Water

Asset Management Plan

2022-2032

Richmond Valley Council

Contents

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) provides water and sewer services to residential, industrial, and fringe rural customers within the major townships of the Local Government Area (LGA). This provision of this service relies on pump stations, reservoirs, and associated infrastructure for which it has responsibility within the LGA.

The purpose of this plan is to provide a structured process of management of Council's water reticulation system, documenting the quantity, condition, level of service (LoS) provided, financial planning, risk management, operation, maintenance and renewal of the assets. The plan takes into consideration the legislative requirements of Council in managing such public assets, while balancing the risk and demand for infrastructure with long term financial affordability. The detailed information in this plan provides the framework for responsible asset management of these vital community assets.

The water supply is a combination of water extraction under licence from the Richmond River at Casino, with a supply provided by Rous County Council in the Lower River Region of the LGA. The safe, efficient and effective delivery of potable water to the community is managed via the processes and practices listed within this Asset Management Plan. The water network is valued at $108,803,208 and detailed in the following table:

Water Infrastructure

Asset Group	Asset Type	Quantity of Water Assets	Length of Assets (km)	2022 Gross Replacement Cost
Connections	Service connection pipes	7642	96.35	$ 6,299,194
Filling Stations	Filling stations, batteries, card readers, signs	15		$ 90,208
Hydrants	Fire hydrants	2224		$ 5,699,238
Meters	Water meters	7137		$ 2,703,628
Pipelines	Pipes main, encasement, fire service	5403	197.64	$ 47,255,585
Pump Stations	Pits, control cabinets, pumps, pipes etc.	160		$ 5,248,712
Reservoirs	Pits, control cabinets, pumps, pipes etc.	298		$ 19,717,865
RTU PLC	PLC	8		$ 35,654
Swabbing Pits	Tee and elbow pipes,	41		$ 69,358
Treatment Plants	Pits, air conditioners, flow meters, pumps, pipes etc.	413		$ 19,171,211
Valves	Stop valves, scour valves etc.	1385		$ 2,512,544
	Total	**24,726**	**293.99**	**$ 108,803,208**

Key Issues

A summary of key issues related to the management of Council's water infrastructure are identified in the following table:

Key Issues

Asset	Key Issues
Strategic and Forward planning	• Quantity and quality of Information provided by Council staff on the performance of the water supply system. • Finalising the Strategic planning and options assessment for Casino water supply including the Regional Strategic Planning of the Northern Rivers Regional Bulk Water Supply Strategy. • Risk Management Strategies • Drinking Water Management System
Reticulation and Distribution Mains	• Broken watermains and services • Jammed hydrants • Dirty Water • Water leaks • Poor water pressure • Funding and cost of renewals/capital works
Water Meters	• Water Hammer • Faulty or damaged meters
Reservoirs	• Leaks in reservoir walls • Seizing of valves • Dust ingress
Pump Stations	• Faulty or failing pumps • Pump Failures • Loss power • WHS Issues
Water Treatment Plant	• Manual handling of chemicals • Fluoride breaches of drinking water quality • WHS issues • Filtration issues • High level organics from raw water source • Funding and cost of renewals/capital works • Upgrade of system for increased demand.

Levels of Service - Performance

Service levels of water 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 water authorities.

Council has identified minimum standard performance targets, 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 water quality, compliance, loss of network water, availability, security and limits on restrictions.

Demand – New Infrastructure

Specific government projects that will impact on the water supply network infrastructure include the Regional Jobs Precincts, draft Growth Management Strategy, Casino Place Plans and the Northern Rivers Rail Trail project. The draft Growth Management Strategy[1] 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 water supply network.

The Casino Place Plan[2] identifies additional water supply infrastructure costing of $15.97 million is required to implement strategic items identified as part of the employment and residential development expansion.

Current bulk water is not a current issue, but with climate changes, longer periods of drought and increased growth Council must ensure there is sufficient water to meet future demands.

Demand – Existing Water Infrastructure

Council is undertaking a Water Network Strategy to assist in the planning of water security and upgrades relevant to climate change, changing land use conditions, new subdivision and developments. Council can identify existing water assets which carry substantial increased demand, new infrastructure, upgrades of existing infrastructure to accommodate the growth and demand.

Flood Recovery

This Water 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 water 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 water network to pre-flood condition.

Lifecycle Analysis Water Infrastructure

Water network assets on average have a remaining useful life of 78% of their expected lifecycles based on average condition; however more critical infrastructure assets including water pump stations, water treatment plants and reservoirs are all approaching on average 60% of their useful life.

[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

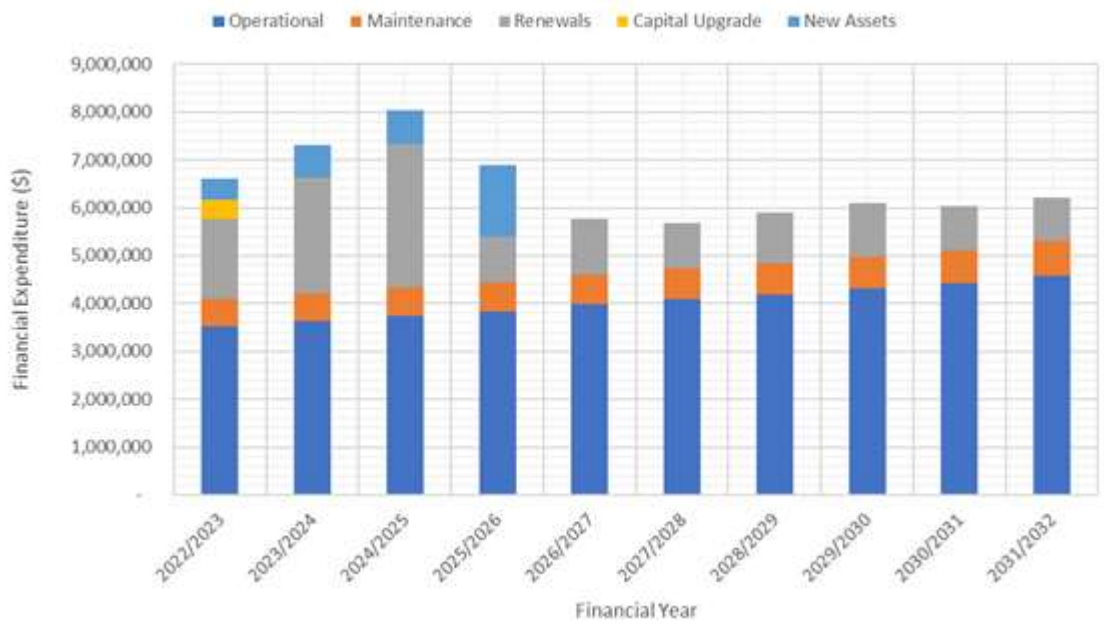
Larger issues including water security and the long-term holding capacity of Jabour Weir in the township of Casino provide ongoing challenges which necessitate a large commitment to improved levels of service and scheme augmentation programs.

Regional strategic planning including the Northern Rivers Regional Bulk Water Supply Strategy will assist with the forward planning enabling Council to meet demand from a growing population.

Ten Year Financial Forecast

The 10-year financial forecast is detailed within ***Appendix G*** for Council's water 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



Council's water supply infrastructure requires further long-term planning where major financial investment will be required to replace or major upgrades over a within the next 30-50 years. This occurs within the ageing infrastructure of the water treatment plant and reservoirs. The current supply of bulk water meets customer demand with demand expected to increase with the implantation of the Regional Jobs Precinct and Place Plans.

A major issue concerning water supply 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 a blended funding options considered:

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

Asset Management Improvements

The following list has 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 water 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.
- Collect the data and complete the valuations for water management devices, pump stations and treatment plants. Prepare scope of works for upcoming valuations.
- Develop the criticality framework for the water infrastructure identifying critical infrastructure across the LGA with the view to improving the management decisions.
- Complete the identification of the infrastructure risk register for Council's water 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.
- Address critical assets framework for improving maintenance plans across entire water infrastructure assets.
- 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.
- Operations Manuals should be updated to ensure the data is current and accurate or at least reference the Asset Register.
- Establish service standards and technical service levels to support the quantity and quality of data captured.

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 Water Asset Management Plan (WAMP) has been developed to assist Council manage water infrastructure, taking into consideration the important links with the whole of the Northern Rivers and Rous County Council.

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 Strategy Water Supply, Long Term Capital Plan and Community Strategic Plan.

The water infrastructure network is valued at $108,803,208 and consists of 197 km of pipelines and associated infrastructure. This includes a weir, water treatment plant, 13 reservoirs, and 8 water pump stations over five separate water schemes which covers two separate water supply systems - Casino and the Mid to Lower Richmond River area.

