

Sewer

Asset Management Plan

2022-2032



Richmond
Valley
Council

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Richmond Valley Council recognises the people of the Bundjalung Nation as Custodians and Traditional Owners of this land and we value and appreciate the continuing cultural connection to lands, their living culture and their unique role in the life of this region in the past, present and future.

Executive Summary

Richmond Valley Council (RVC) is custodian of an extensive range of community assets that it provides to facilitate delivery of its services to the community. This includes 231km of sewerage pipelines and connections, a comminutor and 33 pump stations, four treatment plants, and associated infrastructure for which it has responsibility within the Local Government Area (LGA).

The sewer network is valued at \$170,839,255 at 30 June 2022, and detailed in the following table.

Sewer Infrastructure

Asset Group	Asset Type	Quantity of Sewer Assets	Length of Assets (km)	Replacement Cost (\$)
Sewer Connections	Pipeline connections	6,376	24.91	6,998,674
Sewer Maintenance Shafts	Maintenance shafts	17		71,762
Sewer Manholes	Manholes	2,507		19,677,524
Sewer Pipelines	Pipes	3,771	189.71	63,427,996
Sewer Pressure Flushing Pits	Pits	38		213,631
Sewer Pressure Mains	Sewer mains	79	8.03	1,599,918
Sewer Pressure Pod Control Panel	Control panels	222		415,309
Sewer Pressure Pod Pumps	Pumps	228		730,443
Sewer Pressure Pod Tanks	Tanks	213		2,079,705
Sewer Pressure Service Connection	Pipeline connections	241	8.47	1,055,571
Sewer Pressure Valves	Pressure valves	37		57,600
Sewer Pump Stations	Control panels, pumps, pits, tanks etc.	645		19,051,853
Sewer RM Valves	Rising main valves	155		1,343,393
Sewer RM Valve Pits	Valve pits	84		453,010
Sewer Rodding Ends	Rodding ends	11		24,243
Sewer RTU PLC	Dataloggers, PLC	9		20,900
Sewer Treatment Plants	Control panels, pumps, pits, tanks etc.	777		52,041,079
Sewer Vent Stacks	Vent stacks	88		1,394,211
	Total			170,656,822



Key Issues

A summary of key issues related to the management of Council's sewer infrastructure are:

Key Issues

- Raw sewage in Casino appears to be heavily influenced by trade waste contributions which may influence the achievement of licence quality and load limits.
- There is a risk that the total phosphorus load limit from Casino STP could be breached based on the current process configuration and reuse quantities.
- The Casino STP sludge handling facilities appear to be overloaded.
- The Casino STP relies heavily on the performance of the wetlands to achieve the effluent licence load and concentration limits.
- Casino STP and sewerage pipelines are ageing.
- Dry weather groundwater infiltration and wet weather stormwater infiltration are significant in Evans Head, Casino and Coraki.
- The performance of Evans Head STP is affected during peak wet weather events and the peak summer holiday period. Augmentation of the STP will be required to cater for catchment growth and peak loadings.
- Coraki STP is ageing.
- Non-compliance with TSS licence limits at Coraki STP is expected to be an ongoing issue until the algal growth is controlled.
- The effects of climate change will have direct and indirect implications for Richmond Valley in relation to sewerage services including damage to infrastructure from flooding, storms and sea level rise, the need to reduce greenhouse emissions and potentially higher cost of energy.
- The location/routes of underground assets in rural areas are not clearly marked and are potentially subject to accidental damage during excavation.
- The cost of provision of sewerage services in the Richmond Valley area is high.
- Typical residential bills are high for sewerage.

Levels of Service - Performance

Service levels of sewer infrastructure assets is determined through customer expectations, strategic goals and statutory requirements. Council submits annual regulatory service level reporting to NSW Department of Planning and Environment under an assurance framework which is benchmarked against state-wide authorities.

Council has identified minimum standard performance targets and service levels for response time and priority allocations. Improvements in measuring and reporting performance targets is required with consideration of implementing community and technical levels of service.

The community evaluation provides a measure of the customers perspective with results evaluated of mixed performance from increased community satisfaction to a reduction in recent satisfaction.

The technical service levels are a measure of quality, compliance, availability and security.

Demand - New Infrastructure

Specific government projects that will impact on the sewer infrastructure include the Regional Jobs Precincts, draft Growth Management Strategy, Casino Place Plans and the Northern Rivers Rail Trail project. The draft Growth Management Strategy¹ identified that the floods of 2022 changed the dynamics of the Northern Rivers with Casino emerging as a strategic centre into the future. This strategy documents planning of growth areas for residential and employment areas throughout the LGA. As the population grows demand for new, and upgrades to existing, essential services will be required.

In May 2022 the NSW Government provided an update to population projection taking into account the COVID-19 pandemic, which resulted in changes to migration patterns to regional NSW. The revised projections model a steady increase with an average population growth of 0.7% per annum. This increase requires planning and consideration for an increase in housing supply and essential public infrastructure including Council's sewer network.

The draft Casino Place Plan² provides planning towards supporting growth for population, employment and housing. It is recognised that an estimated \$14.64 million is required in new sewer infrastructure to service the residential investigation areas identified from the growth strategy.

Demand - Existing Sewer Infrastructure

Pressure will be placed on existing sewer infrastructure to meet demand with the increasing sewerage from developments. This impact will be arising from both increase in flow through network pipes on existing network pipes as well as the capacity at the treatment plants and pump stations. The consequence of which is capacity and projected deterioration of existing infrastructure to cope with the increased loads. Based on growth the network may require:

- Additional sewer mains as the network grows in the outer fringes.
- New infrastructure at the treatment plant as the plant is upgraded.
- New pump station and rising/trunk mains.

Council is undertaking a Sewer Network Strategy to assist in the planning of sewer upgrades relevant to changing land use conditions, such as industrial complexes and subdivision developments. Most upgrades will be in the rural area as sewer demand increases. In addition to sewer mains, the four sewer treatment plants will require upgrading in the long term.

Flood Recovery

This Sewer Asset Management Plan uses baseline condition information from the 2021/22 revaluation and any capital works and improvements which have been undertaken to date. In February 2022 a catastrophic flood event hit the Northern Rivers Region and had a major effect on the Richmond Valley, with the highest flood levels recorded in history, in some places 2.5m above previous recorded levels. This has had a significant effect on the sewer infrastructure network condition in some part of the Local Government Area. As part of the flood recovery, RVC through the Natural Disaster Recovery Funding process is working to restore the sewer network to pre-flood condition.

¹ https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft_RV_Growth_Management_Strategy_221124.pdf

² https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft_Casino_Place_Plan_221123-2.pdf

Lifecycle Analysis

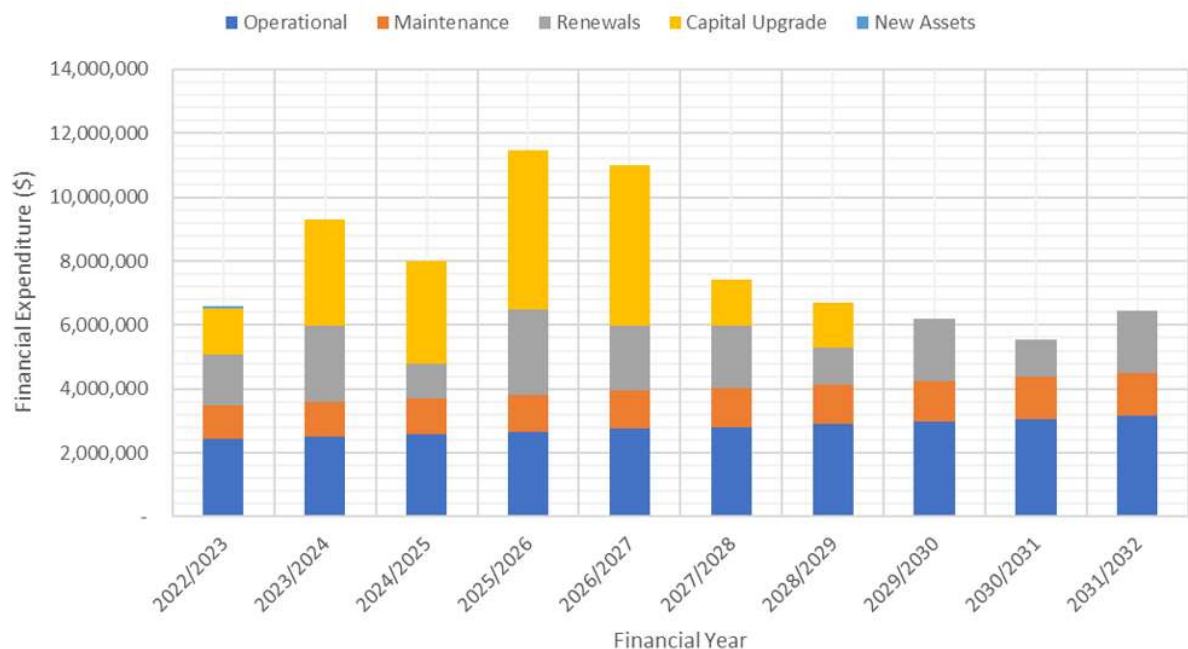
Sewer network assets on average have a remaining useful life of 50% of their expected lifecycles based on average condition; however more critical infrastructure assets including sewer pump stations and sewer treatment plants are on average 71% of their useful life.

Strategic planning will assist with the forward planning enabling RVC to meet demand from a growing population and continuing to service the existing community.

Ten Year Financial Forecast

The 10-year financial forecast is detailed within **Appendix G** for Council's sewer infrastructure including new, upgrades and capital works for each asset group. The reasons for the expenditure are identified for each asset group in Lifecycle Management Plans.

Ten Year Financial Projections



Sewer Pump Stations and Sewer Treatment Plants are on average condition of 71% of their useful life. Council's aging sewer infrastructure requires further long-term planning where major financial investment will be required to replace or major upgrades over the next 30 years.

A major issue concerning sewer infrastructure management is the question of who pays for needed works such as the community through special rates, developer contributions or consumers via recurrent charges. This will be significant with supporting new developments or expansion areas as identified within the draft Casino Place Plan.

To overcome this problem there should be available a range of funding options considered:

- Rating charges for sewer supply;
- Special rates or charges schemes;
- Development contributions; and
- Available grants, e.g., special purpose State Government grants.

Council relies on grant income for delivering a range of services to the community of the LGA. Richmond Valley has a relatively small population, with a low socio-economic element which makes deriving funds from rates, fees and charges a challenge. Council has a substantial sewer network over a large area and funding the renewal and maintenance of this network into the future will remain key.

Over the past five years, Council has received \$1.2 million in grant funding for sewer assets and infrastructure.

The amount of grants Council has received for the sewer network is shown in the table below:

Grants received for Sewer

Grant Funding	2017/18 (\$)	2018/19 (\$)	2019/20 (\$)	2020/21 (\$)	2021/22 (\$)
Grant Revenue (Operating)	81,413	76,054	79,059	78,699	78,187
PWA Flood Recovery					1,175,132
Rappville Sewer *					32,225
Total Grant Funding	81,413	76,054	79,059	78,699	1,285,544

** Under accounting standards, we are required to defer the monies unspent and recognise them as income when the money is expended for capital projects, so we only recognised \$3,532.67 in 2021/22 as revenue in our financial statements for Rappville Sewer Grant Funding.*

Asset Management Improvements

The following list of improvements have been extracted from the improvements summarised in Section 9. The list below represents the most important improvements required.

- Continue the capture of data for all sewer assets and monitor condition. The data capture can be updated as part of normal operations or when servicing/inspecting assets. Link assets data to the GIS.
- Complete the identification of the infrastructure risk register for Council's sewer infrastructure and assets considering current controls, actions and funding required to decrease risk levels.
- Undertake ongoing analysis of future renewal requirements using the condition data.
- Analyse the customer request results to address problem areas and maintain performance.
- Collect and monitor defect histories to identify trends in performance of asset types.
- Confirm target service levels, monitor and report outcomes.
- Use demand projections coupled with other knowledge e.g., risk to develop 10 -year forecast projections of upgrade works and new works. Use predictive models to identify appropriate levels of funding and the impacts of future condition.
- Identify the critical demands on the assets and use these demands and actions in the strategic plans
- Develop Council reporting templates for whole of life (WOL) costs for future capital works projects.

1. Introduction

Richmond Valley is custodian of an extensive range of community assets that it provides to facilitate delivery of its services to the community.

This Sewer Asset Management Plan (SAMP) has been developed to assist Council to manage sewer systems, taking into consideration the important links provided by the Department of Planning and Environment (DPE).

This plan is to be read in conjunction with the Council's Strategic Business Plan for Water and Sewer, IWCM Plan, Business Continuity Plan, Drought Management Plan, Demand Management Plan, Risk Management, Long-Term Capital Plan and Community Strategic Plan.

Richmond Valley Council (RVC) is custodian of an extensive range of community assets that it provides to facilitate delivery of its services to the community. This includes 231km of sewer pipeline and connections infrastructure, four sewer treatment plants, a comminutor and 33 pump stations, and associated infrastructure for which it has responsibility within the Local Government Area (LGA).

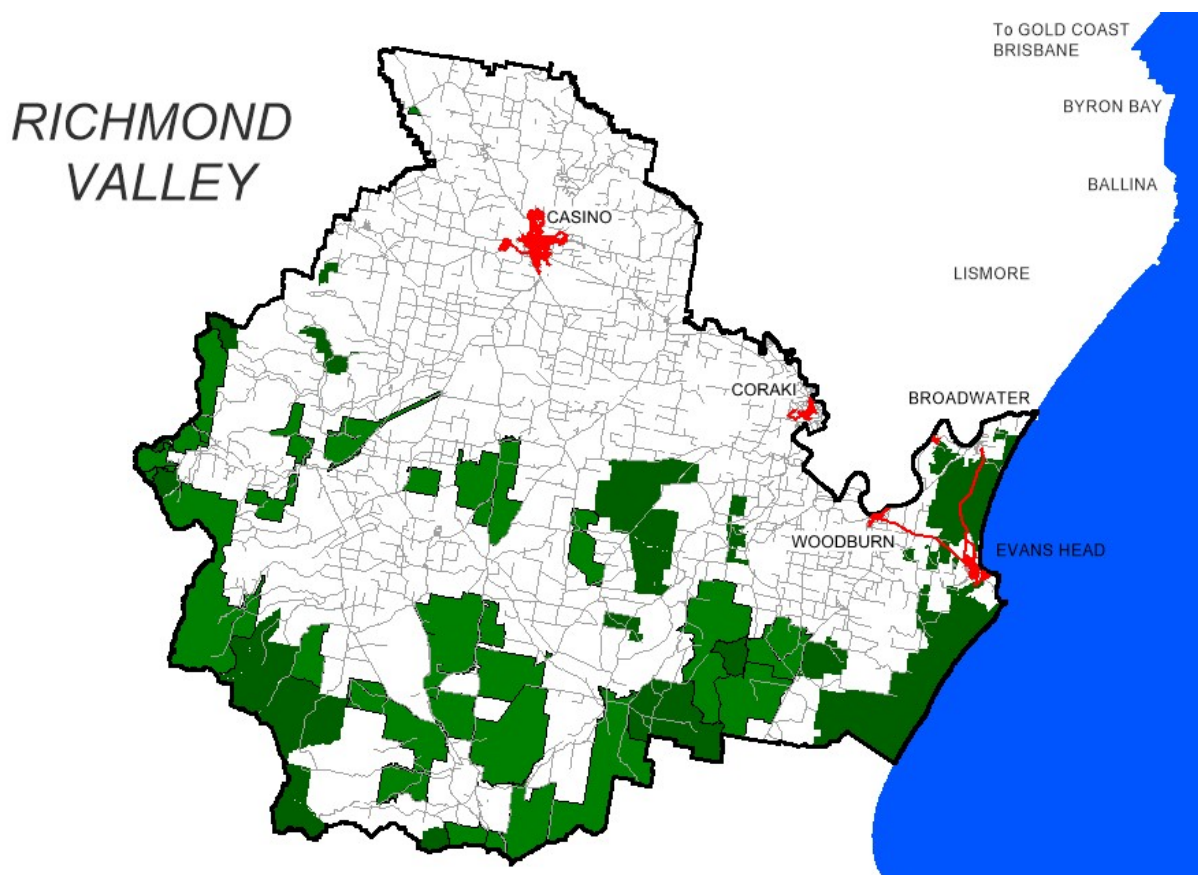


Figure 1-1: Sewer Network for Richmond Valley Council

1.1 Purpose of this Plan

This SAMP is intended to demonstrate how the Council will, by applying the principles of responsible AM planning to manage Council's infrastructure to an agreed standard of service.

In this context the specific objectives of this SAMP are to:

- Demonstrate responsible stewardship.
- Translate the Council Strategic Goals into sewer strategies and action plans.
- Determine the services to be provided, the target service standards that Council aims to achieve, and the measures used to monitor the performance of the sewer network.
- Manage risk of asset failure.
- Achieve savings by optimising whole of life costs; and
- Support long term financial planning.

This AM Plan covers a period of 10 years commencing 1 July 2022. This plan has direct links to Council's Strategic Business Plan for Water and Sewer which provides a more detailed strategic and demand analysis. This AM Plan is required to be regularly reviewed to ensure its continued relevance and alignment with demand and strategic alignment.

1.2 The Asset Management Plan Process

The Asset Management Plan was produced by Odysseus-imc Pty Ltd amended and updated by Richmond Valley Council prior to adoption.

An AM Plan translates strategic goals and plans into specific goals and objectives which are relevant to a particular activity for Council.

The AM plan combines management, financial, engineering and technical practices to ensure the level of service required by customers is provided at the most economical cost to the community and the environment.

The AM Planning process commences with defining stakeholders needs and Council's legislative obligations, incorporating into Council's Community Strategic Plan. This is reflected in Council's Asset Management Policy, Asset Management Strategy, Asset Management Plans and Operational Delivery Plans which are linked to the Long-Term Financial Plan and Resourcing Strategies.

The relationship to corporate planning process is detailed below. The legal framework and relationships to other planning, strategic and documents can be found in Section 1.3 and **Appendix B**.



1.3 Relationship with the Corporate Planning Process

AM plans are a key component of Council's planning process, linking with the following plans and documents:

Community Strategic Plan: Council's current Community Strategic Plan is a three-year recovery plan in response to the 2022 national disaster flooding event. This focus on rebuilding Council's flood affected infrastructure to pre-flood condition. This plan guides Council's strategic direction for the 2022-23 financial year.

A new Community Strategic Plan is proposed to be adopted in 2023 which will identify the community's main priorities and aspirations for the future.

Delivery Program and Operational Plan: The Delivery Program (DP) and Operational Plan (OP) systematically translate the CSP goals into actions. These are the principal activities and individual projects to be undertaken by the Council to implement the strategies established by the CSP within the resources available under the Resourcing Strategy.

The Rebuilding the Richmond Valley Recovery Plan has been adopted as Council's Delivery Program for 2022-23 supported by the 2022-23 Operational Plan.

Annual Report: The Annual Report focuses on the implementation of the Delivery Program and Operational Plan. The report includes information that is prescribed by the *Local Government Act 1993* and by the Office of Local Government Policy through Integrated Planning and Reporting Framework (IP&R).

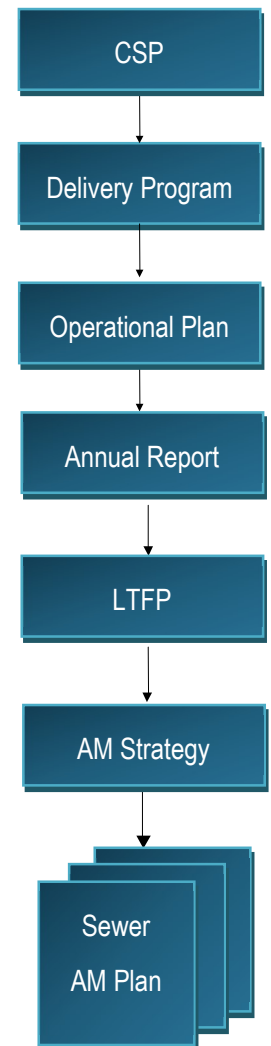
Long-Term Financial Plan: The Long-Term Financial Plan (LTFP) is a 10-year rolling plan that informs decision-making and demonstrates how the objectives of the CSP and commitments of the DP and OP will be resourced and funded. The LTFP captures financial implications of asset management and workforce planning.

AM Strategy: Outlines the processes to manage the long-term sustainability of existing and future infrastructure and continuously improve our asset management practices. Council's objective is to allocate resources to provide services at an agreed quality, cost, and time by using the optimal asset stock needed to deliver corporate objectives whilst controlling the exposure to risk and loss.

The AM strategy is reviewed every 4 years in alignment with IP&R planning cycle ensuing a useful and up-to-date management tool and reference document. The current strategy was adopted by Council in September 2022.

The AM strategy aligns with the corporate direction and provides the management direction over the next 10 years.

Richmond Valley Council Policies: The policies are needed to provide direction for the implementation of AM practices. Policies that apply to the management of sewer assets include the Asset Management Policy, Water and Sewer Management Policy, Risk Management Policy and Discharge of Liquid Trade Waste into the Sewerage System Policy.



1.4 Asset Management Plan Format

This SAMP contains nine sections, each of which are explained in Table 1.1.

Table 1-1: AM Plan Format

SECTION	SUBJECT MATTER
Introduction	Introduction to AM, outlines the purpose, scope and format of the plan, identifies key stakeholders and legislative requirements and describes the relationship with other plans.
Asset Network	Outlines Council's network of assets including quantity and value.
Strategic Environment	Identifies the current working environment, the strategic and corporate goals with a summary of the documents that support the environment.
Levels of Service	Outlines the levels of service required based on the research of customer expectations, statutory requirements, strategic and corporate goals. It also contains tables detailing expected and current performance measures.
Demand Forecast	Details the future growth trends, the impact of these trends on infrastructure and demand management strategies to deal with the projected growth.
Risk Management	Outlines Council's risk management framework including risk events with their severity and consequence.
Lifecycle Management Plan	Gives an overview of the whole of life management concerning each asset type. For each type it details (where applicable) its current performance, operations plan, maintenance plan, renewal/replacement plan, upgrade/enhancement plan, creation/new works plan and disposal plan.
Financial Summary	Details the 10-year financial forecast with its associated assumptions and discussion. It contains an asset valuation for each asset type and their associated confidence levels. It also outlines Council's funding strategy.
Improvement and Monitoring	Deals with methods of monitoring performance by detailing AM processes, systems and data. It outlines a 2-year AM improvement plan. It also details procedures for monitoring and reviewing this AM Plan.

