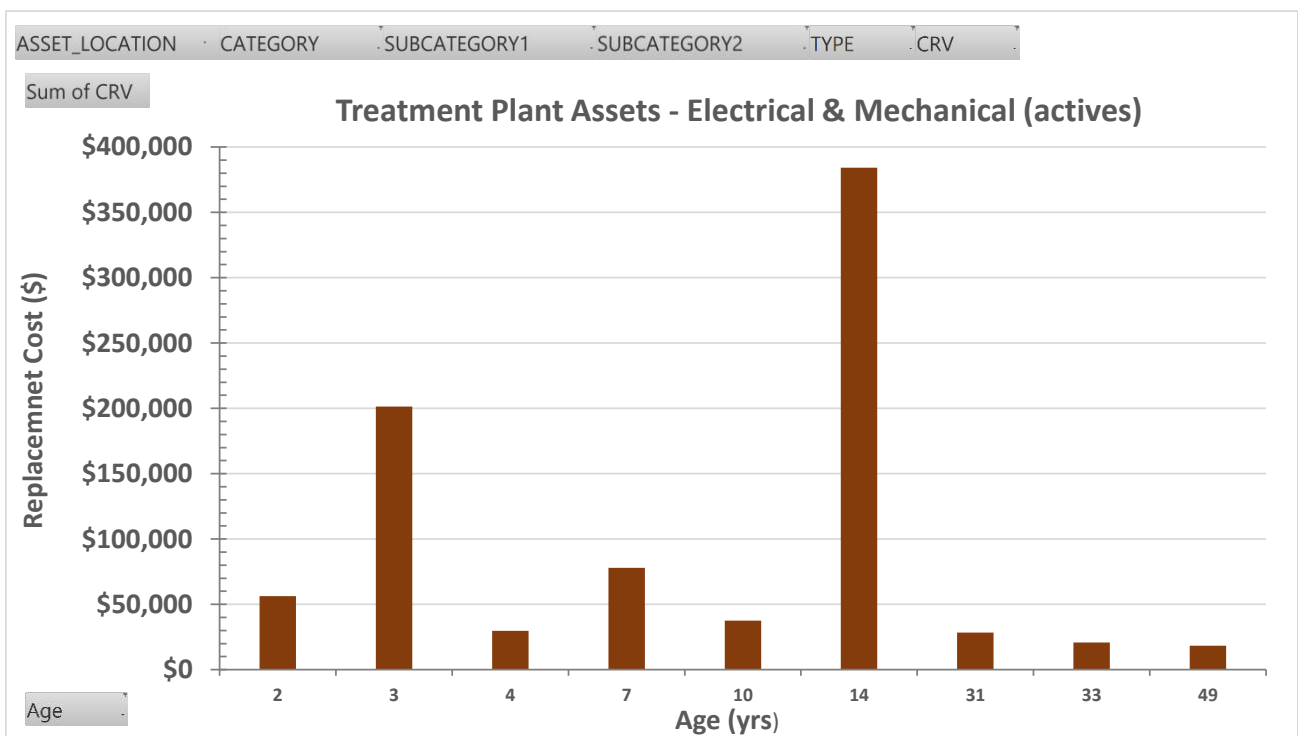


Figure 2.4.g Treatment plant assets – electrical and mechanical age profile

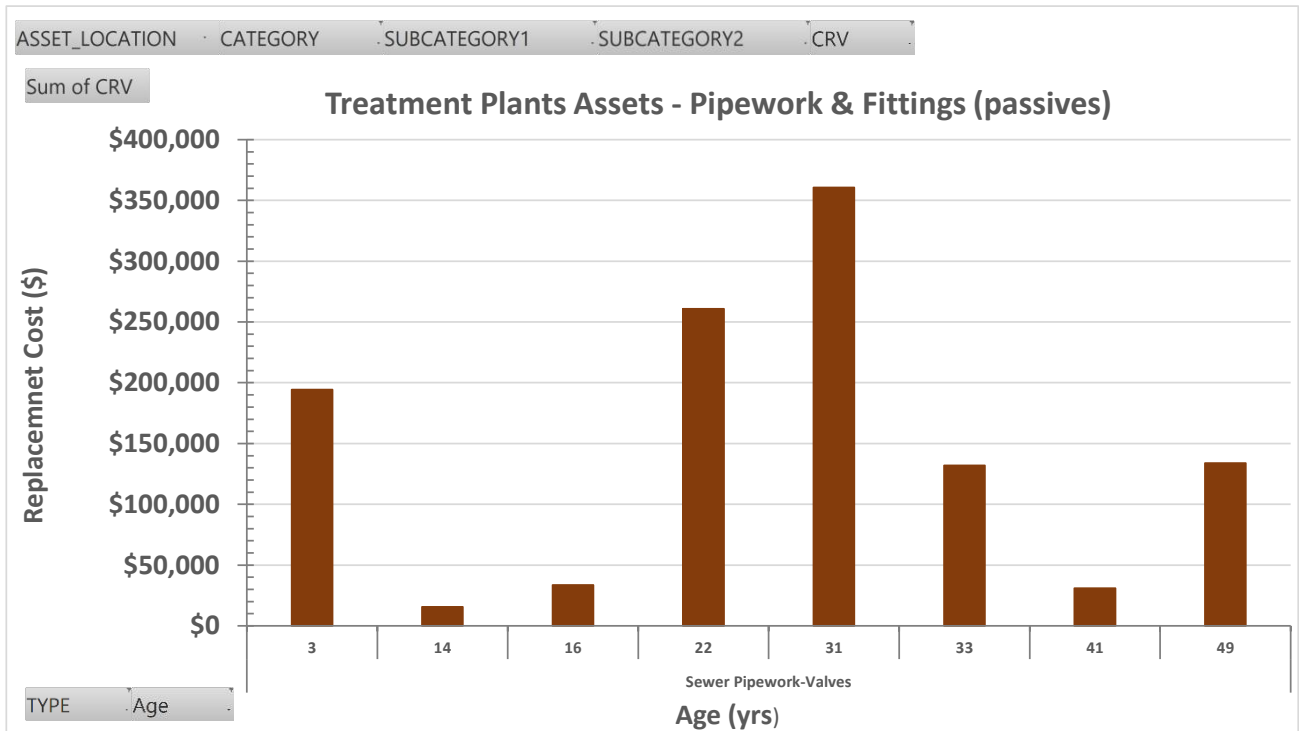


Figure 2.4.h Treatment plants assets – pipework and fittings age profile

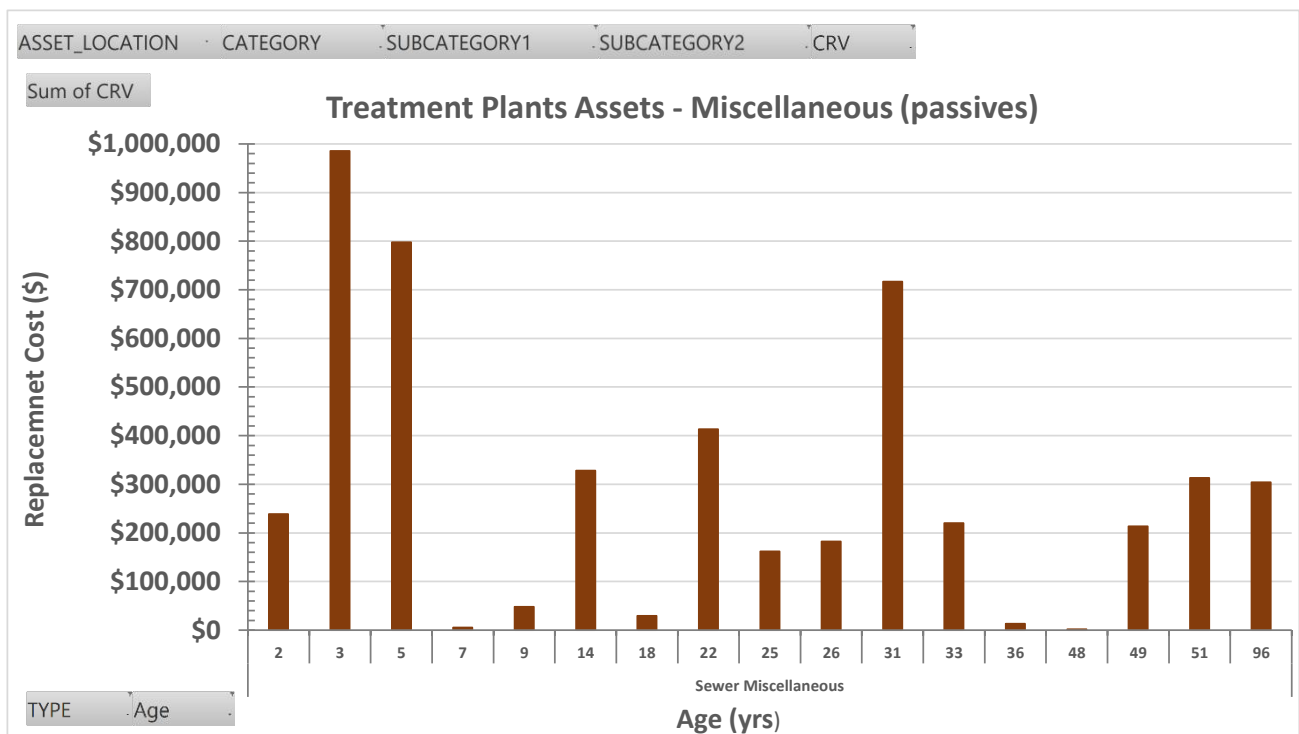


Figure 2.4.i Treatment plants assets – miscellaneous assets age profile

2.5 Asset Condition

Historically, Council has relied almost solely on the knowledge of staff for any available asset condition information. The Council has a CCTV system for inspecting sewers as needed and does not systematically collect and document performance and condition data. About 4 years ago Council undertook a CCTV inspection program in one part of the City and as a result relined several sewers. Valuation data indicates this was for sewers at Short and Nandina Streets, Industrial Avenue and Duchess Road. Root intrusion is not an issue.

As part of the comprehensive asset valuation process undertaken every 4 years condition is determined for above ground assets that can be visually condition assessed and rated. Where condition is not observable for underground assets it is determined from age or performance.

The 2017 valuations give remaining useful life (RUL) for all assets and can also be used to back calculate a condition rating.

The description of condition ratings based on percentage of remaining useful life is provided in Table 2.5.a for civil assets, sewerage mains and electrical and mechanical assets. Figure 2.5.a and 2.5.b summarise condition assessment results for active and passive assets respectively. Condition ratings for individual assets can be found in the spreadsheet data model.

Table 2.5.a Condition ratings based on remaining useful life

Rating	Description	% Remaining Useful Life (RUL)
0	No Information Available	Not applicable
1	Excellent (only normal maintenance required)	100% to 80%
2	Good (minor defects only/minor maintenance required up to 25%)	80% to 50%
3	Average (significant maintenance required 50%)	50% to 20% (25% for E&M)
4	Poor (requires replacement within next 1-2 years)	20% to 5% (25% to 10% for E&M)
5	Asset Failure (requires immediate replacement)	5% to 0% (10% to 0% for E&M)

Source: IPWEA Practice Note 7 V3 2016

The majority (89%) of underground assets are in average or better condition. 0.7% (\$0.19 million) are in poor condition (rating 4) with 10.2% (\$2.91 million) requiring replacement (rating 5).

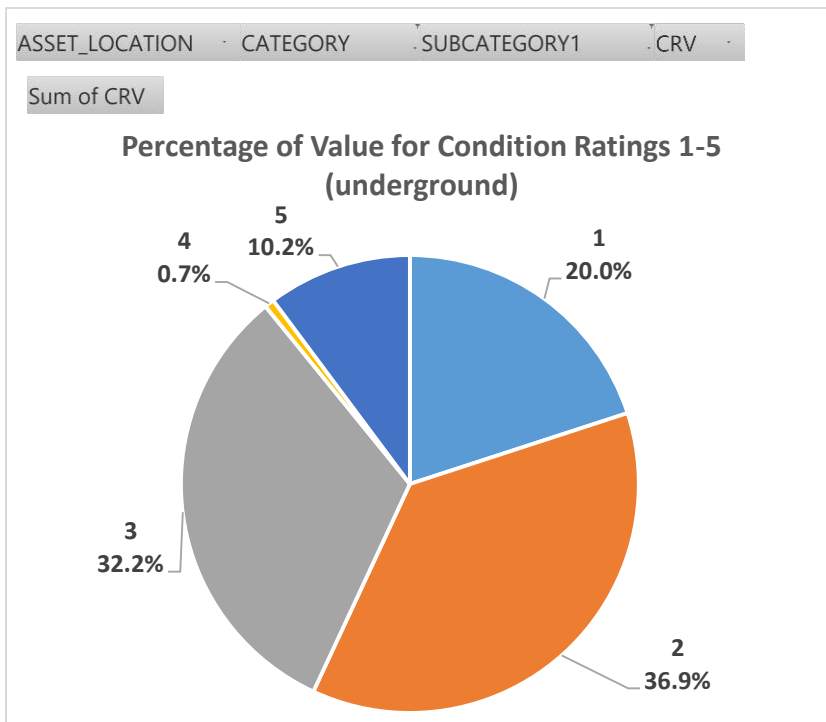


Figure 2.5.a Underground (passive) assets condition ratings

The majority (88%) of above ground assets are in average or better condition. 10% (\$2.1 million) are in poor condition (rating 4) with 2% (\$0.41 million) requiring replacement (rating 5).

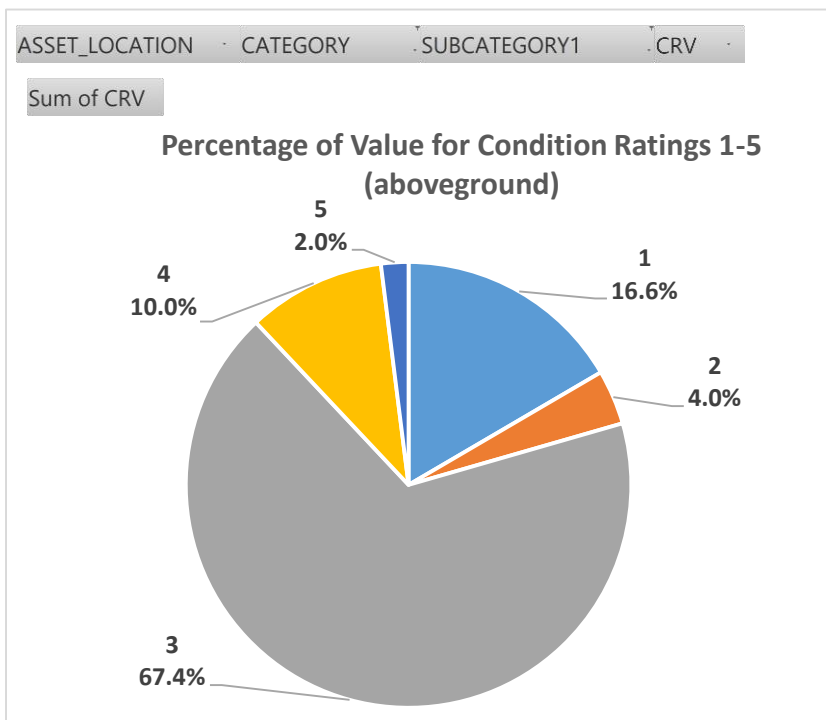


Figure 2.5.b Above ground (active) assets condition ratings

Proposed actions for condition assessment of assets:

- Capture failure data as corporate data, e.g. sewer asset ID and location (performance data can be used to estimate condition)
- Improve field capture of inspection and condition information by implementing where appropriate 'Reflect' as the data collection tool to capture failure and repair data for corporate use
- Map sewer main failure data on a GIS as a layer
- Proactively CCTV inspect problem areas.

2.6 Asset Remaining Useful Life

The valuation results for assessment of remaining useful life (RUL) of assets are shown for under and above ground assets in the following figures. It is estimated 10% (total value \$2.96 million) of the total quantity of underground assets and 2.4% (total value \$0.5 million) of the above ground assets have a RUL of 5 years or less. These assets are listed in the Appendix and comprise the draft renewal program.

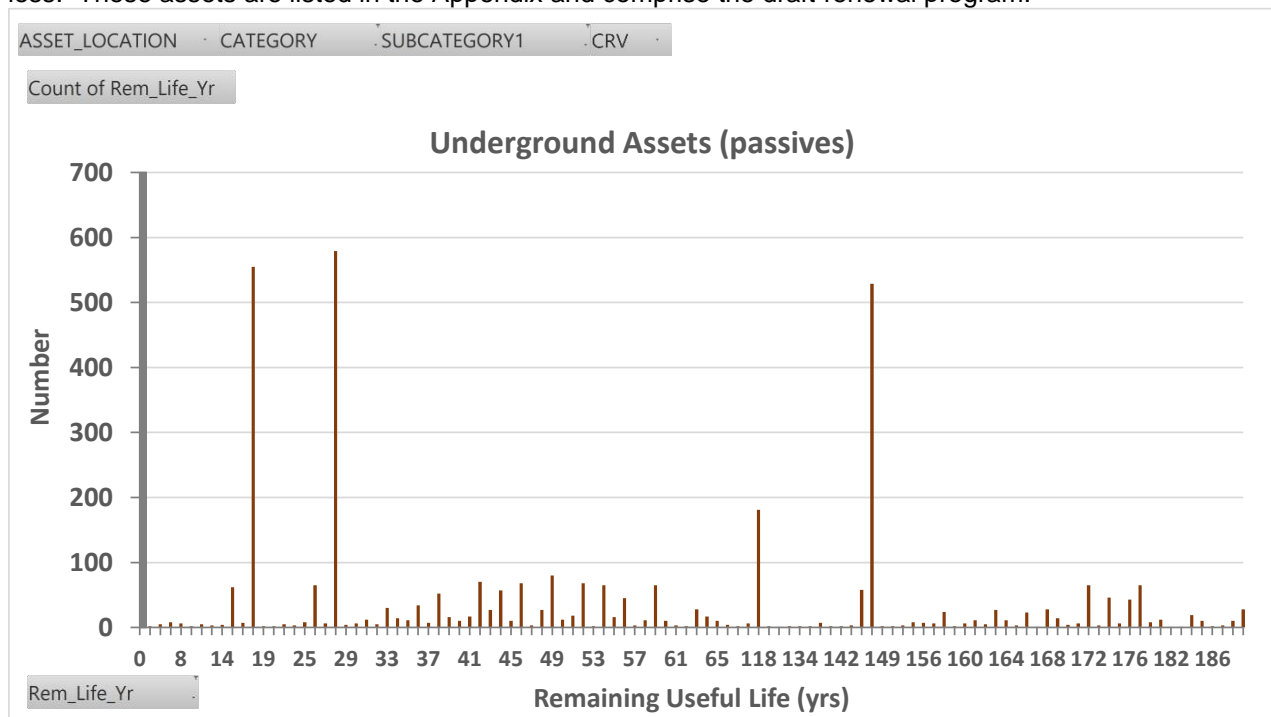


Figure 2.6.a Underground (passive) assets remaining useful life profile

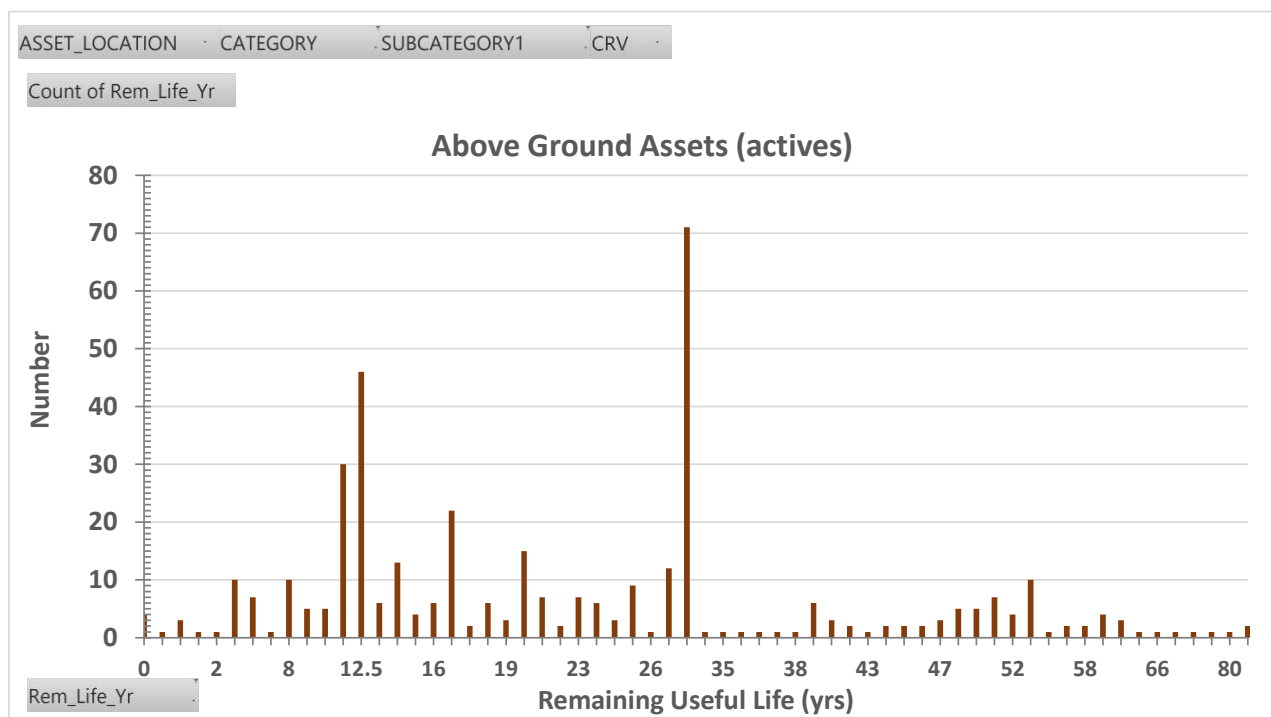


Figure 2.6.b Above ground (active) assets remaining useful life profile

RUL by asset category is shown in Table 2.6.a. The average RUL is 70 years for all underground assets and 25 years for all above ground assets.

Table 2.6.a Average remaining useful life for asset categories

Category	No. of Assets (with value)	Remaining Useful Life (Years)				
		Overall Average	Building - Structure	Electrical Mechanical	Pipework- Valves	Miscellaneous
Underground (passives)						
Gravity Mains	2,261	89	-	-	-	-
Access chambers (manholes)	1,309	32	-	-	-	-
Rising mains	36	24	-	-	-	-
Above Ground (actives)						
Pump Stations	207	24	42	14	38	27
Wastewater Treatment Plants	171	25	26	16	26	30
Wastewater Treatment Plants DAF	4	42	58	23	58	48

Council manages approximately \$49 million of sewerage infrastructure assets with the annual depreciation being approximately \$0.7 million. Thus, it is critical that Council has it “finger on the pulse” in relation to asset condition and the implication for future rehabilitation/replacement expenditure.