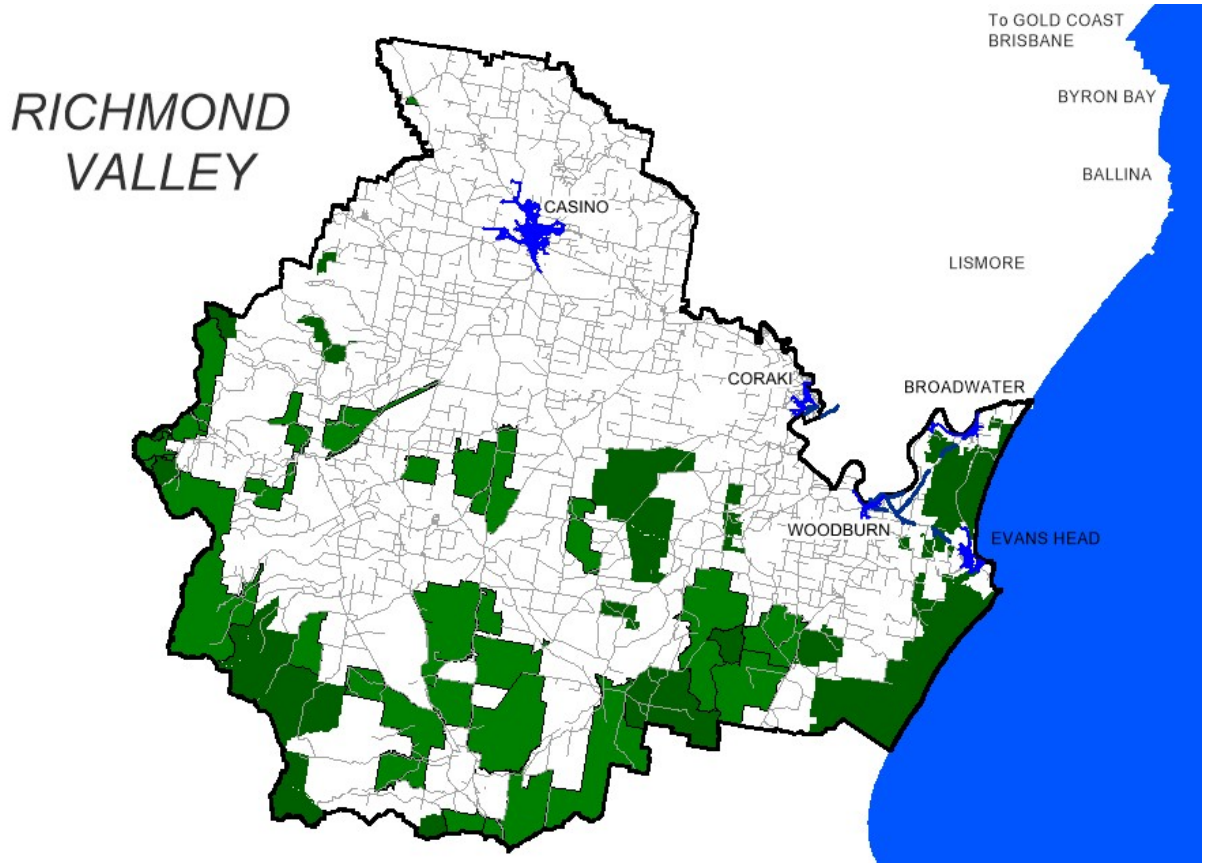


Figure 1-1: Water Supply Network for Richmond Valley Council

1.1 Purpose of this Plan

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

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

- Demonstrate responsible stewardship.
- Translate the Council strategic goals into water 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 water 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 LoS 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

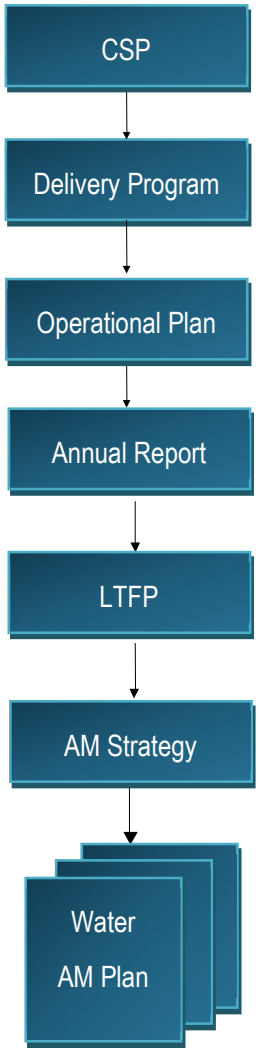
AM plans are a key component of Council's planning process, linking with the following plans and documents:

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 four 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 water assets include the Asset Management Policy, Water Management Policy, Risk Management Policy, Concealed Water Leak – Granting of Allowance, and Drinking Water Quality Policy.

1.4 Asset Management Plan Format

This WAMP 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 the 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 Water Network

The water network consists of 197 km of pipelines and associated infrastructure. Council's major water infrastructure assets consist of a weir, water treatment plant, 13 reservoirs, 8 water pump stations over five separate water schemes which covers two separate water supply systems - Casino and the Mid to Lower Richmond River (MLRR) area. The definitions for each of the asset types across the water asset network are:

- **Water Connections:** consisting of pipes and fittings from the water main to the water inlet pipe of the distribution serving the abutting property.
- **Water Filling Stations**: location and facilities for obtaining bulk water which is purchased via a metered infrastructure.
- **Water Hydrants: f**itting generally located within public locations to attach hoses to water mains. Generally utilised for emergency services (firefighting hoses).
- **Water Meters**: instrument for recording water quantity passing through the outlet used for servicing water accounting billing based upon used consumptions.
- **Water Pipelines:** physical pipelines for transporting drinking water to customers.
- **Water Pump Stations:** installed when the water is unable to flow through pipelines via gravity, Pumps are utilised to increase the pressure, or quantity of water over a period of time. The water pump stations assets contain an extensive amount of asset types to operate these facilities.
- **Water Reservoirs:** large storage holding tank used for the storage of water prior to supplying to residents within a set geographical area.
- **Water 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.
- **Water Treatment Plant:** location which improves the quality of water to be safe to consume. The water treatment plant assets contain an extensive amount of asset types to operate this facility.
- **Water Values**: fitting that allows for regulation control (stop values, scour, backflow prevention values, and check values).

The water infrastructure and quantities for Council's water 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 Water Asset Network

Asset Group	Asset Type	Unit	Quantity of Water Assets	Length of Assets (km)
Water Connections	Service connection pipes	km	7642	96.35
Water Filling Stations	Filling stations, batteries, card readers, signs	No.	15	
Water Hydrants	Fire hydrants	No.	2224	
Water Meters	Water meters	No.	7137	
Water Pipelines	Pipes main, encasement, fire service	km	5403	197.64
Water Pump Stations	Pits, control cabinets, pumps, pipes etc.	No.	160	
Water Reservoirs	Tanks, pits, control cabinets, pumps, pipes etc.	No.	298	
Water RTU PLC	PLC	No.	8	
Water Swabbing Pits	Tee and elbow pipes	No.	41	
Water Treatment Plants	Pits, air conditioners, flow meters, pumps, pipes etc.	No.	413	
Water Valves	Stop valves, scour valves etc.	No.	1385	
	Total		**24,726**	**293.99**

Casino Water Treatment Plant

The Casino water treatment plant, on Summerland Way, was built in 1985 and officially open in March 1986. Raw water is drawn from the Richmond River upstream of the Jabour Weir north west of the town. Treated water is stored in three reservoirs in North Casino and one reservoir in South Casino. Major water consumers in Casino include the Casino Food Co-op (formally Northern Cooperative Meat Company), Casino Hide Traders and Richmond Dairies. There is no relationship between quantity and replacement value as shown in ***Appendix C***, e.g., there is only one treatment plant, but it represents approximately 18% of the value of the water network.

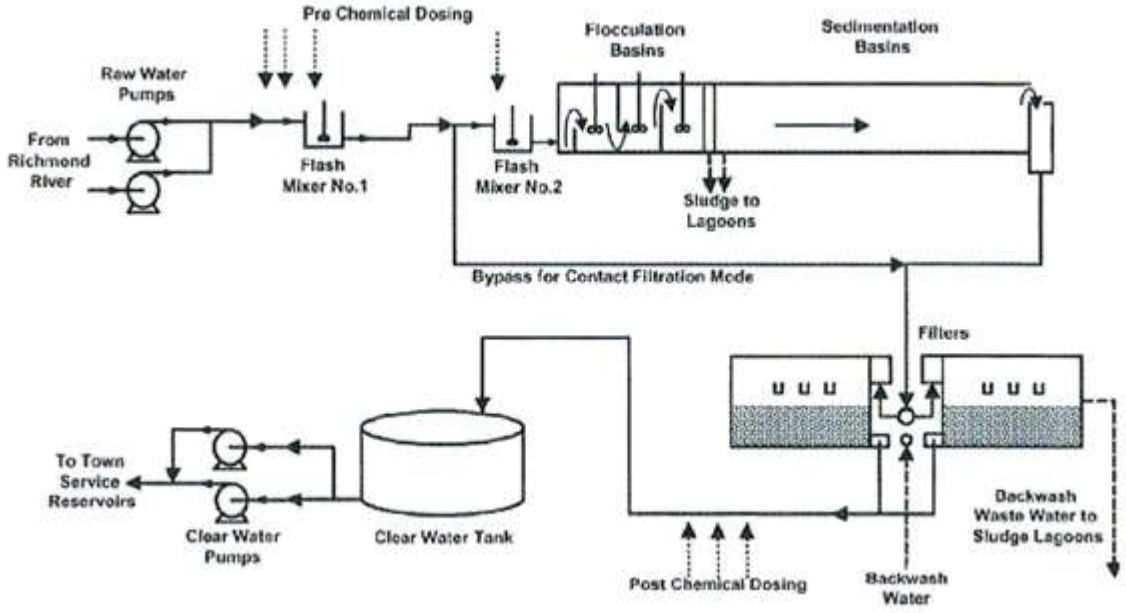


Figure 2-1: Casino Water Treatment Plant Process Flows[3]

[3] Source: Operations Manual – Casino WTP

Figure 2-1 illustrates the treatment process through the plant from the Richmond River to the town service reservoirs.

The Casino water treatment plant is a conventional water treatment process, utilising coagulation, flocculation, settling and filtration stages.