Note: All Asset Management Plans are based on the framework recommended in the Institute of Public Works Engineering Australia's International Infrastructure Management Manual (Australia / New Zealand Edition).



2. Asset Network

2.1 Our Sewer Network

The sewerage network consists of 231 km of pipelines and associated infrastructure. Council's major sewer infrastructure assets consist of 4 sewer treatment plant, a comminutor and 33 pump stations, and 2507 manholes over four separate sewer schemes – Casino, Coraki, Rileys Hill and Evans Head. The townships of Woodburn and Broadwater are serviced by connecting pump stations to the Evans Head Sewerage Treatment Plant. The definitions for each of the asset types across the sewer asset network are:

- **Sewer Connections:** consisting of pipes and fittings from the sewer main to the outlet pipe of the distribution serving the abutting property.
- **Sewer Pipelines:** physical pipelines for transporting sewage to the treatment plant from properties.
- **Sewer Manholes:** maintenance holes providing formal access to the sewer pipe network.
- **Sewer Maintenance Shafts:** often known as junction chambers allow for easing inspecting and cleaning sewerage pipelines.
- **Sewer Pump Stations:** infrastructure used to move (lift) sewage wastewater to a higher elevation to transport via a gravity flow.
- **Sewer Treatment Plants:** location to treat and process raw sewerage. Involves breaking down, decomposition and treatment.
- **Sewer Vent Stacks:** regulates airflow to ensure waste flows through the pipe network.
- **Sewer Valves:** designed to limit raw sewage flow in one direction along the pipelines, and air valves for introducing/controlling air release.
- **Sewer RTU PLC:** RTU is a Remote Terminal Unit, PLC is a Programmable Logic Controller, both being an electrical device used for automated control of a suite of devices such as pumps, valves etc.
- **Sewer Pressure Systems:** Sewer Pressure systems consist of Pods (control panels, pumps, tanks), mains, flushing pits, valves and service connections. Pressure systems are utilised through the LGA where gravity systems are unable to be implemented. These are predominately located within Broadwater, and North Woodburn.

The sewer infrastructure and quantities for Council's network is summarised in Table 2-1 and further details and breakdown of the asset quantities refer to **Appendix C**.



Table 2-1: Summary of Sewer Asset Network

Asset Group	Asset Type	Quantity of Sewer Assets	Length of Assets (km)
Sewer Connections	Pipeline connections	6,376	24.91
Sewer Maintenance Shafts	Maintenance shafts	17	
Sewer Manholes	Manholes	2,507	
Sewer Pipelines	Pipes	3,771	189.71
Sewer Pressure Flushing Pits	Pits	38	
Sewer Pressure Mains	Sewer mains	79	8.03
Sewer Pressure Pod Control Panel	Control panels	222	
Sewer Pressure Pod Pumps	Pumps	228	
Sewer Pressure Pod Tanks	Tanks	213	
Sewer Pressure Service Connection	Pipeline connections	241	8.47
Sewer Pressure Valves	Pressure valves	37	
Sewer Pump Stations	Control panels, pumps, pits, tanks etc.	645	
Sewer RM Valves	Rising main valves	155	
Sewer RM Valve Pits	Valve pits	84	
Sewer Rodding Ends	Rodding ends	11	
Sewer RTU PLC	Dataloggers, PLC	9	
Sewer Treatment Plants	Control panels, pumps, pits, tanks etc.	777	
Sewer Vent Stacks	Vent stacks	88	
	Total	15,498	231.12

2.1.1 Treatment Plants

There are four sewerage systems serving the urban areas of Casino, Evans Head (including Woodburn and Broadwater), Coraki and Rileys Hill. Sewage treatment processes and effluent management practices are as follows:

- Casino sewage treatment plant (STP) includes three trickling filters and an extended aeration tank (EAT). Treated effluent from Casino STP is reused by Blue Dog Agriculture (BDA), primarily for surface irrigation of various crops and the Casino Golf Course for irrigation of greens. The remaining treated effluent is discharged into a tertiary pond and then into a constructed wetland area within the STP site.
- Evans Head STP was augmented in 2007 with a new intermittently decanted extended aeration (IDEA) treatment plant replacing the old trickling filter plant. Treated effluent is discharged from the STP via an open drain to natural wetlands that drains into Salty Lagoon.
- Coraki STP comprises a trickling filter and two tertiary maturation ponds. Treated effluent is reused for irrigation of Coraki Golf Course. Effluent not reused is discharged via a concrete outfall pipe onto adjacent swampland which drains into the Richmond River; and
- Rileys Hill STP is an activated sludge plant incorporating UV disinfection and phosphorus removal. Treated effluent is discharged directly into the Richmond River.

The rural areas rely on on-site sewerage systems.

2.1.2 Pump Stations

The pump stations range from the below ground sewer pump stations and low-pressure pump stations. The smaller pressure pump located at households form a separate asset group compared to the Broadwater pressure system. The components that make up the pump station are identified below.

- Valves, pipes, and fittings of a variety of diameters, materials, and configurations.
- Mechanical devices such as a variety of pump types and sizes.
- Electrical assets such as motors, variable speed drives, control panels and cabinets etc.
- On-site structures to support tanks, pump and wells.
- On-site infrastructure such as roads, car parks, fencing and stormwater drainage.
- Tanks for storage and application of chemicals.
- Safety equipment such as fire extinguishers and eye wash and showers for chemical protection.
- Pits to support and provide access to the underground assets including pipes, flow meters, dosing points.
- Overhead gantry for lifting and moving the heavy equipment around the pump station.
- Ladders and stairs, platforms, and handrails to provide safety to personnel and visitors.
- Switchboards at each pump station.
- Bunding for protection of the sites from spillage and chemical contamination.
- Electrical cabling providing access to and distribution of power, around the pump stations.
- Internal pipework and fittings for transportation of fluids and chemicals.

While quantities of the components vary significantly across the pump stations, the pump station structures (building, onsite infrastructure, gantry, ladders, stairs, platforms, and structures supporting tanks, pumps & wells) outweigh any other component type at the pump stations. This is followed by the mechanical devices e.g., pumps followed by valves, pipes, and fittings. The relative value between the major components at pump stations as of 2022 is:

P. Stn. Components	Electrical	Valves, Pipes & Fittings	Mechanical Devices	Wells
Ratio between Components	1.0	0.2	0.39	1.18

While the above ratios may vary at individual sewer pump stations, as a group the ratio is sound.

2.1.3 Manholes

Richmond Valley has over 2,507 manholes used to access sewer pipelines and connections. In accordance with the asset register and observations within the sewer valuations, 99.5% of the manholes are 1050 mm in diameter making up the 99.37% of the total replacement costs for manholes. The remaining manholes range include 800 mm, 1200 mm and 1500 mm.

For further details and breakdown of the asset quantities refer to **Appendix C**.

2.2 Sewer Functional Hierarchy

The sewer hierarchy is based upon asset type, and attribute details of each asset (condition, material and dimensions) which provides a classification that assists in criticality, inspection frequencies, maintenance regimes and standards for new construction.

The sewer classifications specify each sewerage or ancillary area by use function, reflects the perceived risk associated of each asset type and are used to differentiate service levels and maintenance standards.

Council sewer network with projected design lives is detailed in **Appendix C**.

2.3 Asset Performance

Council monitors and models the condition of sewer assets through inspection information, revaluation processes and maintenance treatments. Condition information is compiled and kept in the Asset Master system. Reporting and extracts of this data contributes to the development of works programs.

Performance monitoring of the sewer assets includes:

- Asset condition;
- Age profile;
- Customer requests; and
- Maintenance inspections.

2.3.1 System Performance

The Water Supply & Sewerage Strategic Plan 2018 identified:

- *The volume of sewage collected per property has decreased by 20% since 2008 potentially due to internal household water saving measures and sewer infiltration/inflow reduction measures.*
- *System capacity limitations and required upgrades to achieve adopted levels of service need to be identified through hydraulic modelling of the sewerage systems.*
- *Council has prepared a Raw Water Management Plan and Improvement Plan.*
- *The Casino STP currently has little difficulty in meeting the effluent load (with the exception of total phosphorus) and concentration limits. The ultimate loading on the Casino STP is not expected to exceed the original design capacity.*
- *Treated effluent from Casino STP is currently reused primarily for surface irrigation of various crops. Historically reuse has been approximately 26% of the effluent but this has increased to 37% in the last 4 years. In dry periods, most of the effluent is reused.*
- *Evans Head STP is currently performing to licence requirements. A Stage 2 augmentation of the Evans Head STP has been delayed due to lower-than-expected growth within the catchment.*
- *The Salty Lagoon monitoring program for pre-post closure of the artificial channel indicates that the closure of the channel has been successful. Continued discharge from Evans Head STP is unlikely to adversely affect the overall health of the system.*
- *Full compliance with licence requirements is generally achieved apart from the concentration of total suspended solids (TSS) in effluent discharged from Coraki STP due to the growth of algae in the effluent ponds.*
- *Recycled water is used for irrigation of the Coraki Golf Course fairways (10% of treated effluent).*
- *Performance of the Rileys Hill sewerage system is considered to be adequate.*
- *Best-practice sewerage pricing has been implemented*

Note: New increased population growth projections will exceed of the Casino treatment plant design capacity.

2.3.2 Condition Assessment

Full network condition assessments are conducted every five years through the statutory revaluation process. As part of the asset revaluations for Water and Sewer infrastructure the network was reviewed in 2022, prior to the natural flood disaster in February. Condition assessments were recorded for all above ground assets with the condition ratings being included within this AM Plan.

The Sewerage Treatment Plants and Pump Stations were visited, and the asset condition recorded and rated on a 5-point scaling system (1 - Excellent condition and gradually progressing down the scale to 5 - extremely poor condition).

The condition ratings were then segregated as per the valuations between civil assets, electrical assets, instrumentation, mechanical assets, and fittings in accordance with the hierarchy.

Council has inspected 112km of sewerage gravity mains over the past six years using CCTV technology. Council has engaged VAPAR for automated technology to identify defects and condition score using the WSA code standard. The program has a remaining 70km of network for video inspections which is anticipated to be completed over the next 4 years.

The sewerage pipeline network condition assessment is currently in progress utilising CCTV and automated technology to condition score and identify defects. It is expected this program will take four years to finalise the inspection of the whole network.

When condition assessments have not been recorded or updated (eg sewer pipelines assets underground and inaccessible including connections, and pressure mains), the remaining life based on observation or age plays an integral part in establishing future works programs and the long-term replacement of existing assets. As sewer infrastructure assets have a combination of observation or age condition assessment, the remaining life based on observation would take precedent over the aged based remaining life where possible.

The spread of years for sewer infrastructure is based on condition based remaining life. The condition framework is detailed in **Appendix D**.

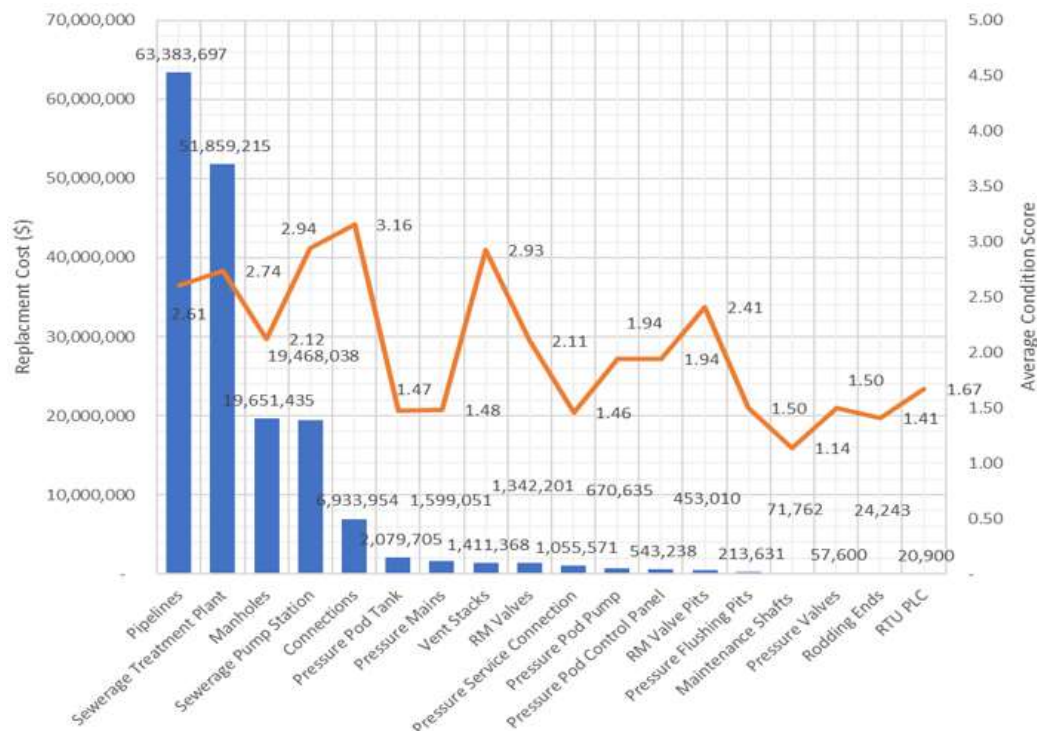


Figure 2-1: 2022 Total Replacement Value and Average Condition Score by Asset Type

Sewer Pump Stations Components

The sewerage pump stations components are individually condition rated which assists in maintenance, renewals, financial reporting, and overall asset management. The pump stations condition scoring, and replacement values are shown in Figure 2-2.



Figure 2-2: Replacement Value and Average Condition Score by Pump Station component

Sewer Treatment Plant

The sewerage treatment plant components are individually condition rated which assists in maintenance, renewals, financial reporting, and overall asset management. The pump stations condition scoring, and replacement values are shown in Figure 2-3.

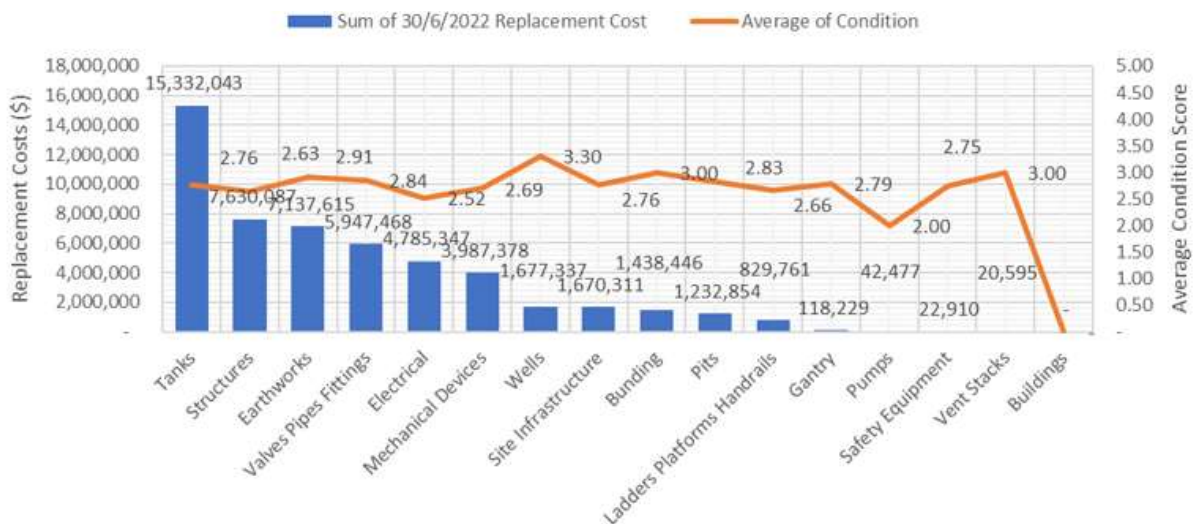


Figure 2-3: Replacement Value and Average Condition Score by Sewerage Treatment Plant component

2.3.3 Customer Requests

Customer requests can be used as a measure of asset performance. Sewer infrastructure related customer requests received over the past five years are included in the table below:

Table 2-2: Sewer Infrastructure Related Customer Requests

Requests/Locations	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	Trend
Blockage - Council Reticulation	75	73	72	116	30	↗
BROADWATER	-	8	1	6	-	
CASINO	61	47	57	92	22	
CORAKI	3	5	5	5	4	
EVANS HEAD	7	6	3	7	2	
WOODBURN	4	7	6	6	2	
Maintenance - Council Reticulation	111	135	124	121	28	↔
BROADWATER	52	89	74	69	19	
CASINO	32	24	21	30	4	
CORAKI	4	1	3	3	1	
EVANS HEAD	5	3	5	8	3	
NORTH WOODBURN	1	-	-	1	1	
RILEYS HILL	1	1	1	-	-	
WOODBURN	16	17	20	10	-	
Maintenance - Pump Station	3	1	3	4	4	↔
BROADWATER	-	-	1	2	1	
CASINO	-	1	1	-	2	
CORAKI	-	-	1	-	-	
EVANS HEAD	-	-	-	1	1	
RILEYS HILL	2	-	-	1	-	
WOODBURN	1	-	-	-	-	
Odour	13	11	6	9	1	↔
BROADWATER	-	-	1	2	-	
CASINO	7	7	4	5	1	
CORAKI	1	1	1	-	-	
EVANS HEAD	5	3	-	-	-	
RILEYS HILL	-	-	-	1	-	
WOODBURN	-	-	-	1	-	
Overflow	28	28	43	46	30	↗
BROADWATER	4	5	7	7	5	
CASINO	22	18	31	28	22	
CORAKI	-	2	2	6	3	
EVANS HEAD	2	2	2	4	-	
WOODBURN	-	1	1	1	-	
Grand Total	230	248	248	296	93	↗

Trend Legend:

↑	Consistent increase in customer requests	↔	No real change in customer request levels
↘	Customer requests trending lower	↗	Customer requests trending higher

Observations

It can be observed from Table 2-2 requests and investigations into root causes that requests have increased specifically within the areas:

- Blockages in the sewer reticulation;
- Blockages caused by flooding (based on hydraulic capacity issues); and
- Sewer overflows.

The maintenance requests are presumed to be a high reactive response to the issues identified above in the sewer reticulation.

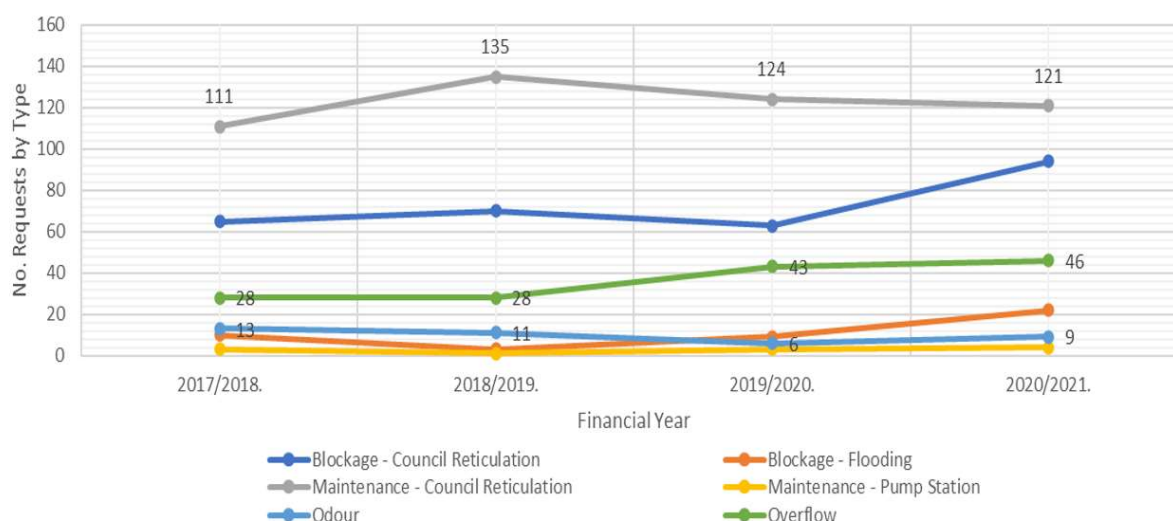


Figure 2-4: CRM Request types by Financial Year



3. Strategic Environment

It is essential that the AM plan and associated practices align with the strategic direction identified by Council.

3.1 Corporate Vision

The following Vision and Mission are the basis of Council's Strategic Direction and reflect the input received from the community as part of the Community Strategic Plan processes.

Council's vision is:

A collaborative community working together to advance a resilient and robust economy which reflects a strong sense of community, successful businesses, and a healthy environment.

Council's mission is:

To protect and improve the quality of life for our community, and for future generations.

Richmond Valley's three-year recovery plan in response to the 2022 floods focuses on rebuilding Council's flood affected infrastructure to pre-flood condition. Council will target funding through natural disaster funding, government grants, and utilising Council's existing insurance. Part of the rebuilding process includes improving resilience and developing systems and processes to assist in supporting the community should future disasters occur. This will include streamlining Council's processes for grants and claims based upon industry best practice, business needs, reviews of the existing impacts and business processes. This Plan will guide Council's strategic direction for the 2022-23 financial year, until the revised Community Strategic Plan 2040 is completed.

Asset Management Principles

The following guiding principles (which are regarded as essential elements for good local government) are to be utilised as part of the everyday decision-making processes, actions, and management of RVC:

- good governance (delivers good performance, minimises risks, ensures transparency and accountability, and promotes efficiency and effectiveness)
- representative democracy and community support. (Council's direction/activities are to broadly reflect its community demographics and to have community support)
- sound policy (a strong and sustainable LGA requires clear direction via a policy and planning framework)
- sufficient resources (a vibrant LGA needs human and financial resources to implement its decisions and to fulfill statutory obligations)
- meaningful planning (planning is a process to translate community needs and aspirations into Council services. To be meaningful Plans must result in actions and outcomes for the community)

- connectedness (a strong local government environment requires a high level of connectivity across all the community)
- strong leadership (effective local government and outcomes can only be achieved via strong community leadership through Councillors and staff)

Values

Council's Community Strategic Plan developed through various community engagement processes, identified a range of "values" that the community sought to retain into the future; these are summarised in the following:

- a quiet, friendly and relaxed lifestyle.
- access to natural attributes (waterways, national parks, natural bushland).
- open space and recreation.
- wanting to contribute to the community.
- economic diversity.
- the expectation of community leadership.