For the assets approaching the end of their useful life it is paramount that Council collects some condition and performance data for these categories and additionally for critical assets, since their failure is generally not acceptable.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

At present, indications of desired levels of service are obtained from various sources including residents' feedback to Councillors and staff, service requests and correspondence. No formal customer research or community survey has been undertaken to determine levels of service for infrastructure assets covered by this Asset Management Plan. The completion of a customer survey has been added to the improvement plan. Survey results will be used to inform future updates of the AMP and in particular the levels of service. Council will also use this information in developing the Operational Plan and in allocation of resources in the budget.

3.2 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. The requirements of key legislation that have a direct impact on asset management activities are shown in Table 3.2.a.

Table 3.2.a Key legislative requirements

Legislation	Requirement
Local Government Act 1993, 2009	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery, the acquisition and disposal of assets and requirements for corporate and operational plans. The Local Government (Finance, Plans & Reporting) Regulation is subordinate legislation.
Electrical Safety Act 2002 (Qld)	This Act is directed at eliminating the human cost to individuals, families and the community of death, injury and damage/destruction of property that can be caused by electricity.
Environmental Protection Act 1994	The object of this Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development). Services to conform to state-wide integrated conservation strategy. Treatment plants are to be licensed in accordance with the Act. Responsible for the protection of air and sewerage quality, and the control of pollution, waste, noise and radiation.
Plumbing and Drainage Act 2002	The main objects of this Act are to control plumbing and drainage, the licensing of plumbers and drainers and managing on-site sewerage systems.
Public and Environmental Health Act (Waste Control Regulations) 2005	Public health is dedicated to preserving, protecting and promoting good health and preventing illness and injury
Queensland Competition Authority Act 1997 (Qld)	The Queensland Competition Authority (QCA) to develop criteria to assist the Premier and the Treasurer (the Ministers) in deciding whether to declare a government business activity to be a government monopoly business activity. QCA ensures monopoly businesses operating in Queensland, particularly in the provision of key infrastructure, do not abuse their market power through unfair pricing or restrictive access arrangements. Achieved through investigating and monitoring pricing practices of certain monopoly businesses and regulating third party access to essential infrastructure.
Water Act 2000	Sustainable management of water and other resources. Regulatory framework for providing water and sewerage services. Delivery of service to conform to regulatory requirements. This includes regulating the management, control and removal of asbestos in the workplace (including residential premises which are a 'workplace' when work is undertaken by a contractor).
Water Supply (Safety and Reliability) Act 2008	A regulatory framework for providing safe and reliable water and sewerage services in the State, including functions and powers of service providers, a regulatory framework for providing recycled water, primarily for protecting public health and protecting the interests of customers of service providers. Since 2014 specific changes to the Act were enacted aimed to simplify regulatory requirements. The Council is required to collect data (SWIM) on a pre-determined list of key performance indicators and submit to the regulator each year on or before 1 October a performance report about each of the indicators each financial year occurring immediately after the financial year ends.
Work Health and Safety Act 2011	The objective of this Act is to prevent a person's death, injury or illness being caused by a workplace, by a relevant workplace area, by work activities, or by plant or substances for use at a relevant place. Sets out roles and responsibilities to secure the health, safety and welfare of persons at work.

3.3 Service Standards and Performance

Council aims to provide an affordable and reliable sewerage service meeting environmental compliance requirements. Sewerage assets are to be maintained in a reasonable usable condition and defects found or reported that are outside of our service standards are repaired within defined maintenance response times.

The actual levels of service provided are monitored through information recorded by the following means:

- Service Complaints /Action Requests
- Planned Service Interruptions
- Treated Effluent Quality test results
- SWIM data collected for mandatory performance reporting to State Government.

Monitoring of consumer comments and complaints provides valuable information on potential problems that may not have been identified by performance monitoring of the sewerage systems. All complaints are recorded and investigated.

This Sewerage AMP has defined service levels in two terms.

1. **Community Levels of Service** - related to how the community receives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.
2. **Technical (operational) Levels of Service** - measures of performance developed to ensure that the minimum community levels of service are met.

The performance indicators (PI) the Council has adopted are easily measurable and the targets set for each PI are reviewed annually with assistance from the following:

- Community satisfaction measured by numbers of and nature of complaints received and results of annual customer survey
- Examination of movements of key performance indicators
- Changes in asset condition
- Annual valuation of sewerage infrastructure assets.

The main objective of reviewing standards of service is to determine to what degree the target levels of service are being achieved.

Council prepared a legislated Customer Service Standard (CSS) in 2009 to address day to day continuity of supply and adequacy and quality of normal supply. Performance against indicators and targets adopted in 2009 from SWIM data are shown in Table 3.3.a. Further details are provided in the Annual SWIM reports to State Government.

The results indicate all targets are being met.

Council has no set levels of service other than those proposed in 2009. A review and update of standards is overdue.

Proposed revised targets based on a review of recent SWIM data, regulatory requirements, affordability and financial viability are given in Table 3.3.b. These service levels can be adjusted in future revisions of this AMP as better data is obtained.

Table 3.3.a Performance against Levels of Service Targets

Level of Service	Performance Measure (performance indicator)	SWIM code	CSS Target (2009)	GRC Overall Performance [#] 😊 achieves / 😞 fails				Proposed Target (overall)
				2015	2016	2017	Comment	
COMMUNITY LEVELS OF SERVICE								
Quality - Provide service of adequate quality	Number of Odour complaints per 1,000 connections per year ⁺	-	Less than 10	0 😊	0.6 😊	0.9 😊	CS28 is total number of complaints	Less than 1
	Number of sewerage service complaints	CS21	-	2 (0.6 per 1,000 conn) 😊	7 (2 per 1,000 conn) 😊	48 (13.8 per 1,000 conn) 😞	Goondiwindi 37 in 2017	Less than 35 (10 per 1,000 conn)
Function - Provide adequate system capacity	Number of sewage overflows to customer properties per 1,000 connections per year ⁺	-	Less than 10	0	0	2.9	Goondiwindi 10 in 2017	Less than 5
Safety - Respond to incidents in a timely manner	Response time to incidents (incl. main breaks and chokes)+ Note: problem may not be fixed on initial response	CS33	Less than 5 hours	Max 1 hr. Avg 34 mins 😊	Max1.5 hrs. Avg 49 mins 😊	Max 2 hrs. Avg 31 mins 😊		Less than 60 mins in at least 90% of instances
TECHNICAL LEVELS OF SERVICE								
Condition - Provide infrastructure of adequate condition to maintain services	Number of sewer main breaks and chokes per 100 km mains per year ⁺	AS39	Less than 100	54 😊	43 😊	46 😊	Totals – 98 in 2015 79 in 2016 84 in 2017	Less than 40 (NPR 15/16 median is 18.2)
	Number of sewage overflows per 100 km per year	AS37	Less than 30	0 😊	0 😊	5.9 😊	AS36 is total number sewage overflows 0 in 2015 0 in 2016 10 in 2017	Less than 310
Accessibility - Provide a continuous service	Time for restoration of service	-	Less than 8 hours	Max 13 hrs. 😞 Avg 9 mins 😊	Max 22 hrs. 😞 Avg 17 mins 😊	Max 16 hrs. 😞 Avg 12 mins 😊		Less than 8 hours
Cost Effectiveness	Sewer inflow / infiltration – ratio of peak day flow to average day flow ⁺	-	Less than 5 : 1	-	-	-		Less than 5 : 1
Regulatory Compliance	% of sewage treatment plant effluent samples meeting licence limits	-	Greater than 90% compliance with license requirements	Refer Appendix	Refer Appendix	Refer Appendix	2017 – BOD ₅ & TSS targets met at Goondiwindi, not met for Texas & Ingledwood	Greater than 90% compliance with license requirements

+ - Required under Water Act 2000; # - includes SWIM data

Table 3.3.b Proposed KPIs and Targets

Key Performance Measure (performance indicator)	Proposed Target (overall)	Equivalent Target (overall)
Number of sewage overflows to customer properties per 1,000 connections per year	Less than 5	Less than 18 per year in total
Number of sewerage service complaints per 1000 connections per year	Less than 10	Less than 35
Response time to incidents (incl. main breaks and chokes) NB: problem may not be fixed on initial response	Less than 60 mins in at least 90% of instances	-
Time for restoration of service	Less than 8 hours	-
Number of sewer main breaks and chokes per 100 km mains per year	Less than 40 (State median 11.4 in 15/16)	Less than 73 per year in total
% of sewage treatment plant effluent samples meeting licence limits	Greater than 90% compliance with license requirements	-

4. DEMAND

4.1 Current

The most recent available data from 2015/16 SWIM data gives a total of 5,384 connections. Residential and non- residential connections and 2016 loading stated in the LGIP versus plant capacity for each location are provided in Table 4.1.a.

All plants had sufficient capacity to meet 2016 loadings based on EP, although the Goondiwindi plant was approaching its capacity (81% for 2016 load). More recent loadings data was not available for comparison in preparing this AMP – it is anticipated loadings will have increased a minor amount. However, it is interesting to note the 2016-17 Local Government Comparative Report gives a total of 5,050 connections (3,018 residential and 2,032 non-residential) – a decrease from the total of 5,384 reported in SWIM 2015/16.

Table 4.1.a Sewage Treatment Plant Load and Capacity Details

Location	No. of Connections [#]			Plant Load [#] 2015/16 (ML)	Plant Capacity (EP)	Plant Load ⁺ 2016 (EP)	2016 load vs Capacity (%)
	Residential	Non Residential	Total				
Goondiwindi	2,241	1,558	3,799	536.3	6,500	5,271	81%
Inglewood	394	279	673	57.9	1,500	683	46%
Talwood	68	31	99	9.4	250	70	28%
Texas	382	220	602	41.9	1,000	660	66%
Yelarbon	167	44	211	14.6	500	25	5%
Total	3,252 (60%)	2,132	5,384		9,750	6,709	69%

[#] Source: SWIM 2015/16

⁺ Source: LGIP 2016

4.2 Future

Factors affecting demand include population change, changes in demographics, seasonal factors, environmental awareness, product pricing etc. The impact of these trends needs to be regularly examined and demand management strategies are recommended as a technique to modify demand without compromising customer expectations.

Growth is typically approximately 1.6% per annum for Goondiwindi, with a steady number of new house approvals occurring each month (11 house approvals alone in November 2017). Lower growth has occurred at Inglewood and Texas water and little if any growth at the other towns.

Future average day wastewater volumes derived from LGIP data of forecast equivalent persons (EP) are shown in Table 4.2.a. In theory, average day loads for 2031 populations for all towns will be met by current plant capacities. Loads for ultimate population will exceed capacities at all plants except Inglewood and Talwood.

Table 4.2.a Future Sewage Plant Load and Capacity Details

Location	Plant Capacity (EP)	2016		2021		2026		2031		Ultimate	
		Load (EP)	% Capacity	Load (EP)	% Capacity	Load (EP)	% Capacity	Load (EP)	% Capacity	Load (EP)	% Capacity
Goondiwindi	6,500	5,271	81%	5,377	83%	5,485	84%	5,592	86%	8,803	135%
Inglewood	1,500	683	46%	697	46%	711	47%	726	48%	1,089	73%
Talwood	250	70	28%	71	28%	73	29%	75	30%	232	93%
Texas	1,000	660	66%	674	67%	687	69%	699	70%	2,159	216%
Yelarbon	500	25	5%	231	46%	235	47%	238	48%	618	124%

An abattoir is planned for construction near Goondiwindi, construction starting during 2018 and operational 2 years later. As it will require approximately 380 persons to operate, this will result in a substantial additional approximate 1000 EP loading on the town sewerage system. Other enterprises are also possible in the coming years which will impact the demand for sewerage services. An additional 1,000 EP in 2021 equates to an increase from 83 % to 98% of plant capacity.

Given that assessments of system capacities were done a long time ago it is timely to undertake a review of sewerage system and treatment capacities for all towns for future needs. Analyses of system deficiencies will confirm the current capital works proposed in the forward works program. In conjunction, a full CCTV survey of sewers at all towns (or priority areas based on type/age/performance issues), will confirm the required pipework renewals (relining program) and priority works.

5. LIFECYCLE MANAGEMENT PLAN

5.1 Operations

5.1.1 Approach

Operations is defined as the active process of utilising an asset which will consume resources such as manpower, energy, chemical and materials and operational costs are part of the lifecycle costs of an asset. Effective and efficient (or proper) operation results in optimum utilisation and contributes to a reduction in breakdowns and maintenance need.

Each of the sewerage system assets is operated by Council to ensure the:

- Standard of the asset does not decline below a level at which the standard of service can be achieved
- Appropriate service objectives (i.e. Levels of service, statutory/regulatory requirements, and obligations, etc.) Are achieved at the least cost and that the impact of any breakdowns or outages is minimised
- Consumers get value for money.

The individual sewerage systems are different. Council strives to operate each system to deliver the same levels of service. Substantial investment in telemetry has occurred over the last 5 years at each sewerage system including at Yelarbon last year, to monitor and control assets. Council will continue changing over and upgrading controls and telemetry - from Radtel radio telemetry to ClearSCADA for pump stations.

Now the whole sewerage system is connected and can be monitored by office staff and changes made. The server is at the George St site, Goondiwindi with a backup server at the McClean St site. Texas and Inglewood are standalone systems.

Council's proposed revised organisational structure as of June 2018 for management of sewerage (and water supply) services is shown in Figure 5.1.1.a.

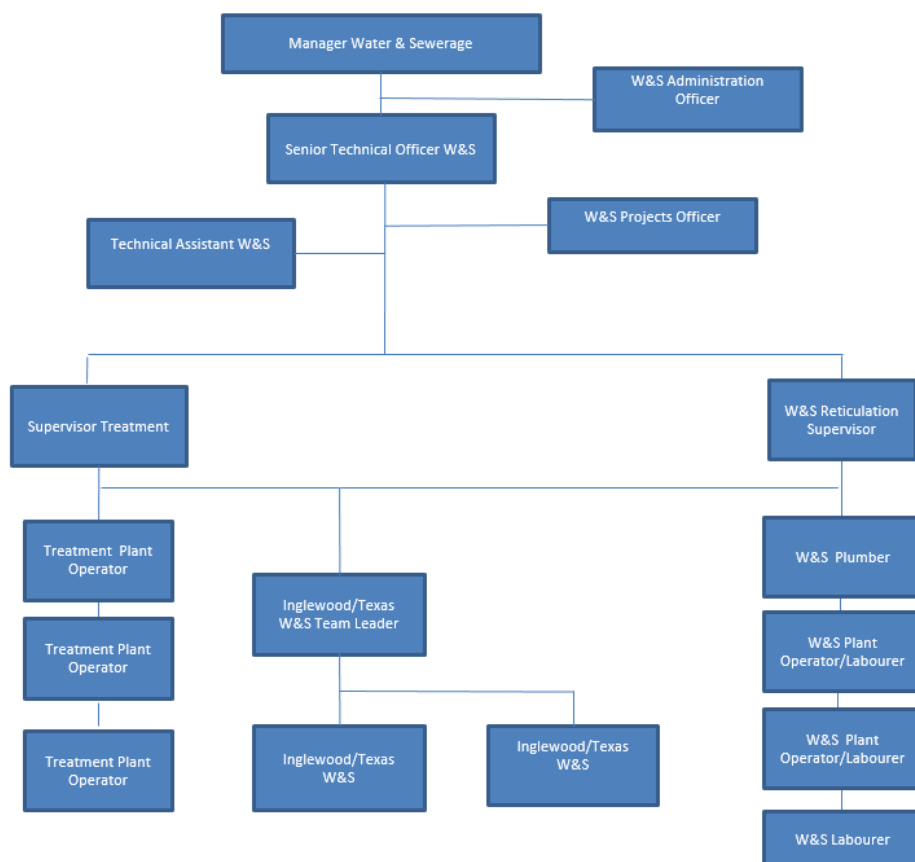


Figure 5.1.1.a Water and Sewerage Organisation

The 'Manager Water and Sewerage' has responsibility for overall management of the section and is also engaged in specific project pre work. The position of 'Technical Officer Assistant' is a project officer role for planning capital works projects. To date the officer in the role has been engaged 75% of time on telemetry activities and ongoing problem solving with operational benefits. This is hindering preparing for and implementing capital works - projects are not ready and are not being delivered as proposed.

Given the current lack of resourcing and quantity and complexity of upcoming capital works projects, Council will likely require additional skilled resources to ensure timely preparation and delivery of project activities. Increasing staffing levels (supports local jobs) or outsourcing are solutions.

The position of 'Senior Technical Officer' will be an operational coordinator role and the 'Water and Sewerage Team Supervisor' position will be responsible for day to day operation (and maintenance) of sewerage assets.

Treatment plant operators will be managed by the 'Supervisor Treatment'. Plant operators that manage the Goondiwindi, Yelarbon and Talwood plants are based at Goondiwindi. The Inglewood and Texas plants are managed by separate operators, with a plumber servicing both towns.

Operators monitor treatment plant performance by undertaking testing daily and testing for legislative purposes is sent away to a NATA laboratory for analysis.

For Goondiwindi, 3 out of 8 operational staff are available for after hours (1 x operator and 1 x maintenance and 1 x floater). Overall, there are effectively 5 in the maintenance team for reactive work.

Capital works are generally contracted out and backup provided by consultants for asset management activities due to a shortage of staff.

The roles and responsibilities of operational and maintenance staff are clearly defined in their respective position descriptions, which ensures accountability for operational and maintenance activities.

In conjunction with these key roles the Council Customer Contact Centre receives and notifies operational staff to action customer enquiries.

5.1.2 Risk Management and Critical Assets

Condition ratings from valuations for assets, performance data or indeed age where no other information is available can be used as a surrogate for Likelihood of failure (LoF). However, Consequences of Failure (CoF) and thus overall risks for the sewerage assets are yet to be identified and assessed.

Examples of likely assets at risk, consequences and treatments are -

1. Sewerage reticulation pipelines - breaks can interrupt supply. Record mains break data, continue mains replacement program and remove trees where causative.
2. Pumps - failure due to wear, blockage or power failure resulting in sewage overflows. Implement a regular pump maintenance program, spare pumps, overflow storage, station by-pass pumping and portable/fixed standby generators.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring

For critical assets, if failure occurs, the consequences are typically higher/significant. Knowledge of critical assets can feed into decision making, for example, control measures, critical spares, more frequent pro-active condition assessment and inspections, maintenance or renewal earlier before failure occurs. The intent is to avoid failures for such critical assets.

Critical assets will include the following infrastructure categories:

- Large trunk sewers (particularly those for critical customers or where failure has significant environmental impacts -
- Pump stations and rising mains delivering to treatment plants
- Treatment plants, in particular key electrical and mechanical equipment.

The key staff and contractors involved in maintenance/renewal decisions need to confirm the most critical assets. Based on an agreed risk framework the high risks can then be identified and risk management strategies developed and documented for critical assets.

The following is a preliminary listing of the consequence of failure assessment categories identified to for which a qualitative measure of severity (e.g. minor, moderate, and extreme) can be weighted and scored:

- Environmental Impact
- Type of Customer impacted
- No of disrupted customers
- Disruption to Transportation and/or potential to damage other utility assets
- Risk to Public Health and Safety
- Difficulty of Repair
- Cost of Repair
- Quantity of sewage spilt to environment and potential for fines from EPA.

An example is a trunk sewer collapse causing discharge to a watercourse (no containment) – the weighted scoring for consequences converts to a CoF of '5' ('catastrophic').

With LoF and CoF determined Council can apply the risk based decision management model shown in Figure 5.1.2.a.

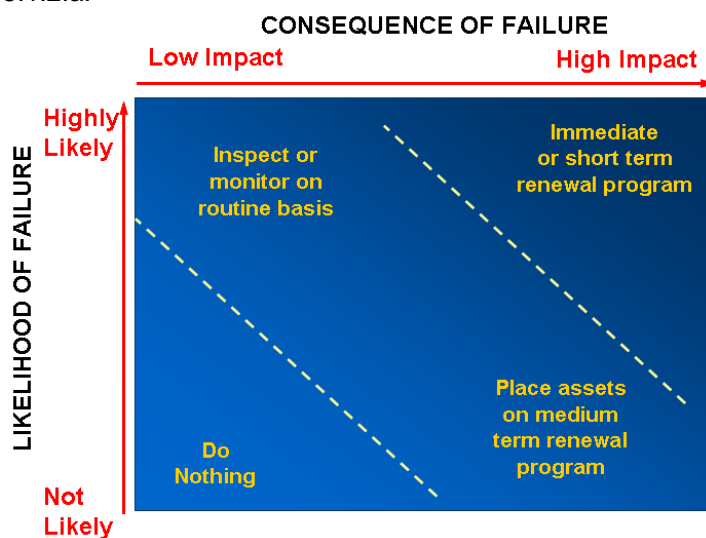


Figure 5.1.2.a Risk Based Decision Model

5.2 Inspections and Maintenance

Each of the sewerage system assets, particularly critical assets, must be maintained to a standard to avoid failure and ensure:

- The standard of the asset does not decline below a level at which the standard of service can be achieved
- The appropriate level of service is maintained
- The consumers get value for money.

In the longer term the maintenance activities can be modified as necessary to reflect:

- The age of assets relative to expected economic life cycle
- The risk of failure of critical assets
- Changes in the desired level of service
- The nature and timing of asset upgrading/ development works.

Reactive maintenance (unplanned repair work) is carried out by Council staff in response to service requests and management/supervisory directions. Field staff use tablets to collect failure data and then onto SWIM 'local'.

Informal asset inspections are undertaken on a regular basis by suitable qualified and experienced staff.

Planned maintenance is the basic regular on-going work that is necessary to keep assets operating and is usually identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Council's maintenance policies and procedures are yet to be established. Planned maintenance is adhoc and in general not carried out for the majority of asset categories.

Council has the 'Reflect' software developed by Asset Edge which is slowly being used more often. Expanded use of 'Reflect' for fixed interval inspection and/or maintenance activities is required. There would appear capacity to undertake this as a priority activity for current staff (once activities/jobs are agreed and set up the software).

Reactive and fixed interval inspection and/or maintenance activities (refer Table 5.2.a) is required for:

- Telemetry
- Treatment Plants
- Pump Stations
- Reticulation pipework – work is largely of a reactive nature and is unplanned. Sewer main blockages and breaks are attended to as soon as possible so as to restore service to customers within the maximum time frame targets specified in the Customer Service Levels. The work is generally identified via customer complaints that are communicated to Council's operational staff.
- Rising main valves - air, scour, scour, non-return and isolation.

As an example, proposed maintenance intervals for network assets are provided in Table 5.2.a.

Table 5.2.a Network Planned Maintenance

Asset / Activity	Frequency
Rising main valve - scour	5 years or less
Rising main valve - air and Non return	1 year
Sewer and rising mains crossing	1 year

Aside from pipes and fittings for pipe breaks, spares (assets/components) need to be identified, listed and procured if necessary, especially for critical infrastructure. Some spare pumps do exist, mainly for use in single pump stations.

5.3 Operations and Maintenance Expenditure

5.3.1 Historical

Details of historical operations and maintenance expenditure (Opex) for the previous 3 years are summarised in Table 5.3.1.a and following figures. State SWIM results indicate an operating cost of \$220 per property which was below the state median of \$342 per property.