The water treatment plant is disaggregated into the following components being:

- Valves, pipes and fittings of a variety of diameters, materials, and configurations.
- Electrical assets such as motors, variable speed drives', control panels and cabinets etc. Electrical cabling providing access to and distribution of power, around the treatment plant.
- Mechanical devices such as a variety of pump types and sizes.
- Tanks for storage and application of chemicals on-site structures to support tanks, and pump wells.
- Ladders and stairs, platforms, and handrails to provide safety to personnel and visitors.
- Pits to support and provide access to the underground assets including pipes, flow meters, dosing points.
- On-site infrastructure such as roads, car parks, fencing and stormwater drainage.
- Structures including building structure, shed, plinth and travelling bridge. Internal pipework and fittings for transportation of fluids and chemicals.
- Safety equipment such as fire extinguishers, eye wash and showers for chemical protection.
- Overhead gantry for lifting and moving the heavy equipment around the pump station.
- A variety of pump types (dosing, pressure, clear water and sampling) are used at the WTP.
- Earthworks that were reshaped resulting from excavation and to meet the hydraulic profile required for the water treatment.
- Bunding for protection of the sites from spillage and chemical contamination.
- Switchboards for the major raw water pump station.

Pump Stations

The pump stations range from the major raw water station at the Richmond River to the much smaller booster pump stations within the water schemes. Due to the complexity and size of the raw water pump station, the components assigned to 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 and pump 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, 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 for the major raw water 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' 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 30 June 2022 is:

P. Stn. Components	Electrical	Valves, Pipes & Fittings	Mechanical Devices	Structures
Ratio between Components	1.0	1.79	2.1	3.77

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

Reservoirs

The reservoirs consist of 13 tanks used for water storage to meet the daily demands of the community at the various towns where they are located. While the tanks are predominantly steel structures, some concrete tanks are operational. Each tank has been roofed to protect the drinking water from being contaminated by external sources such as birds. The components have been segmented to an appropriate level however as can be seen in the chart one tank is under the tank component while the remainder are under the structures category.

As identified below, the structures category is clearly the category of dominance by replacement value. The relative value between the major components at the reservoirs as of 30 June 2022 is:

Reservoir Components	Valves, Pipes & Fittings	Electrical	Structures
Ratio between Components	1.0	1.23	14.22

2.1.1 Casino Water Supply

The Casino system comprises of a weir, raw water pump stations, clear water tank, water treatment plant, four reservoirs, a booster pump station and a network of pipes (115 km) that distributes water to 9,600 people. Raw water from the Richmond River is fully treated and reticulated to the town of Casino. Historically rainfall tends to exceed evaporation for only two months (February and March) with a rainfall deficit from April to January.

The town of Casino is serviced by a water treatment plant (WTP) and RWPS constructed in 1985 (which replaced the old water treatment plant located at South Casino). Raw water from the Richmond River flowing at Jabour Weir is extracted via a pumping station at the river. Casino's water supply sourced from the Richmond River at Casino has an entitlement of 3,427ML/pa or 25% of the total entitlement in that water source. The water is treated and reticulated to the town of Casino through a network of pipes and four reservoirs, three at North Casino and one at South Casino.

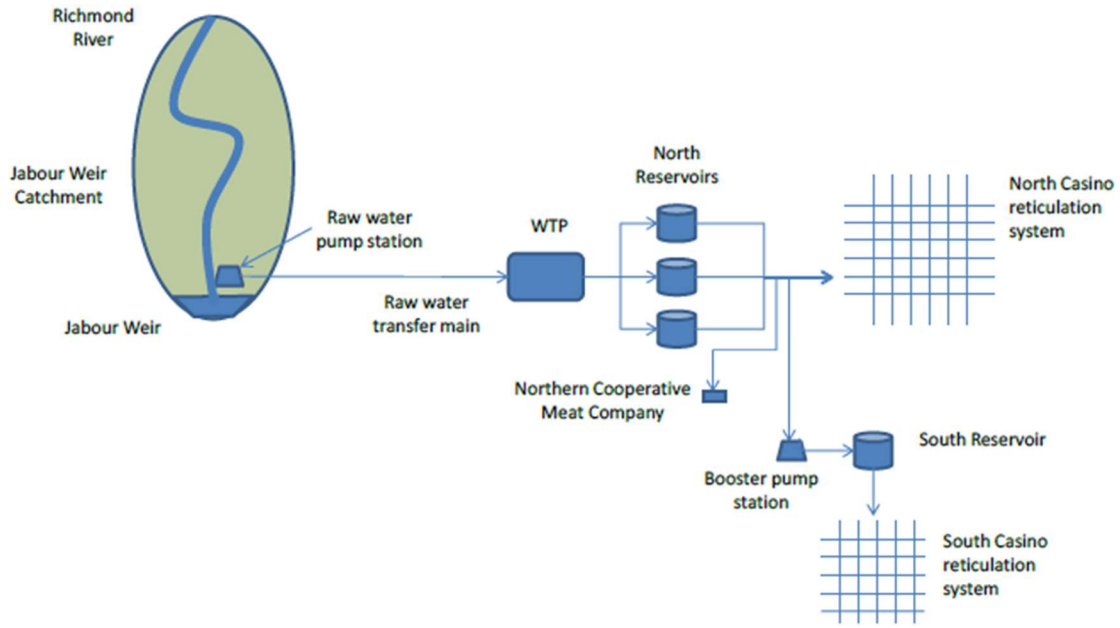


Figure 2-2: Casino Water Supply System Flow Chart[4]

2.1.2 Lower Richmond

The Lower Richmond River (LRR) reticulation system distributes water purchased from Rous Water. The system supplies water to the towns of Evans Head, and the villages of Broadwater, Woodburn, Rileys Hill and Coraki (which also services nearby Box Ridge). Council owns 8 reservoirs and a network of pipes (total length 77 km) distributing from the reservoirs. The source of water is a combination from Rocky Creek Dam and bores. Historically rainfall exceeds evaporation for eight months in the Rocky Creek Dam catchment (which is the source of water for lower river towns).

Rous Water supplies bulk water under a Water Supply Agreement (WSA) to four constituent councils in the Northern Rivers (Lismore, Byron Bay, Ballina and Richmond Valley). Rous Water is responsible for the

[4] Source: RVC Water Asset Management Plan 2017 – 2027 – Pg. 14

treatment, construction, extension, protection, maintenance, control, and management of bulk water supply works. Council is responsible for assets used to distribute water services in the LRR water supply system. Richmond Valley Council owns all pipes downstream of the reservoirs, one of which (Langs Hill Reservoir) is leased to Rous Water. The town of Evans Head is provided with water by two reservoirs. North Evans Head is serviced by the lower reservoir; whilst part of South Evans Head is supplied by the high zone, and the remaining serviced by the low zone reservoir.

Council distributes water to customers in the Lower River area through four separate distribution servicing:

1. Evans Head, population served approximately 2,700 people.
2. Woodburn, population served approximately 630 people.
3. Broadwater and Rileys Hill, population served approximately 660 people: and
4. Coraki (including Box Ridge), population served approximately 1,220 people.

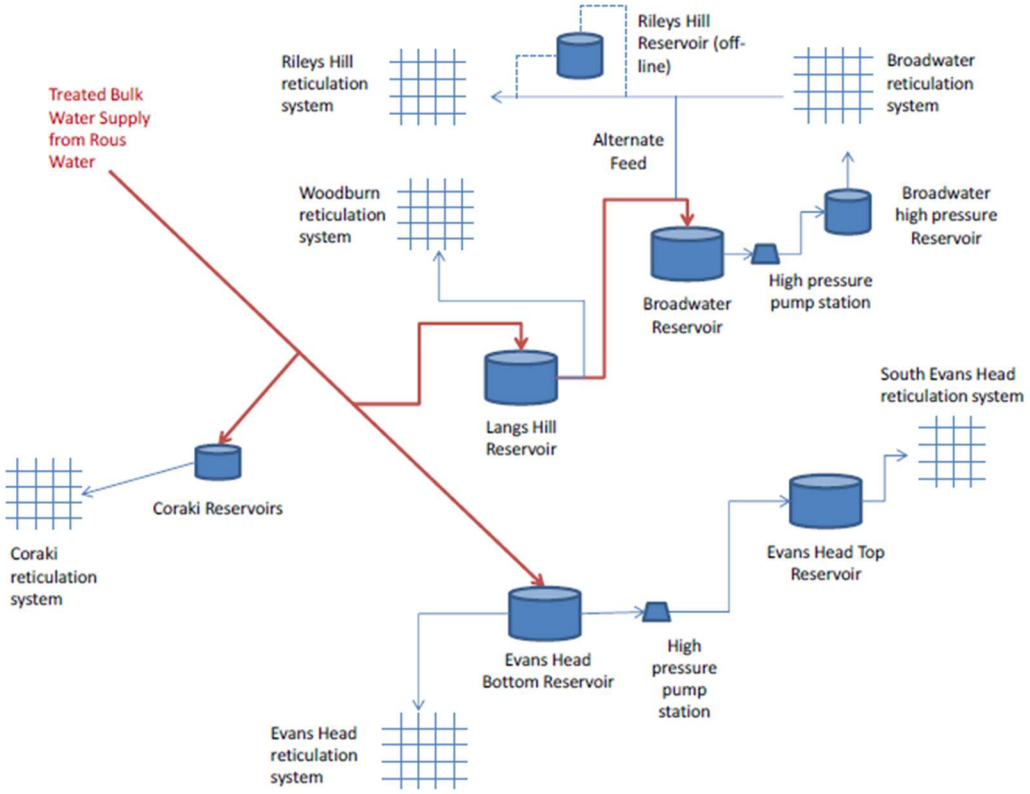


Figure 2-3: Lower River Water Supply System Flow Chart[5]

The village of Woodburn is served by one reservoir located on Langs Hill via Woodburn. Coraki is comprised of a Lower Reservoir and two smaller tower reservoirs that also serve the locality of Box Ridge via interconnecting pipes. An in-line booster system provides increased pressure to the Box Ridge community during nominated hours of the day.

Rileys Hill receives water from the Broadwater reservoir. There is a small reservoir at Rileys Hill which acted as a backup when the Broadwater Sugar Mill was operating. The villages of Rappville and Fairy Hill are not supplied with a reticulated water supply, water is harvested and provided by individual private rainwater tanks.