3.2 Strategic and Corporate Goals related to Sewer Infrastructure

During the 2022 Flood Natural Disaster it was estimated \$50 million in damages to sewer infrastructure with most damage occurring within the communities of Broadwater and Rileys Hill. The ageing treatment plant at Casino, and several pump stations and transfer stations suffered damage through water inundation.

One key core objective of 'Rebuilding the Richmond Valley Recovery Plan' is to:

Objective #4 - Restore Essential Infrastructure
Objective #6 – Improve Disaster Resilience of Public Assets

The Objectives of relevance to this AM plan include:

- Provide a defined level of service and monitoring performance;
- Managing the impact of growth through demand management and infrastructure investment;
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet a defined level of service;
- Identifying, assessing and appropriately controlling risks;
- Having a LTFP which identifies required, affordable expenditure and how it will be financed;
- Ensure adequate maintenance and renewal of sewer infrastructure and assets; and
- Advocate for additional sewer funding from all levels of government.

Progress against these objectives will be measured by community satisfaction sewer maintenance and repairs.

3.2.1 Key Projects Aligned with Strategic Goals

Key projects identified in the 'Rebuilding the Richmond Valley 2022-25 Recovery Plan' supporting the strategic goals and strategies include:

- Repair and upgrades for recommission of the Rileys Hill Sewerage Treatment Plant.
- Complete repairs to Broadwater pressure sewer system and Mid-Richmond sewage pump stations.
- Design a new sewage transfer system for South Casino.
- Finalise designs and approvals for Evans Head STP Stage 2.
- Construct Rappville Sewerage Scheme.
- Secure funding for Casino STP upgrade and finalise the concept design.
- Continue the inflow detection program for Casino, Coraki and Evans Head sewerage systems.

3.2.2 Annual Report

Council has a statutory obligation and community interest to present annual reports that communicate performance against targets, outcomes, efficiency and cost effectiveness over time. This includes presenting details on how Council has managed community infrastructure and delivered services to the community. Details of Council's business area and services are provided in Table 3-1.

Table 3-1: Council Plan Priorities and Actions

Business Area	Description of Services Provided
Projects and performance	Specification, tendering and delivery of major capital works projects.
Infrastructure services	Survey, design and specification for capital and renewal projects. Works prioritisation for renewals, disposal, and capital additions. Operations, maintenance of the sewer network and developing the operations budget.
Asset planning	Asset information compilation, database management, mapping, works prioritisation and programming, financial reporting, valuations.
Projects and performance	Specification, tendering and delivery of major capital works projects.

Key initiatives associated with the sewer network include:

- Further develop an integrated approach to asset management that is consistent with National Asset Management frameworks.
- Deliver the Richmond Valley Recovery Plan (Delivery Program).
- Deliver the 2022-2023 Operational Plan.
- Deliver the sewer renewal program; and
- Finalise the Water and Sewer Network Strategy.

A service performance outcome indicator will be the community satisfaction rating out of 100 with how Council has performed on the service delivery for sewer infrastructure.

The 2021-2022 Capital Works Program achieved completion of 68%, however Council achieved 106% accomplishment of capital works including flood repair works of an additional \$896,677 expenditure.

3.2.3 Asset Management Policy 2022

This policy acknowledges that management of the community's several hundred million dollars' worth of infrastructure assets is a core function of the Council and that sound asset management is essential to enable the Council to meet its responsibilities for:

- Delivering high quality services to current and future communities.
- Providing and maintaining community infrastructure.
- Ensuring financial sustainability; and
- Encouraging and supporting the economic and social development of the LGA.

Key objectives of the policy include.

- Provide an appropriate level of service to meet the communities needs and expectations in a financially sustainable manner.
- Undertaking a whole of life approach to asset management, recognising assets must be planned, provided, maintained and renewed so that they continue to meet the service delivery needs of the community within the context of providing best value to the community.
- Ensuring Council has the information knowledge and understanding the long-term risk of managing public infrastructure.
- Ensuring Council meeting statutory requirements of asset management linking to the IP&R planning framework.
- The implementation and maintenance of an Asset Management System which supports all Asset Management Practices. It is a combination of processes, data, and software applied to provide the essential outputs for effective asset management such as reduced risk and optimum infrastructure investment. The Asset Management System links to other information systems within Council such as the Property System, Geographic Information System, Finance System, and Document Management System, integrating Asset Management with all of Council's operations.

3.2.4 Water Supply & Sewerage Strategic Plan³

A key aim of the Strategic Plan is to review, update and consolidate Richmond Valley's strategic planning documentation including:

- 2008 IWCM Strategy.
- 2012 Review of the IWCM Strategy (draft).
- Draft Water Supply and Sewerage Strategic Business Plan (SBP) originally prepared in 2010 and reviewed in 2013.
- Casino Drought Management Plan prepared in 2006 but not yet adopted as well as investigations in 2008 and 2011 into potential emergency supplies; and
- Financial plans prepared in 2008 and reviewed in 2009, 2010, 2011 and 2012.

This Water Supply and Sewerage Strategic Plan considers:

- Water cycle management directions from the NSW government.

³ Source: Water Supply and Sewerage Strategic Plan, March 2018, Hydrosphere Consulting Pg. 1

- The appropriateness of the management issues identified in the IWCM Strategy Plan and any new issues that have arisen since 2008.
- Policies and strategic planning initiatives undertaken by Council; and
- The status of the actions identified and Council's progress towards implementation of the preferred IWCM Scenario.

3.2.5 Integrated Water Cycle Management (IWCM)

The IWCM Plan is a 30-year strategic planning tool for local water utilities enabling RVC to manage its urban water services (water supply, sewerage and stormwater) in a holistic manner within a catchment context. Council completed its IWCM Plan in 2008.

The objectives of the IWCM Plan Strategy are:

- Improve land use management through education and demonstration.
- Coordinated approach to sharing of surface and ground waters.
- Maximise high value (priority to substitution of potable water) reuse.
- Increase the number of alternative water sources.
- Improved security of urban water supply; and
- Provide the highest level of service relative to users' willingness to pay.

The issues addressed by the IWCM Plan Strategy are:

- Sustainable effluent reuse with end user requirements considered.
- Sustainable management of onsite sewage systems.
- High operating and management costs for water and sewerage systems leading to relatively high typical residential bills.
- Non-conformances at Coraki and Riley's Hill sewage treatment plants.
- Climate change altering the rainfall and temperature patterns of the study area; and
- Acid Sulphate soils in the Richmond Valley urban areas potentially impact on sewer infrastructure.

The IWCM Plan has set the future direction for Council waste water services by addressing several priority issues identified by Council staff, government agencies and the local community. Council will need to continuously develop, implement and review the components of the IWCM Plan to ensure it is successful.



3.3 Key Stakeholders

This plan recognises the following key stakeholders as outlined in Table 3-2.

Table 3-2: Stakeholders

External	Internal
The RVC community, including residents, sewer users and ratepayers	Councillors
Government agencies	Executives
Developers	Managers
Contractors/suppliers	Personnel
Utility providers	Field workers
Insurers	Assets Department
Special Interest groups	Finance Department
Tourists and visitors	Operations Department
Emergency services	Customer Service

This plan will demonstrate to the various stakeholders that Council is managing its sewer assets responsibly. The above list does not exclude the role and interest of other stakeholders.



4. Levels of Service

Levels of service (LoS) provide the basis for the lifecycle management strategies and works programme identified within this AM plan. They support Richmond Valley's strategic goals and are based on customer expectations and statutory requirements.

The levels of service will be refined over a period to align with the expectation of customers, which requires a clear understanding of customer needs, expectations, preferences, and their willingness to pay for any increase in the levels of service.

One of the objectives of this AM plan is to align the LoS provided by the asset with the expectations of customers. This requires a clear understanding of customers' needs and preferences. The levels of service defined in this section are used:

- To inform customers of the characteristics of, and level of service to be offered;
- As a focus for the AM strategy developed to deliver the required LoS;
- As a measure of the effectiveness of this AM plan;
- To identify the costs and benefits of the services offered;
- To enable customers to assess suitability, affordability and equity of the services offered.

The adopted LoS for sewer assets are based on staff knowledge and:

- **Customer Research and Expectations:** Information gathered from customers on expected quality and cost of services.
- **Strategic and Corporate Goals:** Provides guidelines for the scope of current and future services offered, the manner of service delivery and define specific LOS which Council wishes to achieve. (Refer to Section 3 - Strategic Environment).
- **Statutory Requirements:** Environmental standards, Regulations, Acts and Council Policies that impact on the way assets are managed (e.g., sewer regulations, sewer safety legislation). These requirements set the minimum LoS that must be provided.

Council is required to submit annual regulatory service level reports to NSW Department of Planning and Environment under an assurance framework which is benchmarked against state-wide authorities.

Council has identified minimum standard performance targets, service levels for response time and priority allocations.

Setting key performance indicators allows Council to monitor progress and measure performance with future recommendations to implement community and technical based service levels in line with customers' expectations part of service delivery.

4.1 Customer Research and Expectations

Understanding customer expectations is a key input into LoS and prioritising works across multiple asset types. This understanding will be balanced against legislative requirements, ability of obtaining funding through grant processes as well as the customers' ability/willingness to pay.

4.1.1 Customer Research

Customer research is carried out through several formal and informal processes within Council. Many opportunities exist for the community to provide valuable feedback on current asset LoS. Either by face-to-face contact or by telephone, letters, or e-mail etc.

In 2021 Council engaged Micromex to conduct the RVC Community Research. The random survey of 403 residents in surveyed revealed their attitudes and perceptions towards current and future services and facilities provided by council. Customer survey results are represented in Table 4-1

Table 4-1: Community Survey Results

PERFORMANCE MEASURES	Customer Survey Results	Customer Survey Results	Customer Survey Results
	2013	2016	2021
Overall satisfaction with performance	82%	94%	86%
Financial management	3.08	3.41	3.28
Long term town planning	3.12	3.26	3.24
Community consultation	3.10	3.17	3.31

Satisfaction Legend:

1.99 or lower	Very Low	2.00-2.49	Low
2.50-2.99	Moderately Low	3.00-3.59	Moderate
3.60-3.89	Moderately High	3.90-4.19	High
4.20-4.49	Very High	4.50 +	Extreme

Key objectives of the research included:

- To assess and establish the community's priorities and satisfaction in relation to Council activities, services and facilities.
- To identify the community's overall level of satisfaction with Council's performance.
- To identify the community's level of satisfaction with regards to communication and engagement with Council.
- Understand the level of support for proposed signature projects.

At an overall level, residents expressed a 'moderate' level of satisfaction with the performance of Council, with 86% of the respondents giving a rating of 'somewhat satisfied' to 'very satisfied'. Only 14% of residents indicated that they were 'not very satisfied' or 'not at all satisfied' with Council's performance. The Micromex Customer Survey report provides some comparisons against the regional benchmark which has been developed across 39 Regional Council's throughout NSW. Compared to an 'All of NSW' measure for Metropolitan and Regional Council's, RVC performance is in line with Regional Benchmarks.

The Micromex Customer Survey report provides some comparisons against the regional benchmark which has been developed across 39 Regional Councils throughout NSW. Unfortunately, however there are no specific questions on the satisfaction with the wastewater management. A recommendation regarding satisfaction of wastewater services has been added to the improvement program of this plan.

Regarding level of investment, there is little regard for cost cutting based on the following results:

- More investment: 49%
- Same investment: 47%
- Less investment 4%

There were no major issues related to sewer infrastructure that were identified by the community.

4.1.2 Customer Expectations

The specific community LoS expectations are captured in the CSP and further demonstrated in Council's Recovery Plan. The typical customer expectation considered in determining the LoS are explored within Table 4-2.

Table 4-2: Typical community expectations for sewer

Community LOS	Community Expectation
Safety	Sewerage network is maintained and managed to prevent a public health risk and protects the natural environment.
Quality	Odour is minimised and Council ensures safe disposal of wastewater.
Quantity	Planning is being undertaken to ensure quantity and reliability of sewer supply is available both short and long term.
Reliability	Reliability standards are delivered including minimal loss of supply or reduced restrictions. Sewer spills and blockages are managed efficiently should they occur.
Service Cost	Lifecycle costs are managed to deliver services within budget constraints.
Legislative Compliance	Compliance with all relevant applicable legislation and EPA licence conditions for sewerage treatment plants.

4.2 State-wide Indicators

NSW Department of Planning and Environment uses a regulatory and assurance framework to performance monitor local sewer utilities within regional NSW under the National Water and Sewerage Initiative. Performance reports are provided on the basis of social, environmental and economic performance indicators. The regulatory and assurance framework applies from 1 July 2022 to ensure safe, secure, efficient, sustainable and affordable services in regional NSW.

Table 4-3: Level of Service – State-Wide Complaints

Customer Responsiveness Indicators (per 1000 properties)	Performance Indicator	2017-18	2018-19	2019-20	2020 -21	2021-22
Sewer Service Complaints	No. of complaints per 1000 properties	1	1.16	0.49	0.49	n/a
Odour Complaints	No. of complaints per 1000 properties	1	0	0	0	n/a

Table 4-4: Environmental State-wide Indicators⁴

Performance Indicator	2017-18	2018-19	2019-20	2020-21	Trend	Council State-wide ranking
Total Mains Length (km)	197	197	197	196	↔	27
No. of Sewer Treatment Works	4	4	4	4	↔	23
Sewer Overflows (per 100 km)	1.02	0	0	1.02	↔	n/a
Breaks and Chokes (per 100 Km)	8.63	-	5.58	3.58	↘	74
Chokes and Breaks (No. Retic + Rising Main)	17	-	11	7	↘	68
Rehabilitation of mains (% of total length)	0	3	2	0	↔	8
Rehabilitation of service connections (%)	1	1	1	1	↔	8
No. of Pump Stations	31	31	31	31	↔	24
No. of Pump Stations per 100 km	15.74	15.74	15.74	15.86	↔	41
No. of non-residential assessments	639	640	633	629	↑	33
No. of residential assessments	6357	6381	6413	6419	↑	31
Total no. of assessments	6996	7021	7046	7048	↑	31

Note: Some of the state-wide indicators are not included as there is no annual reporting.

Trend Legend:

↑	Consistent improvement	↔	No real change in community satisfaction levels
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↘	Initial upward trend then trending lower	↗	Initial downward trend then trending higher
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The data for the 21/22 year has been submitted, post processing has not yet been completed.

Council currently has a target LoS of 30 dry weather sewer overflows per 100km. As per Table 4-4, Council is performing well with a reported 1.02 sewer overflow per 100km of main in the previous reporting period. The number of breaks and chokes reported have also reduced, which may be a result of targeted cleaning and maintenance programs.

⁴ Source: NSW Department of Planning and Environment, <<https://www.industry.nsw.gov.au/water/water-utilities/lwu-performance-monitoring-data>>

4.3 Minimum Standard Performance Targets

The Strategic Business Plan (2010) identified the minimum standard performance targets which have been adopted as a baseline indicator for service levels.

Table 4-5: Sewer Supply Minimum Operational Performance Indicators

Performance Indicator	Target LoS
System Performance	
Availability of service within residential areas	All urban residential and industrial areas are serviced where practical.
Frequency of system failure	
Dry weather overflows (per 100km p.a.)	30
Customer Complaints	
Service complaint (per 1000 properties)	9 p/a
Odour complaint (per 1000 properties)	5 p/a
Treatment Plant (events per year per plant)	3
Other (events per year per scheme)	10
Effluent Discharge Compliance	
Compliance with EPA licence conditions	100%



4.4 Response Times Standards and Priorities

Council has identified response times by prioritised event as follows. The response time is identified as the time to have staff onsite or to investigate a problem or answer an enquiry.

Table 4-6: Response Times by Priority

Response Time (time to have staff onsite or to investigate a problem or answer an enquiry)		
<i>Priority, Issues and Effects</i>	<i>Customer given informed feedback</i>	<i>Repairs to commence</i>
Priority 1: A complete failure to contain sewerage within the Sewer System or any problem affecting many users resulting in one or more of the following occurring.		
Possible Issue: Blockage overflowing sewer system, manhole overflowing, broken gravity/rising main, pump station failure, missing manhole lid Typical Effects: Personal injury or significant risk to health, Surcharge inside/outside a building, Property damage - subsidence of critical asset, roadway, buildings, railway etc, Environmental impact - Trade waste spill, subsidence causing danger	Within 1 hour	Within 1 hour
Priority 2: Minor failure within the Sewer System or any problem affecting users resulting in one or more of the following effects occurring.		
Possible Issue: Cracked sewer pipe, Odour Complaint, Partial sewer blockage, Noisy manhole, Noisy Pump Station. Typical Effects: Slow moving toilet flush	Within 1 working day	Within 3 days
Priority 3: Non urgent fault but significant in the belief of the customer.		
Possible Issue: Minor subsidence, Restoration, Locations Typical Effects: No impact on the environment, Seepage investigation	Within 3 working days	Programmed Maintenance List

4.5 Performance Management

Council will require to improve system, process and technology for ease of measuring and monitoring performance and LoS deliverables. This includes improved links to Council's customer request system which is operating as the maintenance system and/or upgrading systems for recording regular maintenance activities. Improved KPI and dashboard reporting will aid monitoring performance decision making in managing Council's sewer infrastructure.

5. Demand

Council's fundamental role is to provide services to the community and its assets are a means to support this. Consequently, future demand for sewer and associated urban sewer assets are tied to the demand for Council's services and this is a more complex consideration than population growth. Issues such as changing demands for services, changing mixes in the balance between public and private service provisions including changing community expectations of service levels.

Population is expected to increase modestly over the next 25 years, therefore not influencing demand for new assets as much as other drivers. A general issue with infrastructure delivery is the increasing costs of doing business. Rising costs are a factor of increased resourcing costs (labour and materials).

In the 2021/22 sewerage valuation, it was noted material costs associated with infrastructure had increased between 15% and 19% with an overall cost for materials, plant and labour of approximately 10%. Due to the destabilisation of the world markets, and the threat of a global recession, increased energy costs are sure to continue, leading to increased construction and operating costs of Council's assets.

5.1 Demand Drivers

Demographic factors that may influence the need for new or improved sewer infrastructure include things such as population, changes to regulations, changes in demographics, seasonal factors, consumer expectations, technology changes, economic factors, agriculture practices, environmental factors, and future development.

Specific government projects that will impact on Council's sewer network infrastructure in the future include activities such as the Regional Jobs Precincts, Growth Management Strategy and Northern Rivers Rail Trail project implementations. The draft Growth Management Study identified that the floods of 2022 changed the dynamics of the Northern Rivers with Casino emerging as a strategic centre into the future.

5.2 Demand Forecast

In May 2022 the NSW Government provided an update to population projection including the COVID-19 pandemic, which resulted in changes to migration patterns in regional NSW. The revised projections model a steady increase with an average population growth of 0.7% per annum. This increase requires planning and consideration for increase housing supply and essential public infrastructure including Council's sewer network.

Table 5-1 identifies the projected population changes based upon DPE Population Projects and GYDE Consulting. The areas identified are referenced in the population statistical areas shown in Figure 5-1.

The Regional Job Precinct (RJP) is the NSW Government initiative identifying Casino for a special activation precinct by fast tracking planning to drive growth, investment and development opportunities. The target is to unlock new industrial lands and create jobs within the region. The RJP areas in alignment with the draft Growth Management Strategy are shown in Figure 5-2.



Figure 5-1: Population Statistical Areas

Table 5-1: Population Change 2021– 2031⁵

Area	Population 2021	Population 2031	Population 2041	% Change
Casino (SA2)	12,595	14,400	16,700	1.42%
Evans Head (SA2)	5,560	5,750	5,900	0.3%
Casino Surrounds (SA2)	5,395	5,250	5,050	-0.33%
TOTAL	23,550	25,400	27,650	0.81%

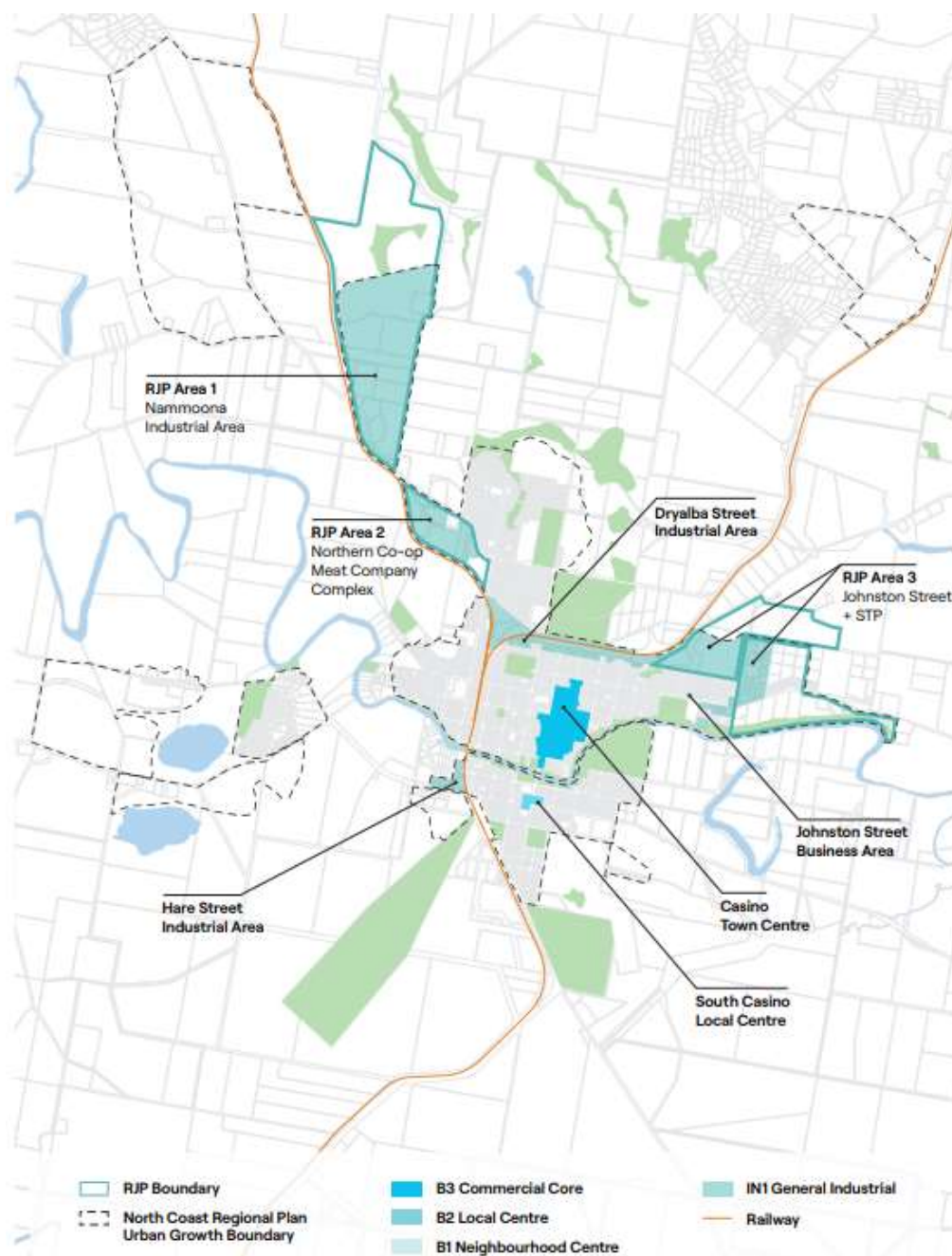


Figure 5-2: Regional Jobs Precinct and Draft Growth Strategy Areas.