Table 5.3.1.a Summary of Operations and Maintenance Expenditure

	2014/15	2015/16	2016/17
Goondiwindi			
Operations	\$321,138	\$486,948	\$297,201
Maintenance	\$218,889	\$83,087	\$238,324
subtotal	\$540,027	\$570,034	\$535,526
Inglewood			
Operations	\$158,728	\$112,218	\$106,541
Maintenance	\$41,862	\$30,947	\$23,215
subtotal	\$200,590	\$143,165	\$129,757
Talwood			
Operations	\$18,077	\$15,564	\$18,667
Maintenance	\$9,599	\$6,497	\$66,846
subtotal	\$27,676	\$22,061	\$85,513
Texas			
Operations	\$56,188	\$52,539	\$54,981
Maintenance	\$10,902	\$9,040	\$16,242
subtotal	\$67,090	\$61,578	\$71,224
Yelarbon			
Operations	\$19,110	\$15,538	\$19,792
Maintenance	\$9,982	\$9,334	\$20,940
subtotal	\$29,093	\$24,872	\$40,732
All Areas			
Operations	\$279,209	\$217,461	\$248,072
Total	\$1,143,685	\$1,039,171	\$1,110,823

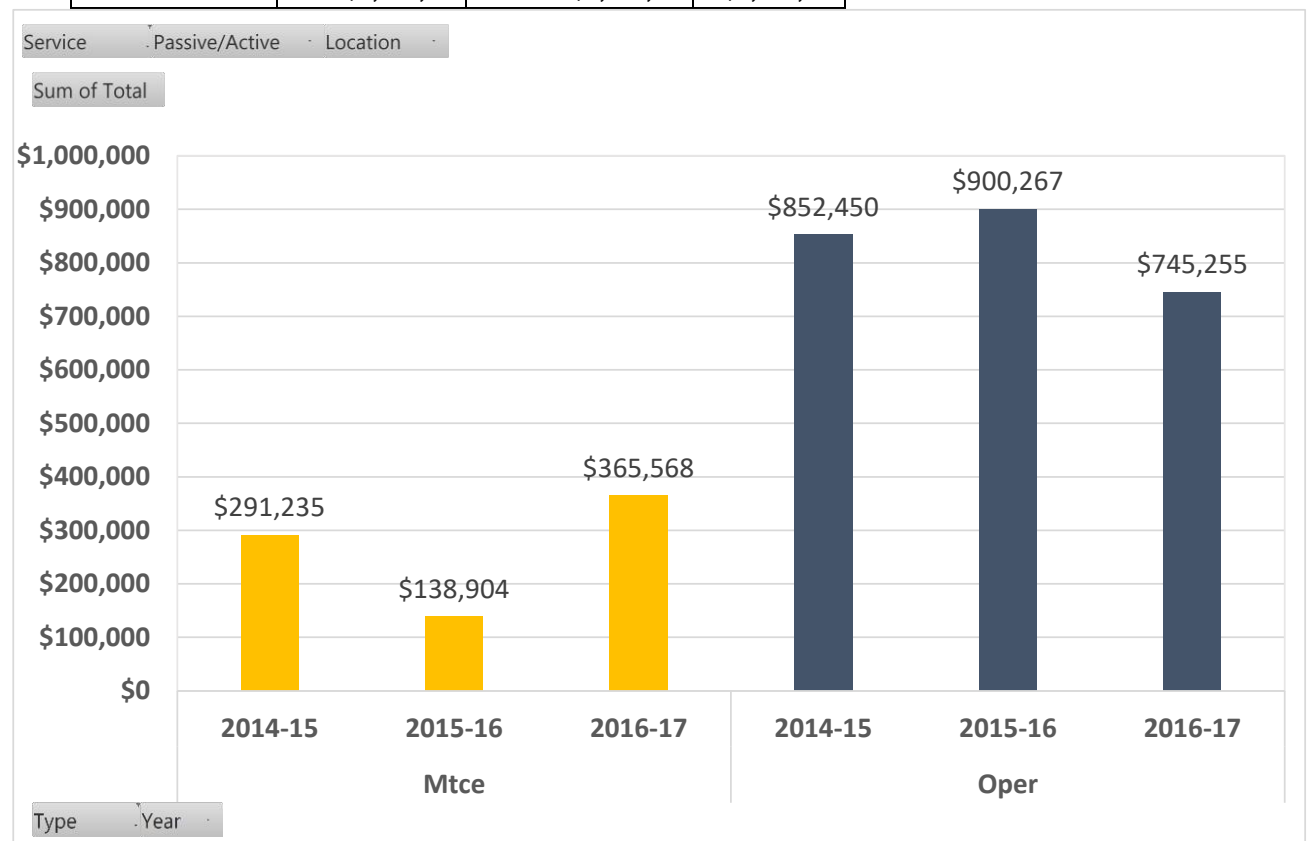


Figure 5.3.1.a Operations and Maintenance Expenditure

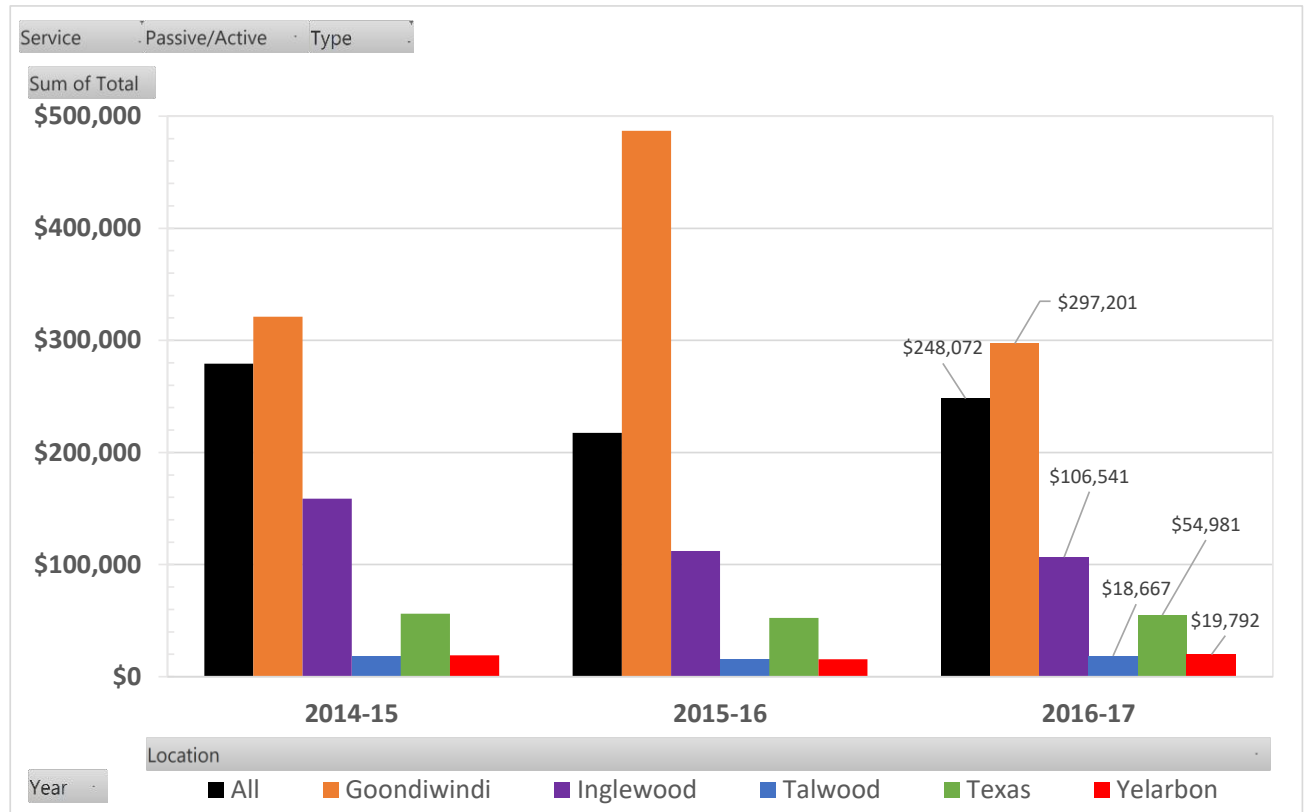


Figure 5.3.1.b Towns Operations Expenditure

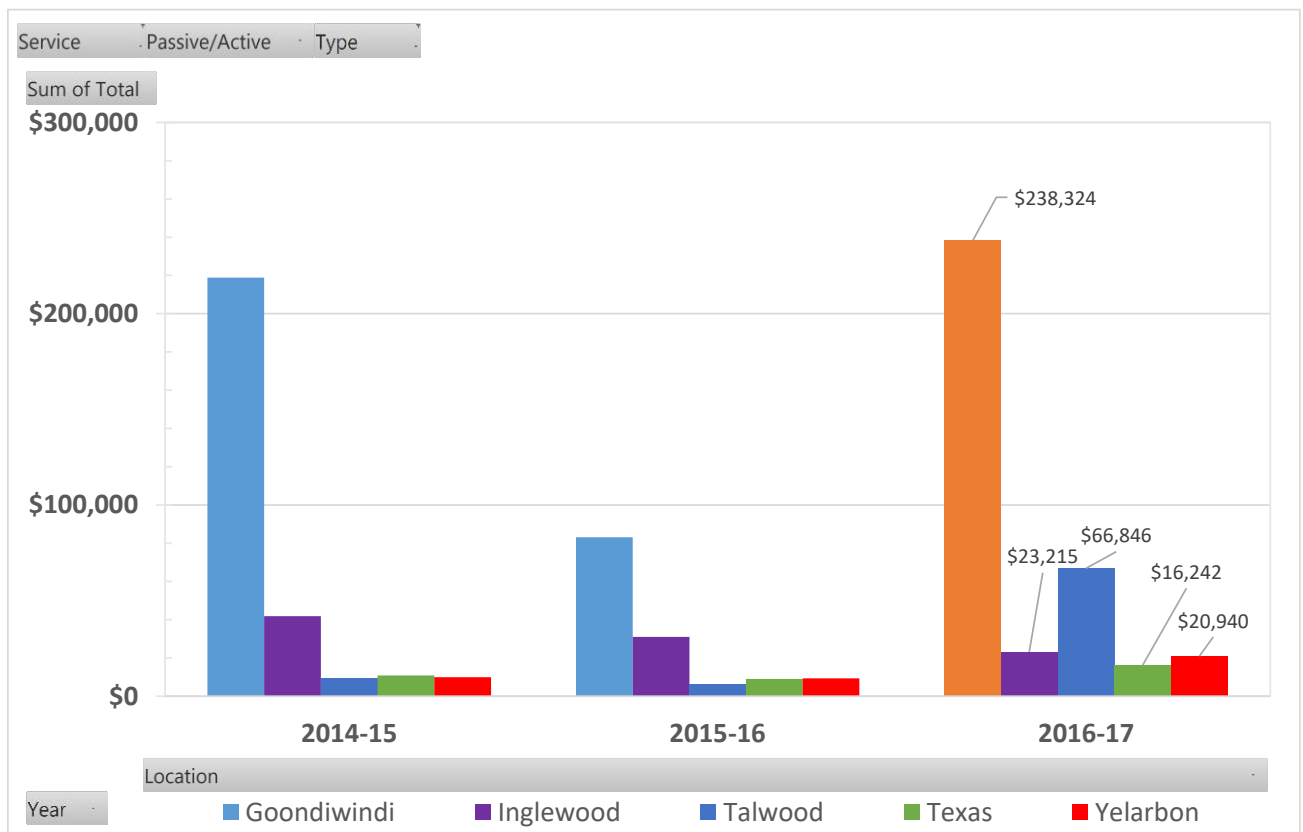


Figure 5.3.1.c Towns Maintenance Expenditure

Key observations:

- i. Total opex in 2016/17 was approximately \$1.11 million - 67% operations and 33% maintenance;
- ii. Total annual operations spend is increasing whilst total annual maintenance spend is variable;
- iii. In 2016/17 operations spend was \$0.24 million for underground and \$0.5 million for above ground assets;
- iv. In 2016/17 maintenance spend was \$0.1million for underground and \$0.25 million for above ground assets;
- v. In 2016/17 Goondiwindi comprised 40% of operations and 65% of maintenance spend; and
- vi. Annual maintenance spend in 2016/17 comprised 0.64% of underground and 0.6% of above ground asset replacement values respectively.

5.3.2 Projected

The 2017/18 sewerage services budget of approximately \$1.28 million is estimated to comprise, based on historical spend:

- Operations - \$0.97 million (\$0.52 million above ground and \$0.45 million below ground)
- Maintenance - \$0.31 million (\$0.13 million above ground and \$0.18 million below ground).

An allowance is made for a nominal 10% increase in spend (not allowing for inflation) over the next 10 years due to increased demand.

The annual operations expenditure is estimated to be \$1.07 million in 10 years (2027/28) and annual maintenance \$0.34 million (2017/18 budget plus 10%).

However, the current maintenance spend is only 0.6% of replacement value. A higher proportion is likely desirable. Thus, for \$0.9 million of proposed new and upgraded works over the 10 year period in the QTC model giving a total replacement value of \$50.3 million, adopting 1% of replacement value gives projected \$0.32 million annual maintenance in 2026/27 shown in the figure following.

Note that all costs are shown in current 2017/18 dollar values. Council is advised to monitor the operations and maintenance expenditure impacts for the new assets and increase expenditure if warranted.

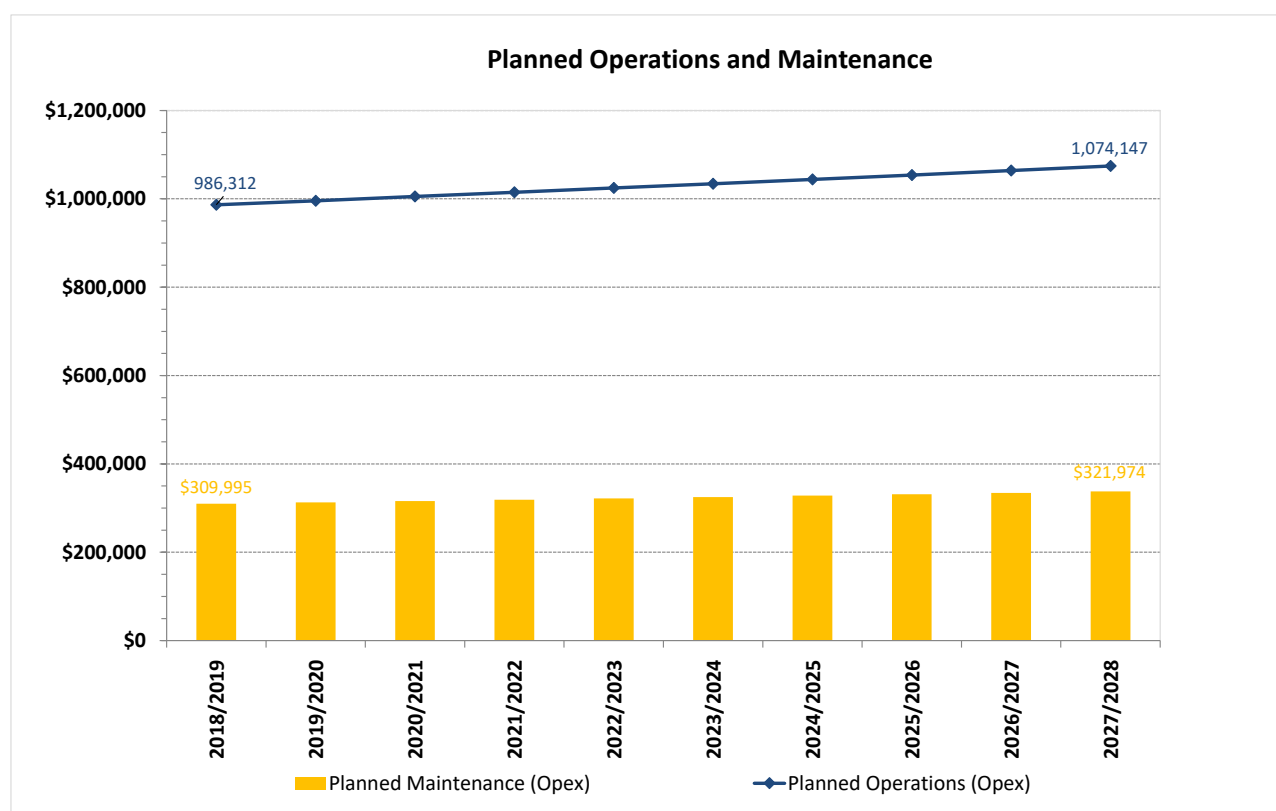


Figure 5.3.2.a Projected Operations and Maintenance Expenditure

5.4 Capital Expenditure

5.4.1 New and Upgrade Works

Selection Criteria

Little information is available as a basis for proposed new and upgrade projects on the forward works program – costs and scopes are yet to be confirmed. A rigorous planning and analysis approach (e.g. network analyses) is required to be implemented to identify, confirm and prioritise new and upgrade infrastructure projects. Currently, new assets and upgrades of existing assets are typically identified from community feedback, Councillor suggestions and engineering staff knowledge of deficiencies and experience. Candidate projects are inspected to confirm need and an estimated project cost is determined. Verified proposals are to be ranked by priority and available funds. The priority ranking criteria is detailed below.

Table 5.4.1.a Project Selection Criteria

Criteria	Weighting
System performance improvement	35%
Reliability of treatment improvement	35%
Maintenance minimisation	10%
Links to Community Plan and Corporate Plan	5%
Links to works programs and strategies	5%
Community request	10%

10 Years 2018/19 to 2017/28

Key new and upgrade works planned for the 10 years 2018/19 to 2027/28 taken from Council's forward works plan are listed in Table 5.4.1.b for underground, Table 5.4.1.c for above ground and summarised in Figure 5.4.1.a. Note, some 'upgrade' projects have been apportioned to part 'upgrade' and part 'renewal' expenditure.

Total planned expenditure for the 10 years is \$0.9 million in the QTC model although projects provided by Engineering (in figures below) total approximately \$22 million, comprising \$20.8 million for a portion of the Goondiwindi treatment plant upgrade.

Note that all costs are shown in current 2017/18 dollar values.

Table 5.4.1.b 10 Years (2018/19-2027/28) 'Planned' New and Upgrade Expenditure – Underground Assets

ID	Infrastructure	Project Description	Type	Start Year	Finish Year	Project Total (\$)	New/Upgrade Amount
S04	Rising Main	Diversion from SPS5 to allow for residential/Industrial growth	New	2027	2036	\$100,000	\$10,000
S013	Recycled Water Distribution	Upgrade effluent reuse to new site	Upgrade & Renewal	2017	2022	\$300,000	\$62,500
S020	Recycled Water Distribution	Upgrade effluent reuse to new site	Upgrade & Renewal	2017	2022	\$120,000	\$25,000
S027	Rising Main	SPS10-Divert Rising main to new SPS5	New	2017	2022	\$40,000	\$33,333
	Total					\$560,000	\$130,833

Table 5.4.1.c 10 Years (2018/19-2027/28) 'Planned' New and Upgrade Expenditure – Above Ground Assets

ID	Infrastructure	Project Description	Type	Start Year	Finish Year	Project Total (\$)	New/Upgrade Amount
S01	Treatment	Goondiwindi STP-Upgrade to add capacity for additional demand	Upgrade	2023	2028	\$25,000,000	\$20,833,333
S02	Treatment	Goondiwindi STP-Additional drying beds to cater for additional demand	New	2017	2022	\$150,000	\$125,000
S03	Pump Station	New pump station (SPS12) and associated rising main	New	2023	2028	\$750,000	\$625,000
S05	Pump Station	Upgrade SPS1 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$50,000	\$10,417
S07	Pump Station	Upgrade SPS1 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$50,000	\$10,417
S09	Pump Station	Upgrade SPS2 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$75,000	\$15,625
S010	Pump Station	Upgrade SPS3 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S011	Pump Station	Upgrade SPS4 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S014	Pump Station	Upgrade SPS1 to Wet Well	Upgrade & Renewal	2023	2028	\$150,000	\$31,250
S015	Pump Station	Upgrade SPS2 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$75,000	\$15,625
S016	Pump Station	Upgrade SPS3 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$75,000	\$15,625
S017	Pump Station	Upgrade SPS4 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S018	Pump Station	Upgrade SPS5 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$75,000	\$15,625
S019	Pump Station	Upgrade SPS6 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S021	Pump Station	Upgrade SPS1 to Wet Well	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S022	Pump Station	Upgrade SPS2 Pumps pipes etc	Upgrade & Renewal	2023	2028	\$75,000	\$15,625
S023	Treatment	Upgrade Disinfection system	Upgrade & Renewal	2017	2022	\$70,000	\$14,583
S026	Pump Station	Upgrade SPS8 Pumps pipes etc	Upgrade & Renewal	2017	2022	\$100,000	\$20,833

ID	Infrastructure	Project Description	Type	Start Year	Finish Year	Project Total (\$)	New/Upgrade Amount
S028	Treatment	STP Ponds upgrade	Upgrade	2017	2022	\$50,000	\$41,667
S029	Telemetry	Upgrade Telemetry	Upgrade & Renewal	2017	2022	\$100,000	\$20,833
	Total					\$27,735,000	\$21,889,583

The effect of the capital works expenditure in the QTC model on depreciation requirements and maintenance spend over 10 years 2018/19 to 2027/28 is also shown in Figure 5.4.1.a. Additional depreciation of approximately \$14,000 and additional maintenance of approximately \$9,000 is forecast.

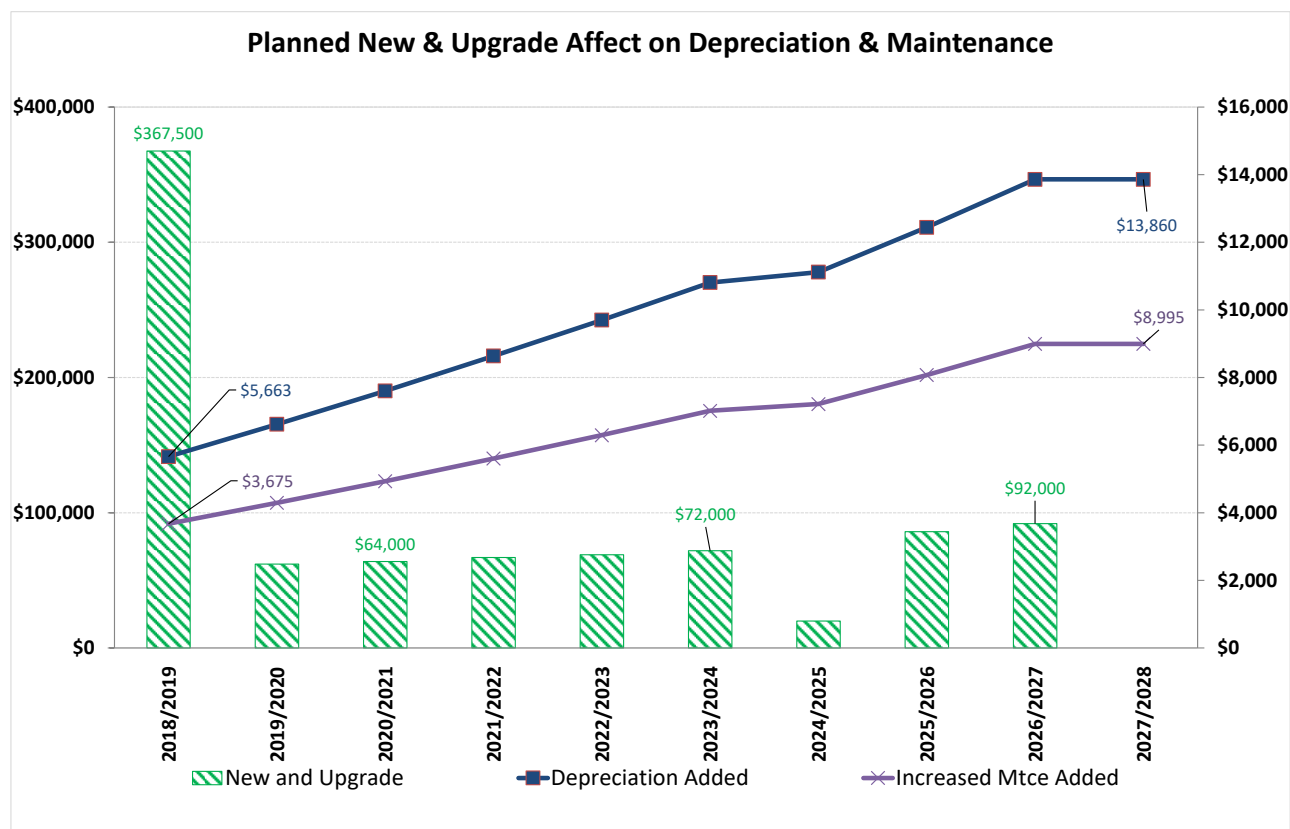


Figure 5.4.1.a Impact of New and Upgrade Capital Expenditure on Depreciation and Maintenance

Acquiring these new assets will commit Council to fund ongoing operations and maintenance costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operating and maintenance costs.