[5] Source: RVC Water Asset Management Plan 2017 – 2027 – Pg. 15

Council plans to augment the water supply and sewerage schemes to cater for growth, improve sustainability and achieve more integrated systems. Major projects may include:

- Augmentation of the Casino water source to increase yield and improve reliability of supply;
- Investigation and implementation of an emergency water source for Casino to improve reliability in drought and emergencies; and
- Possible implementation of an irrigation re-use scheme to recycle water from Evans Head.

2.2 Water Functional Hierarchy

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

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

2.3 Asset Performance

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

Performance monitoring of the water assets includes:

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

2.3.1 Condition Assessments

Full network condition assessments are conducted every 5 years through the statutory revaluation process. As part of the asset revaluations for Water and Sewer infrastructure the network was reviewed this year (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.

Both the water treatment plant 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 spread of years for water pump station replacement are based on condition based remaining life.

When condition assessments have not been recorded or updated (eg water pipelines assets underground and inaccessible), 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 water 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 condition framework for water assets is attached in ***Appendix D***.

As can be seen from the age profiles, each of the asset groups comprise of a single high-cost peak, that represents the cost of replacement of assets at that point in time. During the additional analysis, all the points

showing peak cost could be initially spread across +/- 5 years to reduce the funding burden. As the asset conditions are updated over time the asset remaining lives should be adjusted to reflect the real state of the assets. As the peak in the pipelines profile represents a significant number of water mains, it should be initially spread over +/- 20 years, as in reality, the assets would likely require replacement over that timeframe and is likely to be normally distributed.

Figure 2-4 illustrates the replacement value of the asset types while simultaneously displaying the average condition of each asset type. As to be expected, the asset types with the largest value are the pipelines, reservoirs and the treatment plant.

Council continues to invest in information systems and evidence-based data including condition ratings, remaining useful life, depreciation patterns which improve the infrastructure and long-term financial planning functions, for the next ten years and new works scheduled to improve the water business.

The average condition of the assets within each asset type varies between 0.5 (Excellent) and 3.5 (Average).

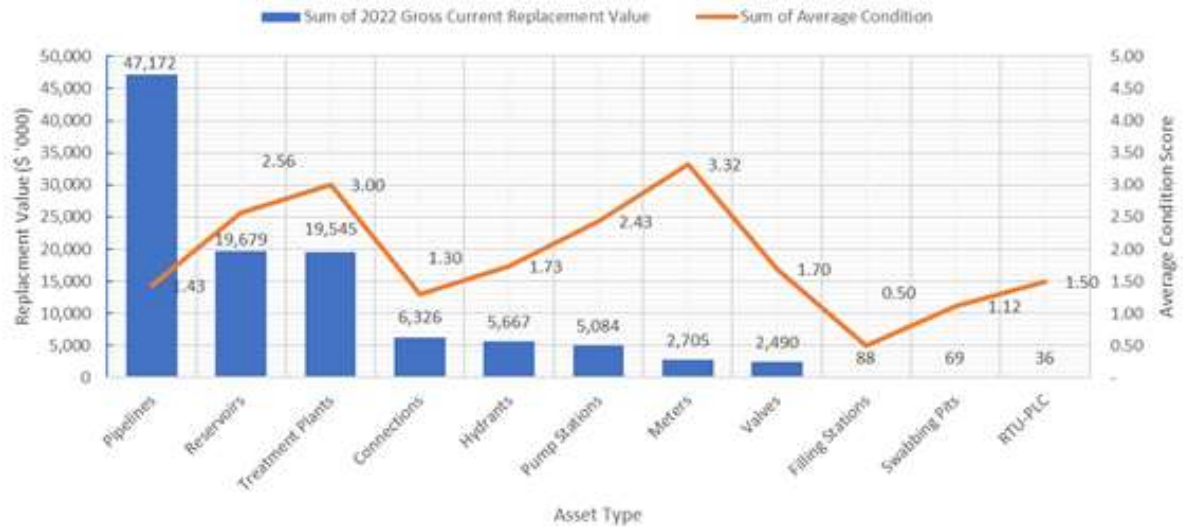
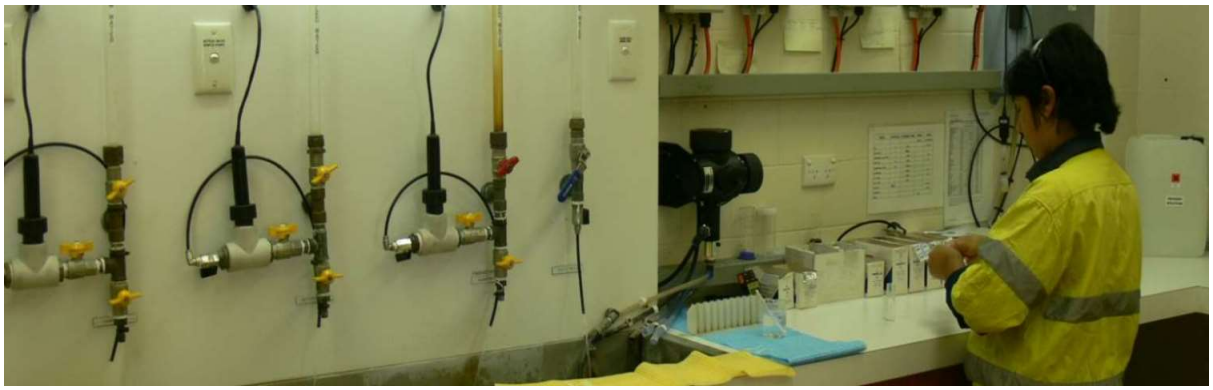


Figure 2-4: 2022 Total Replacement Value and Average Condition Score by Asset Type



2.3.2 Customer Requests

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

Table 2-2: Water Infrastructure Related Customer Requests

ASSET TYPES	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL	TRENDS
Water Infrastructure Maintenance and Repairs	328	366	426	196	1316	↘
Water Pressure	11	11	17	8	47	↘
Water Quality	17	43	26	3	89	↘
Water Supply Issues	22	27	19	12	80	↘
TOTAL	378	447	488	219	1532	↘

Trend Legend:

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

It can be observed from the above table that requests have decreased since 2018/19 across the water asset areas. Whilst the service levels have remained unchanged Council predicts community focus has been redirected to other priorities as a result of the natural disasters that have occurred in the past 3-5 years being drought, fires, flooding and COVID-19. Council has improved services through ongoing maintenance and specific improvement projects such as the pressure booster station at the Evans Head High Zone Reservoir.

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, 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 and 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 assets:

- 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 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 fulfil 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); and

- 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 Water Infrastructure

During the 2022 Flood Natural Disaster essential community infrastructure of Council's water network systems were significantly affected by damage. Council is required to make significant repairs to the Casino water supply system including replacing damaged water meters.

Core objectives related water Infrastructure of the '*Rebuilding the Richmond Valley Recovery Plan'* are:

Objective #4 - Restore Essential Infrastructure

Objective #6 – Improve Disaster Resilience of Public Assets

Objective #7 – Build Resilience in a Changing Climate

Forward planning involves Council finalising the Casino Water Security Study and Water Treatment Plant review to enable future growth, future water security and ensuring the community is better prepared for future droughts and bushfire. Council is committed to partner with Rous Water to deliver the Regional Demand Management Strategy.

The Objectives of relevance to this AM plan include:

- Provide a defined LoS 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 LoS;
- Identifying, assessing and appropraitely controlling risks;
- Having a LTFP which identifies required, affordable expenditure and how it will be financed;
- Ensure adequate maintenance and renewal of water infrastructure and assets; and
- Advocate for additional water funding from all levels of government.

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

3.2.1 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.
Asset Planning	Asset information compilation, database management, mapping, works prioritisation and programming, financial reporting, valuations. Grant funding.
Asset Operations	Operations of the water network and developing the operations budget.
Asset Maintenance	Maintenance planning, resource management, establishing the maintenance budget and defect inspections.
Asset Renewal	Developing the renewals works program.
Asset Disposal	Proposing the disposal of assets and decommissioning them.

Key initiatives associated with the water network include:

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

A service performance outcome indicator will be the community satisfaction rating out of 100 with how Council has performed on the condition and services of local water.

The Annual Report further identifies achievements for the water infrastructure attributed to each department with a capital works program achieving a 60 per cent target completion.

3.2.2 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 LoS to meet the community 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 (GIS), finance system and document management system, integrating asset management with all of Council's operations.

3.2.3 Water Supply & Sewerage Strategic Plan[6]

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

- 2008 IWCM Strategy.
- 2012 Review of the IWCM Strategy (draft).
- Draft Water Supply & 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.
- 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 progress towards implementation of the preferred IWCM Scenario.

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

3.2.4 Integrated Water Cycle Management (IWCM)

The IWCMP is a 30-year strategic planning tool for local water utilities enabling Council 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 IWCMP 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 LoS relative to users' willingness to pay.

The issues addressed by the Strategy are:

- Town water supply security;
- Ground and surface water sharing plans. Council must be involved in the water sharing process to ensure town water supplies are adequate;
- Sustainable effluent reuse with end user requirements considered;
- Existing land use practices and urban impacts affecting surface water quality;
- High operating and management costs for water and sewerage systems leading to relatively high typical residential bills;
- Compliance with current and future potable water standards;
- Hydrologic stress in catchments contributing to unsustainable extraction particularly during low flows;
- The need for sustainable stormwater / rainwater reuse;
- Climate change altering the rainfall and temperature patterns of the study area; and
- Poor demand management in terms of consumption and unaccounted for water.