⁵ Source: Draft Growth Management Strategy, GYDE Consulting, November 2022.

The draft Casino Place Plan provides planning towards supporting growth for population, employment, and housing. It is recognised that an estimated \$14.64 million is required in new sewer infrastructure to service the residential investigation areas identified from the Growth Strategy.

The development areas at the time of this plan are identified in Table 5-2. The areas in conjunction with the status of the development areas are identified in Table 5-3. Using this information, the impacts on existing and new infrastructure can be identified and discussed further in 5.3-Demand Impact on Assets.

Table 5-2: Recent Developments

Development Area	Year Start	Year Finish	Dwellings / Lots	Status type
Eucalypt Drive, Swan Bay	2014	2018	14 lots	Constructed.
Casuarina Drive, Swan Bay	2014	2018	8 lots	Constructed.
Moonem View Drive, Swan Bay	2014	2018	4 lots	Constructed.
Grevillea Place, Swan Bay	2015	2018	5 lots	Constructed.
Currajong Street, Evans Head	2011	2018	20 lots	Constructed.
Verulam View, North Casino	2018	2020	18 lots	Constructed.
Kimberley Place, Casino	2021	2021	4 lots	Constructed.
Canning Drive, Casino	2022	2022	28 lots	Constructed.
George Street, Broadwater (stage 1)	2019	2022	27 lots	Constructed.
Industrial Land, Reynolds Road, Casino	2022	2022	13 lots	Approved / under construction.

Development that will result in the need for new or upgraded infrastructure are listed in Table 5-3:

Table 5-3: Status of Existing Developments

Development Area	Year Start	Dwellings / Lots	Status type
Iron Gates, Evans Head		178 lots	Refused, decision pending appeal.
Currajong Street, Evans Head	2017	199 lots	Approved / under construction.
George Street, Broadwater	2019	42 lots	Stage 1 Constructed, Stage 2 Approved / under construction.
Rail Freight Terminal, Reynolds Road, Casino	2021		Approved.
Stapleton Avenue, Casino	2021	1 lot / 8 Units	Approved / under Construction.
Lennox Street, Casino		46 Lots	Rezoned, approved

Table 5-4: Future Potential Development

Development Area	Dwellings / Lots	Status type
Gregors Road, Spring Grove	19 lots	Rezoned.
Hills Road, Rileys Hill	35 lots	Future potential.
Casino industrial estate extension		Future potential.
Hotham Street / Light Street, Casino		Future potential.
Forest Grove, Fairy Hill		Future potential.
Nordenfeldt Street, Broadwater	65 lots	Future potential.
Barling Street, Casino		Future potential.
Airport Land, Evans Head	50 lots	Future potential / strategic redevelopment area.
Manifold Road Casino, (rural residential)	20 lots	Scoping phase of rezoning.
Fairy Hill	1644 lots	Scoping phase of rezoning.

5.3 Demand Impact on Assets

Demand will be placed on existing sewer infrastructure to cope with the increasing sewerage from developments. This impact will be arising from both increase in flows within existing network pipes, capacity at the treatment plants and demand on pump stations downstream of development. The consequence of which is capacity and projected deterioration of existing infrastructure to cope with the increased loads. Based on growth the network may require:

- Additional sewer mains as the network grows in the outer fringes.
- New infrastructure at the treatment plant as the plant is upgraded.
- Additional rising mains, trunk mains and pump stations to service development.

Council is undertaking a Water and Sewer Strategy to assist in the planning of sewer upgrades relevant to changing land use conditions, such as industrial complexes and subdivision developments. In addition to sewer mains, the four sewer treatment plants will require upgrading in the long term.

5.4 Flood Management

Flooding in Casino and the downstream river towns is a regular occurrence due to the confluence of three major river inflows: the Richmond River, Wilsons River and Bungawalbin Creek. Approximately 35% of the LGA is vulnerable to flooding, with events in the lower river towns having reoccurrence intervals of five to ten years.

The floodplain risk management plans identify immediate and longer-term mitigation measures, including:

- Flood warning and emergency planning.
- Raising community awareness.
- Development control planning.
- Voluntary house raising/purchase; and
- Infrastructure measures including levees, creek protection and drainage measures.

Richmond Valley was devastated by unprecedented flood levels in February 2022 resulting in damages to homes, businesses, and major infrastructure damage. Council is needed to make significant repairs to the sewer supply within the Casino and the Mid-Richmond villages.

Council is undertaking remedial works to raise the switchboards and control panels for the sewer pump stations above the recognised flood water levels.

5.5 Climate Change

The impacts of climate change on the region have been analysed by the NSW Government in conjunction with the CSIRO. The projected climate change events are shown in Table 5-5.

Table 5-5: Impacts of Climate Change

Climate Change
Annual precipitation decreases likely (changes +10% in rainfall intensity) by 2070
Extreme heavy rainfall events may become more intense
Drier soil likely, even if precipitation increases
Sea level rise of 900mm by 2100

Climate change is already having major affects in Australia including droughts and extensive flooding causing more severe droughts and floods which is affecting water access for people around the world. In fact, Richmond Valley experienced three flood events in the 2021/22 year and is still repairing the damage from the first flood.

Climate change impacts lead to:

- Increasing global temperatures.
- More frequent, heavy and intense rains in the coming years.
- Excessive runoff resulting in fertilisers and contaminants polluting water supplies limiting water access for human consumption.
- People and animals can become sick or die from the toxins. The toxins may survive treatment process making drinking water unfit for consumption. This can result in industries being closed during blooms.
- As the oceans warm, coastal areas will be subject to flooding from glaciers melting.
- Desalination occurs naturally when the water warms leaching salt out of the water and contaminate aquifers.

The net effect on infrastructure is:

- Greater wear and tear on the assets from contamination, pollutants and salt intrusion.
- Infrastructure being stressed during operations following the events.
- Reduced asset life, increased operating costs e.g., chemicals, energy costs
- Increased maintenance of assets e.g. flushing of mains, corrosion protection, extra pump servicing.

5.6 Casino STP Flow Analysis

The Casino STP has two treatment streams. The first includes a trickling filter process, followed by an intermittently decanted extended aeration (IDEA) system, alternatively flow can be sent directly to the IDEA tank

without treatment in the trickling filter process. The facility was originally constructed in 1933, with modifications made in the 1950's and again in the 1990's.

The primary sedimentation and trickling filter system has remained essentially unchanged with the exception that one additional Primary Sedimentation Tank (PST), tricking filter and humus tank were added as a part of an intermediate facility expansion in the 1950's. The IDEA treatment stream was added as a part of the 1990's expansion along with storm ponds, sludge lagoons and additional sludge drying beds. The facility treats residential and commercial flow with some contributions from industrial food processing facilities.

5.6.1 Casino STP Modelling

STP flow enters the facility via two sewage pump stations (SPS), numbers SPS601 and SPS607. Flow is directed into a balance tank prior to flow measurement and then split between treatment tanks.

The following has been observed regarding the daily flow data:

- Base flows at the facility have stayed constant over the 5-year historic period evaluated, indicating there has been little growth in the area over the past few years.
- Minor seasonal variations seem to occur every year in the Autumn typically around March through May. This is consistent with increased precipitation during these times.
- Casino STP's average dry weather flow rate of 2.7 ML/d (211 L/d/EP) is less than the typical flow rates per EP values of 260 L/d/EP as estimated by Hunter Water Australia (HWA).
- STP process capacity modelling developed by GHD summarises flow projections for both evaluations as a basis for future augmentation strategies.

Future flows and populations have been determined based on projected population growth and historical flow data. Table 5-6 summarises future flows expected at Casino STP for current conditions through to 2042 future flow conditions. A wet weather peaking factor of 11.6 and peak dry weather peaking factor of 2.7 were determined from historical data and used for these evaluations.

Table 5-6: Future estimated flows, based on 1.0% growth rate and 260 L/EP/d⁶

Year	Adopted (HWA, 2013, growth rate 1.0% / year)	ADWF (Flow per capita = 260 L/EP/d)	PDWF (2.7 x ADWF)	PWWF (11.6 x ADWF)	PWWF (11.6 x ADWF)
	kL/d	kL/d	kL/d	kL/d	L/s
2014	10,411	2,700	7,400	31,400	363
2022	11,500	3,000	8,200	34,900	404
2032	12,703	3,300	9,000	38,400	444
2037	13,351	3,500	9,600	40,700	471
2042	14,032	3,600	9,900	41,900	485

⁶ Source: Odysseus-imc predictor modelling on 1% growth.

5.7 Treatment Plant Improvements

Specific projects that will impact on Council's Sewer infrastructure⁷ in the future include:

- Completion of the SCADA system implementation.
- Secure funding and complete flood damage repairs to sewer assets.
- Complete Richmond Valley Water and Sewer Management Strategy with community feedback.

5.7.1 Casino STP

- The treatment plants have assets at varying stages of their life, including condition based and hydraulic based, with further development limited if upgrades are not planned in the short term.
- With regard to average dry weather flow, the humus tanks and the anaerobic digesters, sludge lagoons, and drying beds are all slightly overloaded.
- The humus tanks do not receive equal flow, resulting in the eastern humus tank being significantly overloaded. Humus tank effluent samples confirm this condition as it appears as though solids are being washed out of the tank. At peak flows, both humus tanks are over capacity.
- Existing digesters appear to be overloaded at current conditions, the condition could be mitigated by decanting supernatant from the digesters, however further investigation of the active volumes is needed.
- The sludge lagoons may not be currently meeting the current design criteria of six months of retention time.
- The provision of wet weather flow buffering (via storm ponds) is necessary for plant performance at peak flows.
- The IDEA tank can currently lose nitrification and is likely not performing optimally due to low influent average loads and high influent peak flows.
 - Stable final effluent performance (at the licence measuring point) is primarily due to polishing treatment (lagoon and wetland), and both these processes perform to expectations. Council plans to address these issues next year with wetlands showing signs of stress while the lagoons will have a sludge blanket.
 - Additional sludge drying bed area is required to properly dry current sludge produced at the STP. It is possible that the existing drying arrangements are not providing sufficient dewatering, resulting in higher disposal costs.
 - A septage receiving facility will improve performance of the sludge lagoons by providing treatment (such as screening or even treatment through the main processes) to septage arriving at the facility. This will also reduce odours from the sludge lagoons due to untreated septage.

⁷ Source: Richmond Valley Council Draft Operational Plan 2022-23

The following recommendations are made regarding the Casino STP process capacity:

- Undertake detailed investigation of all solids processes to ascertain existing performance and determine required expansion. Investigation should include a more detailed look at actual supernatant return rates (if any) and sludge pumping rates and schedules from PSTs, humus tank and IDEA tank.
- Storm ponds should have capacity to significantly mitigate peak wet weather flow events, operation options should be evaluated to better use these facilities and determine if targeted peak flow mitigation to the treatment streams is being achieved. Additional storm pond volume should be provided in the future to allow for at least one full day's diversion at future flows.
- Additional investigation is required to determine if tertiary lagoon can be taken offline (as a potential option for increasing storage volumes), assuming improvements to upstream processes, to potentially increase the capacity of either the storm water bypass system or the sludge lagoon stabilisation process. It is suggested that this review be undertaken in conjunction with any planning regarding wet weather storage bypass arrangement.
- All trickling filters should be taken offline for maintenance and mechanical components and bed details investigated to determine if performance can be improved. Depending on the results of the inspection, bed media may benefit from replacement for improved performance.
- An additional humus tank is recommended to reduce loading contributed from the east and middle trickling filters.
- Alternative operating configurations for IDEA tank should be investigated and evaluated. If treatment in the trickling filters and humus tank system can be improved (possibly by treating higher raw sewage flows through the IDEA up to 2 ML/d) then effluent can be directed straight to the tertiary lagoon, allowing for only raw sewage to be treated by the IDEA tank. Augmentation of the process to include a dedicated phosphorus removal process (through chemical precipitation with alum or equivalent) to allow the process to meet the future EPA licence load limits.
- Additional sludge storage and/or stabilisation capacity (lagoons and digesters) is required. A complete review of consolidated sludge storage and stabilisation practices (including septage management) is required, and options for increasing capacity should be investigated.
- Additional sludge drying or dewatering capacity is required to meet current and future loads. Augmentation of the drying/dewatering facilities should be incorporated into future strategic planning.

5.7.2 Evans Head STP

Council constructed a new STP facility in 2007 to service Evans Head and Woodburn. Stage 1 provided capacity for 5,500 equivalent persons (e.p.). Previous modelling scenarios expected this threshold to be reached in 2015 necessitating Stage 2 development with expanded capacity for 11,000 e.p. However actual populations have been lower than expectations, postponing the need for augmentation works in previous planning documents. Stage 2 is currently in concept design phase.

Reclaimed water from the STP is presently released via a circuitous route into the Salty Lagoon coastal lake within the Broadwater National Park. Upgrading the Evans Head STP has achieved a scale improvement in the quality of water released, with significant reductions in gross nutrients of nitrogen and phosphorous. This combined with the trial closure of the artificial channel is restoring ecosystem vitality. The closing of the channel at Salty Lagoon has significantly improved the hydrological regime within, including stabilising water levels and salinity regimes and removing environmental triggers for large scale fish kills.

5.7.3 Coraki STP

The Coraki system was upgraded to satisfy current and future licensing agreements. Upgrades included works to SPS1, SPS2 and a rising mains extension in 2010. A duckweed system was installed in 2009 to control algal growth, which has resulted in previous breaches. Duckweed growth has been slow due to the presence of carp affecting water quality in the pond (their removal is being investigated).

The following major conclusions regarding plant performance:

- The PST is performing within the expected ranges.
- The trickling filter is performing only slightly below the expected levels for BOD removal and the filter is achieving good nitrification rates.
- The humus tank solids capture rate is less than expected, however the effluent quality is within the expected ranges for a secondary sedimentation tank.
- The two tertiary ponds (in series) are achieving the required disinfection standards, as well as providing good nutrient reduction.
- The plant meets the EPA licence limits for BOD and faecal coliforms. TSS limits are frequently exceeded in the warmer months, most likely due to algae blooms in the ponds. Nutrient discharge concentrations and loads are not currently licenced.
- Pump station upgrades to include variable speed drive, which improved the PST, trickling filter and humus tank performance, by minimising the peak flows to the plant during dry weather.

The following recommendations are made regarding the Coraki STP process capacity and performance:

- The implementation of the new PS with variable speed drives improved the performance of the trickling filter and humus tanks, by limiting the dry weather flow to 11 L/s. It is important to ensure that the variable speed drives are correctly operated, to minimise pumping at rates greater than 11 L/s.
- Address all condition assessment items within either the long-term upgrade strategy, or within scheduled maintenance activities. Any items allocated a remaining life of less than five years should be incorporated into maintenance schedules.
- Undertake detailed investigation of the existing lagoons, tertiary treatment (disinfection), algae mitigation and effluent storage, compared to existing pond arrangement.
- Modification of the storage will need to be addressed due to the algae issues resulting in licence breaches. It is suggested that this review be undertaken in conjunction with any planning regarding wet weather storage bypass arrangements (if required).
- A review of the digested sludge handling should be undertaken, to determine what improvements could be made to the digestion process. A review of sludge operating levels within the digester may indicate that the full digester volume is not in use, which would impact on volatile destruction by effectively decreasing solids retention time in the system. Furthermore, a review of primary sludge transfer volumes (measured) would also be beneficial in improving the digester performance.

5.7.4 Rileys Hill STP

Rileys Hill STP is an activated sludge plant incorporating UV disinfection and phosphorus removal.

Treated effluent is discharged directly into the Richmond River.

No recommendations are made regarding the Rileys Hill STP process capacity and performance.

5.8 Load Management and Infiltration/Inflow⁸

Wet weather and dry weather groundwater infiltration is known to be significant in the Casino, Evans Head and Coraki sewerage catchments. Dry weather groundwater infiltration in the Evans Head catchment was estimated to be 37% of the average wet weather flow (GeoLINK, 2009). Instantaneous peak wet weather flow to the Casino Sewer Treatment Plant (STP) and the Evans Head STP is likely to be in the order of 10 to 12 x ADWF (GHD, 2008).

Wet weather flows in Coraki are limited by the pumping capacity and as such, recorded wet weather flows are limited to 7 x ADWF, although significant infiltration is known to occur.

As part of its renewal program, Council has implemented a sewer main relining program with proposed **\$0.8 million** budget expenditure **every two years**. This program was developed from CCTV inspections and prioritisation of works. An additional \$75,000 p.a. has been allocated over 30 years for mains, junctions, and manhole repairs.



⁸ Water Supply and Sewerage Strategic Plan, 2018 Pg. 28

6. Risk Management

This section outlines how Council's Risk Management System will be applied when managing Council's assets. Council is committed to effectively managing risk within the organisation and the wider community and our Risk Management Policy is based on the expectation that all Council employees, contractors and others in the workplace will take responsibility for risk management.

Council's Risk Management Framework (RMF) has been developed in accordance with Australian Standard ISO31000: 2018 and forms the basis for decision making on Council's strategic planning, resource allocation and operations. The Framework has been designed to implement Council's Risk Management Policy and is supported by Risk Registers and Risk Management Procedures.

6.1 Key Risks and Risk Appetite

Council has identified infrastructure as one of the 10 Key Risk Areas that have potential impacts on our organisation. Ensuring that RVC has the right asset base for our community and that assets are well managed and maintained is a top priority. Council uses four levels to describe its organisational risk appetite:

1. **Minimal** – Low tolerance for risk. Always prefer options that eliminate risk or have a low level of residual risk. Safety/security is the key consideration.
2. **Cautious** – Prefer safer options, smaller scale commitments and lower levels of residual risk. Will accept lower returns for greater security.
3. **Open** – Willing to consider a wide range of options if there is a demonstrated benefit for the risk involved.
4. **Adventurous** – Willing to consider all options and try new things. A preference for innovation and entrepreneurship.



Richmond Valley Council acknowledges its responsibility under the *Local Government Act 1993* to act as a faithful steward of community assets and infrastructure. Although Council is open to exploring new technologies, construction techniques and designs, it will also be diligent in ensuring that infrastructure is safe, fit for purpose, sustainable and affordable for our community.

6.2 Risk Management Methodology

Understanding which assets are critical and how they might fail helps focus lifecycle management strategies on what is most important. Critical sewer and sewer inventory assets are those that have major consequences or impacts if they fail and a high probability or likelihood of failing.

Asset consumptions provide an insight into the likelihood or probability of assets failing. To determine which assets are critical to the consequence of failure must be assessed and included in the analysis.

To determine risk of exposure of assets, the following simple calculation is applied:

$$\text{Risk Exposure} = \text{Probability of Failure (PoF)} \times \text{Consequence of Failure (CoF)}.$$

The basis of determining relative priority for each asset is the calculation of Business Risk Exposure (BRE) rating index. The BRE is a probability-consequence risk matrix determination using Council's Risk Matrix as shown in Table 6-1.

Table 6-1: Risk Matrix

Probability of Failure		Consequence of failure				
	Likelihood	C5 Major	C4 Serious	C3 Moderate	C2 Minor	C1 Minimal
	P5 Very Likely	Extreme 25	Extreme 20	High 15	High 10	Medium 5
	P4 Likely	Extreme 20	Extreme 16	High 12	Medium 9	Low 4
	P3 Possible	High 15	High 12	Medium 9	Medium 6	Low 3
	P2 Unlikely	High 10	Medium 8	Medium 6	Low 4	Low 2
	P1 Very unlikely	Medium 5	Low 4	Low 3	Low 2	Low 1

6.2.1 Probability of Failure

Probability of failure is derived using asset consumption and likelihood scale as outlined in Table 6-2. Assets that are reaching the end of the estimated life (high consumption) have a higher probability of failure compared to assets at the start of the estimated life (eg low consumption) have a low probability of failure.

Table 6-2: Probability of failure

% Life Consumed	Level	Probability / Likelihood	Descriptor	Probability of occurrence
0-20%	P1	Very unlikely	May occur in rare circumstances	More than 20 years
21-40%	P2	Unlikely	Could occur at some time	Within 10-20 years
41-60%	P3	Possible	Might occur at some time	Within 3-5 years
61-80%	P4	Likely	Will probably occur at some time	Within 2 years
81-100%	P5	Very Likely	It is expected to occur at most times	Within 1 year

6.2.2 Consequence of Failure

Consequence of failure has been established in draft format applied to sewer infrastructure assets. This process identifies the criticality factors to determine assets that carry the most consequences should a failure occur. A criticality assessment needs to be undertaken by Council to identify key infrastructure/assets which would classify as extreme criticality, such as:

- Assets within the sewer pump stations or sewer treatment plants that would cause the facilities to fail through the pumping or treatment process.

- Pipelines.
- Communications / SCADA.

Critical assets noted 'High' in time, become 'High' risk assets with the risk to be used for prioritising future capital works and maintenance programs to reduce the risk.

Consequence of failure ratings are applied to asset classes are defined in Table 6-3.