5.4.2 Renewals

10 Years 2018/19 to 2027/28

Council's 'planned' renewals expenditure for the 10 years 2018/19 to 2027/28 totals \$5 million to exceed the 'projected' required expenditure of \$3,912,948 determined from the predicted remaining useful lives of assets used in the 2017 asset valuations. Note, some 'upgrade' projects have been apportioned to part 'upgrade' and part 'renewal' expenditure.

Renewals due in the next 5 years from the valuations are listed in the Appendix for consideration.

Key projects currently planned are listed in Table 5.4.2.a and b. Council also advises of other projects under consideration, such as replacement of screens for all treatment plants, excluding Goondiwindi. These replacements will improve downstream treatment process, extend the useful lives of treatment process equipment and contributing toward better quality effluent that consistently meets the EPA Licence.

Table 5.4.2.a 10 Years (2018/19-2027/28) 'Planned' Renewals Expenditure – Underground Assets

ID	Infrastructure	Project Description	Start Year	Finish Year	Project Total (\$)	Renewals 10 Years (\$)
S013 [#]	Recycled Water Distribution	Upgrade effluent reuse to new site	2017	2022	\$300,000	\$187,500
S020 [#]	Recycled Water Distribution	Upgrade effluent reuse to new site	2017	2022	\$120,000	\$75,000
	Total				\$420,000	\$262,500

[#] - project part renewal and part upgrade

Table 5.4.2.b 10 Years (2018/19-2027/28) 'Planned' Renewals Expenditure – Above Ground Assets

ID	Infrastructure	Project Description	Start Year	Finish Year	Project Total (\$)	Renewals 10 Years (\$)
S05 [#]	Sewage Pump Station	Upgrade SPS1 Pumps pipes etc	2023	2028	\$50,000	\$31,250
S07 [#]	Sewage Pump Station	Upgrade SPS1 Pumps pipes etc	2017	2022	\$50,000	\$31,250
S08	Telemetry (Control Systems)	Replace Telemetry	2017	2034	\$125,000	\$69,444
S09 [#]	Sewage Pump Station	Upgrade SPS2 Pumps pipes etc	2017	2022	\$75,000	\$46,875
S010	Sewage Pump Station	Upgrade SPS3 Pumps pipes etc	2023	2028	\$75,000	\$46,875
S011 [#]	Sewage Pump Station	Upgrade SPS4 Pumps pipes etc	2023	2028	\$75,000	\$46,875
S014 [#]	Sewage Pump Station	Upgrade SPS1 to Wet Well	2023	2028	\$150,000	\$46,875
S015 [#]	Sewage Pump Station	Upgrade SPS2 Pumps pipes etc	2017	2022	\$75,000	\$46,875
S016 [#]	Sewage Pump Station	Upgrade SPS3 Pumps pipes etc	2017	2022	\$75,000	\$46,875
S017 [#]	Sewage Pump Station	Upgrade SPS4 Pumps pipes etc	2023	2028	\$75,000	\$46,875
S018 [#]	Sewage Pump Station	Upgrade SPS5 Pumps pipes etc	2017	2022	\$75,000	\$46,875
S019 [#]	Sewage Pump Station	Upgrade SPS6 Pumps pipes etc	2023	2028	\$75,000	\$46,875
S021 [#]	Sewage Pump Station	Upgrade SPS1 to Wet Well	2023	2028	\$75,000	\$46,875
S022 [#]	Sewage Pump Station	Upgrade SPS2 Pumps pipes etc	2023	2028	\$75,000	\$46,875
S023 [#]	Wastewater Treatment	Upgrade Disinfection system	2017	2022	\$70,000	\$43,750
S024	Telemetry (Control Systems)	Replace Telemetry	2017	2034	\$150,000	\$83,333
S026 [#]	Sewage Pump Station	Upgrade SPS8 Pumps pipes etc	2017	2022	\$100,000	\$62,500
S029 [#]	Telemetry (Control Systems)	Upgrade Telemetry	2017	2022	\$100,000	\$62,500
	Total				\$1,545,000	\$946,528

[#] - project part renewal and part upgrade

20 Years and Long Term

The following figures show 'projected' 20 years and long term required renewals expenditure (\$9.2 million for underground and \$6.5 million for above ground) determined from the predicted remaining useful lives of assets used in the 2017 asset valuations. Additional individual plots of 20 year renewals for underground assets (pipework, manholes and rising mains) and above ground assets (structures, electrical and mechanical, and pipework, fittings and miscellaneous) are provided in the Appendix.

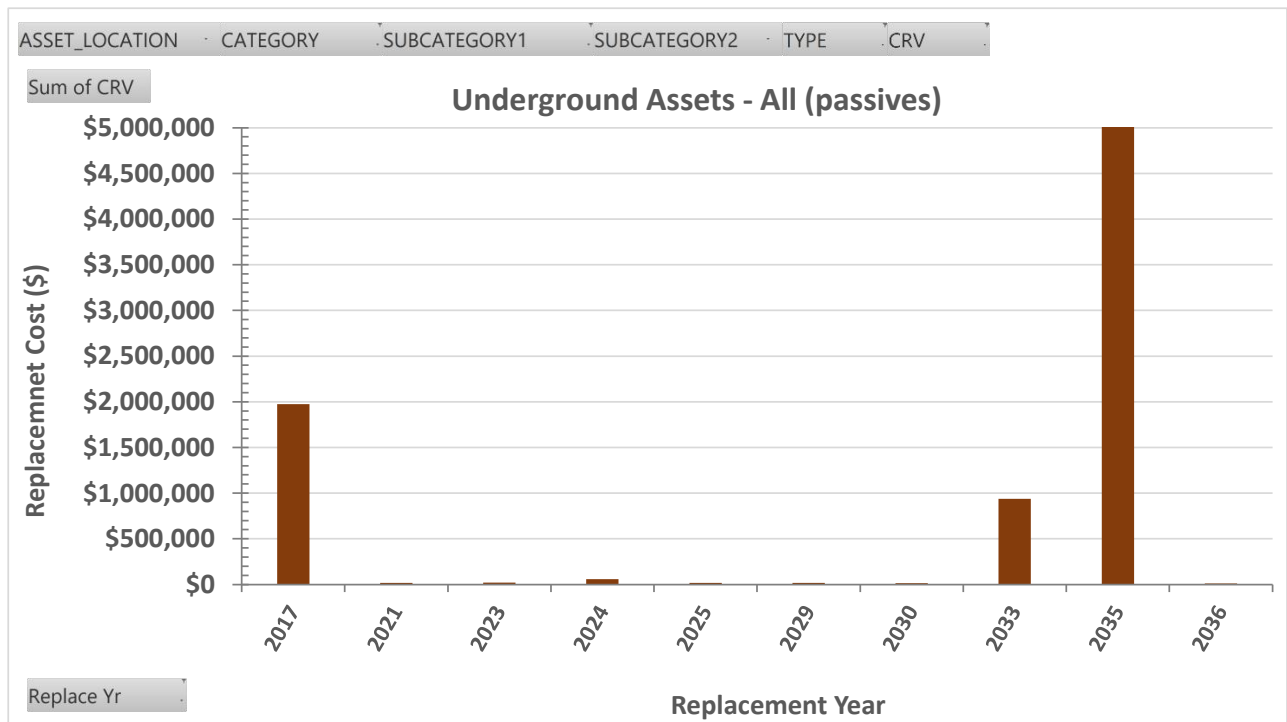


Figure 5.4.2.a Projected 20 Years Renewal Needs – Underground Assets

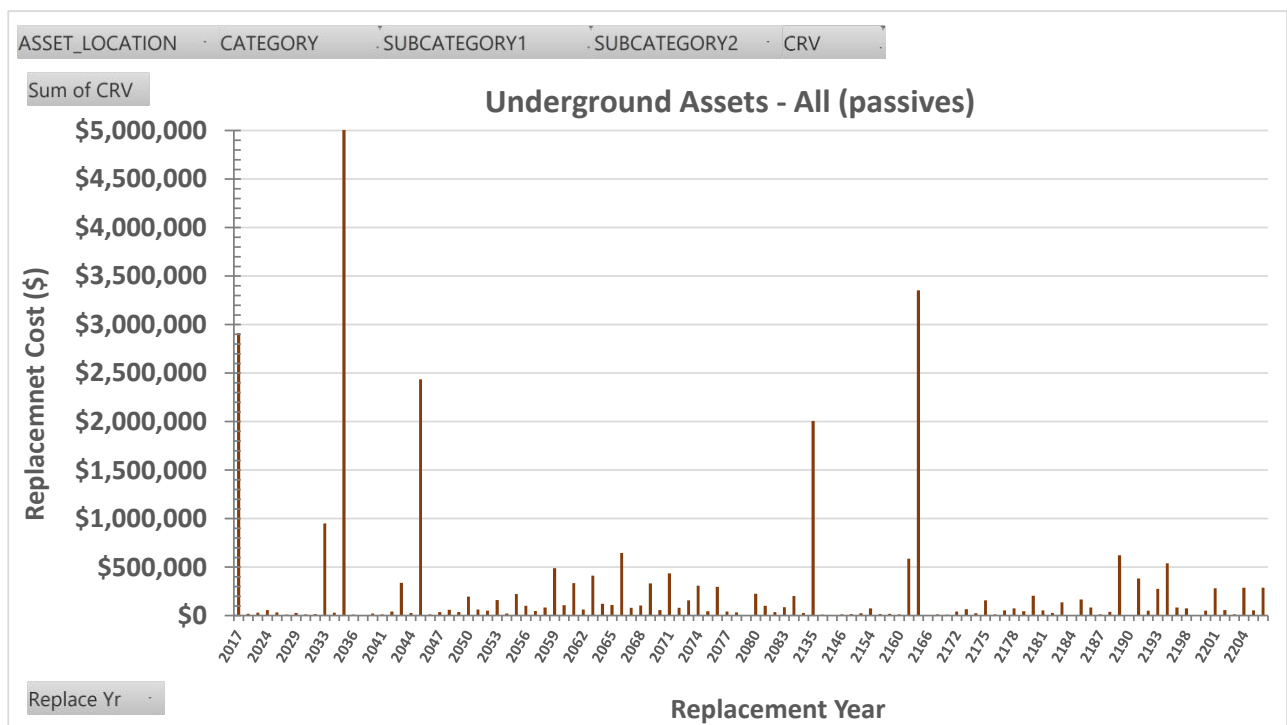


Figure 5.4.2.b Projected Long Term Renewal Needs – Underground Assets

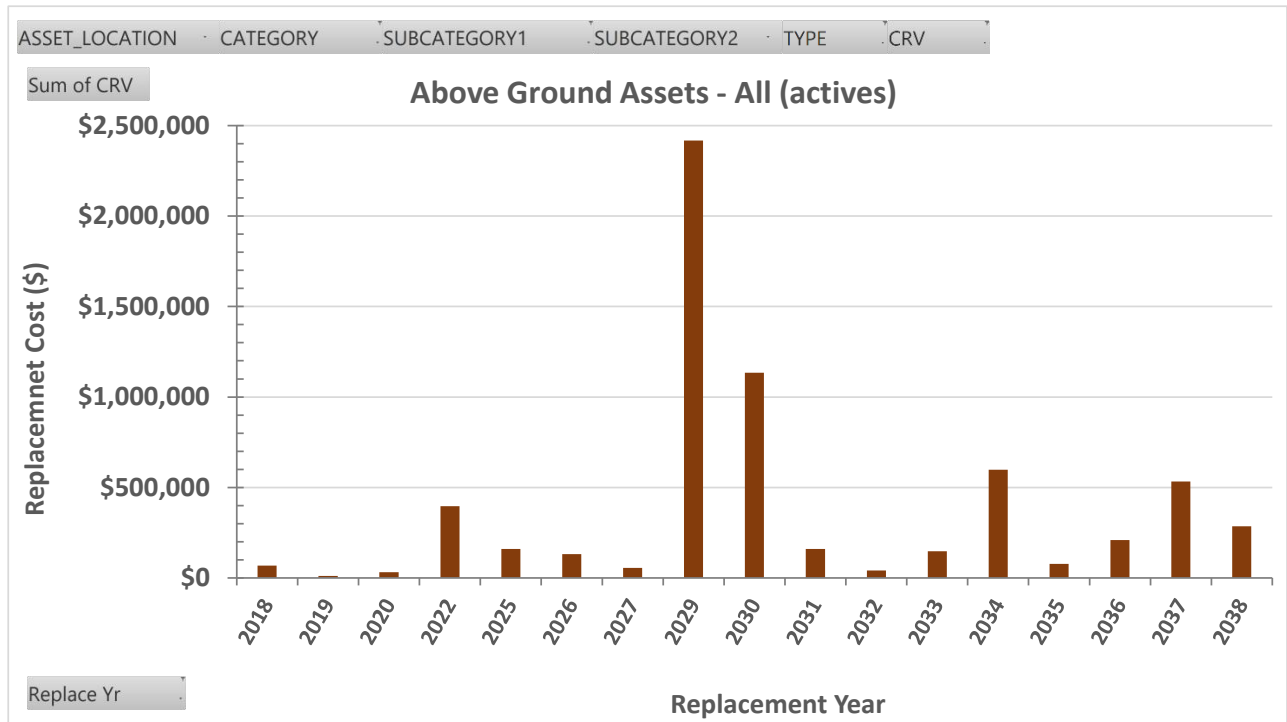


Figure 5.4.2.c Projected 20 Years Renewal Needs – Above ground Assets

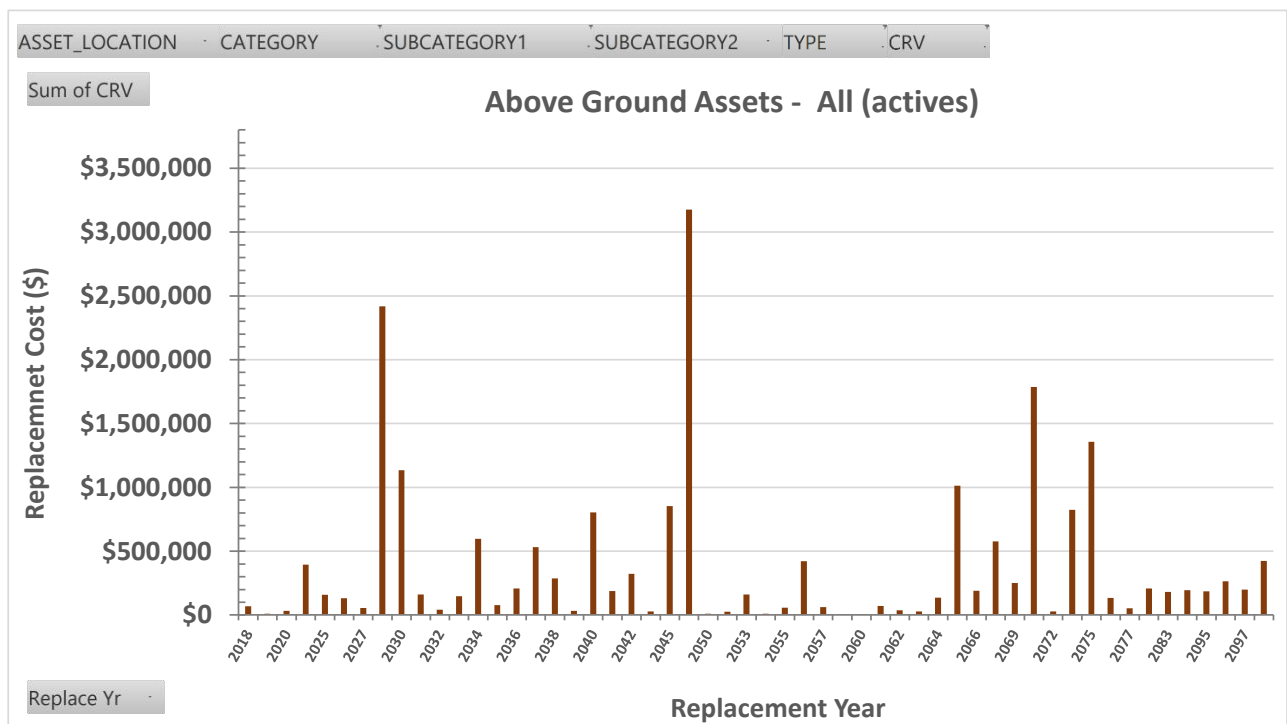


Figure 5.4.2.d Projected Long Term Renewal Needs – Above ground Assets

Renewals Gap

Figure 5.4.2.f indicates the accumulative gap in renewal funding between what Council plans to spend and projections of required renewals over the next 10 years (allowing for 2017/18 spends). A positive gap indicates underspending on renewals, although the gap is negative at 10 years indicating sufficient spending on renewals over the period.

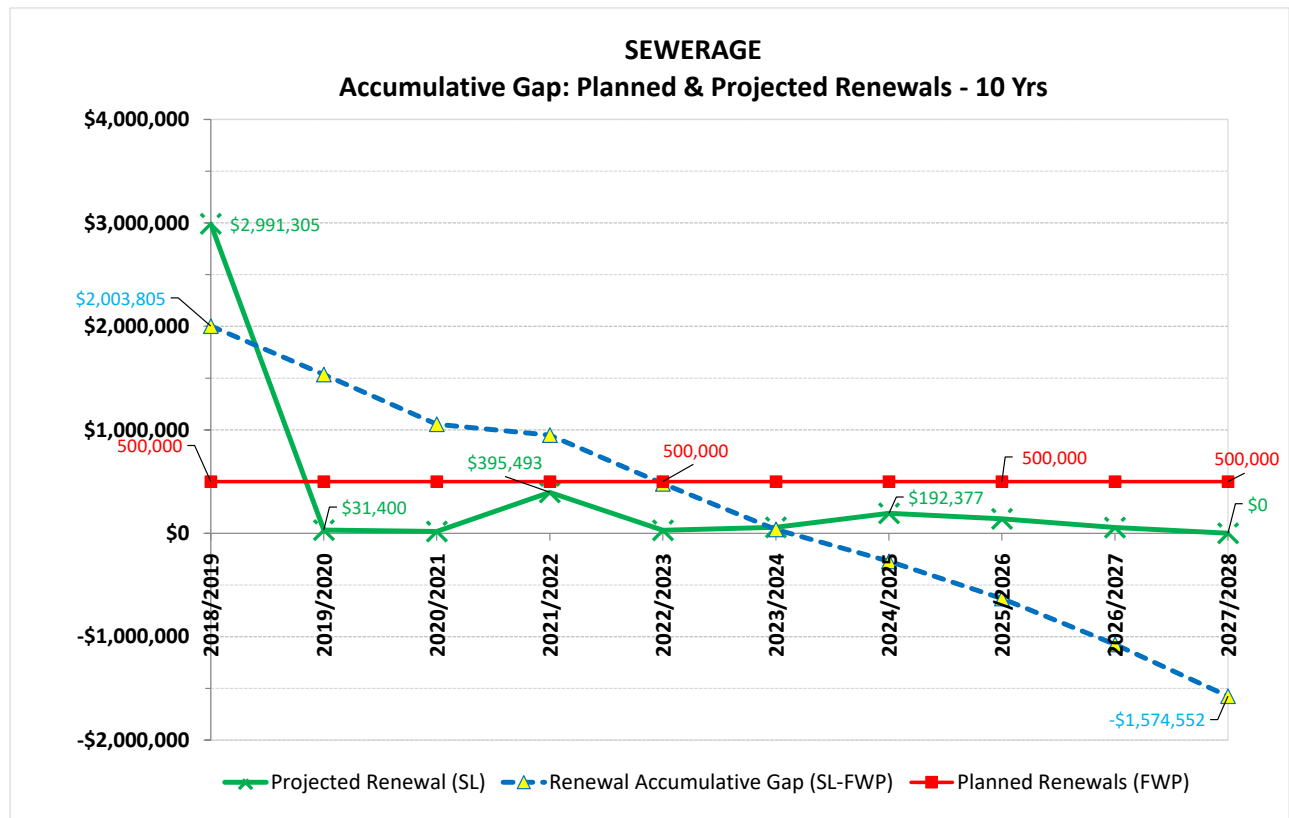


Figure 5.4.2.e Accumulative Gap Between Planned and Projected Renewals for 10 Years

It is concluded that Council needs to undertake the necessary evaluations and condition assessments where possible, to confirm replacements planned and projected for the next 10 years are warranted or otherwise. This will be aimed at avoiding unnecessary/too early replacements or replacements that if not carried out in time will results adverse LOS impacts.

It should be noted that at this is a newly developed Asset Management Plan, the planned renewals referenced in the Plan are primarily based upon modelling using age profiles, condition assessments and some planned upgrade works. These planned works don't include new works, such as additions to the network, and upgrades for such things as aligning with current standards and increases to capacity. It is hoped that as the Plan matures over time these items, wherever possible, will also be included to give a more complete financial projection moving forward.

5.5 Disposals

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. At present no sewerage assets are being considered for disposal. Future updates of this plan may identify assets for possible decommissioning and disposal.

5.6 Asset Sustainability

5.6.1 Life Cycle Cost versus Expenditure

The Life Cycle Cost (LCC) from valuation data projections is the average cost required to operate and maintain the asset over its life including renewal. The Life Cycle Expenditure (LCE) is Council's planned average cost for this. An acceptable target ratio, named the life cycle sustainability index, of Council's planned versus projected (LCE:LCC) is 0.90 or greater in order to maintain service levels.

The index average of 1.10 over 10 years indicates Council is adequately funding the required renewals. .