The IWCM Plan has set the future direction for Council water supply 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 community, residents, water users and ratepayers	Councillors
Emergency services	Executives
Government agencies (inc Rous County Council)	Managers
Developers	Personnel
Contractors/suppliers	Field Workers
Utility providers	Assets Department
Insurers	Finance Department
Special interest groups	Operations Department
Tourists and visitors	Customer Service Area

This plan will demonstrate to the various stakeholders that Council is managing its water assets responsibility. 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 program identified within this AM plan. They support Richmond Valley's strategic goals and are based on customer expectations and statutory requirements.

The LoS 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 LoS 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; and
- To enable customers to assess suitability, affordability and equity of the services offered.

The adopted LoS for water 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., water regulations, water 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 water authorities State-Wide.

Council has identified minimum standard performance targets and 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 Richmond Valley Council Community Research. The random survey of 403 residents 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 Satisfaction Results 2013	Customer Survey Satisfaction Results 2016	Customer Survey Satisfaction Results 2021
Overall satisfaction with performance	82%	94%	86%
Maintaining local water infrastructure and assets	-	-	82%
Economic development and local employment	2.95	3.37	3.40
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 Councils throughout NSW. Compared to an 'All of NSW' measure for metropolitan and regional Council's, Richmond Valley Council's performance is in line with regional benchmarks.

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 water 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 Water

Community LoS	Community Expectation
Safety	Water supplied meets service standards suitable and safe for human consumption.
Quality	Maintenance is undertaken regularly to maintain good quality drinking water conditions.
Quantity	Planning is being undertaken to ensure quantity and reliability of water supply is available bother short and long term.
Reliability	Reliability standards are delivered including pressure, minimal loss of supply or reduced restrictions.
Service Cost	Lifecycle costs are managed to deliver services within budget constraints.
Legislative Compliance	Compliance with all relevant applicable legislation.

4.2 State-wide Indicators

NSW Department of Planning and Environment uses a regulatory and assurance framework to performance monitor local water utilities within regional NSW under the National Water 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 water supplies 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
Water Quality Complaints	No. of complaints per 1000 properties	0	2.46	0	0	3.27

Table 4-4: Environmental State-wide Indicators[7]

Performance Indicator	2016-17	2017-18	2018-19	2019-20	2020-21	Trend	Council State-wide ranking
Headworks transfer mains length (km)	2	2	2	2	2	↔	20
Infrastructure leakage index (ILI)	-	-	-	-	-		Not ranked
No. of main breaks per 100 km	-	0.52	3.63	43.17	39.08	↑	11
No. of main breaks total	-	1	7	86	78	↑	16
No. of pump stations	7	7	7	7	7	↔	45
No. of pump stations per 100 km	3.72	3.72	3.72	3.72	3.72	↔	36
Real water losses (kL/km/day)	2.64	2.72	5.29	3.18	1.78	↘	25
Real water losses (litres/connection/day)	-	-	-	-	-	-	Not ranked
Rehabilitation of mains (% of total length)	-	2%	1%	1%	-	↔	Not ranked
Rehabilitation of service connections (%)	1%	1%	1%	1%	1%	↔	15
Total Length – trunk and reticulation mains (km)	187.6	191	192.7	199.2	199.6	↑	45
No. of non-residential assessments	760	824	813	804	797	↔	Not ranked
No. of residential assessments	6,761	6,709	6,727	6,774	6,765	↑	Not ranked
Total no. of assessments	7,521	7,533	7,540	7,578	7,562	↑	Not ranked

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
↘	Initial upward trend then trending lower	↗	Initial downward trend then trending higher

Indicators such as head works transfer mains lengths and pump station numbers are used to benchmark and compare against other local water utilities. Improvements in indicators such as water loss is due to repairing concealed leaks and overall network maintenance, which has contributed to an improvement in these key indicators.

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

Council implemented a new Customer Request System, which has had limitations and differences in the reporting period post 2019. This is reflected in the levels of mains breaks which appear to be not recorded under the correct classification.

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: Water Supply Minimum Operational Performance Indicators

Performance Indicator	Target LoS
System Performance	
Minimum pressure at water meter (m head)	12 (except for existing high-level zones)
Average annual demand (kL/res property)	200
Domestic quantity available per peak day (L / tenement / day)	2,500
Consumption Restrictions in Droughts	
Maximum frequency of restrictions (subject to supply volume, blue green algae, and Rous Water Guidelines) (number of times per 10 years)	5
Maximum duration of restrictions (months / 10 year period)	12 months
Ability to supply demand through the worst drought on record (% of water demand)	80 (i.e., a 20% reduction in consumption).
Interruptions to Supply (per year per supply)	
Planned (95% of time)	
Notice given to domestic customers (between 9am and 4pm) (days)	1
Notice given to industrial and commercial customers (times to be negotiated) (days)	7
Unplanned	
Maximum duration (hours)	8
Maximum interruptions to supply (per 1,000 properties p.a)	70
Main breaks (per 100 km main p.a.)	10
Service Provided	
Time to provide an individual, residential connection to water supply in serviced area (working days)	10
Water Quality	
Potable Water Quality	ADWG 2011

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)		
Priority, Issues and Effects	***Customer given informed feedback***	***Repairs to commence***
Priority 1: A complete failure to maintain continuity of supply to large number of customers or critical user at critical time		
Possible Issues: Broken water main, broken service, jammed hydrant, no water, dirty water, leak creating a major issue. Typical Effects: Personal injury or risk to public health, loss of supply, major property damage, failure to maintain quality or quantity of service, large volume of water wasted, significant unplanned depletion of service reservoir, major environmental impact.	Within 1 hour	Within 2 hours
Priority 2: Partial failure to maintain continuity of supply to small number of customers or critical user at a non-critical time		
Possible Issues: Missing hydrant/valve lid, poor pressure, leaking tapping, ferrule, stop tap, water main/service, valve or hydrant, minor leak on footpath or roadway, partial failure of connections, water hammer, faulty or damaged meter. Typical Effects: Minor property damage, minor environmental impact.	Within 1 working day	Within 24 hours
Priority 3: Known fault, non-urgent.		
Possible Issues: Service disconnection, faulty hydrant/valve, missing hydrant. Typical Effects: Need for preventative maintenance, minor customer impact.	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 CRM 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 water network infrastructure.

5. Demand

Council's fundamental role is to provide services to the community and its water assets are a means to support this. Consequently, future demand for water and associated water 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 and changing community expectations of service levels, all affect the need for water assets. Predicted population growth for the Casino area is expected to be the biggest driver of demand for the reticulated water service. Other drivers of future demand include changes in household lot size, occupancy rates, dwelling mix and the uptake of water efficient devices.

5.1 Demand Drivers

Future demand is based on the growth in household numbers with demand from the large industrial businesses remaining constant. Previous demand management forecasting for Casino anticipated consumption to exceed the Jabour Weir extraction limit of 3,427 ML/year by 2035. Specific projects that will impact on Council's water infrastructure in the future include:

- Secure funding and commence replacement of the carbon dosing system at Casino Raw Water Pump Station.
- Secure funding and complete flood damage repairs to water assets.
- Commission design for Casino WTP upgrade.
- Upgrade chlorine dosing systems at Casino WTP.
- Finalise Casino water security options assessment in conjunction with Regional Jobs Precinct Masterplan and Casino Place Plan.
- Work with Rous Water and the Northern Rivers Resilience Project to finalise water security options for the Mid-Richmond.
- Complete Richmond Valley Water Management Strategy, including water security options, and seek community feedback.
- Complete automation upgrade at Casino WTP and Raw Water Pump Station.
- Partner with Rous Water to deliver the regional demand management strategy.
- Second stage of Casino water security option assessment report to investigate the need for an emergency source e.g., bores.

5.2 Demand Forecast

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 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 increased housing supply and essential public infrastructure including Council's water 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.

Figure 5-1: Population Statistical Areas

Table 5-1: Population Change 2021– 2031[8]

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%

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.

[8] Source: Draft Growth Management Strategy, GYDE Consulting, November 2022.