Table 6-3: Consequence of failure

Consequence	Level	Criticality Factors			
		Operational & Technical	Financial	Social	Environmental
Major	C5	Essential and non-essential services unavailable	Financial loss > \$1M	Loss of life Extensive state/national media coverage Unacceptable exposure to litigation	Toxic release off site
Serious	C4	Wide disruption to essential services Some non-essential services unavailable	Financial loss between \$200K and \$1M	Extensive (multiple injuries) Some state/national media coverage Major exposure to litigation	Off-site environmental with no detrimental effects
Moderate	C3	Isolated disruption to essential services Wide disruption to non-essential services	Financial loss between \$50k and \$200K	Medical treatment required Moderate exposure to litigation Regional media coverage	On site environmental impact contained with outside assistance
Minor	C2	Isolated disruption to non-essential services	Financial loss between \$10K and \$50K	First aid treatment Acceptable exposure to litigation Local media coverage	On site environmental impacts immediately contained
Minimal	C1	None or negligible service disruptions	Financial Loss < \$10K	No injuries No litigation exposure No medical interest	None or negligible environmental impacts

6.3 Risk Management Lifecycle Process

Planning

Council manages strategic risks by ensuring that its planning functions are fully integrated through the IP&R framework. The Community Strategic Plan (CSP) is Council's highest-level plan and outlines the community's priorities and strategic objectives for the next 10 years. The Delivery Program is the elected Council's commitment to the community to deliver those elements of the CSP that are within Council's responsibility. The Resourcing Strategy ensures that Council can complete its Delivery Program by addressing asset management, financial and human resourcing requirements.

Supporting the IP&R framework are a range of other strategic plans and processes that help to inform decision-making on asset planning and design and ensure risks are adequately addressed. These include:

- Richmond Valley Local Strategic Planning Statement and Development Service Plans.
- Richmond Valley Flood Study.
- Water/Sewer Management Strategy and Business Plan.
- Waste Management Strategy and Business Plan.
- Community Resilience and Preparedness Plan.
- Community Land Plans of Management & supporting Master Plans.

Design

Risks are managed in the asset design phase by:

- Undertaking community consultation to ensure assets are fit for purpose and reflect community expectations.
- Undertaking risk assessment processes such as Hazop or CHAIR to identify safety issues at the design phase.
- Reference to appropriate Standards and regulatory requirements.

Construction

Risks at the construction phase are addressed by:

- Council's procurement policy/procedures and the Local Government Tendering regulations.
- Developing and implementing project management plans, including risk management plans.
- Inspection and monitoring.
- Council's Contractor Management procedures.

Commissioning

Council develops and implements Asset Commissioning Plans for major infrastructure to manage risk during the hand-over and commissioning phase.

Maintenance and Monitoring

Risk management methodologies for asset maintenance and monitoring include:

- Critical Asset Register
- Maintenance schedules
- Condition assessment
- Asset inspection programs
- Risks and issues registers
- CRM responses
- Council's annual budgeting process ensures adequate resources are available for maintenance and monitoring requirements

Upgrade/refurbishment

Council relies on its strategic planning framework, Critical Assets Register and Asset Management Plans to inform the optimal time for asset upgrade/refurbishment. Risks during this process are addressed as per the asset design, construction and commissioning phases. Council's Long-Term Financial Plan, supported by the Borrowing Program and Strategic Grants Framework ensures that adequate resources are available for asset upgrade/refurbishment. Where an asset upgrade/refurbishment is a high community priority, Council may choose to fast-track the options analysis and design phases to increase the opportunity of obtaining grant funding.

Replacement/decommissioning

Council relies on its strategic planning framework, Critical Assets Register and Asset Management Plans to inform the optimal time for asset replacement. Council's Long-Term Financial Plan supported by the Borrowing Program and Strategic Grants Framework ensures that adequate resources are available for asset replacement. Where an asset replacement is a high community priority, Council may choose to fast-track the options analysis and concept design to increase the opportunity of obtaining grant funding.

Risks during the asset replacement process are addressed as per the asset design, construction, and commissioning phases.

Risks associated with asset decommissioning are addressed through a decommissioning plan including stakeholder consultation.

6.4 Sewer Risks⁹

Council will endeavour to complete a sewer and related infrastructure risk register which identifies the specific risks related to sewer infrastructure as well as assess the current controls, further actions required and funding allocations needed to reduce the risk elements identified.

Current infrastructure risks for sewer infrastructure include:

- Flooding.
- Overloading of the sludge handling facilities.
- Sewer safety issues relevant to industry development.

The identification of issues and risks was undertaken in late July 2020 via a series of management and staff interviews and site inspections of the majority of Council's Sewer Assets.

A high-level risk assessment was undertaken across the assets with individual reports prepared for each site from NixonClarity, 27 June 2020. The high-level findings and recommendations were categorised across the following functions:

1. Work Health and Safety.
2. Roles & Responsibilities.
3. Levels of Services.
4. Asset Management Planning.
5. Inflow and Infiltration.
6. SCADA / Automation.
7. Knowledge Management.

⁹ Source: Water & Sewerage Issues and Risks, NixonClarity, 27 June 2020, Draft V2

Key outcomes of the sewerage risk assessment were¹⁰:

- Key sewerage risks related to poorly documented asset management and operation procedures, inadequate quality control procedures, climate change, urban water reform, non-compliance with regulatory requirements and overflows from the sewerage system;
- Factors contributing to the identified risks include uncertainty regarding urban water reform and climate change and how these will influence sewerage services, asset condition and high wet weather flows which contribute to the potential risk of overflows and reliance on the knowledge of individual staff members combined with operations activities that are undertaken intuitively rather than following documented systems and procedures;
- Existing risk mitigation measures include ongoing strategic planning and investigations, the Business Improvement Program, progressive development of operation and maintenance procedures, multi-skilling of operations staff, experienced staff members and conventional sewerage system design and treatment processes; and
- The causes of some key risks (e.g., climate change and urban water reform), cannot be directly addressed by the RVC water group and therefore alternative mitigation measures need to be developed. In some cases, mitigation is expensive which means that Council may choose to accept a relatively high level of risk. Improved management systems and emergency response procedures can assist improved response to these risks.



¹⁰ Water Supply and Sewerage Strategic Plan, 2018 Pg. 40

6.5 High Priority Assets

The risk assessment criteria can be seen in Water and Sewerage Issues and Risks, NixonClarity, 27 June 2020, Draft V2 – Findings Summary.

The improvement plan and the status of the actions is incorporated as **Appendix F** of this document.

Table 6-4: Results of High-Level Risk Assessment

Asset	Hydraulic Capacity	Environment	Process (Quality)	Public Health	Structural Integrity	WHS	Delivery Risk
Casino Sewerage Treatment Plant	Acceptable	High	High	Acceptable	Extreme	Extreme	High
Casino Pump Station 1	Acceptable	Acceptable	No	Acceptable	Acceptable	High	Acceptable
Casino Commutator Pump Station	High	High	Acceptable	High	Acceptable	High	High
Evans Head Sewerage Treatment Plant	High	High	High	Acceptable	No	Acceptable	Acceptable
Evans Head Pump Station 4	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Riley's Hill Sewerage Treatment Plant	High	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Woodburn Pump Station 1	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	High	Acceptable
Coraki Sewerage Treatment Plant	Acceptable	High	High	High	Acceptable	Extreme	High

The rankings are:

- Extreme – Has Failed.
- High Risk – Likely to Fail Within 5 Years.
- Acceptable – Risk Managed by Current Systems.
- No Risk – No Risk of Failure.



7. Lifecycle Management Plans

This section presents asset condition and performance information and considers the risk management described in Section 6 to develop the broad strategies and specific work programs required to achieve the goals and standards outlined in Section 3 and 4.

7.1 Overview

Council must ensure that it manages all assets on a lifecycle basis, with full knowledge of the social, environmental, and financial costs, benefits and risks associated with the asset.

Sewer assets on average have a remaining useful life of 50% of their expected lifecycles based on average condition; however more critical infrastructure assets including Sewer Pump Stations and Sewer Treatment Plants on average are approaching 71% of their useful life.

The lifecycle model must consider each phase of an asset's life from inception through to disposal. This life cycle model is illustrated in the figure 7-1.

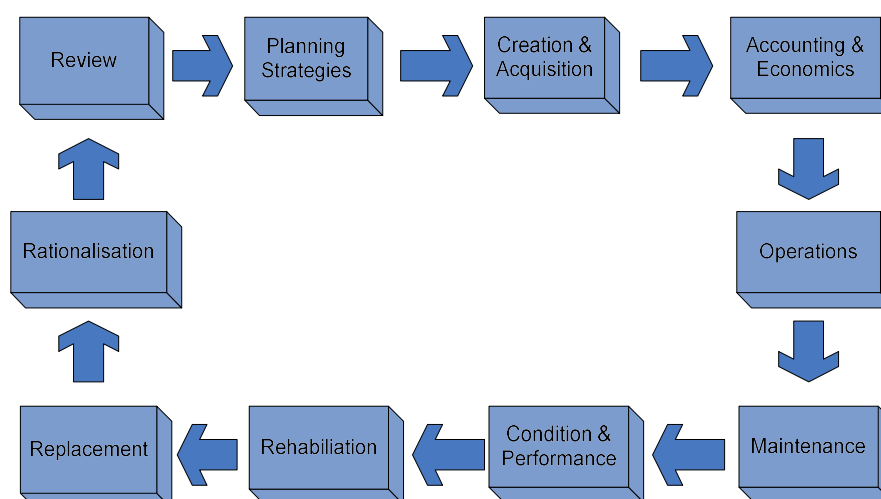


Figure 7-1: Lifecycle for Asset Management

Table 7-1: Asset Treatment Definitions

TREATMENT	DEFINITION
Operations	<p>An activity that has no direct effect on asset condition, consumes resources and is necessary to keep the asset functioning. The operations expenditure can be distinguished from maintenance expenditure in the Council's financial systems.</p> <p>Typical operational activities include:</p> <ul style="list-style-type: none"> • CCTV Inspection of sewerage mains. • Mains Cleaning (noting that however cleaning can deteriorate condition of pipe walls). • Processing monitoring and testing.

TREATMENT	DEFINITION
Maintenance	<p>An activity that will retain / maintain the asset's current condition or performance level. Routine maintenance is the day-to-day work required to keep assets operating at required service levels, and falls into two broad categories:</p> <ul style="list-style-type: none"> Planned (proactive) Maintenance: Proactive inspection and maintenance works planned to prevent asset failure; and Unplanned (reactive) Maintenance: Reactive action to correct asset malfunctions and failures on an as required basis (i.e. emergency repairs). <p>Maintenance is defined in each section of the lifecycle plan and includes all repairs and maintenance that are not classified as renewals (see below).</p> <p>A key element of AM planning is determining the most cost-effective blend of planned and unplanned maintenance.</p>
Renewal Replacement	<p>An activity that replaces an asset with one that meets contemporary functional requirements. These works are defined as being the:</p> <ul style="list-style-type: none"> Renewal and rehabilitation of existing assets to their original size and capacity, or, Replacement of the entire component of the asset with the equivalent size or capacity, or, Replacement component of the capital works which increase the capacity of the assets (that portion of the work which restores the assets to their original size and capacity). <p>Examples of renewals expenditure include:</p> <ul style="list-style-type: none"> Sewer main relining
Upgrades	<p>Upgrade work is related to the extension or augmentation of an asset in response to growth or an increase in the defined levels of service. Upgrades are defined as assets either being:</p> <ul style="list-style-type: none"> Works which improves an asset beyond its original size or capacity; or Works which increase the capacity of an asset; or Works designed to produce an improvement in the standard and operation of the asset beyond its original capacity. <p>Upgrade activities may include:</p> <ul style="list-style-type: none"> Expansion of the Sewerage Treatment Plant.
New Works	<p>Acquisition, purchase or inheritance of an asset. Projects (including land purchase) for the extension or upgrading of assets required to cater for growth or additional levels of service, including:</p> <ul style="list-style-type: none"> Works which create an asset that did not exist in any shape or form, or Works which improves an asset beyond its original size or capacity, or Upgrade works which increase the capacity of an asset, or Works designed to produce an improvement in the standard and operation of the asset beyond its original capacity. <p>New assets required for growth are distinguished from those required for improvements to levels of service, because of differences in how these assets can be funded. Growth related works can also be separated into those that are Council funded (including those funded by developer contributions), and those that are vested in the Council as a condition of development.</p>
Disposal	<ul style="list-style-type: none"> Sale, removal or decommissioning of an asset.

7.1.1 Whole of Life Costing

Achieving value for money is a key principle in procurement framework and the sustainability of managing Council's assets. Whole of life (WOL) costing is a methodology used to estimate the total costs of services over an asset whole of their life. It estimates accumulated costs of acquisition, operation, maintenance support and disposal or decommissioning of the supply (less income or revenue).

The Asset Management Strategy WOL basic principles include:

Do we need it? Can we afford it? Is it the best value for the community?

WOL costing enables informed decision making from the outset leading for a more comprehensive assessment of value for money and should commence at the acquisition planning stage. Prior to the acquisition of new assets, a WOL evaluation must be evaluated to ensure long term sustainability.

Calculating WOL should include:

Acquisition Costs – This includes the initial costs of obtaining the goods, eg purchase price, design, planning, freight, installation, and training

Operating Costs – The costs incurred during the life of the goods eg energy consumption, quality and safety, condition inspections, valuations, distribution and logistics, supplier staff wages, transport costs, program materials, indexation.

Maintenance and Support Costs – The costs incurred in maintaining the dependability of the goods and services during their life eg supplier administration costs, consumables, spare parts, minor repairs, labour, staff refresher training,

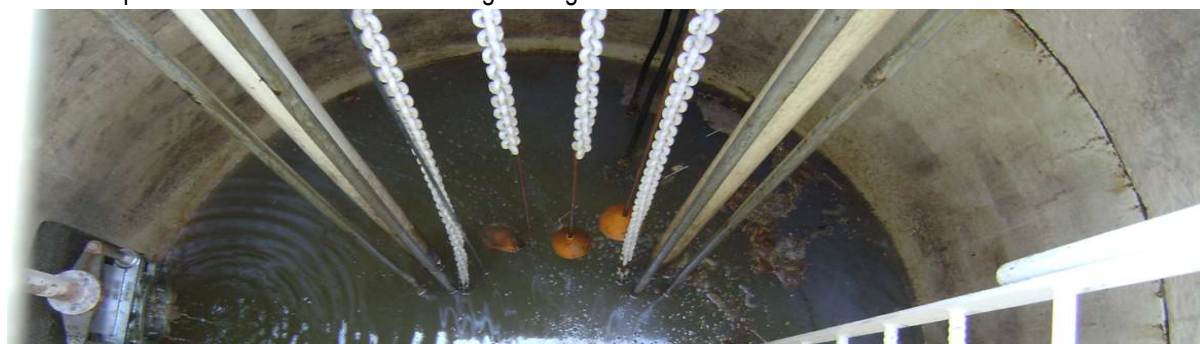
Disposal Costs – costs for removing or disposing of the goods after the economic life has ended, eg costs to transfer ownership, trade-in, retender, auction or recycle or transiting/closure of a service.



Excluded Costs – Depreciation, corporate overheads, and existing staff members (unless additional staff are engaged to operate goods/service).

7.1.2 Coordination with Other Organisations

Richmond Valley operates and maintains sewer infrastructure at North Woodburn which is owned by adjoining Lismore City Council. The systems operate on a pressure pump system with localised onsite tank storage. The assets are recorded within Council's asset register for maintenance purposes being an non-owned asset. Council conducts operational and maintenance through an Agreement. The Assets are not included within this Plan.



7.1.3 Management Structure

The management structure established by Council for managing the lifecycle of its sewer infrastructure is identified in Figure 7-2.

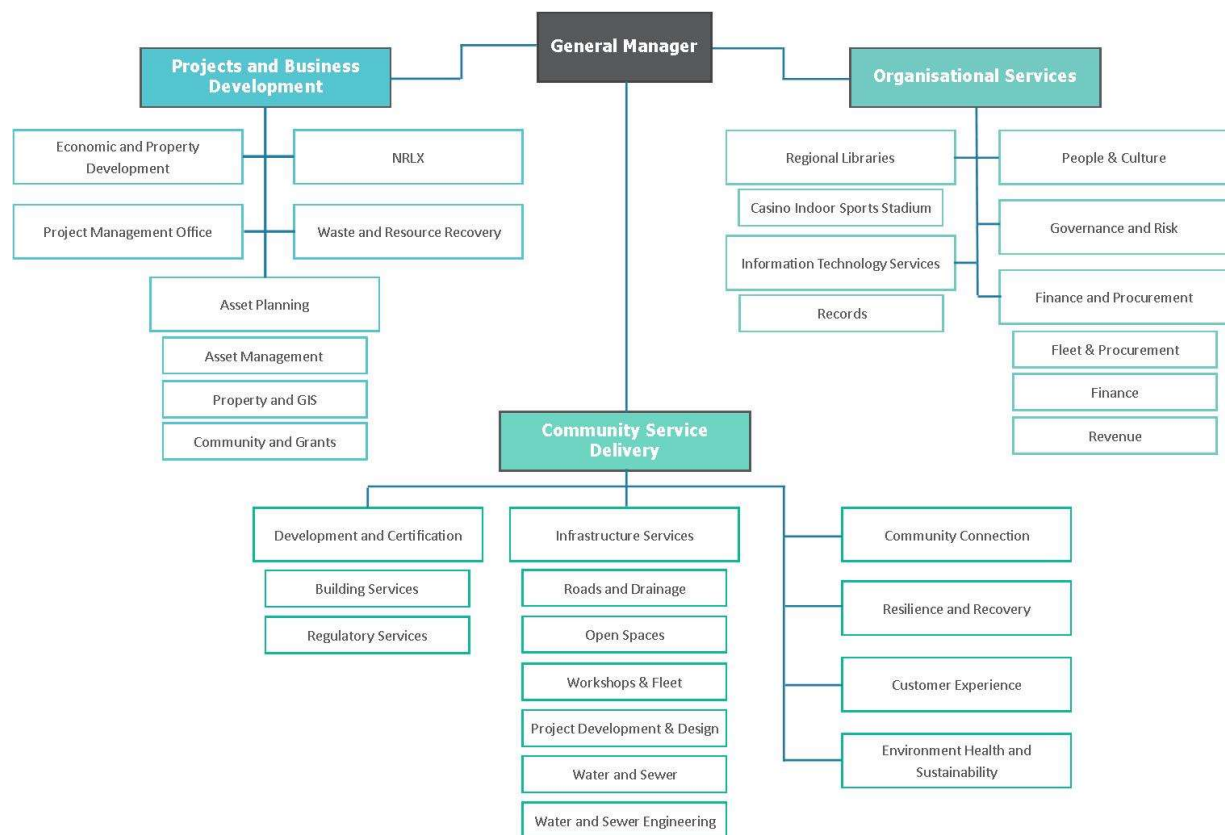


Figure 7-2: Management Structure

7.1.4 Corporate Responsibilities Matrix

The Corporate Asset Management Responsibilities Matrix identifies roles of individuals in the organisation against asset management activities and sub activities. This matrix is a powerful tool that defines the responsibilities of the entire organisation with respect to sewer asset management. This matrix should be the first reference point for all responsibility issues/problems that arise from day-to-day activities. The matrix clearly defines who plays the lead role for any given activity, against any given sewer asset group. The individuals involved need to understand their role in asset management and appreciate the holistic role it must play across Council. By everyone working together, asset management practices will thrive.



Table 7-2: Corporate Responsibility Matrix (All Sewer Assets)

ACTIVITY	SUB-ACTIVITY	Lead	Stakeholder
SERVICE PLANNING	Utilisation Management/Strategic Planning	MAP	LS /DPABD/CSAPP/WSE
	Setting Community Levels of Service	MAP	LS /DPABD/CSAPP/WSE
	Setting Technical Levels of Service	MAP	MIS/MFS/CSAPP/WSE
ASSET PLANNING	Strategic Asset Management	MAP	LS /DPABD/CSAPP/WSE
ASSET CREATION	Budget Development	MFS	MAP/MIS/WSE
	Design	CPDAD	MAP/MIS/WSE
	Construction Management	MIS	MPMO/WSE/OCWS
	Commissioning	DPM	MPMO/WSE/OCWS
	Asset Handover - Sign Off/As built records	DPM	MAP/WSE
ASSET OPERATIONS	Budget Development	MIS	MAP/MFS/WSE
	Operations Management	MIS	OCWS
ASSET RENEWAL	Renewal Works Program	MAP	WSE/MIS/OCWS/CSAPP
ASSET MAINTENANCE	Maintenance Budget Development	MIS	MFS/OCWS/WSE/CSAPP
	Maintenance Planning	OCWS	WSE/CSAPP
	Resource Management	OCWS	MIS
	Defect Inspections	WSE	MIS/OCWS/MAP/CSAPP
DISPOSAL	Proposal	MAP	DPABD/DCSD/GM/CSAPP
	Decommission	MAP	MIS/CSAPP

Legend

GM General Manager

DPABD Director Projects and Business Development

DCSD Director Community Service delivery

LS Chief of Staff (including Leader Strategy)

*** MAP** Manager Asset Planning

MIS Manager Infrastructure Services

DPM Designated Project Manager

CSAPP Coordinator Strategic Asset Planning and Property

CAM Coordinator Asset Management

MPMO Manager PMO

MFS Manager Finance and Procurement

CPDAD Coordinator Project Development and Design

OCWS Operations Coordinator Water and Sewer

WSE Water and Sewer Engineer

*** NOTE:** MAP position currently under structural review.

7.2 Key Issues

The key management issues related to the management of sewer infrastructure were identified in the Water Supply and Sewerage Strategic Plan, March 2018, Hydrosphere Consulting are identified in the following list:

- Raw sewage in Casino appears to be heavily influenced by trade waste contributions which may influence the achievement of licence quality and load limits.
- There is a risk that the total phosphorus load limit from Casino STP could be breached based on the current process configuration and reuse quantities.
- The Casino STP sludge handling facilities appear to be overloaded.
- The Casino STP relies heavily on the performance of the wetlands to achieve the effluent licence load and concentration limits.
- Casino STP and sewerage pipelines are ageing.
- Dry weather groundwater infiltration and wet weather stormwater infiltration are significant in Evans Head, Casino and Coraki.
- The performance of Evans Head STP is affected during peak wet weather events and the peak summer holiday period. Augmentation of the STP will be required to cater for catchment growth and peak loadings.
- Coraki STP is ageing.
- Non-compliance with TSS licence limits at Coraki STP is expected to be an ongoing issue until the algal growth is controlled.
- The effects of climate change will have direct and indirect implications for Richmond Valley in relation to sewerage services including damage to infrastructure from flooding, storms and sea level rise, the need to reduce greenhouse emissions and potentially higher cost of energy.
- The location/routes of underground assets in rural areas are not clearly marked and are potentially subject to accidental damage during excavation.
- The cost of provision of sewerage services in the Richmond Valley area is high.
- Typical residential bills are high for sewerage.