5.6.2 Asset Sustainability Ratio

A measure of satisfactory levels of expenditure on asset replacements is the Asset Sustainability Ratio - the net capital expenditure on replacements as a percentage of the depreciation. It indicates whether the amount of replacement exceeds or is less than the amount of depreciation, that is, whether assets are being replaced at the rate they are wearing out.

An index of less than 1.0 on an ongoing basis indicates that capital expenditure levels are not being optimised so as to minimise whole of life cycle costs of assets, or that assets may be deteriorating at a greater rate than spending on their renewal. Predictions for planned and projected renewals over the next 10 years are illustrated in Figure 5.6.2.a against a proposed conservative target of equal to or greater than 0.90.

The index averages 0.69 for 'planned' and 0.53 for 'projected' renewals indicating asset sustainability may not be achieved and may result in not meeting service levels.

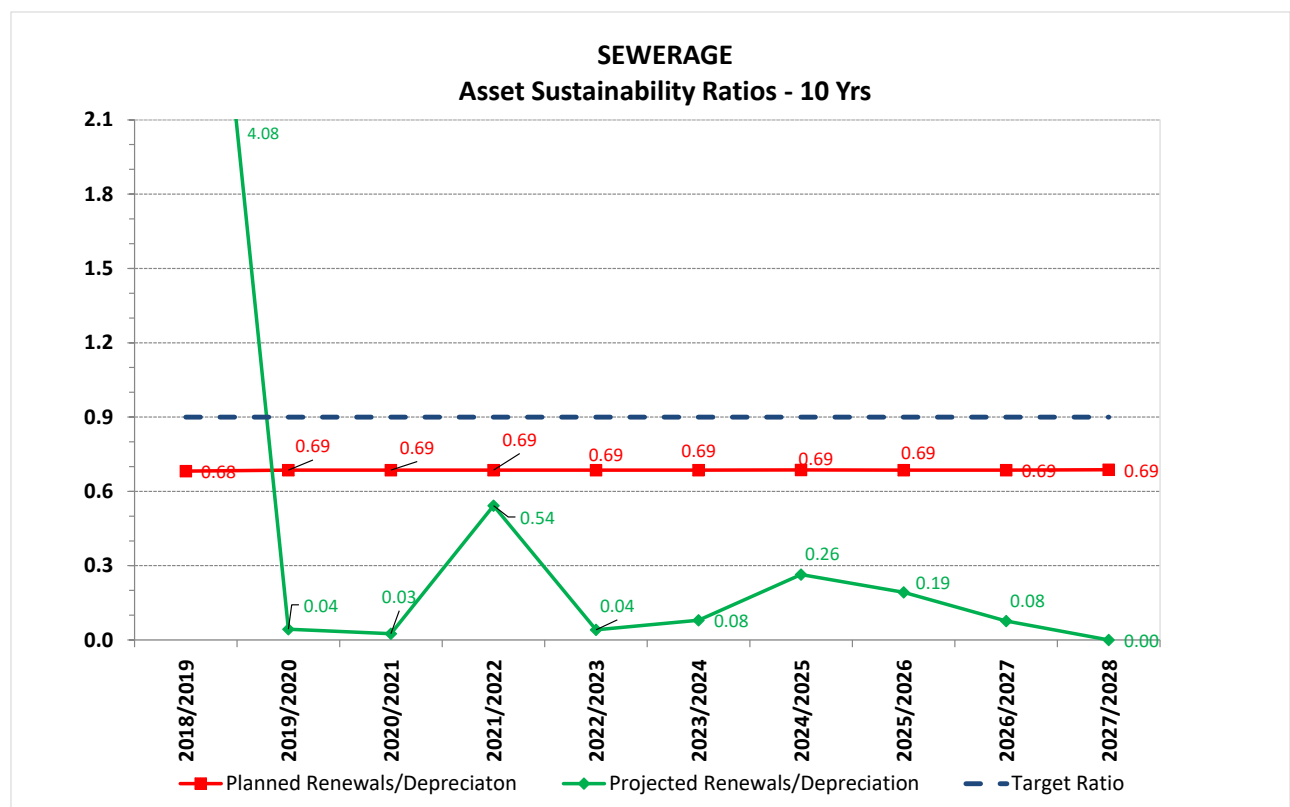


Figure 5.6.2.a Asset Sustainability Ratios

Another similar measure of asset consumption is the fair value as a percentage of replacement cost. The 2017 valuations indicate only 56% with the percentage improving to 91% over the next 10 years for 'planned' renewals.

The Appendix provides a summary of 10 years forecast lifecycle costings.

6. FINANCIAL SUMMARY

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.

A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap.

6.1 Summary Financial Projections

Projected Opex and Capex is shown in Figure 6.1.a. For comparison, the planned Opex and Capex for the next 10 years based on 2017/18 budgeted is shown in Figure 6.1.b.

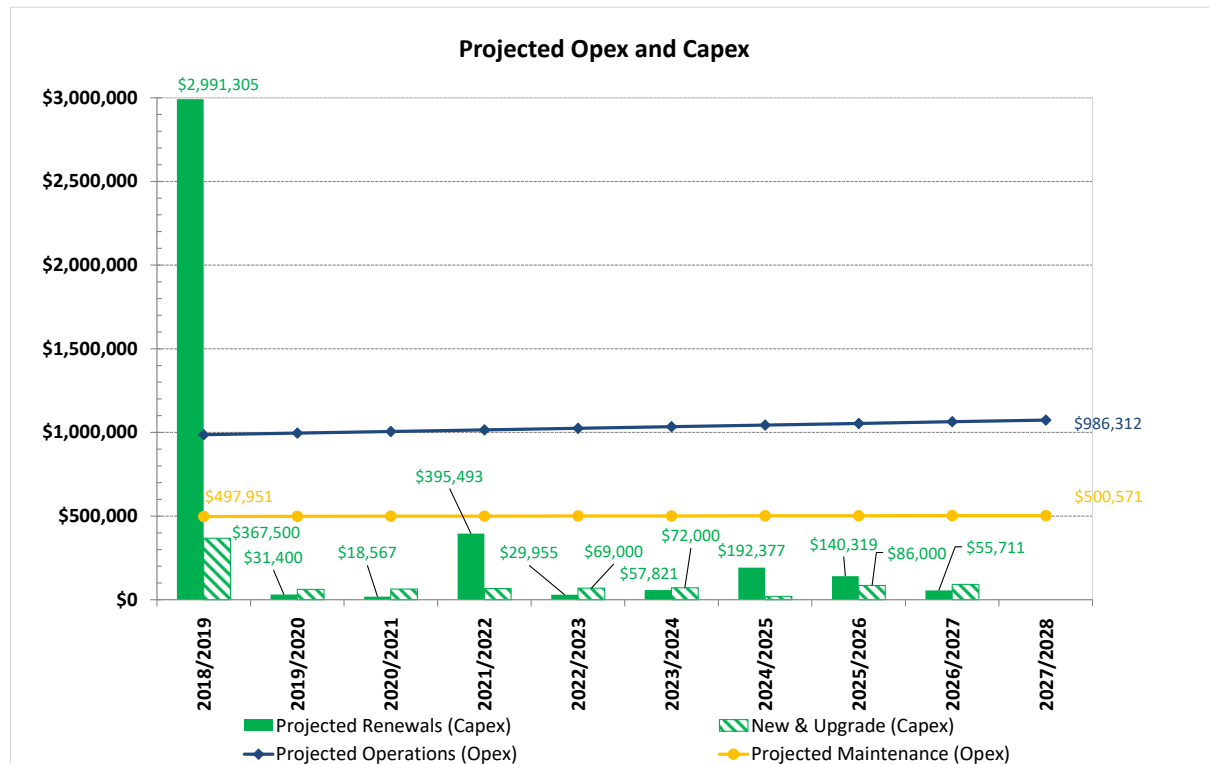


Figure 6.1.a Summary Projected Opex and Capex

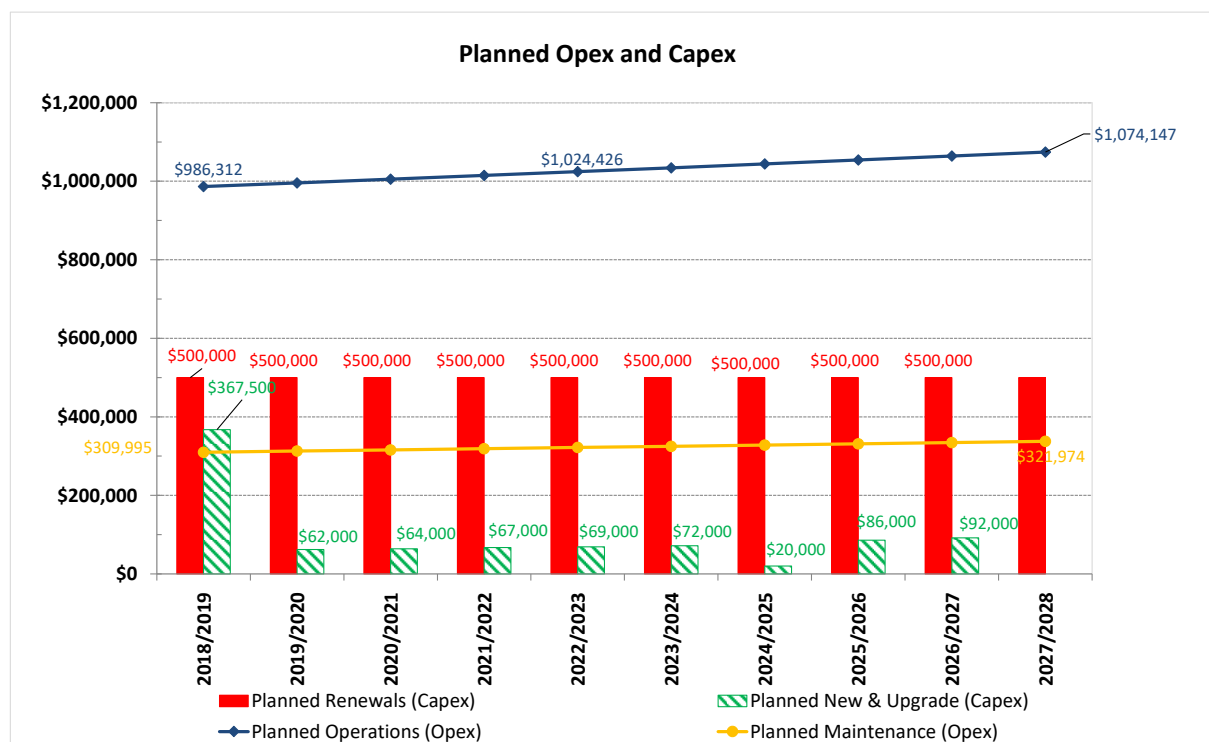


Figure 6.1.b Summary Planned Opex and Capex

6.2 Future Valuations

Council will be adding \$0.76 million of new and \$0.14 million of upgraded assets over the next 10 years to the asset stock (a 1.1% increase).

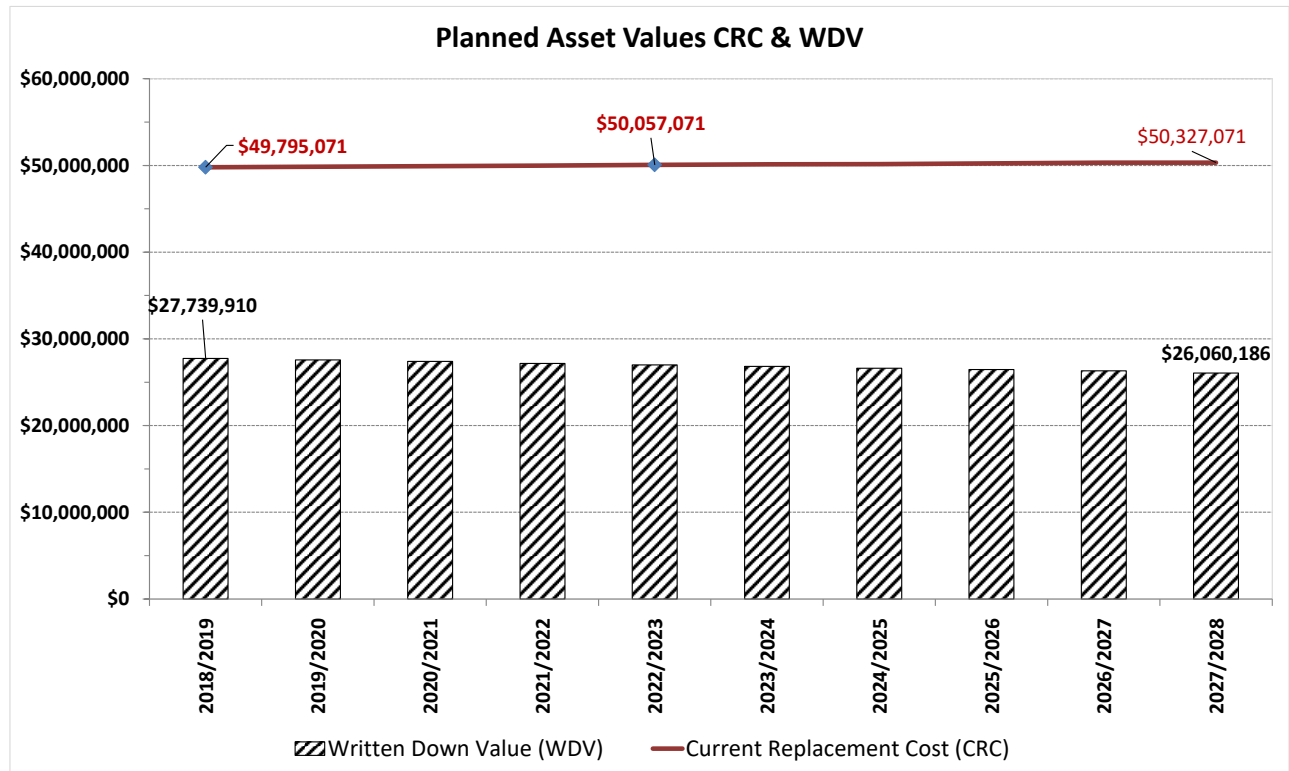


Figure 6.2.a Asset Values from Planned New and Upgrade Capex

7. FINANCIAL AND ASSET MANAGEMENT PRACTICES AND SYSTEMS

7.1 Financial

Council uses a standard computerised general ledger system for all of its financial (accounting) operations. The integrated accounting software used to manage all of Councils accounting operations is the Civica Plus System.

The asset accounting manual details the process by which Council manages its infrastructure asset data and describes the asset accounting procedures involved. Asset infrastructure attribute data is stored in the MapInfo System and the assets financial data in the Practical Plus System, using the Asset Code as the link between the two systems. The process adopted is a simplistic and effective model, which has been developed taking into account Council's limited resources and budget

The chart of accounts used within the general ledger is structured to facilitate the ease of data extraction required for various financial reporting requirements (e.g. annual budget, internal management reporting, job costing monthly reports, annual financial statements etc).

Asset Accounting encompasses the entire lifetime of the asset from purchase order or the initial acquisition (managed as an asset under construction or Works in Progress) through its retirement. All costs considered to be of a capital nature are costed to the relevant Works in Progress Account by class. Once completed, they are transferred to the Fixed Asset Register by class. Each asset is separately recorded and identified with other pertinent details such as in-service date, description, depreciation rate, residuals, location, category etc. Based on this information, the Civica system calculates, to a large extent automatically, the values for depreciation, revaluation increments/decrements sales proceeds, profit/loss entries if retired. These details are also recorded by directorate and there is a report for depreciation forecasting and simulation of the development of asset values.

The day to day administration of Councils financial system is managed through the Financial Services Section.

Council subscribes to the following asset recognition thresholds - \$5,000 for non-infrastructure and \$10,000 for infrastructure. All assets above these recognition thresholds are capitalised into the Fixed Asset Register and depreciation over their economic lives. Assets under these thresholds are expensed in the Operating Statement.

7.2 Asset Management

An asset management system is a combination of processes, data and software applied to provide the essential information outputs for effective management of risk and optimum infrastructure maintenance and renewal.

The MapInfo GIS system holds asset data including physical information (attributes). The GIS is not being regularly updated with asset changes. Also, the accuracy of pipe material types on the GIS is not the best - on repairing pipework it is often found to be a different material type. The KIM (Knowledge Information Mapping) GIS software tool is used to manage assets and their associated information. It allows users to perform powerful GIS data analysis, querying and reporting tasks in the office or on the move.

Other than wider use of current asset management systems to better manage assets, there are no system changes resulting from this plan.

7.2.1 Responsibility

The primary division responsible for preparation of this AMP resides with Engineering Services with support from Finance Services. The CEO reports to Council on development and implementation of the AMP.

The role of the Asset Management Steering Group includes:

- Developing Councils infrastructure and asset management practices, including the 10 year asset management plans.
- Key performance indicators such as financial ratios, statistics etc.
- Managing and providing strategies and systems to ensure a whole of Council understanding and improvement in asset management practices.
- Managing and estimating the consumption, residuals, and revaluation decrements/increments of all assets.

8. IMPROVEMENT PROGRAMME AND PLAN MONITORING

8.1 Improvement Programme

A 3 year programme is included in Table 8.1.a for implementing the improvement actions identified in preparing this initial plan. Note, Task ID is from the overall list of Asset Management Improvement Program Tasks.

Table 8.1.a Improvement Programme

ID	Improvement Action	Description	Priority
1.0	Establishing Service Levels		
1.1	Confirm Key Performance Measures	Consider KPIs provided in this AMP	High
1.2	Confirm targets for LOS	Consider targets provided in this AMP	High
1.3	Update Customer Service Standard	CSS is dated 2009	Medium
1.4	Further develop community consultation	CSS says surveys will be done every 3 yrs. Further develop community consultation to inform strategic asset based decision making.	Low
2.0	Asset Risk Management		
2.1	Confirm condition ratings for underground derived from age	Sampling of network ages to prove condition based on age where no other data available	Medium
2.2	Assign criticality (consequences of failure) to assets	Develop asset criticality criteria (consequences of failure) for asset categories and apply to assets.	Low
2.3	Identify and assess risks using condition as a surrogate for likelihood.	Include assessment of asset criticality and active management of associated risks at asset class level.	Low
2.4	Develop condition ratings and renewal triggers based on performance	E.g. One break or blockage in past 12 months, or 2 or 3 in past 3 years is condition 4 – consider for renewal	Low
2.5	Develop risk programs.	Develop risk based inspection and condition assessment programs.	Medium
2.6	Critical Spares	Identify, list and procure if necessary spares for critical assets and components.	High
3.0	Asset Life Cycle Management		
3.1	Develop Maintenance Management Plans	Develop as a minimum routine maintenance management plans that align with technical service measures - 'Reflect'	High
3.2	Confirm assets for short term renewal programs for asset categories	Adopt asset renewal profiles for asset categories from valuations used for this AMP. Examine 5 yr. renewal profile and confirm assets for short term (3 yr.) renewal programs for categories from condition/performance assessment, e.g. CCTV of sewers.	High
3.3	New/upgrade capital works projects confirmed from system analyses/ planning reports	Planning Reports including system analyses provide the information for verifying the need, extent, timing and cost of proposed new/upgrade capital works projects	High
3.4	Develop a project management framework for Capital Expenditure Planning	Develop a project management framework incorporating stage-gating and whole of life cost consideration. Pre-construction activities need to be identified and programmed, e.g. planning, pre-feasibility and options studies, approvals, design, procurement etc.	Medium
3.5	Implement project prioritisation method for new and upgrade projects	Confirm the project prioritisation tool in this AMP aligns with the principles of the asset management policy and implement for all new and upgrade projects.	High
3.6	Develop clear work scope for projects at planning stages	Scope of works are required - necessary for complex projects	High

ID	Improvement Action	Description	Priority
3.7	Complete as constructed and project completion documentation	As constructed and project completion documentation to be completed in a timely manner so as project capitalization and mapping updates can occur before knowledge is lost	High
4.0	Measuring and Managing Asset Performance		
4.1	Develop and implement condition assessment plans for asset categories.	Develop condition assessment plans that identify asset condition and defects.	Medium
4.2	Improve field capture and input to corporate systems for inspection, maintenance activities and condition information for facilities / asset classes	Inspections results and maintenance works should be formally documented. Implement on mobile devices ('Reflect') where appropriate to capture data for corporate use, e.g. Sewer failures - asset ID, material and location, routine inspections/maintenance activities.	High
4.3	Update mapping and map pipework failures on GIS	Mapping needs to be updated. Map sewer failures on GIS (previous from operational knowledge and future from new collection measures)	High
4.4	Sewerage layout schematics	Update layout schematics for town sewerage systems and treatment plants	Low

8.2 Plan Monitoring and Review

The effectiveness of the AMP can be measured in the following ways:

1. The degree to which improvement actions are implemented.
2. The degree to which the required cash flows identified in this AMP are incorporated into Council's long term financial plan
3. The degree to which 1 to 5 years detailed works programs, budgets, business plans and organisational structures and initiatives take into account the works program trends provided by this AMP.

This Asset Management Plan should be fully reviewed every 3 years (2020/2021 financial year) and the Improvement Programme updated annually.

Appendix A Glossary of Terms

Activity

The work undertaken on an asset or group of assets to achieve a desired outcome.

Annual service cost (ASC)

An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operating, maintenance, depreciation, finance/opportunity and disposal costs, less revenue.

Asset class

Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset management

The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Asset management plan

A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost effective manner to provide specified level of service. A significant component of the plan is a long term cash flow projection for the activities.

Asset management system (AMS)

A system (usually computerized) for collecting, analysing and reporting data on the utilization, performance, lifecycle management and funding of the existing assets.

Assets

Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12). Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12-month.

Average annual asset consumption (AAAC)

The amount of a local government's asset base consumed during a year. This may be calculated by dividing the Depreciable Amount (DA) by the Useful Life and totalled for each and every asset OR by dividing the Fair Value (Depreciated Replacement Cost) by the Remaining Life and totalled for each and every asset in an asset category or class.

Brownfield asset values

Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.

Capital expansion expenditure

Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretionary expenditure, which increases future operating, and maintenance costs, because it increases council's asset base, but may be associated with additional revenue from the new user group, e.g. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital funding

Funding to pay for capital expenditure.

Capital grants

Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure (capex)

See capital expenditure definition

Capital new expenditure

Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital (asset) renewal expenditure

Major expenditure on an existing asset, which returns the service potential or the life of the asset up to that which it had originally. Replacement, renewing, restoration or rehabilitation to original size and design capacity of an asset or the component of the asset. Renewals are “capitalized”, so that the cost can be depreciated over the future life of the asset. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, e.g. replacing a material section of a pipe network with pipes of the same capacity. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the council's asset base, e.g. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Carrying amount

The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Component

An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

Condition Monitoring

Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action.

Core Asset Management

Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, condition assessment and defined levels of service, in order to establish alternate treatment options and long term cash flow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).

Cost of an asset

The amount of cash or cash equivalents paid, or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical Assets

Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. They have lower threshold for action than non-critical assets.

Current replacement cost (CRC)

The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Current replacement cost “As New” (CRC)

The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Cyclic Maintenance

Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, building roof replacement, cycle, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Depreciable amount

The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)

Depreciated replacement cost (DRC)

The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation

The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Design Life

The theoretical life of an asset assumed in its design

Economic life

See useful life definition.