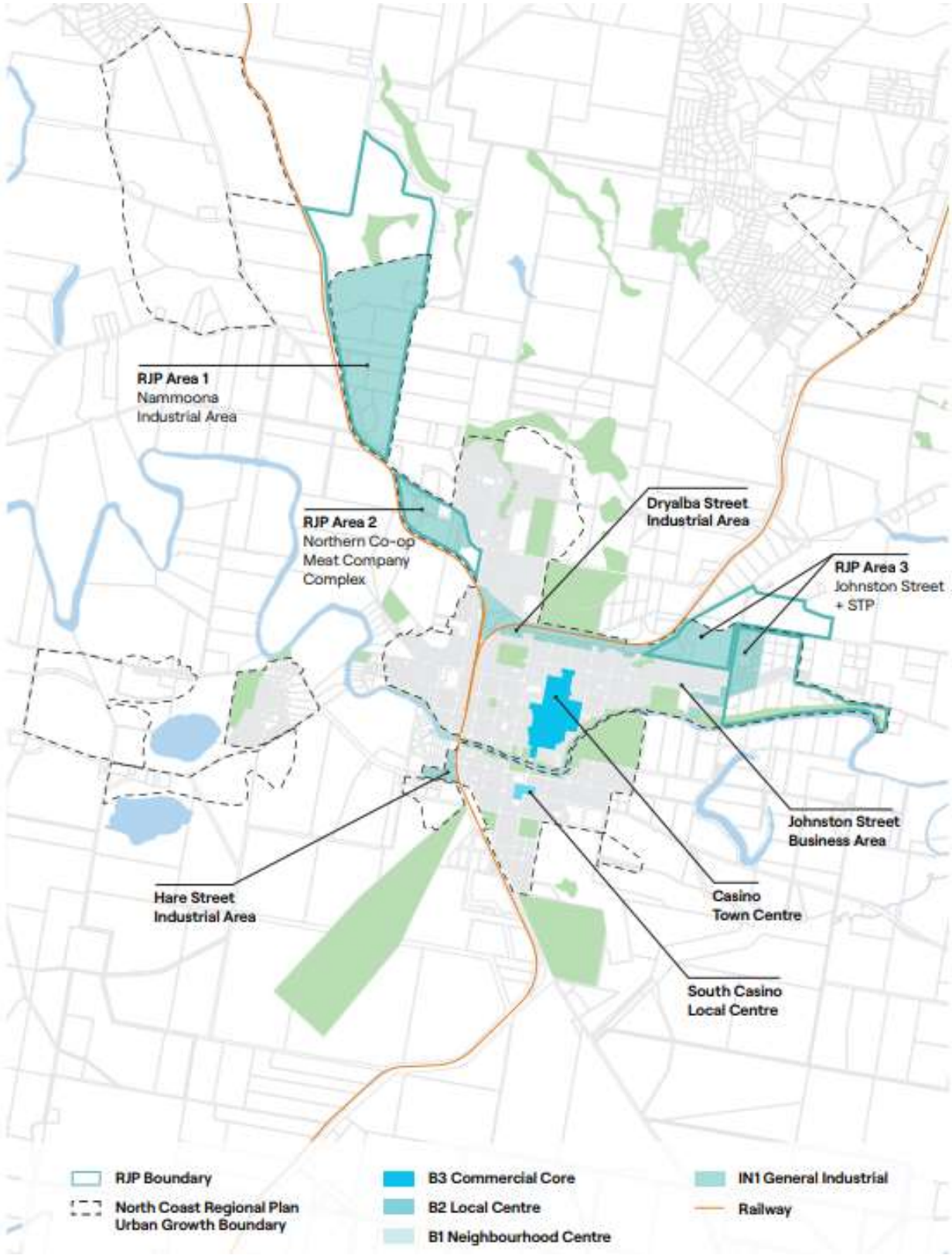


Figure 5-2: Regional Jobs Precinct and Draft Growth Strategy Areas.

The draft Casino Place Plan provides planning towards supporting growth for population, employment and housing. It is recognised than an estimated $15.97 million is required in new water infrastructure to service the residential investigation areas.

The development areas at the time of this plan are identified in Table 5-2: Recent Developments.

Table 5-2: Recent Developments

Development Area	Year Start	Year Finish	Dwellings / Lots	Status type
Currajong Street, Evans Head	2011	2018	20 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 may result in the need for new or upgraded water related 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	Approved / Under construction
George Street, Broadwater (Stage 2)	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	Year Start	Year Finish	Dwellings / Lots	Status type
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

Development Area	Year Start	Year Finish	Dwellings / Lots	Status type
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 water infrastructure to cope with the increasing water flow generated from the land developments. The consequence will be minimal in the short term but will result in increased wear and tear and deterioration of supporting water assets such as the water treatment plant (Loading) and pumps, motors, and chemical dosing assets due to increased operation and consumption.

The water system capacity for each major water facility is identified in Table 5-.

Table 5-5: Water System Capacity[9]

System Facility	Capacity	Capacity (ET[10])
Jabour Weir & Raw Water Pump Station	Secure Yield = 2,500 ML/a	11,600
Casino WTP	Capacity = 23 ML/d	8,600
Casino Transfer System	6,254 total assessments in 2039	8,636
Evans Head Transfer System	3,113 total assessments in 2039	2,954
Woodburn Transfer System	529 total assessments in 2039	508
Broadwater/Rileys Hill Transfer System	405 total assessments in 2039	505
Coraki Transfer System	675 total assessments in 2039	642

5.4 Impact of Trends on Infrastructure

5.4.1 New Infrastructure

Based on the development applications identified in Table 5-3, the impacts on new water infrastructure such as pump stations, reservoirs and treatment plants can be estimated for demands until 2037. The new infrastructure in the long term based on growth may require:

- Additional water mains as the network grows in the outer fringes.
- Potential for more reservoirs for additional storage.
- New infrastructure at the treatment plant as the plant is upgraded.

[9] Source: RVC Development Servicing Plan, Water Supply Services, September 2010

[10] ET – Equivalent Tenements

5.4.2 Existing Water Infrastructure

Council is undertaking a water strategy to assist in the planning of water upgrades relevant to changing land use conditions, such as industrial complexes and subdivision developments. In addition to water mains, the Casino Water Treatment Plant may require upgrading in the long term based on additional consumption.

5.4.3 Draft Growth Management Strategy, November 2022

The draft Growth Management Strategy provides guidance to shape the community as an emerging strategic centre within the NSW Northern Rivers. This includes support for both residential and industrial land development ensuring sustainable growth within the Richmond Valley area. The strategy provides clear direction for the location and priorities to manage growth over the next 10-20 years. The plan identifies the need for a coordinated approach for delivery of water supply infrastructure.

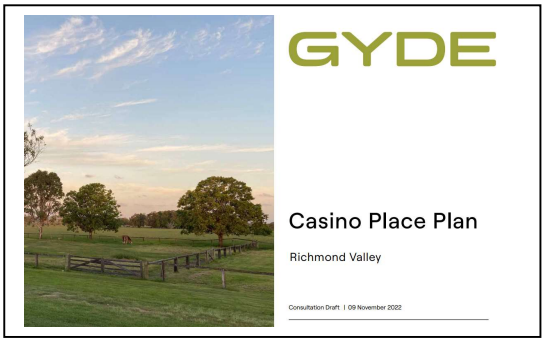
5.4.4 Richmond Valley Regional Jobs Precinct, 2022

The Regional Jobs Precinct (RJP) is designed to create an additional 600+ jobs within Casino and surrounds with a focus on high-value agriculture, food processing, manufacturing, distribution and renewable energy.

The improved planning pathway aims to attract investment and a diversity of business opportunities to grow the local workforce within Casino and surrounds. This is done through support in simplifying the planning process and reduced delays in development approvals.

5.4.5 Casino Place Plan, 2022

The Casino Place Plan is a key planning support document to assist with the delivery and impacts of the Regional Jobs Precinct. Whilst the RJP focus on employment the place plan supports sustainable planning for housing, employment growth, and place outcomes.



The plan identifies additional water supply infrastructure costs of $15.97 million required to implement the plan.

Current bulk water is not a current issue, but with climate changes, longer periods of drought, increased growth Council must ensure there is sufficient water to meet future demands.

5.4.6 NOROC Regional Water Study

NOROC has resolved to develop a long-term (50 year) regional water supply strategy to evaluate potential benefits and future water supply security resulting from a regionally integrated system.

The current system serves approximately 80,000 residential properties and 7,000 non-residential properties with 23,000 ML p.a. demand/capacity. The current secure yield is 32,000 ML p.a. with a current supply surplus of 8,000 ML p.a. or 27%. The major sources are Rocky Creek Dam and Clarrie Hall Dam which provide 86% of supply to 90% of the region's population.

By 2060 the Northern Rivers water supplies are expected to serve approximately 146,000 residential properties and 14,000 non-residential connections. Regional demand will increase by 74% to 40,000 ML p.a., while the secure yield is expected to reduce by 26% to 26,000 ML p.a. The net effect is that the region will experience a water supply deficit of 14,000 ML p.a. or 43% of requirement.

Hydrosphere Consulting has preliminarily investigated options and recommended five scenarios to secure the long-term supply of water services in the Northern Rivers. Number one recommendation is for a large-scale

centralised desalination plant that provides benefits in term of yield, climate independence and scalability. Potential risks include energy cost and NOROC has resolved to develop a long-term (50 year) regional water supply strategy to evaluate potential benefits and future water supply security resulting from a regionally integrated system.

Preliminarily investigations have been completed with five options recommended to secure the long-term supply of water services in the Northern Rivers.

1.	Regional approach to water security via a large-scale centralised desalination plant.	Attractiveness: High
2..	Raise the Clarrie Hall Dam to increase yield by 8,250 ML/a; and to develop Dunoon Dam (50,000 ML/a) on the Richmond River with a predicted yield of 6,100 ML/a.	Attractiveness: Moderate
3.	Raising the capacity of Dunoon Dam to 85,000 ML/a..	Attractiveness: Low
4.	Usage of Toonumbar Dam with 20m of wall-raising; this provides benefits for Kyogle and Casino.	Attractiveness: Low
5.	Usage of Toonumbar Dam and raising the Clarrie Hall Dam although still susceptible to climate change.	Attractiveness: Low

The success of long-term regional planning will depend on a comprehensive water sharing plan developed by NSW Office of Water (NOW), a two-transfer system between major surface water sources a coordinated approach to scheme development. Individual LWU proceeding with large scale scheme developments to secure their own supplies would limit economies of scale achievable from a coordinated approach. Ultimately this will require sophisticated modelling to determine local cost benefit against regional cost benefit and ownership direction from NOW.

5.5 Drought Management

Richmond Valley is characterised by a sub-tropical climate with hot and humid summers and mild winters. The average rainfall for the area is 1,100 mm ranging from 1650mm along coastal areas and 1,025mm over the inland regions.

Council's Drought Management Plan ensures sound and robust mechanisms to manage town water supplies during periods of drought. These include a staged approach to water security with five levels of water restrictions for Casino triggered by river flows at Jabour Weir, and seven levels of restrictions for the Lower Richmond River area managed by Rous Water based on Rocky Creek dam storage levels.

This provides the Licensed Water Users, (LWU) and residents with a timely, efficient and affordable response to reduce water consumption during drought periods. The LWU actively cooperates with key stakeholders from Kyogle Council, Rous Water, and the Department of Natural Resources to ensure the provision of minimum water supplies for basic sanitation and health requirements.

A key planning objective of demand management and drought management is to ensure that, in the long term, restrictions are not required more than 5% of the time and that the average frequency of restrictions is less than once every 10 years.

The Richmond Valley was one of many NSW regions determined to be eligible for government drought support in 2018 and 2019. Due to the low rainfall in the catchment areas and falling river levels residents who receive a town water supply were subjected to level one water restrictions in January 2019. Level three water restrictions were imposed in February 2019.