7.3 Historical Expenditure

Historical expenditure for the sewer network is detailed below. The table illustrates the considerable investment Council makes towards its local sewer network.

Table 7-3: Sewer Historical Expenditure

Cost Category	2017/2018 (\$)	2018/2019 (\$)	2019/2020 (\$)	2020/2021 (\$)	2021/2022 (\$)
Operations	3,541,604	2,241,768	2,688,551	2,677,889	2,101,088
Maintenance	721,164	629,566	883,827	904,229	833,334
Capital Renewal	311,000	837,000	1,622,000	742,000	1,169,000
New Assets	360,000	821,000	182,000	430,000	117,000
Total	4,933,768	4,529,334	5,376,378	4,754,118	4,220,423

It should be noted that works from natural disasters such as floods and bushfires are excluded from the above summary. Table 7-3 also excludes subdivision dedicated assets.

7.4 Water Supply and Sewerage Strategic Plan

In 2018, Council produced the Waste and Sewer Strategic Plan with the objective of consolidating previous reports and findings. From this consolidation process, a direction regarding the sewer supply was developed and implemented using a risk-based approach. The status of the improvement actions is detailed in Table 7-4 below.

In summary, Council will:

- Continue to address the improvement actions identified in the Raw Water Management Plan;
- Review the long-term strategy for the upgrade and renewal of the Casino sewerage network and STP including trade waste management, phosphorous removal, sludge management, effluent reuse, and wetland maintenance to incorporate increased population projections;
- Continue to investigate options to reduce the growth of algae and the discharge of solids from Coraki STP;
- Develop a long-term strategy for Coraki STP; and
- Augment the Evans Head STP once the existing capacity is no longer sufficient.

Table 7-4: Status of Recommendations from the Strategic Plan

No.	Recommendation	Status
1.	A WHS audit of all key assets (STP, STP's & Res) should be undertaken.	In Progress
2.	A review of the roles and responsibilities across W&S should be undertaken to address the GAPs	Completed
3.	Identify key Executive / Policy / Corporate issues to give guidance for engineering decisions/reports including population growth, infrastructure buffer capacity; approach to EPA & Health Licenses	Completed restructure In progress identifying future growth areas.
4.	Determine the preferred visit frequency or all key assets to inform remote access requirements and resourcing requirements.	Not Started
5.	Develop a Strategic Action Plan for inflow and infiltration to address the high storm flows across the sewerage network	In Progress
6.	Establish a more robust risk management system for RVC including structure for Corporate and Operational Risks, as well as the monitoring of mitigations and previously agreed initiatives.	In Progress
7.	Undertake an Asset Criticality Assessment (preferably Council Wide) to identify key assets including normal, abnormal, and emergency Ops.	In Progress
8.	Review approach to condition assessment and renewal planning to include ongoing, periodic and revaluation	Not Started
9.	Establish an issues management system either in the current CRM, the asset system or alternative.	Completed
10.	Undertake an Audit of SCADA, remote Ops, and Automation	Completed
11.	Develop a Strategic Action Plan for SCADA, remote Ops, and Automation	In Progress
12.	A regular (every 3-6 months) WHS inspection of all key sites should be undertaken. These issues should be raised as CARs through the CRM system.	Process in Place do inspections of sites throughout the year
13.	The WHS team should work with the W&S team to identify and source appropriate signage and PPE for use across all W&S assets	In Progress

No.	Recommendation	Status
14.	The Executive and Management should undertake periodic site inspections and include identifying WHS issues and raising CARs to increase WHS awareness/culture.	Process in Place
15.	Review the key contact “zippering” (who talks to who and how often) with Rous Water and ensure it is a proactive relationship.	Process in Place
16.	Review the external and internal supplier / provider relationships for all maintenance activities.	Completed
17.	Determine the approach to the standardization of key and high use assets e.g., Valves, PLC's, RTU's etc.	Process in Place
18.	Review Water & Sewerage Asset Management Plans with a focus on the identification of purpose, inspection, operations, optimization, maintenance, and renewal to inform resourcing plans and forward budgets.	In Progress
19.	Develop an optimization approach to all treatment plants (4). E.g., three-monthly optimization deep dive	SCADA upgrade in progress
20.	Develop maintenance management standards including return periods for all key items to drive automation.	Not Started
21.	Digital induction, signing-in and recording of site access by staff and contractors should be investigated.	Not Started
22.	Develop a Strategic Action Plan for electronic field data collection, management, and reporting	Not Started
23.	Develop a change management requirement for all new builds, upgrades, and asset alterations	Process in Place for Revised operational procedures submitted as part of the WAE documentation
24.	Implement operational skills improvement program by sending staff to other utilities to learn different skills and approaches	Process in Place

Legend

Completed



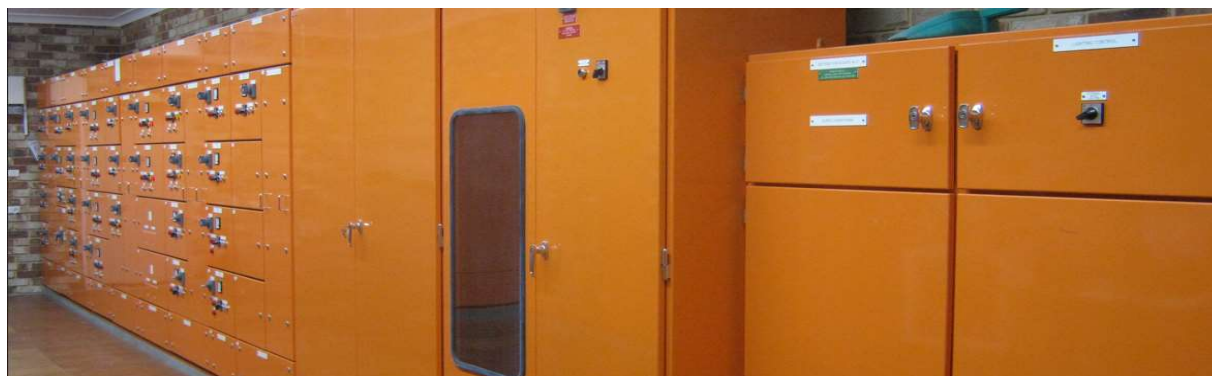
In Progress,
Process in Place*



Not Started



Note: “Process in place” has been used for some recommendations where there has been insufficient time to test the process. Once tested through an audit process to the satisfaction of management, the recommendation should be regarded as complete.



7.5 Identification for Prioritisation of Operational and Maintenance Works

Sewer related works have been identified through review of understanding of the performance of the sewer system and assets, a desire to improve the internal asset management capacity and capability which is maintained within an Asset register.

Council aims to program maintenance through an understanding of condition, performance, criticality and risk. Without this information in a quantitative form, the prioritisation process is at best subjective based on the experience of management. As this information becomes readily available, the greater the confidence in the decision-making.

In 2020 it was reported that:

“Current asset management assessment and preventive maintenance processes do not appear to be effective with ongoing asset failures occurring. Many operational areas are suffering due to lack of regular and timely maintenance”¹¹.

The operations and maintenance activities historically have been largely reactive driven by perception with the need to respond to faults and failures. Typical activities for reactive operational and maintenance activities are identified in Table 7-5.

Table 7-5: Reactive Operations and Maintenance Activities

ASSETS	OPERATIONS & MAINTENANCE REACTIVE ACTIVITIES
Reticulation & Distribution Mains	<ul style="list-style-type: none">• Broken sewer mains• Broken services• Sewer leaks• Blocked mains
Manholes	<ul style="list-style-type: none">• Missing or broken manhole lids• Resealing and relining manholes
Pump Stations	<ul style="list-style-type: none">• Faulty or failing pumps, impellers• Pump failures• Lost power• Sewer odours• WHS issues
Sewer Treatment Plant	<ul style="list-style-type: none">• Manual handling of chemicals• WHS issues• Filtration issues

As part of the revaluation process in 2022 the asset condition was collected and is therefore current. This data provides the basis of identifying asset renewals and annual funding. The prioritisation process would best be supplemented by quantified maintenance records, and asset risk which would significantly increase the confidence in the decision-making.

Criticality on its own is used to develop maintenance plans while risk is used for generating capital works programs. Council has recognised this need and identified actions as part of the current risk register.

¹¹ RVC Water & Sewerage Issues & Risks (Draft V2), July 2020, Pg. 3, NixonClarity

In the past few years, maintenance at the four treatment plants has improved, recorded and costs tracked. This process will take a few years to provide quality information. Although if recorded properly reactive maintenance can provide quality information almost immediately. Maintenance standards will be developed for the treatment plant and in time a maintenance plan developed.

Casino Sewer Treatment Plant is undergoing a process of automation in the plant e.g., converting valves to automated valves and finalising SCADA implementation which will permit the operations of the plant to be automated and tracked when assets fail. This will enable speedier responsiveness to faults, analysis of faults and smoother operations.

7.6 Inspections

Inspections are undertaken to ensure that the sewer assets are being maintained in a safe manner and that adopted intervention levels are being met. Depending on the type of inspection they may be performed by the following:

- Project Managers.
- Overseers.
- Assets Engineers.
- Engineering Assistants; or
- Specialist Consultants / Contractors.

Inspections may typically include safety audits, condition assessments, works inspections, quality sampling, quality audits; and reactive investigative inspections are performed in response to customer requests.

Note: In the past, condition assessments had been infrequent, however, the need for regular condition assessments is recognised and will be undertaken in the future.



7.7 Renewal Plan

From an initial planning perspective, Table 7-6 to Table 7-8 indicate the current replacement cost of condition 5 assets. These have been derived following condition assessments undertaken as part of the 2022 revaluation which indicate the required funding in the current replacement cost and the timeframe in years to replace the assets. This of course is an initial view of the renewal program. Further investigation is required over time, to supplement condition with maintenance records, criticality and risk.

Assets identified as requiring renewals based on condition rating of 5 (Very Poor – Unserviceable). These assets are identified as is no longer providing an acceptable level of service. If action is not taken, asset will need to be closed or decommissioned.

Table 7-6: Summary of renewal assets

Condition Rating	Asset Description	Replacement Cost (\$)	% Of Total Replacement Costs
5	Sewer connections	1,593,055	23
5	Manholes	6,108	0.03
5	Pipelines	2,956,794	5
5	Sewer pump stations	114,377	0.59
5	Sewer treatment plant	67,782	0.13
	Total	4,738,116	29

Table 7-7: Sewer Pump Stations Components

Condition Rating	Asset ID	Asset Description	Replacement Cost (\$)	% Of Total Replacement Costs
5	94111	Control cabinet	16,800	0.09
5	101287	Gantry	21,996	0.11
5	93989	Ladders & landings	2,010	0.01
5	94108	Pump	9,181	0.05
5	111660	Pump	25,245	0.13
5	94109	Tank	23,175	0.12
5	93999	Valve pit	15,971	0.08
		Total	114,377	0.59

Table 7-8: Sewer Treatment Plant Components

Condition Rating	Asset ID	Asset Description	Replacement Cost (\$)	% Of Total Replacement Costs
5	94762	Building roof	8,995	0.02
5	94366	Drying bed	-	-
5	94587	Electric winches	14,697	0.03
5	94588	Electric winches	14,697	0.03
5	94589	Electric winches	14,697	0.03
5	94590	Electric winches	14,697	0.03
		Total	67,782	0.13

7.8 Upgrade Plan

The upgrade works planned for the next two years are the result of the need to satisfy capacity and performance issues. An allowance of \$17.94M has been allowed in total for the next five years.

7.9 New Works Plan

New sewer assets are commonly identified in response to growth (demand), risk, safety audits; and recommendations identified in planning and strategy documents.

An allowance of \$80k has been budgeted for 2022/23. There is no allowance for identified new assets.

Council is currently investigating the commission of Rappville Sewerage Scheme which is currently being investigated with funding allocations to be determined.

7.10 Disposal Plan

There is currently no plan to dispose of existing sewer assets.



8. Financial Summary

This section outlines the long-term financial requirements for the operation, maintenance, renewal, and development of sewer assets based on the long-term strategies outlined earlier in the plan. Funding issues are discussed and key assumptions made in preparing financial forecasts. These forecasts are an indication of funding requirements over the next 10 years and are recommended for inclusion in Council's Long-Term Financial Strategy (LTFS).

8.1 10 Year Financial Forecast

Appendix G summarises the 10-year financial forecast for sewer. The reasons for the expenditure are identified for each asset group in Lifecycle Management Plans. Projections are shown in dollar values current as of 1 July 2022 including Operations, Maintenance (Programmed and Reactive), Renewals (Rehabilitation and Replacement Works), Upgrade / Expansion Works; and New Works by Developers. Table 8-1 summarises the 10-year financial projection.

Table 8-1: 10 Year Financial Projection

COST CATEGORY	TOTAL FINANCIAL PROJECTIONS	
	1-5 Years (\$)	1-10 years (\$)
Operations	12,877,901	27,771,299
Maintenance	5,633,412	12,051,418
Renewals	9,811,180	17,961,180
Upgrades	17,941,000	20,791,000
New	80,000	80,000
TOTAL	46,343,493	78,654,897

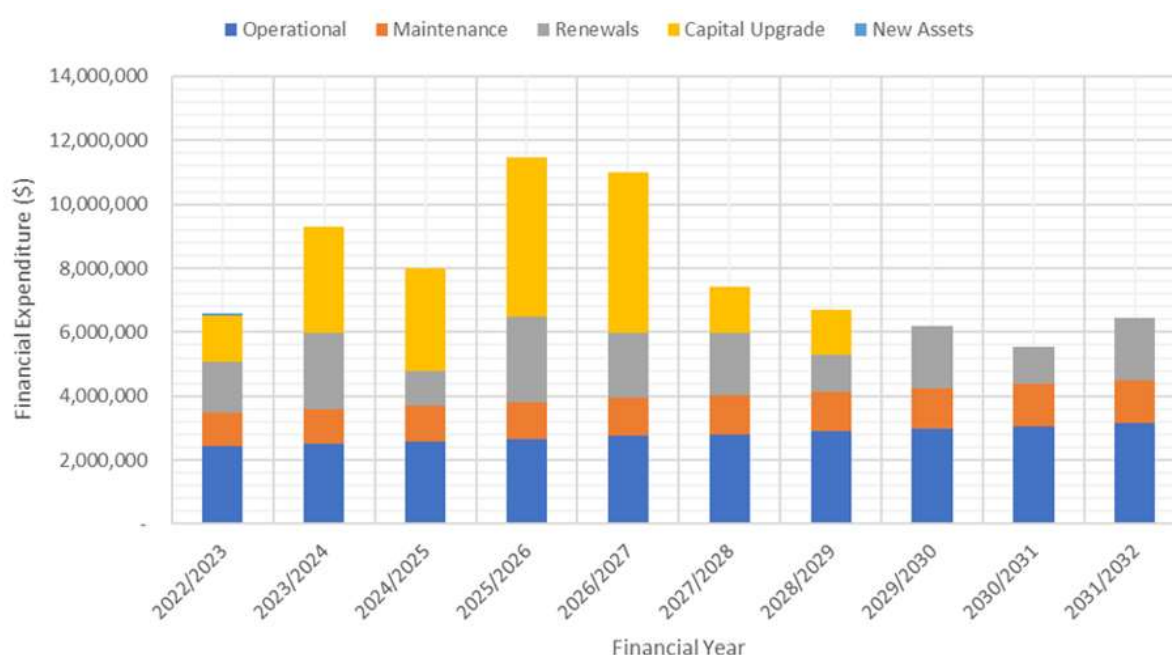


Figure 8-1: 10 Year Financial Projections

Expenditure identified within the financial forecasts was obtained from the following sources:

- Long-Term Financial Plan.
- Annual budget for Operational and Maintenance Budgets; and
- Demand Forecasting refer Section 5 of this plan.

8.2 Financial Forecast Assumptions

The basis for the financial forecasts is explained in the Lifecycle Management Plan. The following general assumptions have been made in preparing the 10-year expenditure forecasts:

1. All expenditure is stated in dollar values as at 30 June 2022 with an allowance made for inflation of 2.5% over the 10-year planning period;
2. CPI increase of 2.5% for operations and maintenance costs;
3. Greenfield unit rate for sewer infrastructure have been applied for infrastructure constructed by developers; and
4. Ongoing operations and maintenance costs for new works is assumed to be 0.78% of original capital costs (included under the operations and maintenance cost categories for sake of simplicity).

8.3 Asset Valuation 2021/22

The accounting asset register for sewer indicates a current written down replacement value of approximately \$106M.

In valuing the sewer infrastructure assets, the following approach was adopted in accordance with the Australian Accounting Standards for Financial reporting purposes. All assets were rated at the appropriate life for the material and assessed in terms of their quantity applying the 'Fair Value' principle:

- Asset values have been based on asset data currently held in valuation spreadsheets.
- Replacement values have been determined from applying first principles to the assets, Rawlinson's 2022, a variety of websites with current day prices for assets and unit rate tables and charts based on the cost of replacing the asset with similar assets that provide the equivalent service.
- Where the useful life of the asset was extended or reduced, the resultant impact was on the future depreciation rates and charges and were not retrospective in accordance with appropriate accounting standards; and
- All valuations and asset counts have been fully documented to provide a clear audit trail that is evident through to the accounting entries in the general Ledger.

The Table 8-2 identifies the 30 June 2022 financial valuation for the sewer network.

Table 8-2: Asset Network Valuation 30 June 2022

Asset Group	Asset Type	Quantity of Sewer Assets	Length of Assets (km)	2022 Gross Replacement Cost (\$)	Accumulated Depreciation (\$)	Fair Value (WDV) (\$)
Sewer Connections	Pipeline connections	6,376	24.91	6,998,674	3,760,309	3,238,366
Sewer Maintenance Shafts	Maintenance shafts	17		71,762	8,417	63,345
Sewer Manholes	Manholes	2,507		19,677,524	5,584,246	14,093,279
Sewer Pipelines	Pipes	3,771	189.71	63,427,996	20,418,733	43,009,263
Sewer Pressure Flushing Pits	Pits	38		213,631	31,831	181,800
Sewer Pressure Mains	Sewer mains	79	8.03	1,599,918	234,667	1,365,251
Sewer Pressure Pod Control Panel	Control panels	222		415,309	84,126	331,182
Sewer Pressure Pod Pumps	Pumps	228		730,443	114,898	615,545
Sewer Pressure Pod Tanks	Tanks	213		2,079,705	301,060	1,778,645
Sewer Pressure Service Connection	Pipeline connections	241	8.47	1,055,571	153,301	902,270
Sewer Pressure Valves	Pressure valves	37		57,600	8,582	49,017
Sewer Pump Stations	Control panels, pumps, pits, tanks etc.	645		19,051,853	9,588,735	9,463,118
Sewer RM Valves	Rising main valves	155		1,343,393	366,266	977,127
Sewer RM Valve Pits	Valve pits	84		453,010	151,139	301,871
Sewer Rodding Ends	Rodding ends	11		24,243	3,346	20,897
Sewer RTU PLC	Dataloggers, PLC	9		20,900	7,499	13,451
Sewer Treatment Plants	Control panels, pumps, pits, tanks etc.	777		52,041,079	22,697,311	29,343,768
Sewer Vent Stacks	Vent stacks	88		1,394,211	631,543	762,668
	Total	15,491	231.12	170,656,822	64,145,961	106,510,861

8.3.1 Valuation comparison 2020/21 and 2021/22

Figure 8-2 illustrates the change in replacement value between 2021 (indexed) and 2022. The figure shows a significant change in values for pipelines, reservoirs and the Casino Sewer Treatment Plant. The reason for these changes include the following:

- The difference in value was based on the use of first principles to determine the unit rate. Rather than four years of indexation. The unit rates were compared to various consultants' rates. Rawlinson 2022 provided the basis of information fed into the replacement model.
- The reservoir values were also based on first principal calculation rather than indexation.
- The treatment plant was valued as above with the provision that there has been more expenditure in the past year based on replacing of pumps, cabinets and associated wiring.

It should be further noted that there was a 15% to 19% increase in material costs in the last financial year based on a significant increase in the cost of living. Recent works have indicated a 40% increase for some sewer assets, including the STP, which may result in \$40M replacement, if not more depending on capacity upgrades. For other assets, the increase in replacement value was not as great as the main asset groups.

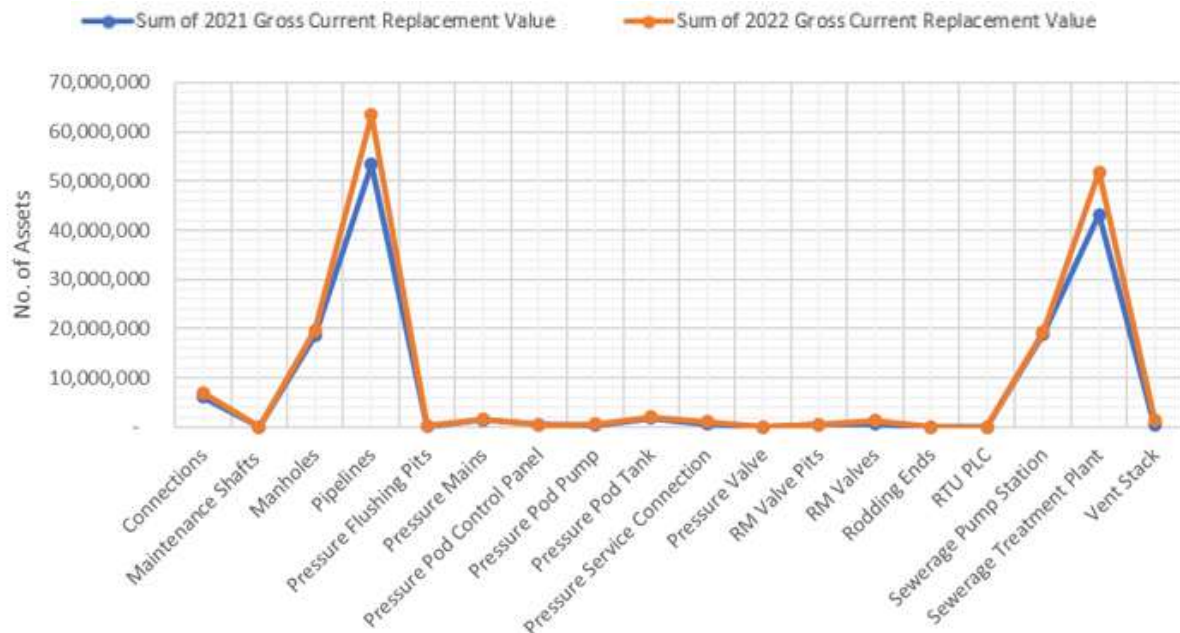


Figure 8-2: Sewer Valuation Comparison 2020/21 – 2021/22

8.4 Asset Sustainability

The Asset Renewal Funding Ratio is a critical indicator of the sewer programs long term stability. An ideal indicator is 1.0; therefore, Council's indicator of 0.83 needs to be addressed. Asset planning is progressive, driven by Level of Service (LOS) agreements and ultimately the communities' willingness to pay for the service. The following Local Sewer Utility (LWU) facts provide perspective:

$$\text{Renewal Ratio} = \text{Renewal Expenditure} / \text{Annual Depreciation} = 83.55$$

- Assets reaching the end of their design life this Long-Term Financial Plan (LTFP) \$0.2 million.
- Capital works programmed this LTFP \$20 million (average \$2.0 million).
- Technical level of service for assets in a backlog condition (either condition 5, 5.5 or 6), average value for LTFP \$491,451.
- Therefore, Bring to Satisfactory (BTS) average measure equals 0.06 (greater than benchmark value of 0.02).