Effluent

Residual or waste water, including sewage, which is flushed through Council's sewerage pipes and treated before re-use or discharge to the environment (i.e. from the sewerage treatment plant).

Expenditure

The spending of money on goods and services. Expenditure includes recurrent and capital.

Fair value

The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Greenfield asset values

Asset (re)valuation values based on the cost to initially acquire the asset.

Heritage asset

An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss

The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets

Physical assets of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, e.g. roads, drainage, footpaths and cycle ways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally, the components and hence the assets have long lives. They are fixed in place and are often have no market value.

Level of service

The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost).

Life Cycle Cost

The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure

The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Cost to give an initial indicator of life cycle sustainability.

Maintenance and renewal gap

Difference between estimated budgets and projected expenditures for maintenance and renewal of assets, totalled over a defined time (e.g. 5, 10 and 15 years).

Maintenance and renewal sustainability index

Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (e.g. 5, 10 and 15 years).

Maintenance expenditure

Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

New assets

Activities that create an asset that did not exist previously or extend an asset beyond its original size or capacity. New assets are also "capitalized", but they increase the asset base rather than restore its capacity to perform.

Operation

The active process of utilizing an asset that will consume resources such as manpower, energy cleaning products and materials. Operation costs are part of the life cycle costs of an asset.

Operating expenditure

Recurrent expenditure, which is continuously required excluding maintenance and depreciation, e.g. power, fuel, staff, plant equipment, on-costs and overheads.

Performance measure

A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Physical Life

The actual life of an asset.

Planned Maintenance

Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspections, assessing the condition against failure/breakdown criteria/experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Rate of annual asset consumption

A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.

Rate of annual asset renewal

A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade

A measure of the rate at which assets are being upgraded and expanded per annum expressed as a percentage of depreciable amount (capital upgrade / expansion expenditure/DA).

Reactive maintenance

Unplanned repair work that carried out in response to service requests and management / supervisory directions.

Recurrent expenditure

Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operating and maintenance expenditure.

Rehabilitation

See capital renewal expenditure definition above.

Remaining life

The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life.

Renewal

See capital renewal expenditure definition above.

Repair

Action to restore an item to its previous condition after failure or damage.

Residual value

The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

Risk management

The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Service potential

The capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.

Service potential remaining

A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide services (service capacity) that is still available for use in providing services (DRC/DA).

Sewer mains

375mm diameter and smaller pipes located underground along public streets or appropriate rights-of-way used for conveyance of wastewater to pump stations and on to treatment plants

Scheduled maintenance

Maintenance carried out in accordance with a routine (predetermined) maintenance schedule.

Strategic Management Plan

Documents Council objectives for a specified period (3-5 yrs.), the principle activities to achieve the objectives, the means by which that will be carried out, estimated income and expenditure, measures to assess performance and how rating policy relates to the Council's objectives and activities.

Sub-component

Smaller individual parts that make up a component part.

Trunk Sewers

Major pipelines which convey wastewater via smaller diameter sewer mains.

Unscheduled maintenance

Work carried out in response to reported problems of defects.

Upgrading

The replacement of an asset or addition/replacement of an asset component which materially improves the original service potential of the asset.

Useful life

Either:

- (a) the period over which an asset is expected to be available for use by an entity, or
- (b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the council. It is the same as the economic life.

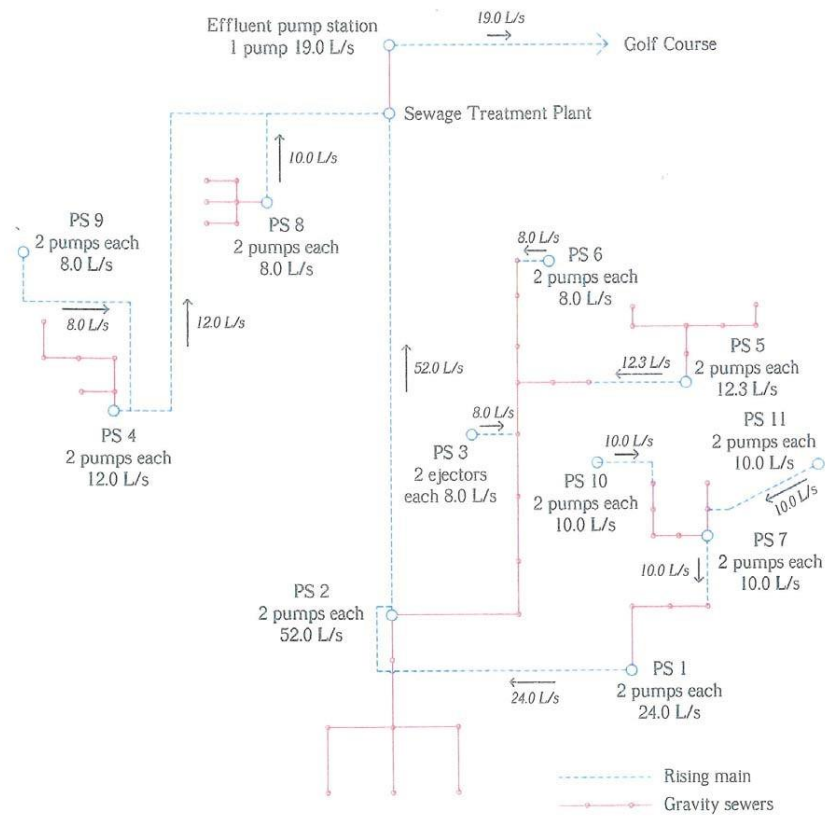
Valuation

Estimate asset value which may depend on the purpose for which the valuation is required, i.e. replacement value for determining lifecycle costing or insurance valuation.

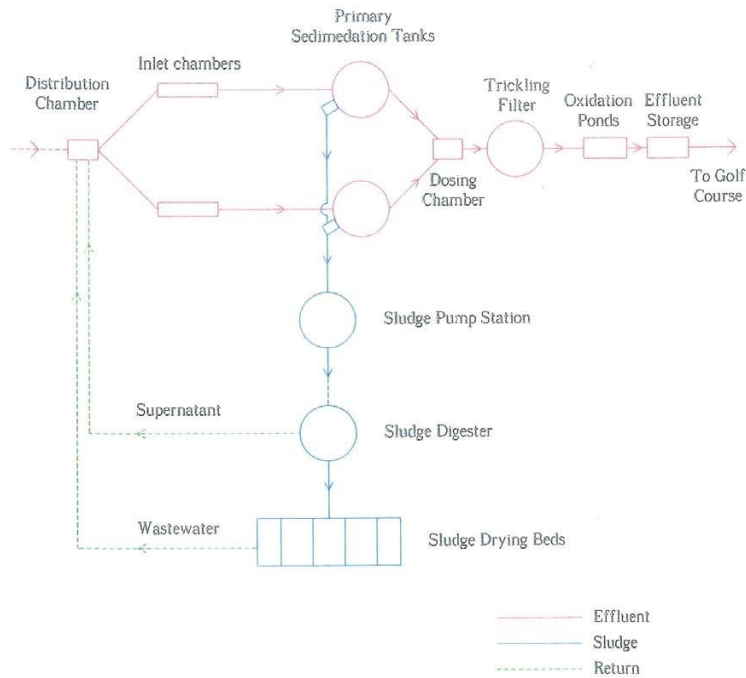
Appendix B Sewerage Schematic Layouts

Note: Schematics are required to be updated

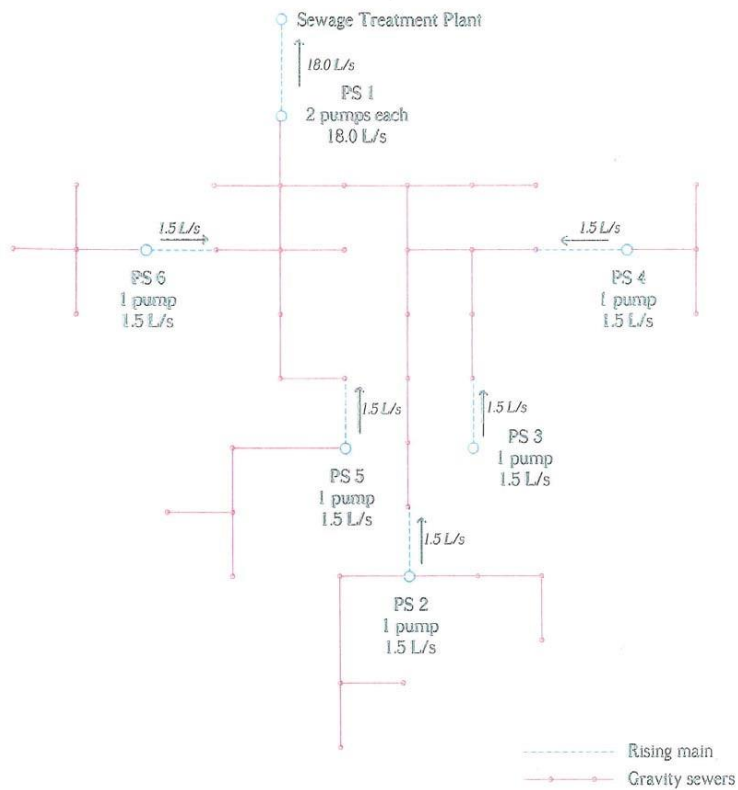
GOONDIWINDI SEWERAGE SCHEME SCHEMATIC LAYOUT



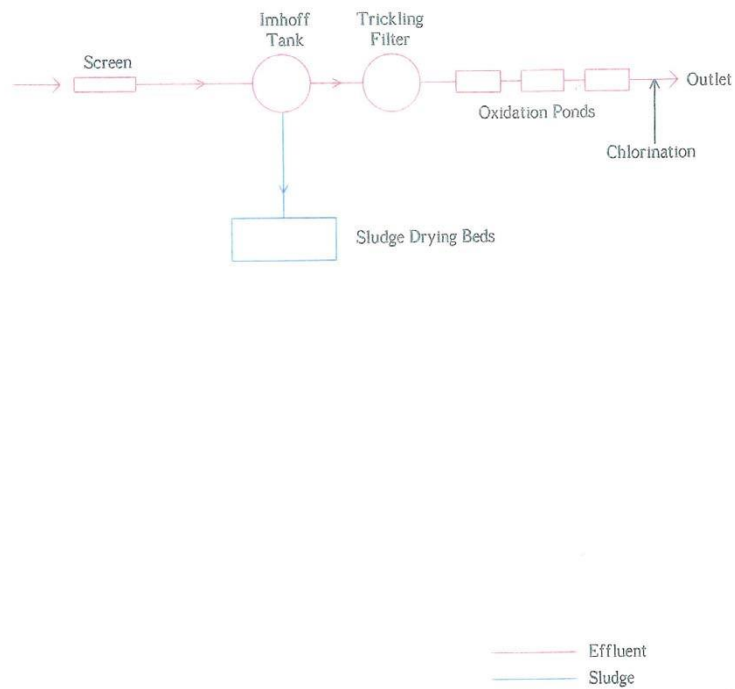
GOONDIWINDI SEWAGE TREATMENT PLANT
SCHEMATIC LAYOUT
6500 EP



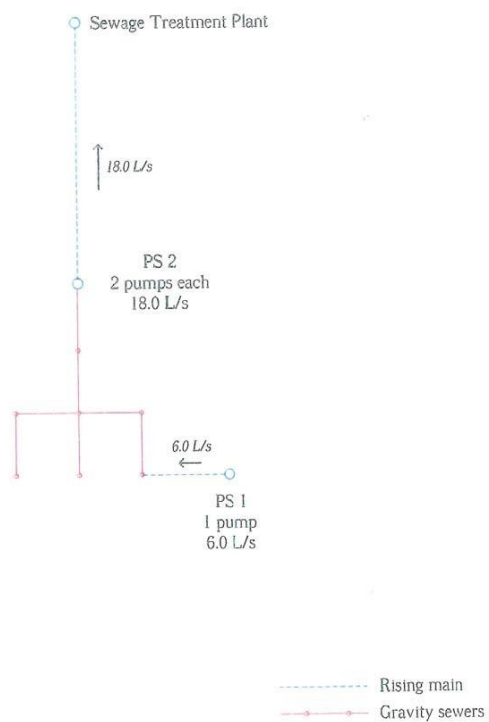
INGLEWOOD SEWERAGE SCHEME
SCHEMATIC LAYOUT



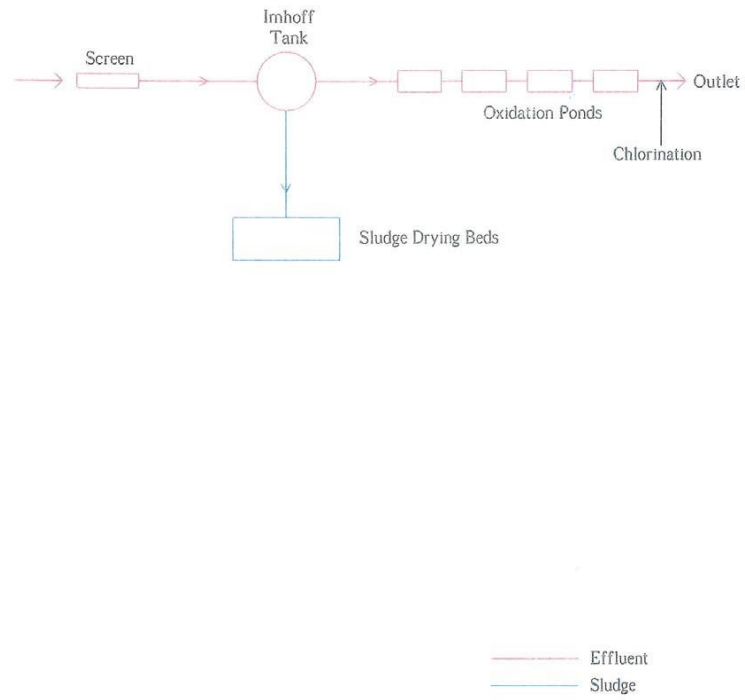
INGLEWOOD SEWAGE TREATMENT PLANT
SCHEMATIC LAYOUT
1500 EP



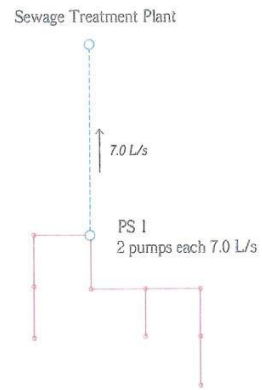
TEXAS SEWERAGE SCHEME
SCHEMATIC LAYOUT



TEXAS SEWAGE TREATMENT PLANT
SCHEMATIC LAYOUT
1500 EP

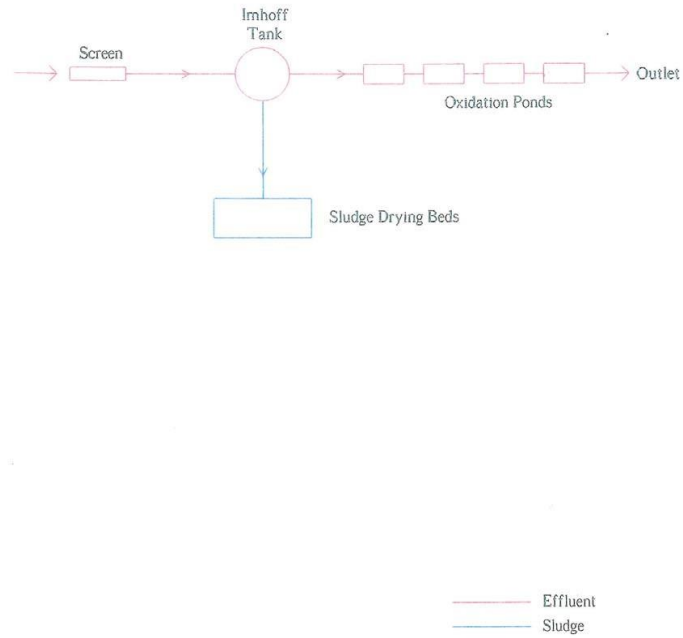


TALWOOD SEWERAGE SCHEME
SCHEMATIC LAYOUT

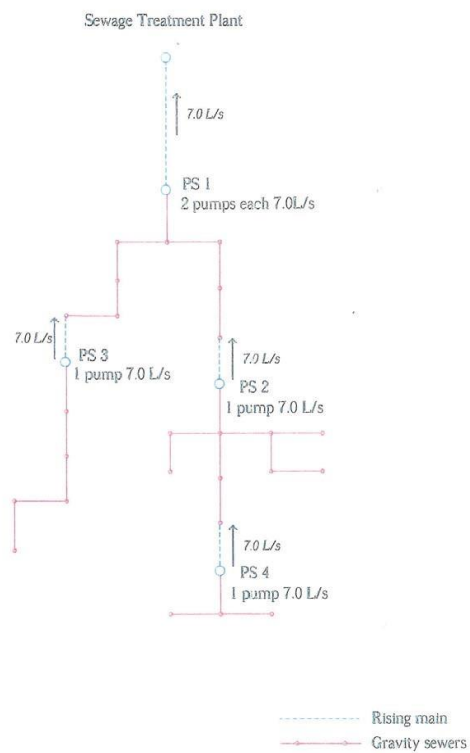


----- Rising main
----- Gravity sewers

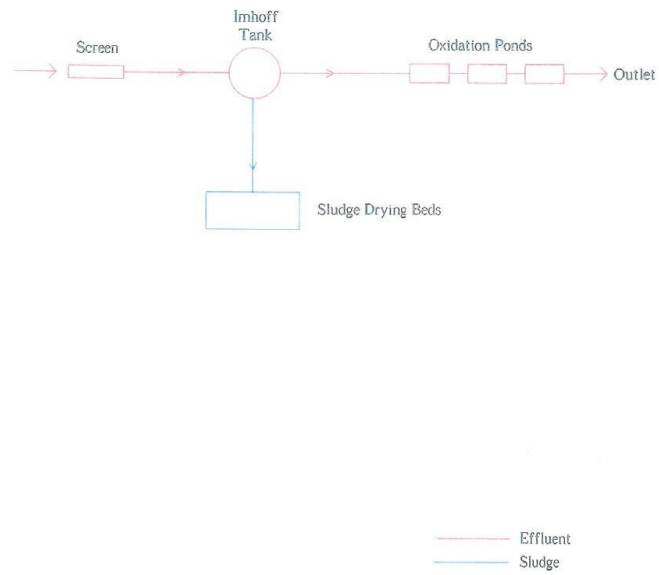
TALWOOD SEWAGE TREATMENT PLANT
SCHEMATIC LAYOUT
250EP



YELARBON SEWERAGE SCHEME
SCHEMATIC LAYOUT



YELARBON SEWAGE TREATMENT PLANT
SCHEMATIC LAYOUT
500 EP



Appendix C Effluent Compliance Results

		2015							
		Max of MAX(BOD5)	Average of AVG(BOD5)	Max of MAX(TSS)	Average of AVG(TSS)	Max of MAX(Total N)	Average of AVG(Total N)	Max of MAX(Total P)	Average of AVG(Total P)
	Texas	140.0	40.7	140.0	82.3	17.0	12.3	4.4	3.2
	Inglewood	20.0	4.4	430.0	53.8	-	-	-	-
	Goondiwindi	88.0	8.1	58.0	11.1	-	-	-	-
	Target	20	20	30	30				
	Average	82.7	17.7	209.3	49.1		12.3		3.2
TEXAS	Total Count	8		8					
TEXAS	Count Complying	1		0					
TEXAS	% Complying	13%		0%					
TEXAS	RESULT > 90% COMPLYING	⊗ fails		⊗ fails					
INGLEWOOD	Total Count	45		45					
INGLEWOOD	Count Complying	45		12					
INGLEWOOD	% Complying	100%		27%					
INGLEWOOD	RESULT > 90% COMPLYING	☺ achieves		⊗ fails					
GOONDIWINDI	Total Count	28		28					
GOONDIWINDI	Count Complying	26		26					
GOONDIWINDI	% Complying	93%		93%					
GOONDIWINDI	RESULT > 90% COMPLYING	☺ achieves		☺ achieves					

		2016							
		Max of MAX(BOD5)	Average of AVG(BOD5)	Max of MAX(TSS)	Average of AVG(TSS)	Max of MAX(Total N)	Average of AVG(Total N)	Max of MAX(Total P)	Average of AVG(Total P)
	Texas	40.0	25.3	190.0	96.0	16.0	12.1	6.5	3.0
	Inglewood	150.0	9.3	94.0	41.6	-	-	-	-
	Goondiwindi	12.0	12.0	12.0	12.0	-	-	-	-
	Target	20	20	30	30				
	Average	67.3	15.5	98.7	49.9		12.1		3.0
TEXAS	Total Count	13		13					
TEXAS	Count Complying	3		1					
TEXAS	% Complying	23%		8%					
TEXAS	RESULT > 90% COMPLYING	⊗ fails		⊗ fails					
INGLEWOOD	Total Count	41		41					
INGLEWOOD	Count Complying	39		12					
INGLEWOOD	% Complying	95%		29%					
INGLEWOOD	RESULT > 90% COMPLYING	☺ achieves		⊗ fails					
GOONDIWINDI	Total Count	12		12					
GOONDIWINDI	Count Complying	12		10					
GOONDIWINDI	% Complying	100%		83%					
GOONDIWINDI	RESULT > 90% COMPLYING	☺ achieves		⊗ fails					

		2017							
		Max of MAX(BOD5)	Average of AVG(BOD5)	Max of MAX(TSS)	Average of AVG(TSS)	Max of MAX(Total N)	Average of AVG(Total N)	Max of MAX(Total P)	Average of AVG(Total P)
	Texas	56.0	17.5	130.0	69.0	14.0	10.3	3.9	2.8
	Inglewood	100.0	6.1	100.0	41.6	14.0	8.1	7.8	4.1
	Goondiwindi	12	12	12.0	12.0	-	-	-	-
	Target	20	20	30	30				
	Average	56.0	11.9	80.7	40.9		9.2		3.4
TEXAS	Total Count	12		12					
TEXAS	Count Complying	8		0					
TEXAS	% Complying	67%		0%					
TEXAS	RESULT > 90% COMPLYING	⊗ fails		⊗ fails					
INGLEWOOD	Total Count	30		30					
INGLEWOOD	Count Complying	4		11					
INGLEWOOD	% Complying	13%		37%					
INGLEWOOD	RESULT > 90% COMPLYING	⊗ fails		⊗ fails					
GOONDIWINDI	Total Count	12		12					
GOONDIWINDI	Count Complying	12		12					
GOONDIWINDI	% Complying	100%		100%					
GOONDIWINDI	RESULT > 90% COMPLYING	☺ achieves		☺ achieves					