Much-needed rainfall in April 2019 saw the easing of restrictions, however, the ongoing severe drought which impacted much of the Northern Rivers in November 2019 saw restrictions go back to level three and forced Council to postpone its scheduled unsealed road grading as water is a key ingredient in maintaining unsealed roads.

5.6 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 Casino

water supply systems and fix damaged water meters within the Mid-Richmond villages. Council will work with Rous Water to help ensure the Mid-Richmond water supply is fully restored.

5.7 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 relevant to the water system are shown in Table 5-6.

Table 5-6: 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.
- The fertilisers wash into the waterways promoting rapid growth of algae and reducing the amount of oxygen levels in the water.
- 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.

5.8 Demand Management Strategies

Council's operational and maintenance administration practices continue to advance with improved predictive knowledge from information systems and the adoption of industry best practices. Managing demand for services is a combination of preventative and reactive maintenance practices that maintain asset serviceability and the timely renewal of assets that have reached end of life.

Opportunities identified for demand management include monitoring community expectations to determine LoS and analysing the cost of provision to determine the long-term affordability. There is currently a gap between community aspirations and their willingness to pay for these services. It is the responsibility of Council to articulate the evidence presented in asset and financial planning, therefore narrowing the expectations gap.

Another strategy would be to spend less on new assets and focus on "social" engineering. This would involve putting strategies in place that will result in reduced water consumption including:

- More frequent restrictions.
- Long term educational process to increase public awareness.
- Changing of shower heads, automatic on/off taps.
- Sprinkler systems to replace garden hoses.
- Use of timers on hoses.
- For industry, change fittings, and taps to reduce water usage and reduce rates.

In addition, to the above, there is the technical solution of installation of recycled water schemes within towns and villages including water tanks on private residential and commercial properties.

In the next 10 years with the low level of growth expected, Council funds will be focussed on asset renewals as per the following ratios:

- Operations and maintenance 72.4%
- Renewals 21.8%
- Upgrade and New assets 5.8%

It is important to note that acquiring additional assets from growth or by provision of additional infrastructure services, will ultimately commit council to fund ongoing operations and maintenance costs. These future costs should be identified and considered in developing forecasts of future operating and maintenance costs.

5.9 Real Water Losses

Real water loss refers to water losses from leaks and failures. The following chart is based on the information provided to the Department of Planning & Environment.

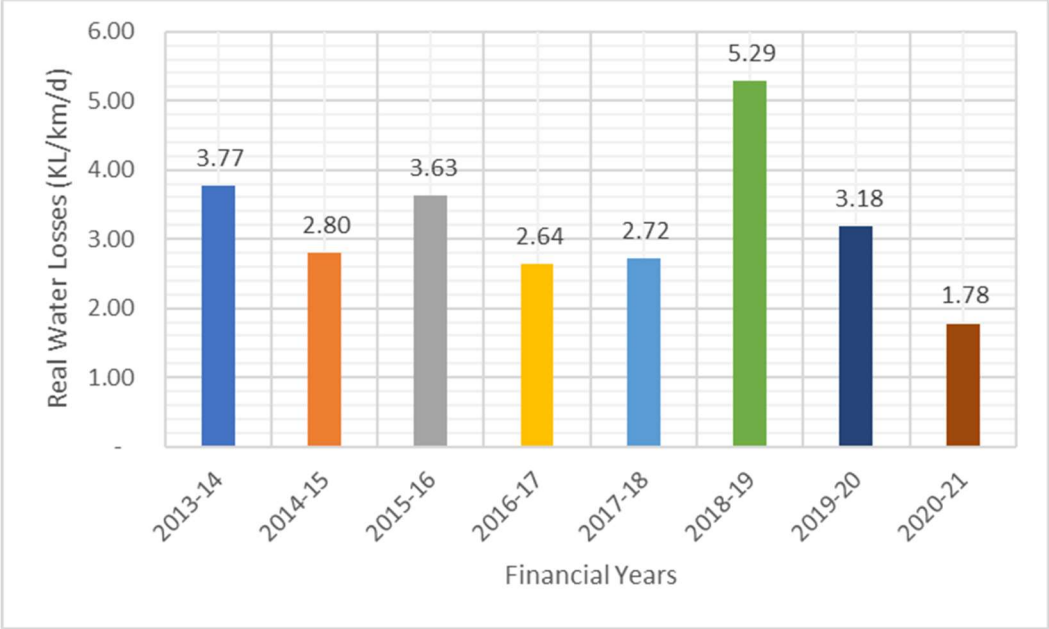


Figure 5-3: Annual measure of Real Water Losses

The average real water loss from 2013 through to 2021 is 3.2 KL/km/day showing a significant drop from 2018/19 to 2020/21. Council has undertaken significant works to reduce these losses as follows.

- Water main renewals.
- Connection replacements.

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 RMF 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 Council 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.

Council's risk appetite in relation to infrastructure

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 water and water 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:

Risk Exposure = Probability of Failure (PoF) x 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	Likelihood	Consequence of failure				
		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 water 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 raw water pump station or water treatment plant that would cause the facilities to fail through the pumping or treatment process.

- Reservoirs.
- 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.	Off-site environmental detrimental impacts.
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 & Business Plan;
- Waste Management Strategy and Business Plan;
- Community Resilience and Preparedness Plan;
- Strategic Water Network Framework; and
- Community land Plans of Management and 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; and
- 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; and
- 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; and

- 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 Water Risks[11]

Council will endeavour to complete a water and related infrastructure risk register which identifies the specific risks related to water 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 water infrastructure include:

- Flooding in rural areas; and
- Water 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 the water assets.

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

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

[11] Source: Water & Sewerage Issues and Risks, NixonClarity, 27 June 2020, Draft V2

Generally, it was found that the water & sewerage operations team was hardworking and diligent in their management of the services. The addition of a new water and sewerage coordinator over the past three years appears to have significantly improved communications both within and external to the team. Through this process:

- 11 recommendations were to be addressed in year 1.
- 9 for year 2; and
- 5 for year 3.

Several reports have been commissioned that suggest substantial capital works are required in the short term. The capital works program has been assessed under the Safe and Secure Water Program with the following being the status of the water risk and upgrade works:

- Casino water security – Risk ID 1022 – Risk Score 5 - Options study.
- Casino Water Treatment Plant – Risk ID 2188 – Risk Score 5 - Priority works underway.

The management team then sought to identify other issues and risks that may exist in the business to ensure a whole of business improvement approach. The high-level risk assessment and status of the actions are identified in ***Appendix F***.

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

Assets	Hydraulic Capacity	Environment	Quality Process	Public Health	Structural Integrity	WHS	Delivery Risk
Casino Water Treatment Plant	Acceptable	Acceptable	Extreme	High	High	Extreme	High
Casino Raw Water pumping station	Acceptable	Acceptable	High	High	High	High	High
Casino Water Reservoirs 1	Acceptable	Acceptable	High	High	Extreme	Acceptable	Extreme
Casino South Reservoir	Acceptable	Acceptable	No	High	Acceptable	High	Acceptable
Casino Booster Pump Station	Acceptable	Acceptable	High	Acceptable	No	No	High
Evans Head High Level Reservoir	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Evans Head Lower-Level Reservoir	Acceptable	Acceptable	Acceptable	Acceptable	High	Acceptable	Acceptable
Langs Hill Reservoir	No	No	No	No	High	Acceptable	Acceptable
Woodburn Pump Station 1	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	High	Acceptable
Coraki Reservoir	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	High	Acceptable

The rankings are:

- Extreme – Has Failed.
- Acceptable – Risk Managed by Current Systems.
- High Risk – Likely to Fail Within 5 Years.
- 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.

Water network assets on average have a remaining useful life of 78% of their expected lifecycles based on average condition; however more critical infrastructure assets including water pump stations, water treatment plants and reservoirs are all approaching approximately 60% of their useful life. Larger issues including water security and the long-term holding capacity of Jabour Weir in the township of Casino provide ongoing challenges which necessitate a large commitment to improved LoS and scheme augmentation programs.

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

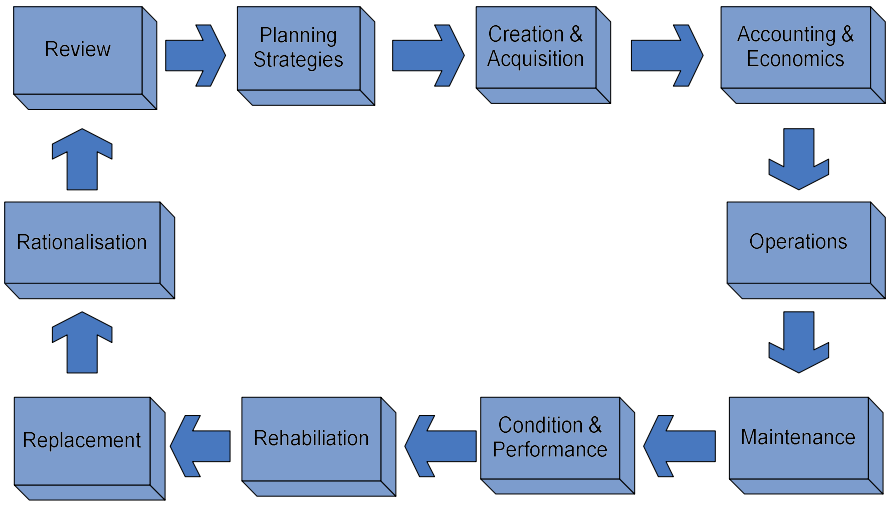


Figure 7-1: Lifecycle for Asset Management

Table 7-1: Asset Treatment Definitions

TREATMENT	DEFINITION
Operations	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. Typical operational activities include water quality monitoring.