8.5 Funding Strategy

A major issue concerning sewer infrastructure management is the question of who pays for needed works e.g.:

- The community through special rates.
- The developer through development contributions, or
- The consumer through recurrent charges.

To overcome this problem there should be available a range of funding options including:

- Rating Water and Sewer Charges.
- Special rates or charges schemes.
- Development contributions; and
- Available grants, e.g., special purpose State Government grants.

Council relies on grant income for delivering a range of services to the community. Richmond Valley has a relatively small population, with a low socio-economic element which makes deriving funds from rates, fees and charges a challenge. Council has a substantial sewer network over a large area and funding the renewal and maintenance of this network into the future will remain key.

Sewer is generally run on a full cost recovery basis however some things are outside of Council's control where opportunities for additional funding sources are provided e.g., grants. Over the past 5 years, Council has received \$1.2 million in grant funding for sewer assets and infrastructure.

The amount of grants Council has received for the sewer network is shown in the table below:

Table 8-3: Grants received for Sewer

Grant Funding	2017/18 (\$)	2018/19 (\$)	2019/20 (\$)	2020/21 (\$)	2021/22 (\$)
Grant Revenue (Operating)	81,413	76,054	79,059	78,699	78,187
PWA Flood Recovery	-	-	-	-	1,175,132
Rappville Sewer *	-	-	-	-	32,225
Total Grant Funding	81,413	76,054	79,059	78,699	1,285,544

NOTE: Under accounting standards, we are required to defer the monies unspent and recognise them as income when the money is expended for capital projects, so we only recognised \$3,532.67 in 2021/22 as revenue in our financial statements for Rappville Sewer.



9. Plan Improvement and Monitoring

This section provides AM improvement tasks that will be carried out over the next 4 years that will improve the level of confidence in this AM plan. Also included is a program for revising this AM plan.

9.1 Water Supply and Sewerage Strategic Plan

In 2018, Council adopted the Water and Sewer Strategic Plan which consolidated previous plans, reports and findings and objectives. From this consolidation process, a direction regarding the water supply was developed and implemented using a risk-based approach. In summary, the improvement actions are identified in Table 9-1. The status of the improvement actions is detailed in **Appendix F**.

Table 9-1: Status of Recommendations from the Strategic Plan

No.	Recommendation	Status
1.	A WHS audit of all key assets (WTP, STP's & Res) should be undertaken.	In Progress
2.	A review of the roles and responsibilities across W&S should be undertaken to address the GAPs	Completed
3.	Identify key Executive / Policy / Corporate issues to give guidance for engineering decisions/reports including population growth, infrastructure buffer capacity; approach to EPA & Health Licenses	Completed restructure In progress identifying future growth areas.
4.	Determine the preferred visit frequency or all key assets to inform remote access requirements and resourcing requirements.	Not Started
5.	Develop a Strategic Action Plan for inflow and infiltration to address the high storm flows across the sewerage network	In Progress
6.	Establish a more robust risk management system for RVC including structure for Corporate and Operational Risks, as well as the monitoring of mitigations and previously agreed initiatives.	In Progress
7.	Undertake an Asset Criticality Assessment (preferably Council Wide) to identify key assets including normal, abnormal, and emergency Ops.	In Progress
8.	Review approach to condition assessment and renewal planning to include ongoing, periodic and revaluation	Not Started
9.	Establish an issues management system either in the current CRM, the asset system or alternative.	Completed
10.	Undertake an Audit of SCADA, remote Ops, and Automation	Completed
11.	Develop a Strategic Action Plan for SCADA, remote Ops, and Automation	In Progress
12.	A regular (every 3-6 months) WHS inspection of all key sites should be undertaken. These issues should be raised as CARs through the CRM system.	Process in Place do inspections of sites throughout the year
13.	The WHS team should work with the W&S team to identify and source appropriate signage and PPE for use across all W&S assets	In Progress
14.	The Executive and Management should undertake periodic site inspections and include identifying WHS issues and raising CARs to increase WHS awareness/culture.	Process in Place
15.	Review the key contact "zippering" (who talks to who and how often) with Rous Water and insure it is a proactive relationship.	Process in Place
16.	Review the external and internal supplier / provider relationships for all maintenance activities.	Completed
17.	Determine the approach to the standardisation of key and high use assets e.g., Valves, PLC's, RTU's etc.	Process in Place

No.	Recommendation	Status
18.	Review Water and Sewerage Asset Management Plans with a focus on the identification of purpose, inspection, operations, optimization, maintenance, and renewal to inform resourcing plans and forward budgets.	In Progress
19.	Develop an optimisation approach to all treatment plants (4). E.g., three-monthly optimisation deep dive	SCADA upgrade in progress
20.	Develop maintenance management standards including return periods for all key items to drive automation.	Not Started
21.	Digital induction, signing-in and recording of site access by staff and contractors should be investigated.	Not Started
22.	Develop a Strategic Action Plan for electronic field data collection, management, and reporting	Not Started
23.	Develop a change management requirement for all new builds, upgrades, and asset alterations	Process in Place for Revised operational procedures submitted as part of the WAE documentation
24.	Implement operational skills improvement program by sending staff to other utilities to learn different skills and approaches	Process in Place

Legend

Completed



In Progress,
Process in Place*



Not Started



Note: “Process in place” has been used for some recommendations where there has been insufficient time to test the process. Once tested through an audit process to the satisfaction of management, the recommendation should be regarded as complete.

9.2 Asset Management Improvement Program

The AM tasks identified in the summary program below are the most important to enable Council to meet its asset management objectives. The programme reflects the overall aim of improving asset management practices, which is to deliver the right level of service at lowest long-term cost to customers. The following table identifies the primary improvements identified for asset management processes, systems, and data.

Table 9-2: Improvement Program

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Data Management	Continue the capture of data for all sewer assets and monitor condition. The data capture can be updated as part of normal operations or when servicing/inspecting assets. Link assets data to the GIS.	2024/25
Risk Register	Complete the identification of the infrastructure risk register for Council's sewer infrastructure and assets considering current controls, actions and funding required to decrease risk levels.	2024/25
Asset Performance	Undertake ongoing analysis of future renewal requirements using the condition data.	2023/24
Asset Performance	Analyse the customer request results to address problem areas and maintain performance.	2022/23 and ongoing
Asset Performance	Collect and monitor defect histories to identify trends in performance of asset types.	2022/23 and ongoing

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Levels of Service	Confirm target service levels, monitor and report outcomes.	Annually
Asset Planning	Use demand projections coupled with other knowledge e.g., risk to develop 10 -year forecast projections of upgrade works and new works. Use predictive models to identify appropriate levels of funding and the impacts of future condition.	2023/24
Demand Management	Identify the critical demands on the assets and use these demands and actions in the Strategic Plans,	2022/23
Community Surveys	Add questions related to the wastewater system regarding satisfaction, odour levels, overflows etc.	2023/24
Financial Planning	Develop Council reporting templates for WOL costs for future capital works projects.	2023/24

9.3 Monitoring and Review Procedures

The AM plan is a living document which is relevant and integral to daily AM activity. To ensure the plan remains useful and relevant the following on-going process of AM plan monitoring, and review activity will be undertaken.

- Formal adoption of the plan by Council.
- Identify and formally adopt levels of service.
- Revise AM planning every four years to incorporate outcome of service level review and new knowledge resulting from the AM improvement program.
- Audits of AM information to ensure the integrity and cost effectiveness of data collected; and
- Peer review: Annual internal audits to be undertaken to assess the effectiveness with which the AM plan meets corporate objectives. Periodic internal audits to be undertaken to assess the adequacy of AM processes, systems, data and external audits to be undertaken to measure AM performance against 'best practice' i.e., gap analysis.



Appendix A - Glossary of Terms

The following terms and acronyms are used in this AM plan.

Activity	An activity is the work undertaken on an asset or group of assets to achieve a desired outcome.
Advanced Asset Management	Asset management which employs predictive modelling, risk management and optimised renewal decision-making techniques to establish asset lifecycle treatment options and related long term cashflow predictions. (See Basic Asset Management).
Asset	A physical component of a facility which has value, enables services to be provided and has an economic life of greater than 12 months.
Asset Management (AM)	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 (AM 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 a specified level of service. A significant component of the plan is a long term cashflow projection for the activities.
Asset Management Policy	Provides an overall policy framework to guide the strategic management of Council's infrastructure assets.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Basic Asset Management	Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, inventory control, condition assessment and defined levels of service, to establish alternative treatment options and long term cashflow predictions. Priorities are usually established based on financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Cash Flow	The stream of costs and/or benefits over time resulting from a project investment or ownership of an asset.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk, or criticality.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement, and interpretation of resulting data, to indicate the condition of a specific component to determine the need for some preventive or remedial action
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX expenditure. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Design Life	The theoretical life of an asset assumed in its design.
Disposal	Activities necessary to dispose of decommissioned assets.
Economic Life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
Geographic Information System (GIS)	Software that provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system is intended to be maintained indefinitely at a particular level of service potential by the continued replacement and refurbishment of its components. The network may include normally recognised 'ordinary' assets as components.
Level Of Service (LOS)	The defined service quality for a particular activity or service area (i.e., interior) against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, regulatory & environmental acceptability, and cost.
Life	A measure of the anticipated life of an asset or component, such as time, number of cycles, distance intervals etc.
Lifecycle	Lifecycle has two meanings: (a) The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset, i.e., from planning and design to decommissioning or disposal. (b) The period between a selected date and the last year over which the criteria (e.g., costs) relating to a decision or alternative under study will be assessed.
Lifecycle Cost	The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation, and disposal costs.
Maintenance	All actions necessary for retaining an asset as near as practicable to its original condition but excluding rehabilitation or renewal.
Objective	An objective is a general statement of intention relating to a specific output or activity. They are generally longer-term aims and are not necessarily outcomes that managers can control.

Operation	The active process of utilising an asset that will consume resources such as manpower, energy, cleaning products and materials. Operation costs are part of the lifecycle costs of an asset.
Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses net present value analysis and risk assessment.
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.
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
Physical Life	The actual life of an asset.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally, involves repairing the asset using available techniques and standards to deliver its original level of service (i.e. Re-roofing, replacing doors etc.) without resorting to significant upgrading or replacement.
Renewal	Works to upgrade, refurbish, rehabilitate, or replace existing facilities with facilities of equivalent capacity or performance capability.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative, level of service.
Replacement Value	The prevailing market cost of supply and installation of an asset delivering an equivalent service, making no allowance for depreciation of the asset.
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 total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
Sewer System	A system carrying wastewater and waste matter through a series of pipes, pump stations and treatment plants for re-use through irrigation on crops, trees, public use.
Strategic Plan	Strategic planning involves making decisions about the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation, and identify major targets, actions and resource allocations relating to the long-term survival, value, and growth of the organisation.
Scheduled Maintenance	Work carried out to a predetermined schedule e.g., air cooler service or programmed because of identified needs e.g., repairing a cracked wall.
Unscheduled Maintenance	Work carried out in response to reported problems of defects e.g., cleaning up vandalism.
Upgrading	The replacement of an asset or addition/ replacement of an asset component which materially improves the original service potential of the asset.
User Cost	Cost borne by the public when using the Sewer.
Valuation	Estimated 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 – Legislative Framework

As a local government owned business, Local Water Utility's (LWUs) are subject to several legislative obligations and requirements. The Local Government Act establishes the conformance criteria which enables sustainable performance achievements. Through the NSW Government's Country Towns Water Supply and Sewerage Program, Sections 283 to 322 of the Water Management Act 2000, and Sections 56 to 66 of the Local Government Act 1993, the Minister for Water is responsible for overseeing the performance of LWUs.

Goal 22 under the NSW Governments 10-year plan is to protect our natural environment and improve the health of wetlands and catchments through actively managing water. Water reforms in NSW included the implementation of the Water Management Act 2000, the development of 63 water sharing plans (improving the management of water resources) and a National Water Initiative (NWI) that commits NSW to achieving sustainability in the use of its water resources¹².

The NSW Best-Practice Management (BPM) of Water Supply and Sewerage Framework encourages the effective and efficient delivery of LWUs water supply and sewerage services. This framework promotes continuing improvement in sustainable water conservation practices, water demand management and appropriate, affordable, and cost-effective water supply.

National requirements include Australian Drinking Water Guidelines, 2011; National Water Initiative (reforms and pricing principles); National Urban Water Planning Principles; and the COAG Strategic Framework for Water Reform.

Council is subject to several legislative obligations and requirements. The Local Government Act establishes the conformance criteria which enables sustainable performance achievements. The framework for Water includes various Water Acts, Public Health and Safety and Environmental Guidelines.

The primary legislation that impacts on how water assets are managed or used is briefly described below. You can find further information regarding these acts at www.legislation.nsw.gov.au.

Reference	Details
Local Government Act 1993	<p>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.</p> <p>The purposes of this Act are as follows:</p> <ul style="list-style-type: none">(a) to provide the legal framework for an effective, efficient, environmentally responsible, and open system of local government in New South Wales,(b) to regulate the relationships between the people and bodies comprising the system of local government in New South Wales,(c) to encourage and assist the effective participation of local communities in the affairs of local government,(d) to give council's:<ul style="list-style-type: none">• the ability to provide goods, services, and facilities, and to carry out activities, appropriate to the current and future needs of local communities and of the wider public

¹² Source: EPA, 2012, NSW State of the Environment.

Reference	Details
	<ul style="list-style-type: none"> • the responsibility for administering some regulatory systems under this Act • a role in the management, improvement, and development of the resources of their areas, <p>(e) To require council's, councillors, and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.</p> <p>Provides guiding principles for Council:</p> <ul style="list-style-type: none"> • Provide strong and effective representation, leadership, planning and decision making • Carry out functions in a way that provides the best possible value for residents and ratepayers • Plan strategically, using the integrated planning and reporting framework, for the provision of effective and efficient services and regulation to meet the diverse needs of the local community.
Public Works and Procurement Act 1912	Sets out the role of Council in the planning and construction of new assets.
Work Health and Safety Act 2011	Legal requirements for employers/employees in relation to workplace safety. Requirements on those who design, manufacture, import or supply any plant for use in the workplace.
Environmental Planning and Assessment Act 1979	An Act to institute a system of environmental planning and assessment for the State of New South Wales. Among other requirements the Act outlines the requirement for the preparation of Local Environmental Plans (LEP), Development Control Plans (DCP), Environmental Impact Assessments (EIA) and Environmental Impact Statements. This legislation outlines requirements for environmental assessment in NSW. Council's have a responsibility to undertake due diligence in relation to managing environmental values, including threatened species, usually by way of an assessment called a Review of Environmental Factors (REF), and are their own consent authority in this regard.
Public Health Act 2010	An Act relating to the maintenance of proper standards of health for the public. Council operations need to be carried out in a manner that protects public health.
Work Health and Safety Act 2011 and Workers Compensation Act 1987	Sets out roles and responsibilities to secure the health, safety, and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work. Council is to provide a safe working environment and supply equipment to ensure safety.
Independent Pricing and Regulatory Tribunal Act 1992	The Act empowers the Independent Pricing and Regulatory Tribunal (IPART) which sets principles and guidelines related to charging for water supply.
Competition Policy including Competition Policy Reform Act 1995	Council is subject to prohibition on anti-competitive behaviour, according to the Trade Practices Act.
Threatened Species Conservation Act 1995	An Act to conserve threatened species, populations and ecological communities of animals and plants.
Protection of the Environment Operations Act 1997	Council is required to exercise due diligence to avoid environmental impact and among others are required to develop operations emergency plans and due

Reference	Details
	diligence plans to ensure that procedures are in place to prevent or minimize pollution.
NSW Framework for the Regulation of Sewerage and Liquid Trade Waste, 2022	Council is responsible for approving liquid trade waste discharges to their sewerage systems under section 68 of the Local Government Act. However, section 90(1) of the Act and clause 28 of the Local Government (General) Regulation 2021 require them to obtain concurrence to council approval from the Secretary, Department of Planning and Environment. The department's Water Utilities branch provides concurrence as nominated by the Secretary.

Appendix C – Asset Quantities

Asset Quantities (at 30 June 2022)

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Connections	Asbestos cement	100	8.66 km	2,389,125
Sewer Connections	Cast iron	100	0.8 km	2,229
Sewer Connections	Concrete	100	6.86 km	2,141,726
Sewer Connections	uPVC	100	4.87 km	1,339,553
Sewer Connections	Vitreous clay	100	4.59 km	1,257,041

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Maintenance Shafts	uPVC	100	17	71,762

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pipelines	Asbestos cement	100	35.52 km	7,716,746
Sewer Pipelines	Cast iron	100	0.24 km	63,472
Sewer Pipelines	Concrete	100	15.46 km	7,849,780
Sewer Pipelines	Ductile iron concrete lined	100	18.76 km	13,072,940
Sewer Pipelines	Hobas	100	2.75 km	3,704,033
Sewer Pipelines	oPVC	100	9.96 km	3,694,777
Sewer Pipelines	Poly	100	1.53 km	323,644
Sewer Pipelines	PVC	100	0.05 km	19,920
Sewer Pipelines	Relined	100	42.07 km	13,675,180
Sewer Pipelines	Steel	100	0.09 km	133,812
Sewer Pipelines	uPVC	100	52.79 km	10,447,728
Sewer Pipelines	Vitreous clay	100	11.03 km	2,831,672

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Manholes	Concrete	100	2646	19,148,512
Sewer Manholes	Relined	100	43	529,012

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Flushing Pits		70	38	213,631

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Mains		70	8.03 km	1,599,918

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Pod Control Panel		25	222	415,309

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Pod Pumps		25	228	730,443

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Pod Tanks		70	213	2,079,705

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Service Connection		70	8.47 km	1,055,571

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pressure Valves		70	37	57,600

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer RM Valves		50	155	1,343,393

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer RM Valve Pits		100	84	453,010

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Pump Stations	Bunding	100	1	78,166
Sewer Pump Stations	Electrical	15 - 100	112	5,659,895
Sewer Pump Stations	Gantry	50	5	59,676
Sewer Pump Stations	Ladders, platforms, handrails	50	15	111,749
Sewer Pump Stations	Mechanical device (pump, motor, gear box etc)	15 – 50	83	2,089,933
Sewer Pump Stations	Pit	50 – 60	31	1,041,331
Sewer Pump Stations	Safety equipment	100	3	9,902
Sewer Pump Stations	Site infrastructure	30 – 100	54	533,399
Sewer Pump Stations	Structure	50 – 80	23	322,265
Sewer Pump Stations	Tank	50	7	434,169
Sewer Pump Stations	Valves, pipes, fittings	15 - 100	245	1,145,773
Sewer Pump Stations	Vent stack	50	30	674,340
Sewer Pump Stations	Well	60	36	6,891,255

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Treatment Plants	Bunding	60 – 100	4	1,438,446
Sewer Treatment Plants	Earthworks	80 – 200	22	7,137,615
Sewer Treatment Plants	Electrical	15 – 50	105	4,825,107
Sewer Treatment Plants	Gantry	50	12	118,229
Sewer Treatment Plants	Ladders, platforms, handrails	50	38	829,761
Sewer Treatment Plants	Mechanical device (pump, motor, gear box etc)	15 – 50	125	4,060,967
Sewer Treatment Plants	Pit	50 – 60	49	1,232,854
Sewer Treatment Plants	Safety Equipment	15	20	22,910
Sewer Treatment Plants	Site Infrastructure	30 – 80	39	1,670,311
Sewer Treatment Plants	Structure	15 – 200	61	7,727,437
Sewer Treatment Plants	Tank	50 – 60	35	15,332,043
Sewer Treatment Plants	Valves, Pipes, Fittings	20 – 60	256	5,947,468
Sewer Treatment Plants	Vent Stack	70	1	20,595
Sewer Treatment Plants	Well	60	10	1,677,337

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Rodding Ends		100	11	24,243

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer RTU / PLC		10	9	20,900

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Sewer Vent Stacks	Concrete	80	77	1,289,401
Sewer Vent Stacks	Concrete / PVC	80	1	17,157
Sewer Vent Stacks	PVC	80	3	29,726
Sewer Vent Stacks	Steel	80	4	25,913
Sewer Vent Stacks	Steel / PVC	80	3	32,015

Appendix D – Asset Condition

The following table identifies the type of assessment undertaken for each asset type. Financial condition classification is simplified into a 1-5 scoring.

Condition Rating	Condition Type	Condition Rating Description
0	Excellent	A new asset or an asset recently rehabilitated back to new condition
0.5	Excellent	A near new asset with no visible signs of deterioration often moved to condition 0.5 based upon the time since construction rather than observed condition decline.
1	Very Good	An asset in excellent overall condition. There would be only very slight condition decline, but it would be obvious that the asset was no longer in new condition.
1.5	Very Good	An asset in very good overall condition but with some early stages of deterioration evident, but the deterioration still minor in nature and causing no serviceability problems.
2	Good	An asset in good overall condition but with some obvious deterioration evident, serviceability would be impaired very slightly.
2.5	Good	An asset in fair overall condition. Deterioration in condition would be obvious and there would be some serviceability loss.
3	Satisfactory	An asset in fair to average overall condition. The condition deterioration would be obvious. Asset serviceability would now be affected, and maintenance cost would be rising.
3.5	Satisfactory	An asset in average to poor overall condition. Deterioration would be quite moderate and would be starting to limit the serviceability of the asset. Maintenance cost would be high.
4	Poor - Significant Renewal	An asset in very poor overall condition with serviceability now being heavily impacted upon by the poor condition. Maintenance cost would be very high, and the asset would be at a point where it needed to be rehabilitated.
4.5	Poor - Significant Renewal	An asset in extremely poor condition with severe serviceability problems and needing rehabilitation. Could also be a risk to remain in service.
5	Very Poor - Unserviceable	An asset that is no longer providing an acceptable level of service. If action is not taken, asset will need to be closed or decommissioned.
99	Not Maintained/Not Owned by Council	Condition of the asset is unknown. This is an asset that is not maintained by Council.