Appendix D Assets with 5 Years or Less Remaining Useful Life

Underground

Year and Assets	Sum of CRV
2017	\$2,912,676
Access Chambers	\$937,748
Sewer Manhole	\$937,748
Sewer Manhole 1/1567 - Mcdougall St Goondiwindi	\$6,079
Sewer Manhole 1/1755 - Hindmarsh St Goondiwindi	\$6,079
Sewer Manhole 1/2055 - 5 Mcdougall St Goondiwindi	\$4,771
Sewer Manhole 1/290 - 10 Hindmarsh St Goondiwindi	\$4,771
Sewer Manhole 1/290A - 3 Cook St Goondiwindi	\$4,771
Sewer Manhole 1/503 - 4 Cook St Goondiwindi	\$4,771
Sewer Manhole 1/733A - 4 Cook St Goondiwindi	\$3,730
Sewer Manhole 10/1279 - 3 Callandoon St Goondiwindi	\$3,730
Sewer Manhole 10/230 - 27 Albert St Goondiwindi	\$6,079
Sewer Manhole 10/462 - 21 Albert St Goondiwindi	\$6,079
Sewer Manhole 10/729 - 17 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 10/796 - Francis St Goondiwindi	\$3,730
Sewer Manhole 10/999 - 11 Callandoon St Goondiwindi	\$4,771
Sewer Manhole 11/1 - 3 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/1048 - Callandoon St Goondiwindi	\$6,079
Sewer Manhole 11/1082 - 3 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/1276 - Waratah Place Cms5324 Goondiwindi	\$6,079
Sewer Manhole 11/1569 - 23 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 11/2 - 23 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/238 - 3 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/285 - Ajax Cms26656 Goondiwindi	\$4,771
Sewer Manhole 11/3 - 23 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/300 - Russell St Goondiwindi	\$6,079
Sewer Manhole 11/302 - 31 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 11/4 - 23 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/455 - 15 Moffatt St Goondiwindi	\$3,730
Sewer Manhole 11/585 - Herbert St Goondiwindi	\$2,789
Sewer Manhole 11/590 - Moffatt St Goondiwindi	\$4,771
Sewer Manhole 11/602 - Moffatt St Goondiwindi	\$6,079
Sewer Manhole 11/73 - 23 Herbert St Goondiwindi	\$3,730
Sewer Manhole 11/820 - 20 George St Goondiwindi	\$4,771
Sewer Manhole 11/884 - 45 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 11/962 - Russell St Goondiwindi	\$6,079
Sewer Manhole 12/1015 - State School Goondiwindi	\$3,730
Sewer Manhole 12/1099 - 59 Callandoon St Goondiwindi	\$2,789
Sewer Manhole 12/1145 - 40 George St Goondiwindi	\$3,730
Sewer Manhole 12/161 - 21 Brisbane St Goondiwindi	\$2,789
Sewer Manhole 12/273 - 79 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 12/580 - 73 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 12/815 - State School Goondiwindi	\$3,730
Sewer Manhole 12/850 - Brisbane St Goondiwindi	\$4,771
Sewer Manhole 12/863 - 59 Callandoon St Goondiwindi	\$2,789
Sewer Manhole 13/1155 - 113 Callandoon St Goondiwindi	\$4,771
Sewer Manhole 13/14 - 109 Callandoon St Goondiwindi	\$4,771
Sewer Manhole 13/1785 - 119 Callandoon St Goondiwindi	\$4,771
Sewer Manhole 13/300 - 91 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 13/584 - 99 Callandoon St Goondiwindi	\$6,079
Sewer Manhole 13/863 - 105 Callandoon St Goondiwindi	\$4,771
Sewer Manhole 14/1869 - 11-25 Marshall St Goondiwindi	\$6,079

⊕ Sewer Manhole 14/2143 - Marshall St Goondiwindi	\$6,079
⊕ Sewer Manhole 14/2416 - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 14/2646 - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 14/277 - Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 14/2876 - Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 14/300 - Bowen Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 14/553 - 14 Callandoon St Goondiwindi	\$3,730
⊕ Sewer Manhole 14/803 - 10 Callandoon St Goondiwindi	\$3,730
⊕ Sewer Manhole 15/1 - 24 Herbert St Goondiwindi	\$3,730
⊕ Sewer Manhole 15/1170 - Bowen Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/1234 - Callandoon Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 15/1400 - Bowen Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/1534 - Callandoon Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 15/1794 - Callandoon Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 15/2 - Callandoon Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/2018 - Callandoon Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/246 - Callandoon Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/300 - Bowen Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 15/3176 - Bowen Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 15/900 - Bowen Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 16/190 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 16/300 - Callandoon Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 16/300A - Callandoon Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 16/300B - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 16/348 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 16/528 - Marshall St Goondiwindi	\$6,079
⊕ Sewer Manhole 16/600 - Callandoon Lane Goondiwindi	\$3,730
⊕ Sewer Manhole 16/600A - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 16/600B - Bowen Lane Goondiwindi	\$4,771
⊕ Sewer Manhole 16/600C - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 16/600D - Callandoon Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 16/806 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 16/977 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 17/1200 - Callandoon Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 17/1200A - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 17/1500 - 193 Marshall St Goondiwindi	\$6,079
⊕ Sewer Manhole 17/1500A - 174 Marshall St Goondiwindi	\$4,771
⊕ Sewer Manhole 17/1600 - 195 Marshall St Goondiwindi	\$4,771
⊕ Sewer Manhole 17/702 - 178 Marshall St Goondiwindi	\$4,771
⊕ Sewer Manhole 17/900 - Callandoon Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 17/900A - Bowen Lane Goondiwindi	\$6,079
⊕ Sewer Manhole 17C/3 - 176 Marshall St Goondiwindi	\$4,771
⊕ Sewer Manhole 18/300 - 18 Bowen St Goondiwindi	\$4,771
⊕ Sewer Manhole 18/3483 - 24 Bowen St Goondiwindi	\$3,730
⊕ Sewer Manhole 18/3749 - 32 Bowen St Goondiwindi	\$3,730
⊕ Sewer Manhole 19/1 - Macintyre St Goondiwindi	\$2,789
⊕ Sewer Manhole 19/1099 - 44 Bowen St Goondiwindi	\$3,730
⊕ Sewer Manhole 19/1211 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 19/1362 - 36-42 Bowen St Goondiwindi	\$2,789
⊕ Sewer Manhole 19/1392 - Pratten St Goondiwindi	\$6,079
⊕ Sewer Manhole 19/2 - Pratten St Goondiwindi	\$2,789
⊕ Sewer Manhole 19/263 - 64 Bowen St Goondiwindi	\$6,079
⊕ Sewer Manhole 19/322 - Mclean St Goondiwindi	\$4,771
⊕ Sewer Manhole 19/545 - 54 Bowen St Goondiwindi	\$4,771
⊕ Sewer Manhole 2/1049 - 10 Campbell St Goondiwindi	\$6,079
⊕ Sewer Manhole 2/1315 - 28 Marsh St Goondiwindi	\$6,079
⊕ Sewer Manhole 2/240 - 16 Campbell St Goondiwindi	\$3,730
⊕ Sewer Manhole 2/330 - 4 Campbell St Goondiwindi	\$3,730
⊕ Sewer Manhole 2/333 - 22 Marsh St Goondiwindi	\$3,730
⊕ Sewer Manhole 2/839 - Sandhurst St Goondiwindi	\$6,079

⊕ Sewer Manhole 20/1684 - 45 Macintyre St Goondiwindi	\$6,079
⊕ Sewer Manhole 20/1974 - 7 Delacy St Goondiwindi	\$6,079
⊕ Sewer Manhole 20/200 - 2 Hunter St Goondiwindi	\$3,730
⊕ Sewer Manhole 20/2274 - 1a Hunter St Goondiwindi	\$6,079
⊕ Sewer Manhole 20/255 - 15 Delacy St Goondiwindi	\$3,730
⊕ Sewer Manhole 20/2554 - 7 Hunter St Goondiwindi	\$6,079
⊕ Sewer Manhole 20/2854 - Lucas St Goondiwindi	\$4,771
⊕ Sewer Manhole 20/300 - 4 Pratten St Goondiwindi	\$3,730
⊕ Sewer Manhole 20/308 - 55 Macintyre St Goondiwindi	\$4,771
⊕ Sewer Manhole 20/4 - 94 Bowen St Goondiwindi	\$2,789
⊕ Sewer Manhole 20/5 - 16 Delacy St Goondiwindi	\$2,789
⊕ Sewer Manhole 20/538 - Delacy St Goondiwindi	\$4,771
⊕ Sewer Manhole 21/1063 - Macintyre St Goondiwindi	\$3,730
⊕ Sewer Manhole 21/838 - Macintyre St Goondiwindi	\$3,730
⊕ Sewer Manhole 3/1279 - 35 Elizabeth Dr Goondiwindi	\$4,771
⊕ Sewer Manhole 3/1539 - 38 Russell St Goondiwindi	\$4,771
⊕ Sewer Manhole 3/1743 - 32 Russell St Goondiwindi	\$3,730
⊕ Sewer Manhole 4/280 - 53 Albert St Goondiwindi	\$6,079
⊕ Sewer Manhole 4/298 - Bell St Goondiwindi	\$6,079
⊕ Sewer Manhole 4/490 - 59 Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 4/570 - 11 Bell St Goondiwindi	\$6,079
⊕ Sewer Manhole 5/2 - Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/228 - Winton St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/229 - Winton St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/230 - Winton St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/231 - Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 5/496 - 57 Herbert St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/508 - 51 Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/511 - 46 Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/657 - Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/761 - 67 Herbert St Goondiwindi	\$3,730
⊕ Sewer Manhole 5/776 - 32 Sandhurst St Goondiwindi	\$3,730
⊕ Sewer Manhole 5/830 - 59 Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 5/932 - 34 Sandhurst St Goondiwindi	\$3,730
⊕ Sewer Manhole 5/RWH - 69 Herbert St Goondiwindi	\$3,730
⊕ Sewer Manhole 6/229 - Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 6/2692 - Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 6/277 - 57 Mclean St Goondiwindi	\$4,771
⊕ Sewer Manhole 6/2992 - Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 6/3252 - 60 Mclean St Goondiwindi	\$4,771
⊕ Sewer Manhole 6/3552 - 68 Mclean St Goondiwindi	\$4,771
⊕ Sewer Manhole 6/3676 - Sandhurst St Goondiwindi	\$3,730
⊕ Sewer Manhole 6/505 - 60a Herbert St Goondiwindi	\$4,771
⊕ Sewer Manhole 6/587 - 65 Mclean St Goondiwindi	\$3,730
⊕ Sewer Manhole 6/770 - 68 Herbert St Goondiwindi	\$4,771
⊕ Sewer Manhole 6/916 - Sandhurst St Goondiwindi	\$3,730
⊕ Sewer Manhole 7/1009 - Boyle St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/144 - Russell St Goondiwindi	\$3,730
⊕ Sewer Manhole 7/230 - 6 Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/250 - 2 Fleming St Goondiwindi	\$6,079

⊕ Sewer Manhole 7/280 - 15 Francis St Goondiwindi	\$4,771
⊕ Sewer Manhole 7/300 - 45 Albert St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/496 - Francis St Goondiwindi	\$4,771
⊕ Sewer Manhole 7/500 - Russell St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/530 - Francis St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/699 - Russell St Goondiwindi	\$6,079
⊕ Sewer Manhole 7/750 - 17 Francis St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/1 - Winton St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/1065 - 37 Moffatt St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/1365 - 36 Moffatt St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/1565 - 42 Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/1801 - 47 Herbert St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/198 - 30 Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/2 - 18c Winton St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/254 - 34 Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/256 - 43 Herbert St Goondiwindi	\$3,730
⊕ Sewer Manhole 8/266 - 29 Moffatt St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/3 - 42 Albert St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/396 - 35 Herbert St Goondiwindi	\$3,730
⊕ Sewer Manhole 8/399 - 19 George St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/419 - 13 George St Goondiwindi	\$3,730
⊕ Sewer Manhole 8/562 - 40 Albert St Goondiwindi	\$6,079
⊕ Sewer Manhole 8/689 - 23 George St Goondiwindi	\$3,730
⊕ Sewer Manhole 8/71 - 3 George St Goondiwindi	\$4,771
⊕ Sewer Manhole 8/832 - 24 Winton St Goondiwindi	\$6,079
⊕ Sewer Manhole 9/1431 - 38 Mclean St Goondiwindi	\$3,730
⊕ Sewer Manhole 9/1579 - 38 Mclean St Goondiwindi	\$2,789
⊕ Sewer Manhole 9/2127 - 48 Herbert St Goondiwindi	\$6,079
⊕ Sewer Manhole 9/2452 - 44 Glasser Dr Goondiwindi	\$6,079
⊕ Sewer Manhole 9/250 - State School Goondiwindi	\$4,771
⊕ Sewer Manhole 9/704 - State School Goondiwindi	\$3,730
⊕ Sewer Manhole CM1 - Callandoon St Goondiwindi	\$6,079
⊕ Sewer Manhole CM2 - 8b Winton St Goondiwindi	\$6,079
⊕ GTC_WWManhole_21/1295	\$2,789
☐ Gravity Mains	\$1,472,782
☐ AC	\$16,939
⊕ WW Gravity Main AC 182 Marshall St Goondiwindi	\$6,298
⊕ WW Gravity Main AC 197 Marshall St Goondiwindi	\$7,259
⊕ WW Gravity Main AC 50 Frideswide St Goondiwindi	\$3,382
☐ EW	\$1,446,582
⊕ WW Gravity Main EW 10 Campbell St Goondiwindi	\$8,739
⊕ WW Gravity Main EW 10 Hindmarsh St Goondiwindi	\$1,381
⊕ WW Gravity Main EW 103 Callandoon St Goondiwindi	\$9,300
⊕ WW Gravity Main EW 107 Callandoon St Goondiwindi	\$4,927
⊕ WW Gravity Main EW 11 Bell St Goondiwindi	\$9,011
⊕ WW Gravity Main EW 11 Delacy St Goondiwindi	\$8,657
⊕ WW Gravity Main EW 11 Francis St Goondiwindi	\$7,115
⊕ WW Gravity Main EW 11-25 Marshall St Goondiwindi	\$18,168
⊕ WW Gravity Main EW 113 Callandoon St Goondiwindi	\$4,622
⊕ WW Gravity Main EW 12 Albert St Goondiwindi	\$9,770
⊕ WW Gravity Main EW 12 Delacy St Goondiwindi	\$9,729
⊕ WW Gravity Main EW 12 George St Goondiwindi	\$9,600
⊕ WW Gravity Main EW 12 Winton St Goondiwindi	\$14,010
⊕ WW Gravity Main EW 126 Callandoon St Goondiwindi	\$9,453
⊕ WW Gravity Main EW 14 Callandoon St Goondiwindi	\$8,284
⊕ WW Gravity Main EW 14 Campbell St Goondiwindi	\$7,890
⊕ WW Gravity Main EW 15 Callandoon St Goondiwindi	\$8,902
⊕ WW Gravity Main EW 15 Frideswide St Goondiwindi	\$7,927
⊕ WW Gravity Main EW 16 George St Goondiwindi	\$7,568
⊕ WW Gravity Main EW 16 Herbert St Goondiwindi	\$5,149

± WW Gravity Main EW 16 Marshall St Goondiwindi	\$9,038
± WW Gravity Main EW 17 Albert St Goondiwindi	\$8,737
± WW Gravity Main EW 17 Bell St Goondiwindi	\$8,910
± WW Gravity Main EW 17 Francis St Goondiwindi	\$16,511
± WW Gravity Main EW 172 Marshall St Goondiwindi	\$9,984
± WW Gravity Main EW 174 Marshall St Goondiwindi	\$1,464
± WW Gravity Main EW 178 Marshall St Goondiwindi	\$4,960
± WW Gravity Main EW 18 Bowen St Goondiwindi	\$6,455
± WW Gravity Main EW 18 Callandoon St Goondiwindi	\$9,127
± WW Gravity Main EW 189 Marshall St Goondiwindi	\$9,941
± WW Gravity Main EW 18c Winton St Goondiwindi	\$3,147
± WW Gravity Main EW 19 George St Goondiwindi	\$7,774
± WW Gravity Main EW 193 Marshall St Goondiwindi	\$3,881
± WW Gravity Main EW 1cp883123 Goondiwindi	\$25,250
± WW Gravity Main EW 21 Sandhurst St Goondiwindi	\$6,973
± WW Gravity Main EW 22 Albert St Goondiwindi	\$10,348
± WW Gravity Main EW 23 Albert St Goondiwindi	\$7,745
± WW Gravity Main EW 23 Bowen St Goondiwindi	\$10,120
± WW Gravity Main EW 23 Brisbane St Goondiwindi	\$6,409
± WW Gravity Main EW 23 Callandoon St Goondiwindi	\$9,914
± WW Gravity Main EW 23 Herbert St Goondiwindi	\$17,199
± WW Gravity Main EW 24 George St Goondiwindi	\$8,673
± WW Gravity Main EW 26 Marsh St Goondiwindi	\$11,036
± WW Gravity Main EW 27 Callandoon St Goondiwindi	\$9,929
± WW Gravity Main EW 28 Marsh St Goondiwindi	\$8,323
± WW Gravity Main EW 28 Moffatt St Goondiwindi	\$6,654
± WW Gravity Main EW 28 Winton St Goondiwindi	\$10,823
± WW Gravity Main EW 3 Cook St Goondiwindi	\$5,598
± WW Gravity Main EW 3 De Lacy St Goondiwindi	\$7,625
± WW Gravity Main EW 3 Herbert St Goondiwindi	\$5,029
± WW Gravity Main EW 30 Albert St Goondiwindi	\$5,765
± WW Gravity Main EW 31 Albert St Goondiwindi	\$7,616
± WW Gravity Main EW 31 Winton St Goondiwindi	\$9,337
± WW Gravity Main EW 32 Sandhurst St Goondiwindi	\$5,108
± WW Gravity Main EW 33 Brisbane St Goondiwindi	\$9,732
± WW Gravity Main EW 33 Elizabeth Dr Goondiwindi	\$8,613
± WW Gravity Main EW 34 Moffatt St Goondiwindi	\$6,472
± WW Gravity Main EW 34 Russell St Goondiwindi	\$6,769
± WW Gravity Main EW 35 Callandoon St Goondiwindi	\$9,933
± WW Gravity Main EW 36 Brisbane St Goondiwindi	\$8,917

± WW Gravity Main EW 37 Elizabeth Dr Goondiwindi	\$9,158
± WW Gravity Main EW 38 Albert St Goondiwindi	\$8,349
± WW Gravity Main EW 38 Mclean St Goondiwindi	\$14,348
± WW Gravity Main EW 39 Herbert St Goondiwindi	\$4,626
± WW Gravity Main EW 3g4747 Goondiwindi	\$9,164
± WW Gravity Main EW 4 Boyle St Goondiwindi	\$8,333
± WW Gravity Main EW 4 Cook St Goondiwindi	\$5,671
± WW Gravity Main EW 4 Pratten St Goondiwindi	\$9,917
± WW Gravity Main EW 40 Albert St Goondiwindi	\$10,934
± WW Gravity Main EW 41 Callandoon St Goondiwindi	\$9,333
± WW Gravity Main EW 42 Albert St Goondiwindi	\$2,613
± WW Gravity Main EW 42 Winton St Goondiwindi	\$11,029
± WW Gravity Main EW 43 Albert St Goondiwindi	\$12,303
± WW Gravity Main EW 43 Macintyre St Goondiwindi	\$9,679
± WW Gravity Main EW 43-45 Winton St Goondiwindi	\$9,180
± WW Gravity Main EW 44 Bowen St Goondiwindi	\$8,690
± WW Gravity Main EW 44 Glasser Dr Goondiwindi	\$10,778
± WW Gravity Main EW 44 Herbert St Goondiwindi	\$8,311
± WW Gravity Main EW 45 Callandoon St Goondiwindi	\$5,492
± WW Gravity Main EW 45 Herbert St Goondiwindi	\$8,459
± WW Gravity Main EW 46 Callandoon St Goondiwindi	\$6,127
± WW Gravity Main EW 47 Herbert St Goondiwindi	\$15,332
± WW Gravity Main EW 5 Mclean St Goondiwindi	\$9,141
± WW Gravity Main EW 50 Moffatt St Goondiwindi	\$8,717
± WW Gravity Main EW 51 Herbert St Goondiwindi	\$7,491
± WW Gravity Main EW 51 Macintyre St Goondiwindi	\$10,175
± WW Gravity Main EW 53 Winton St Goondiwindi	\$9,192
± WW Gravity Main EW 54 Sandhurst St Goondiwindi	\$4,077
± WW Gravity Main EW 55 Albert St Goondiwindi	\$6,932
± WW Gravity Main EW 55 Herbert St Goondiwindi	\$8,880
± WW Gravity Main EW 55 Moffatt St Goondiwindi	\$10,741
± WW Gravity Main EW 56 Winton St Goondiwindi	\$7,903
± WW Gravity Main EW 58 Bowen St Goondiwindi	\$9,297
± WW Gravity Main EW 59 Albert St Goondiwindi	\$5,181
± WW Gravity Main EW 59 Callandoon St Goondiwindi	\$17,044
± WW Gravity Main EW 6 Campbell St Goondiwindi	\$10,946
± WW Gravity Main EW 6 Delacy St Goondiwindi	\$6,591
± WW Gravity Main EW 6 Fleming St Goondiwindi	\$11,735
± WW Gravity Main EW 6 Winton St Goondiwindi	\$10,000
± WW Gravity Main EW 60 Mclean St Goondiwindi	\$8,585
± WW Gravity Main EW 61 Mclean St Goondiwindi	\$10,304
± WW Gravity Main EW 61 Russell St Goondiwindi	\$11,738
± WW Gravity Main EW 62 Mclean St Goondiwindi	\$9,948
± WW Gravity Main EW 63 Herbert St Goondiwindi	\$8,719
± WW Gravity Main EW 64 Bowen St Goondiwindi	\$8,704
± WW Gravity Main EW 64 Herbert St Goondiwindi	\$8,766
± WW Gravity Main EW 68 Herbert St Goondiwindi	\$4,803
± WW Gravity Main EW 69 Herbert St Goondiwindi	\$2,958
± WW Gravity Main EW 7 Bowen St Goondiwindi	\$8,566
± WW Gravity Main EW 7 Macintyre St Goondiwindi	\$8,618