Appendix E – Relevant Council Documents

- Asset Management Policy (adopted September 2022)
- Asset Management Strategy 2022-2032
- Rebuilding the Richmond Valley Recover Plan Adopted 28 June 2022 (being the Delivery Program)
- Richmond Valley Made 2030 Community Strategic Plan Adopted by Council on 27 June 2017
- Resourcing Strategy 2015-2025
- Operational Plan 2022-2026 Adopted by Council 28 June 2022
- Long Term Financial Plan 2022-2032 Adopted by Council 28 June 2022
- Integrated Water Cycle Management Strategy
- CSP Community Engagement Strategy 2022
- Nixon Clarity Water & Sewerage Issues and Risks – 27 July 2020 V2
- Nixon Clarity Strategic Output Plan Draft AL - W&S AMP – Draft
- Operational-Plan-including-Financial-Estimates-2022-2026-presented-to-Council-28-June-2022_1
- Report Richmond Valley Community Research 2016-09-26
- Revised Delivery Program 2017-2022 Adopted by Council 22 June 2021
- Richmond-Valley-Made-2030-Community-Strategic-Plan-Adopted-by-Council-on-27-June-2017.3
- Richmond Valley Annual Reports
- RVC DSP Sewer Standard of Service
- RVC Safety Hazard-Risk Register 3.0
- RVC Resourcing Strategy 2015-2025
- RVC Water and Sewer Strategic Plan 2018_FINAL
- 1731-1351-Salty-Lagoon-EHMP-WQ-Report-2022_04_v1
- Sewerage Assets Revaluation Final
- Sewer 1 July 2017 to 30 June 2021 Customer Requests
- Sewer Asset Management Plan Adopted by Council on 27 June 2017

Appendix F – Risk Management Actions & Status

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
1 & 13	Work Health & Safety / Knowledge Mgt.	A WHS audit of all key assets (WTP, STP's & Res) should be undertaken to identify all structural WHS issues including barricading and manual handling. The outcomes of this audit should then be included in a mid-term upgrade program. & The WHS team should work with the W&S team to identify and source appropriate signage and PPE for use across all W&S assets e.g., Chemical, and confined spaces signage.	1	High			1. Consult People & Culture to determine tools and framework to be used for the audits. 2. Identify with Coordinator W&S all the sites and assets that need to be inspected/audited. 3. Schedule the audits/inspections with the required staff (P&C, W&S etc.) 4. Document the findings of the audits/inspections as they are undertaken (Vault) and provide outcomes or reports to Management. 5. Task actions (within operational budget capability) to responsible staff and make them accountable for delivery of the work or solution to rectify the risk identified (timeframes and reporting responsibilities to be identified). 6. Any actions required that cannot be readily rectified within operational budgets are to be added to a register of issues/work for follow up.	Investigation and Planning	Corporate, Ops and Assets	Discussions with PnC to be instigated October 2020 with procedure being mapped out for inspections to commence.	In Progress
21		Digital induction, signing-in and recording of site access by staff and contractors should be investigated.	3	High			Development of a sign in sign out process to monitor site attendance and induct contractors appropriately. Also develop a process for single operators across Council.	Planning	Corporate	Ops to work with WHS to adopt a system, paper base or other.	Not Started

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
5	Inflow & Infiltration	Develop a Strategic Action Plan for inflow and infiltration to address the high storm flows across the sewerage network.	1	High			1. Discussions have already taken place with Willow+Sparrow regarding the development of an Inflow and Infiltration (I&I) rectification Methodology. Assets and Operational staff have been working together on this. 2. The methodology has been used to draft a RFQ to be issued on Vendor Panel to provide a service to Council for the inflow and infiltration investigation of catchments 4, 5 and 6 in Casino. 3. The approach will be that the service provider will be responsible for all the inspections of the catchments, assessment conditions, reporting, prioritization of issues/problems identified, budget estimation and preparing designs of any renewals required. 4. Following the completion of this catchment approach to I&I an action plan will be developed for the remainder of the network in Casino to determine how best to progress. This will be determined considering the success/failure, advantages/disadvantages, and learnings from the initial investigation.	Doing	Assets and Ops	Quotation document currently being prepared with coordination of delivery to be managed by W&S with interaction with Ops crews and plumbers as works undertaken onto the ground.	In Progress The I&I Inspection for Casino catchments 4,6,7 and 9 were completed and Casino catchments 8 and the comminator catchment is currently underway.
10	SCADA	Undertake an Audit of SCADA, remote Ops, and Automation	1	High			Works currently being undertaken	Doing	All	Timing to be established	In Progress Casino WTP, RWPS, North &

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
											South reservoirs completed
11		Develop a Strategic Action Plan for SCADA, remote Ops, and Automation	1		High		Works currently being undertaken	Doing	All	Strategy to establish timelines for implementation	In Progress
4	Levels of Service / Asset Mgt.	Determine the preferred visit frequency or all key assets to inform remote access requirements and resourcing requirements.	1		Medium		1. All sites, assets and facilities that are required to be automated, connected to SCADA or monitored are identified. 2. Develop a framework for the assessment of each site to be able to determine what the preferred visit frequency should be. This should involve testing the framework against a test site/location to determine if it works and helps to guide the decision-making process. 3. For each site in the list generated above a site visit is arranged (if required) with key staff including any operators and a determination is made, based on the criticality of the asset/s, maintenance required, service level, location etc. what the minimum and maximum visit frequency should be. 4. This recommendation needs to be completed in conjunction with Recommendation No.20 as maintenance management standards will inform the return or visit frequency. 5. If maintenance management	Investigation	Assets and Ops	Functionality and Level of Service to be determined for the assets so that information obtained through regular inspections is relevant to operation and maintenance.	Not Started

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
							standards or procedures do not exist for an asset or asset class then they will need to be determined prior to undertaking any of the actions for this recommendation. This could involve consulting OEM's, manuals, purchase information or considering best practice in the industry.				
20		Develop maintenance management standards including return periods for all key items to drive automation.	1			Low					Not Started
7	Asset Mgt / Risk Mgt.	Undertake an Asset Criticality Assessment (preferably Council Wide) to identify key assets including normal, abnormal, and emergency Ops.	1			High	This work to be associated with the development of a corporate risk register.	Investigate and planning	Corporate	Procedure and timing to be established.	Works In Progress
6		Establish a more robust risk management system for RVC including structure for Corporate and Operational Risks, as well as the monitoring of mitigations and previously agreed initiatives.	1			High	This work to be associated with the development of a corporate risk register.	Investigate and planning	Corporate	Procedure and timing to be established.	Works In Progress
2	Roles & Resp.	A review of the roles and responsibilities across W&S should be undertaken to address the GAPS in the current Purchaser Provider model. Many of the issues identified are due to poor definition of R&R. This should include but not be limited to risk	1			High	1. Management to conduct a review of the Purchaser Provider model and make determinations on its future. 2. Following the above, the roles and responsibilities of individual staff can be defined to meet the needs of the organization moving forward and the service level to be provided.	Investigation and Planning	Corporate	Scope of review to be established and stakeholders identified to work through	In Progress / Complete W&S Assets staff were restructured to

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
		management, purchaser/provider, Inflow & Infiltration; asset operation requirement; condition assessment, maintenance, scheduling, and reporting; SCADA, electrical & IT, process, and trade waste					3. The above may be a balance of structural and human resource requirements and may even be best facilitated by someone external to the organization who does not have an existing bias or perception of what is/isn't working or what should/shouldn't happen in the future.			resourcing and alignment of tasks.	fall under the same Manager as Ops IT and W&S has developed an improved working relationship with agreed roles & resp.
3	Roles & Resp. / Levels of Services	Identify key Executive / Policy / Corporate issues to give guidance for engineering decisions/reports including population growth, infrastructure buffer capacity; approach to EPA & Health Licenses (Reactive versus Proactive Approach)	1		High		Information included in the current version of the IWMP will assist in this process. This document remains relevant.	Investigation and Planning	All, and include Planning Dev.	Scope of review to be established and stakeholders identified such as planning development area, assets area and operational capacity information to assist.	In Progress / Completed W&S Assets staff were restructured to fall under the same Manager as Ops Urban Regional Growth Management Plan is underway and RJP is identifying future growth areas

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
16	Roles & Resp. / Asset Mgt	Review the external and internal supplier / provider relationships for all maintenance activities. (Who should do what and do they have the capability and capacity?)	1	Medium			Synchronize with Task 2	Investigate and Planning	Corporate	Scope of review to be established and stakeholders identified to work through resourcing and alignment of tasks.	In Progress/Complete W&S Assets staff were restructured to fall under the same Manager as Ops
8 & 22	Asset Mgt / Knowledge Mgt	Review approach to condition assessment and renewal planning to include ongoing, periodic and revaluation. I.e., collect and collate information every time we look at something (include how we rate condition) Develop a Strategic Action Plan for electronic field data collection, management, and reporting	1	Medium			Establishment of information requirements for collation vs maintenance visits, compared with current revaluation data collection. What information is relevant at what time and who is responsible for collection and input.	Investigate and planning	Assets	Part of bigger information gathering which will form initial stage of a lot of works listed, so that hierarchy's, risk register, LOS etc. can be established for infrastructure. To be assessed following	Not Started

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
										reevaluation information.	
9	Asset Mgt	Establish an issues management system either in the current CRM, the asset system or alternative.	1	Medium			Investigate the use of CRM system so that this can assist internal staff to register issues as they are identified.	Investigate and planning	All	Work with Customer Service and PMO regarding the use of CRM system or Pulse program.	<p>In progress/Completed</p> <p>All W&S staff now utilize CRM to record identified issues that require repairs.</p> <p>Vault is used to register WHS issues/incidents positive and negative</p> <p>Fulcrum is used to record asset inspections and the report generated can then be used to appoint contractors to do repair works or generate</p>

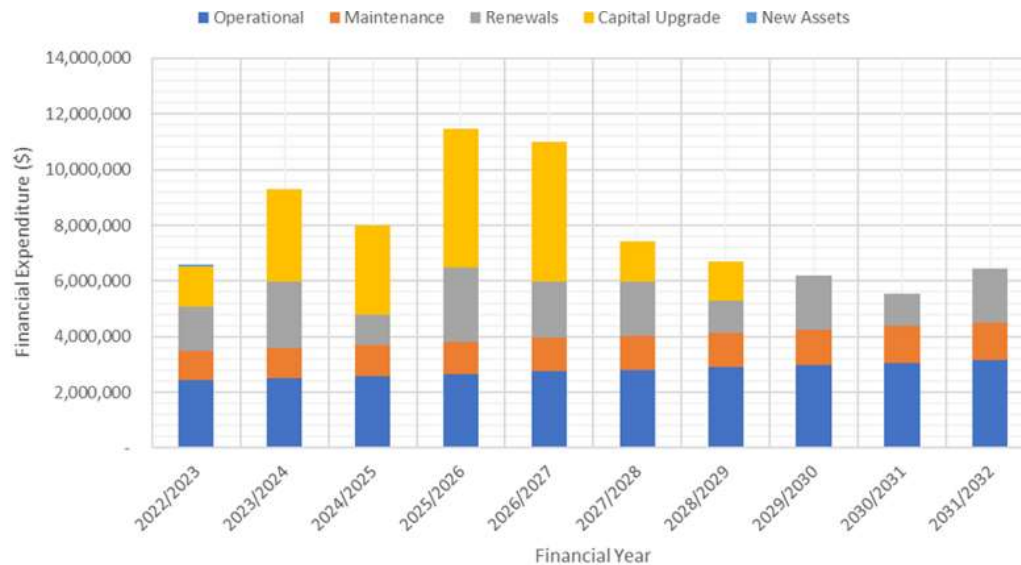
Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
											CRMs for repairs
12	Work Health & Safety	A regular (every 3-6 months) WHS inspection of all key sites should be undertaken to highlight housekeeping, manual handling, signage, and other short term WHS issues that need to be addressed. These issues should be raised as CARs through the CRM system.	2	Medium			This should be a rolling program established under advice from WHS Officers from PnC. There may be existing routines which need to be formalized or documented in response to this.		All		In Progress/Completed WHS Team do inspections of sites throughout the year
14	Work Health & Safety	The Executive and Management should undertake periodic site inspections and include identifying WHS issues and raising CARs to increase WHS awareness/culture.	2								In Progress / Completed. Mgt. do inspections of sites throughout the year
15	Roles & Resp. / Knowledge Mgt	Review the key contact "zippering" (who talks to who and how often) with Rous Water and ensure it is a proactive relationship.	2	Medium			Formalising or documenting existing relationships and forums which Council currently contribute to with ROUS and other agencies	Investigate and Planning	Assets and Corporate	Develop a list of contacts which currently exist, listing forums, and establish if an MOU is required to	Completed Operational and Strategic staff has a good working relationship with RCC staff and issues are flagged asap.

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corporate lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
										formalize any position.	
24		Implement operational skills improvement program by sending staff to other utilities to learn different skills and approaches	3	Low			Utilize contacts in industry network groups which may provide educational tours or information swapping	Investigation and planning	Operational	Ad Hoc, as opportunity arises to relevant projects.	In Progress Although no staff were sent to other utilities there's an established working relationship with surrounding Council's to assist/advise with/on issues
17	Levels of Services / Asset Mgt	Determine the approach to the standardization of key and high use assets e.g., Valves, PLC's, RTU's etc.	2	Medium			Assessment of key items appropriate to needs, and the ability to standardize	Doing	Ops and Assets	Work is ongoing to improve the consistency of items acquired through stores.	In Progress Asset items are standardised where possible or where economical viable
18	Asset Mgt	Review Water & Sewerage Asset Management Plans with a focus on the identification of purpose, inspection, Ops, optimization, maintenance, and renewal to inform	2	Medium			Work will be undertaken as part of the review process aligning with a new Council term and a cooperate plan. Information currently held in AM Plans along with IWMP. Audit scheduled for	Planning	Assets and Ops	Review of AM Plans to be undertaken and draft	In Progress

Rec.. No.	Category	Recommendation	Priority	Risk Rating			Proposed Action	Investigating, Planning or Doing?	Assets, Ops., or corpora te lead?	Initial actions	Current Status Completed/ In Progress/ Not Started
				H	M	L					
		resourcing plans and forward budgets.					May 2021 which will provide direction			produced prior to end of 2021, aligning with CSP process for incoming Council	
19	Ops Mgt.	Develop an optimization approach to all treatment plants (4). E.g., three-monthly optimization deep dive	2		Medium		Results of SCADA investigation to contribute to the outcomes of this task.	Investigation and planning	Ops and Assets	Linked to SCADA investigation Task 10 and 11	In Progress Scada upgrade in Progress
23	Change Mgt	Develop a change management requirement for all new builds, upgrades, and asset alterations	2		Medium		Identified as project-based change, where infrastructure is renewed or upgraded, information can be recorded on the works as executed database, and the reasoning behind the change/improvement is retained.	Planning	Assets Ops	System to record change in operational capacity to be established.	In Progress / Completed Revised operational procedures where applicable are submitted as part of the WAE documentation

Appendix G – 10 Year Financial Forecast

Cost Category	Budget 2022/2023	Budget 2023/2024	Budget 2024/2025	Budget 2025/2026	Budget 2026/2027	Budget 2027/2028	Budget 2028/2029	Budget 2029/2030	Budget 2030/2031	Budget 2031/2032	1-5 Years	1-10 Years
Operations	2,421,237	2,491,354	2,563,693	2,640,939	2,760,678	2,803,003	2,888,016	2,975,805	3,066,465	3,160,109	12,877,901	27,771,299
Maintenance	1,070,687	1,097,463	1,124,898	1,154,822	1,185,542	1,217,084	1,249,468	1,282,712	1,316,853	1,351,889	5,633,412	12,051,418
Renewal	1,589,180	2,390,000	1,112,000	2,674,000	2,046,000	1,950,000	1,150,000	1,950,000	1,150,000	1,950,000	9,811,180	17,961,180
Capital Upgrade	1,441,000	3,310,000	3,190,000	5,000,000	5,000,000	1,450,000	1,400,000	-	-	-	17,941,000	20,791,000
New	80,000	-	-	-	-	-	-	-	-	-	80,000	80,000
Total	6,602,104	9,288,817	7,990,591	11,469,761	10,992,220	7,420,087	6,687,484	6,208,517	5,533,318	6,461,998	46,343,493	78,654,897



Ten Year Financial Projections

Appendix H – 10 Year Capital Improvement Program

Project	Description	Renewal vs Upgrade	Budget \$ 2022/2023	Budget \$ 2023/2024	Budget \$ 2024/2025	Budget \$ 2025/2026	Budget \$ 2026/2027	Budget \$ 2027/2028	Budget \$ 2028/2029	Budget \$ 2029/2030	Budget \$ 2030/2031	Budget \$ 2031/32
850100	Mains Repairs to be allocated	Renewal	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
850101	Junction Repairs to be allocated	Renewal	80,000	80,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
850102	Manhole Repairs to be allocated	Renewal	200,000	200,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
850330	Sewer Connection - Country Lane Casino Broadwater Sewer Scheme Supply e-One Unit	New										
850751	- to be allocated	Renewal	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
850110	Relining Program	Renewal	800,000	800,000		800,000		800,000		800,000		800,000
850950	Future Sewer Renewals	Renewal	100,000	200,000	400,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	Vent stack replacement West Street	New	30,000									
	Duplicate Rising Main from WWPS1 to WWPS8 150 dia	Renewal		364,000								
	Replace Rising Main 4 to WWPS 200 dia	Renewal		493,000								
850332	PS15 Upgrade	Upgrade	130,000									
850333	PS8 Upgrade	Upgrade		240,000								
	PS7 Upgrade	Upgrade		175,000								
	PS9 Upgrade	Upgrade		145,000								
	PS14 Upgrade	Upgrade		250,000								
850334	Switchboard upgrades PS3	Upgrade	140,000									
	SPS2 Odour Control	Upgrade	35,000									
	Comminutor Design	New	50,000									
	SPS 1 RTU Renewal	Upgrade	15,000									
	SPS 3,6,9 Switchboard Renewal	Upgrade	200,000									
	PS1 Replace Pump Impellers	Renewal		59,000								
	PS3 Replace Pumps	Renewal		24,000								

Project	Description	Renewal vs Upgrade	Budget \$ 2022/2023	Budget \$ 2023/2024	Budget \$ 2024/2025	Budget \$ 2025/2026	Budget \$ 2026/2027	Budget \$ 2027/2028	Budget \$ 2028/2029	Budget \$ 2029/2030	Budget \$ 2030/2031	Budget \$ 2031/32
New New 850550 850652 850673 850666	PS5 Replace Pumps	Renewal			24,000							
	PS6 Replace Pumps	Renewal			38,000							
	PS7 Replace Pumps	Renewal				24,000						
	PS7 MHL dosing system upgrade	Renewal	40,000									
	Sew P/Stn Ev - PS8 Upgrade	Renewal					796,000					
	PS3 Upgrade	Upgrade	40,000		90,000							
	VSD SCADA control upgrade	Upgrade										
	Sew P/Stn Bwtr SPS 1 RTU. renewal	Renewal	15,000									
	PS1 Dosing system upgrade	Upgrade	40,000									
	Renewals to be allocated	Renewal										
	Inlet works repairs	Renewal	127,000									
	Radio renewal	Renewal	70,000									
	Wetlands Management	Renewal	57,180									
	Sewerage System Improvements	Renewal		100,000			100,000					
	Augmentation Investigation & Design	Upgrade	250,000									
	Augmentation	Upgrade			600,000	5,000,000	5,000,000					
	Automation - Switchboard and PLC	Upgrade										
	Digesters - Refurbishment	Upgrade						50,000				
	Stage 1 Upgrade - Designs - concept/detailed	Upgrade	200,000									
	Stage 1 Upgrade - Construction	Upgrade						1,400,000	1,400,000			
	Reuse automation	Upgrade	91,000									
	Stage 2 Design	Upgrade										
	Stage 2 Design & Construction	Upgrade	300,000	2,500,000	2,500,000							
	STP Ehd STP UV PLC renewal	Renewal	50,000									
	Reuse effluent water scheme	Renewal			500,000	700,000						
	EAT refurbishment	Renewal										
	New Amenities Building	New										

Project	Description	Renewal vs Upgrade	Budget \$ 2022/2023	Budget \$ 2023/2024	Budget \$ 2024/2025	Budget \$ 2025/2026	Budget \$ 2026/2027	Budget \$ 2027/2028	Budget \$ 2028/2029	Budget \$ 2029/2030	Budget \$ 2030/2031	Budget \$ 2031/32
850748	Automation Switchboard PLC	Upgrade										
850800	Plant & Equipment	Renewal	10,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
850811	Sludge Skid Carting Truck	New										
850814	CCTV Vehicle & Fitout	Renewal										
	SCADA Network server upgrade	Upgrade										

Appendix I – Capital Works Evaluation Module

Council is reviewing a Capital Works Evaluation Module which involves the following workflow:

Initial Concept: The first review is an overarching assessment to determine if the capital works conforms with current management plans and corporate policies. This considers the community current and future needs and identification or corporate supporting criteria.

Justification: The justification phase assesses against Asset Management Plans, Council Strategies, Plans of Management and any financial and timing criteria.

Consequence Evaluation: This phase determines a consequence rating associated with not undertaking the project. This scoring is used with the justification ranking with a matrix assessment applied.

Financial Analysis: This stage determines the financial impacts of a project on Council. For any new assets the WOL evaluation module should be applied. A minimum level analysis on all assessments should include, project expenditure and cash flow, funding sources, and the project revenue.

Cost Benefit Analysis: Identification of benefits undertaking the project, justifiable expenditure, economic, social and environmental factors.

Project Ranking: The final stages determine an overall project ranking. This is calculated through the justification score x consequence score. Project ranking/weighting scores to identify/compares projects of level of importance.