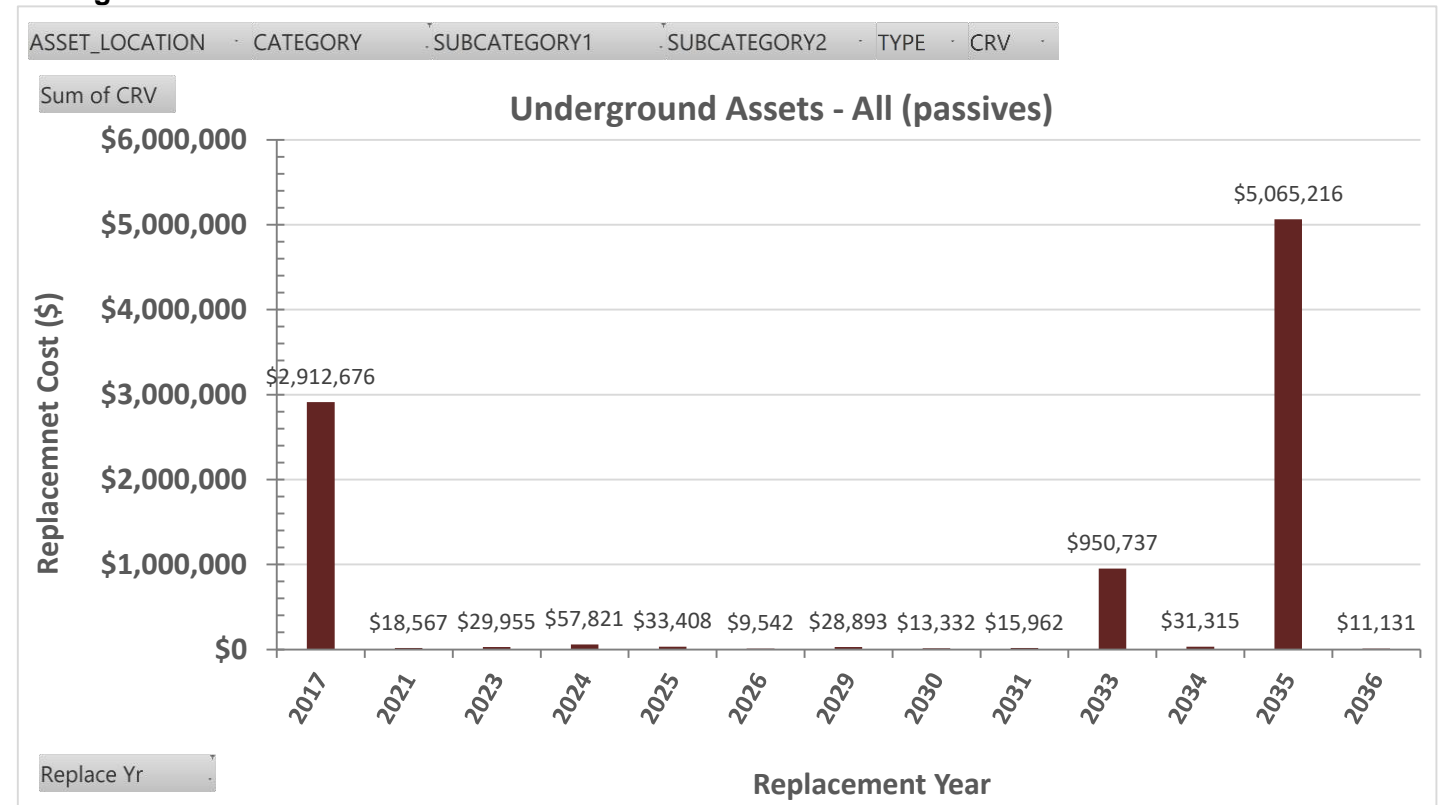
⊕ WW Gravity Main EW 75 Callandoon St Goondiwindi	\$10,176
⊕ WW Gravity Main EW 8 Winton St Goondiwindi	\$7,573
⊕ WW Gravity Main EW 80 Russell St Goondiwindi	\$9,444
⊕ WW Gravity Main EW 82 Russell St Goondiwindi	\$5,572
⊕ WW Gravity Main EW 83 Callandoon St Goondiwindi	\$9,031
⊕ WW Gravity Main EW 89 Callandoon St Goondiwindi	\$9,916
⊕ WW Gravity Main EW 8b Winton St Goondiwindi	\$855
⊕ WW Gravity Main EW 9 Callandoon St Goondiwindi	\$9,284
⊕ WW Gravity Main EW 9 Delacy St Goondiwindi	\$19,564
⊕ WW Gravity Main EW 90 Bowen St Goondiwindi	\$7,587
⊕ WW Gravity Main EW 97 Callandoon St Goondiwindi	\$9,414
⊕ WW Gravity Main EW Albert St Goondiwindi	\$14,074
⊕ WW Gravity Main EW Bell St Goondiwindi	\$9,856
⊕ WW Gravity Main EW Bowen Lane Goondiwindi	\$111,319
⊕ WW Gravity Main EW Callandoon Lane Goondiwindi	\$84,422
⊕ WW Gravity Main EW Callandoon St Goondiwindi	\$10,239
⊕ WW Gravity Main EW Delacy St Goondiwindi	\$29,875
⊕ WW Gravity Main EW Elizabeth Drive Goondiwindi	\$2,487
⊕ WW Gravity Main EW Francis St Goondiwindi	\$9,960
⊕ WW Gravity Main EW Herbert St Goondiwindi	\$8,641
⊕ WW Gravity Main EW Macintyre St Goondiwindi	\$11,128
⊕ WW Gravity Main EW Mclean St Goondiwindi	\$19,889
⊕ WW Gravity Main EW Pratten St Goondiwindi	\$44,822
⊕ WW Gravity Main EW Russell St Goondiwindi	\$22,681
⊕ WW Gravity Main EW Unit 3/46 Winton St Goondiwindi	\$7,503
⊕ WW Gravity Main EW Winton St Goondiwindi	\$1,652
⊖ Non PVC	\$9,261
⊕ GTC_WWMains EW_D	\$9,261
⊕ Rising Mains	\$502,146
⊖ 2021	\$18,567
⊖ Gravity Mains	\$18,567
⊖ AC	\$18,567
⊕ WW Gravity Main AC 15 Clyne St Goondiwindi	\$10,000
⊕ WW Gravity Main AC Donald St Goondiwindi	\$8,566
⊖ 2023	\$29,955
⊖ Access Chambers	\$10,250
⊖ Sewer Manhole	\$10,250
⊕ Sewer Manhole 18/2 - Elizabeth Drive Goondiwindi	\$3,730
⊕ Sewer Manhole 18/3 - Elizabeth Drive Goondiwindi	\$3,730
⊕ Sewer Manhole 21/4 - 14 Frideswide St Goondiwindi	\$2,789
⊖ Gravity Mains	\$19,706
⊖ AC	\$19,706
⊕ WW Gravity Main AC 2 Fletcher St Goondiwindi	\$9,812
⊕ WW Gravity Main AC Donald St Goondiwindi	\$9,894
Grand Total	\$2,961,198

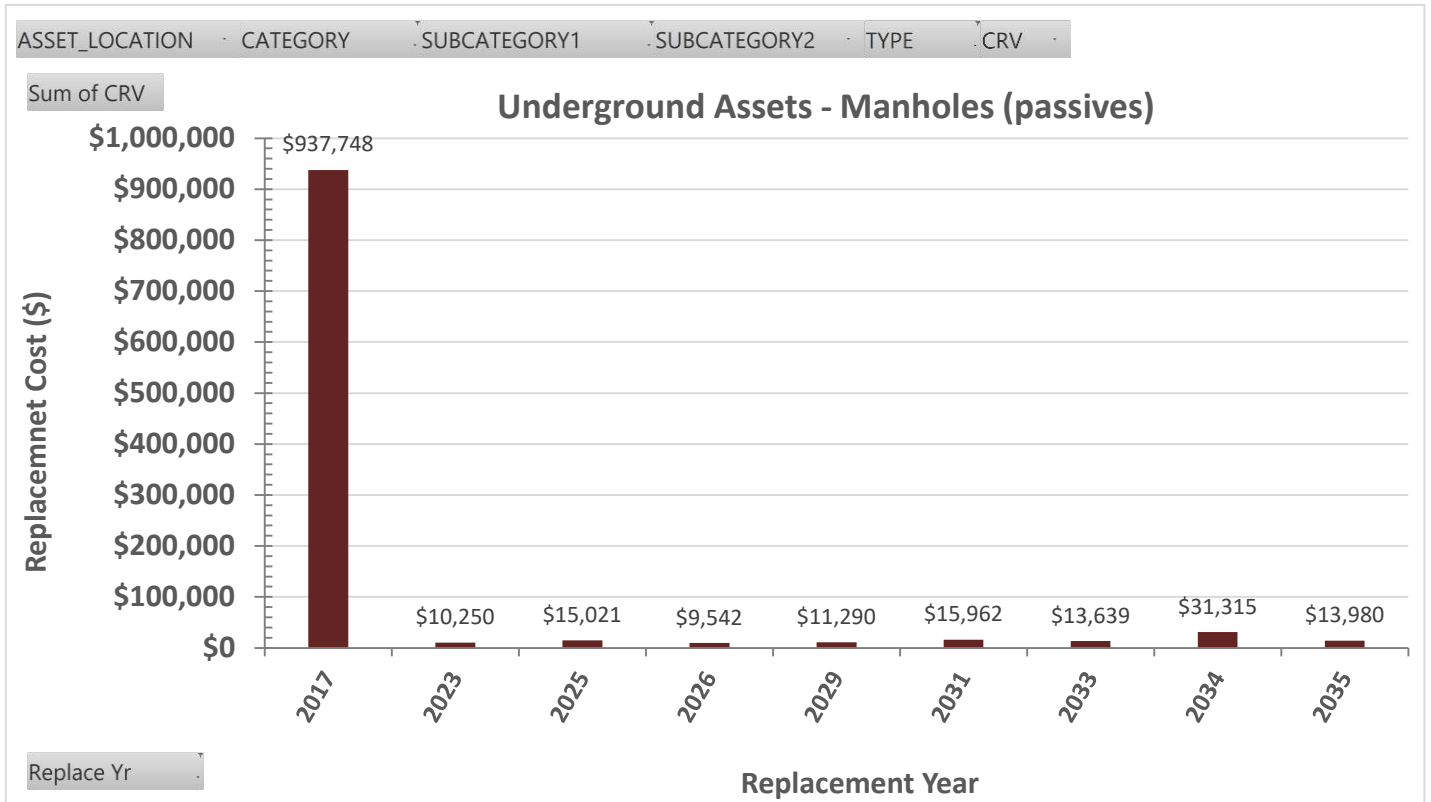
Above Ground

Year and Assets	Sum of CRV
2018	\$67,663
Pump Stations	\$67,663
Sewer Electrical-Mechanical	\$67,663
Goondiwindi SPS 5 - Pump/Motor 1 - 2 kW	\$7,630
Goondiwindi SPS 5 - Switchboard	\$44,692
Goondiwindi SPS 7 - Pump/Motor 2 - 7 kW	\$15,341
2019	\$10,966
Pump Stations	\$10,966
Sewer Electrical-Mechanical	\$10,966
Goondiwindi SPS 5 - Pump/Motor 2 - 2 kW	\$7,630
Texas SPS 2 - Pumps Sump Pump	\$3,336
2020	\$31,400
Pump Stations	\$31,400
Sewer Electrical-Mechanical	\$29,118
Goondiwindi SPS 8 - Pump/Motor 1 - 7kW	\$29,118
Sewer Miscellaneous	\$2,282
Texas SPS 2 - Ventilation Ducting	\$2,282
2022	\$395,493
Pump Stations	\$91,532
Sewer Electrical-Mechanical	\$91,532
Goondiwindi SPS 5 - Electrical Wiring	\$7,630
Goondiwindi SPS 9 - Electrical Wiring	\$10,380
Goondiwindi SPS 9 - Telemetry	\$12,974
Goondiwindi SPS 9 - Pump/Motor 30 kW?	\$60,548
Wastewater Treatment Plants	\$303,961
Sewer Miscellaneous	\$303,961
Goondiwindi STP - Final Lagoon Banks	\$303,961
Grand Total	\$505,522

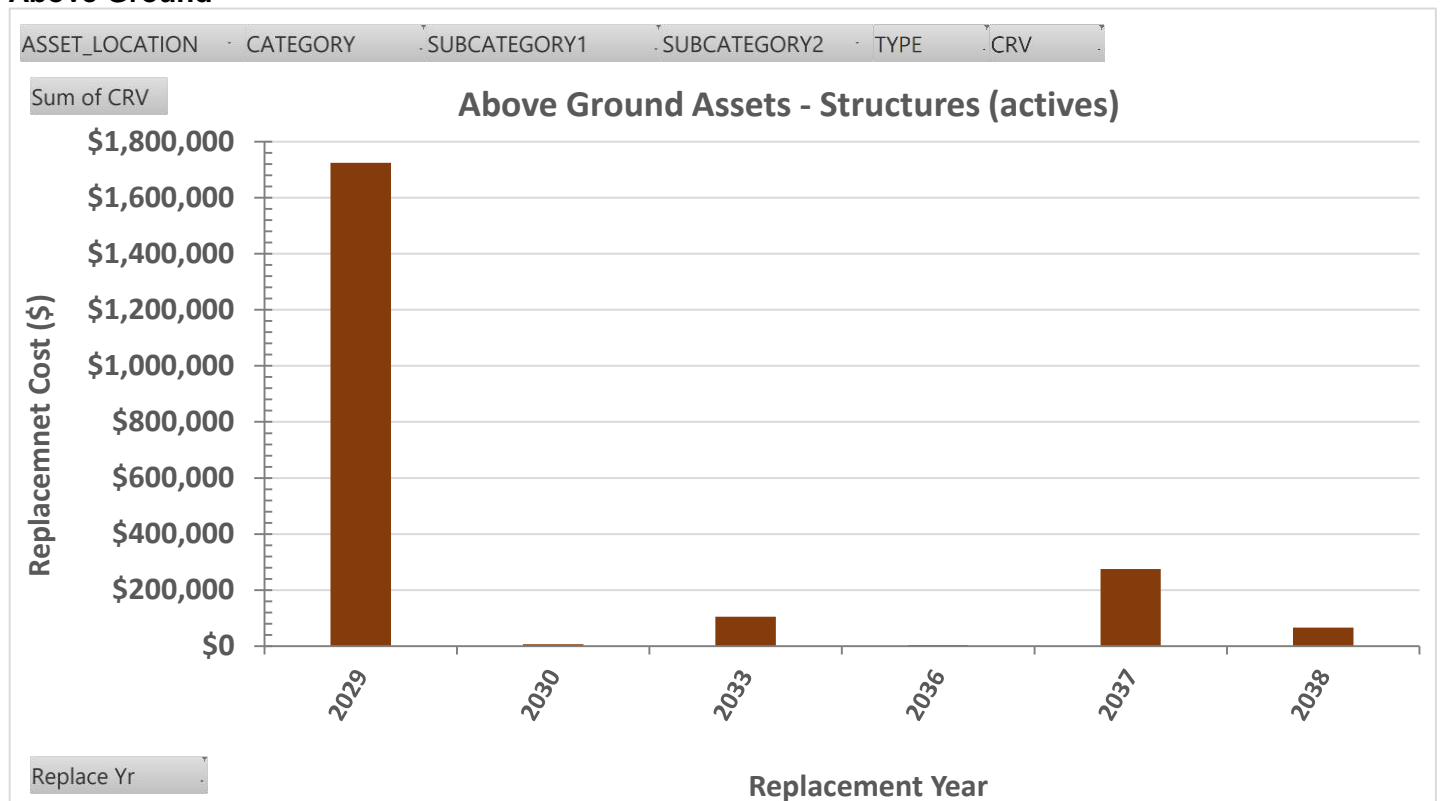
Appendix E 20 Years Renewals Profiles

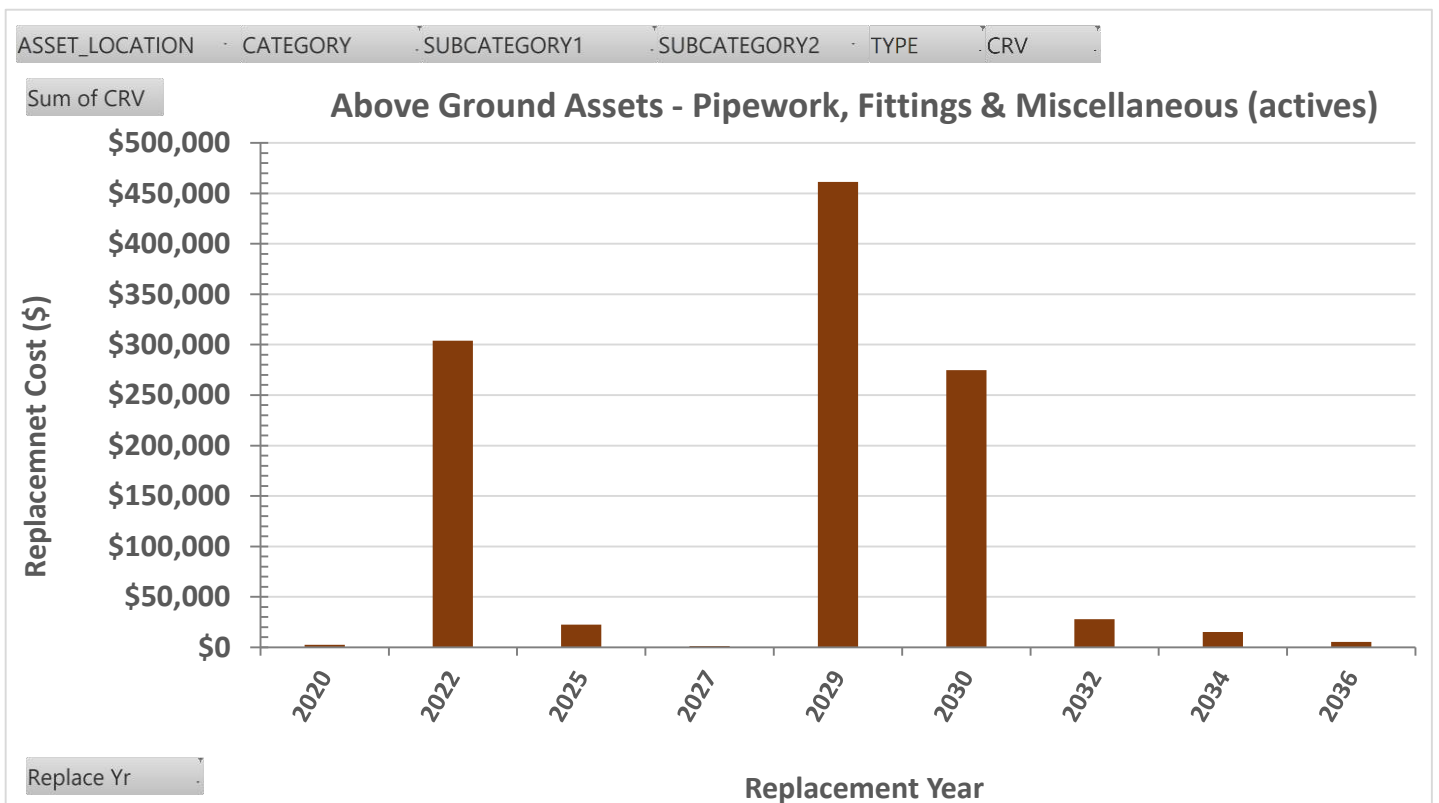
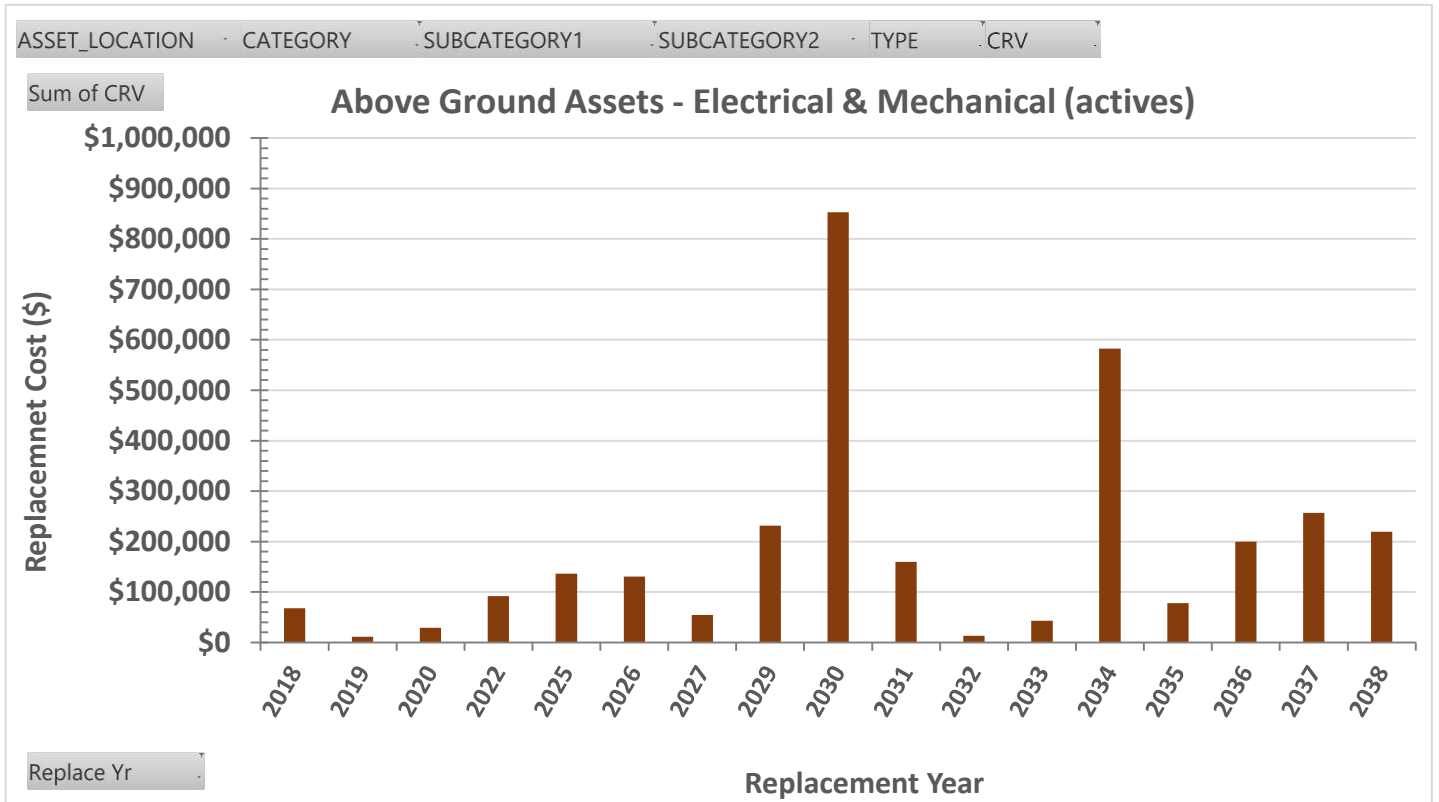
Underground





Above Ground





Appendix F Summary of Forecast Lifecycle Costings

	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Renewal Capex (FWP)											
Existing assets only	\$487,500	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
Renewal Capex (SL)	\$0	\$2,991,305	\$31,400	\$18,567	\$395,493	\$29,955	\$57,821	\$192,377	\$140,319	\$55,711	\$0
Accumulative Gap (FWP-SL) Positive is a short fall in funding. Negative is overspend (before condition or service requires).	-\$487,500	\$2,003,805	\$1,535,205	\$1,053,772	\$949,265	\$479,220	\$37,041	-\$270,582	-\$630,263	-\$1,074,552	-\$1,574,552
Operations (FWP)	\$977,008	\$986,312	\$995,706	\$1,005,189	\$1,014,762	\$1,024,426	\$1,034,183	\$1,044,032	\$1,053,975	\$1,064,013	\$1,074,147
Maintenance (FWP)	\$307,070	\$309,995	\$312,947	\$315,928	\$318,937	\$321,974	\$325,040	\$328,136	\$331,261	\$334,416	\$337,601
Maintenance (SL)	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276	\$494,276
New Capex (FWP)	\$245,000	\$245,000	\$62,000	\$64,000	\$67,000	\$69,000	\$72,000	\$0	\$86,000	\$92,000	\$0
Maintenance (New Capex)	\$3,675	\$3,675	\$620	\$640	\$670	\$690	\$720	\$200	\$860	\$920	\$0