TREATMENT	DEFINITION
Maintenance	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: • 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 (e.g. emergency repairs). Maintenance is defined in each section of the lifecycle plan and includes all repairs and maintenance that are not classified as renewals (see below). A key element of AM planning is determining the most cost-effective blend of planned and unplanned maintenance.
Renewal Replacement	An activity that replaces an asset with one that meets contemporary functional requirements. These works are defined as being the: • 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). Examples of renewals expenditure include: • Water mains replacement.
Upgrades	Upgrade work is related to the extension or augmentation of an asset in response to growth or an increase in the defined LoS. Upgrades are defined as assets either being: • 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. Upgrade activities may include: • Expansion of the Water Treatment Plant.
New Works	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 LoS, including: • 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. 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.
Disposal	• 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 the 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.

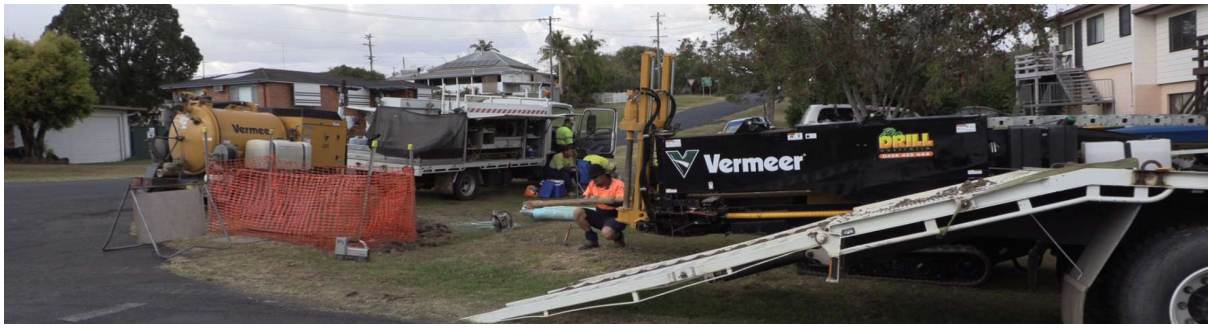
Disposal Costs – Costs for removing or disposing of the goods after the economic life has ended, eg costs to transfer ownership, trade-in, re0tender, auction or recycle or transiting/closure of a service.

WOL = Acquisition Costs + Operating Costs + Maintenance and Support Costs + Disposal Costs

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

Council is required to partner with Rous Water for the service delivery of water to the community. Rous Water supplies bulk water under a Water Supply Agreement (WSA) to four constituent councils in the Northern Rivers (Lismore, Byron Bay, Ballina and Richmond Valley). Rous Water is responsible for the treatment, construction, extension, protection, maintenance, control and management of bulk water supply works. Council is responsible for assets used to distribute water services in the MLRR water supply system.



7.1.3 Management Structure

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

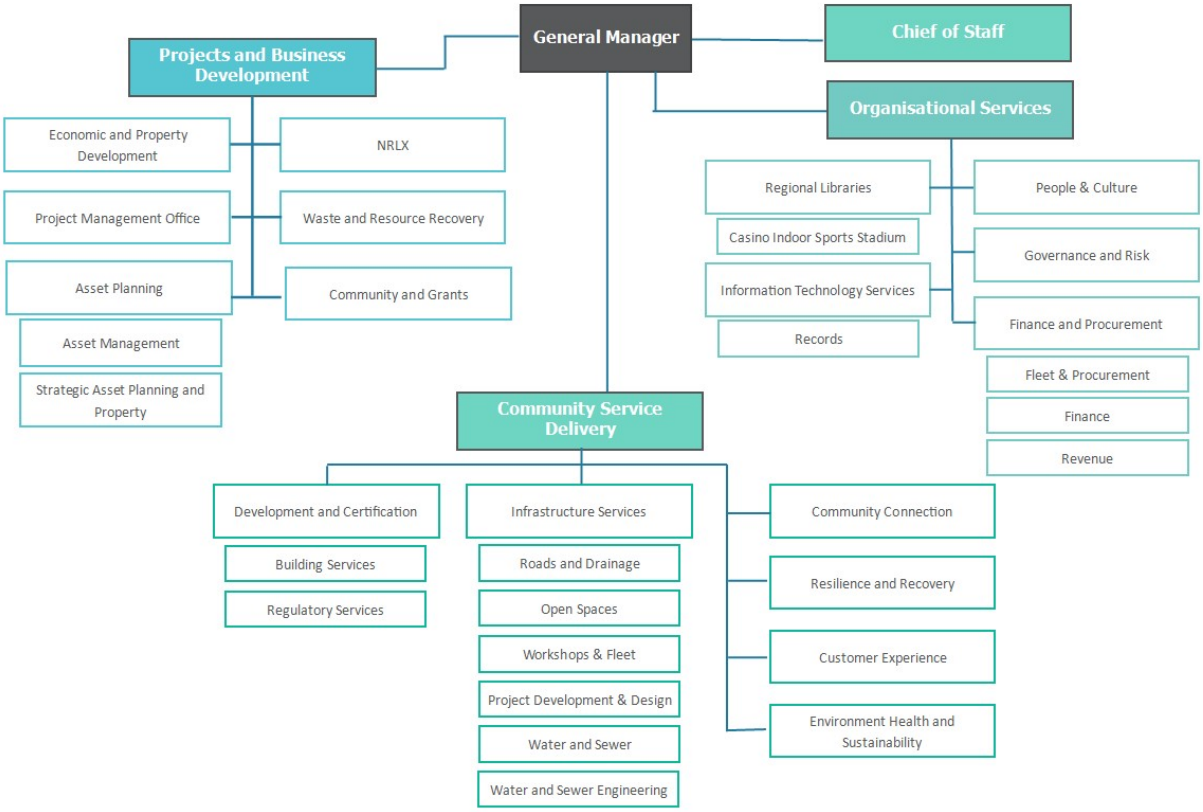


Figure 7-2: Management Structure

7.1.4 Corporate Responsibilities Matrix

The Corporate Asset Management Responsibilities Matrix within Table 7-2 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 water 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 water 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 Water 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	**CSAPP**	Coordinator Strategic Asset Planning and Property
DPABD	Director Projects and Business Development	**CAM**	Coordinator Asset Management
DCSD	Director Community Service delivery	**MPMO**	Manager PMO
LS	Chief of Staff (including Leader Strategy)	**MFS**	Manager Finance & Procurement
*** MAP**	Manager Asset Planning	**CPDAD**	Coordinator Project Development and Design
MIS	Manager Infrastructure Services	**OCWS**	Operations Coordinator Water and Sewer
DPM	Designated Project Manager	**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 water infrastructure are identified in table 7-3.

Table 7-3: Issues related to Water Infrastructure

KEY ISSUES
• Information provided by Council staff on the performance of the water supply system.
• Strategic planning and options assessment for Casino water supply.
• draft Strategic Business Plan.
• Risk Management Strategies.
• Casino water supply yield investigations and search for an emergency supply e.g., bores
• Regional strategic planning including the Northern Rivers Regional Bulk Water Supply Strategy
• Richmond Valley Drinking Water Quality Management Plan (DWQMP)

The performance of existing systems and management issues are summarised in Table 7-4.

Table 7-4: Summary of Management Issues

Performance	Management issues to be addressed
Council-wide water demand has decreased by approximately 40% since 2005 despite an increase in customer numbers. Current residential water supply demand (150 kL/a) is similar to other local water utility (LWU) customers in the region.	The Casino water supply system relies on a single source of water. The development of an emergency supply source for Casino is required.
System capacity limitations and required upgrades to achieve adopted LoS need to be identified through hydraulic modelling of the water supply systems.	Council has prepared a draft Water Management Strategy and Improvement Plan to identify future service levels and future modelling.
The secure yield of the Casino Water Supply is like current average demand although future growth in demand is predicted to be minimal.	The effects of climate change will have direct and indirect implications for Council in relation to water supply services including damage to infrastructure from flooding, storms and sea level rise, the need to reduce greenhouse emissions, potentially higher cost of energy, greater competition for existing water sources and changes in customer demand and usage patterns. Analysis of the impacts of climate change on the secure yield of Casino's water supply is required.
The Casino WTP capacity will be sufficient for the long term (> 30 years).	Much of the asset stock is ageing, particularly the Casino reservoirs and WTP. The location/routes of underground assets in rural areas are not clearly marked and are potentially subject to accidental damage during excavation.

Performance	Management issues to be addressed
The Regional Drought Management Strategy (Hydrosphere Consulting, 2016) documents a regional restriction regime that applies to all customers served by the Rous County Council regional water supply (including the Mid-Richmond area).	Drought Management Planning for Casino should be consistent with the regional approach (adopted for the Mid-Richmond region) to ensure community acceptance and improve the success of drought management in the region.
Water supply pricing in Richmond Valley is significantly lower than other water utilities in the region.	The long-term pricing consultation needs to be undertaken with the community to continue to provide affordable levels of service.
Best-practice water supply pricing has been implemented except that the Casino Food Co-op is charged a lower tariff than other customers.	The long-term supply arrangements for the Casino Food Co-op need to be addressed through consultation and agreement on pricing and water supply demand.

7.3 Historical Expenditure

Table 7-5 below illustrates the considerable investment Council makes towards its water network. Funding from works from natural disasters such as floods and bushfires, and subdivision dedicated assets are excluded from the totals.

Table 7-5: Water Historical Expenditure

Cost Category	2017/2018 ($)	2018/2019 ($)	2019/2020 ($)	2020/2021 ($)	2021/2022 ($)
Operations	2,870,105	2,983,103	3,254,099	3,246,116	1,882,048
Maintenance	424,862	532,309	680,213	505,916	658,595
Capital Renewal	560,000	949,000	564,000	1,253,000	758,000
New Assets	210,000	349,000	186,000	427,000	141,000
Total	4,064,967	4,813,412	4,684,312	5,432,033	3,439,643

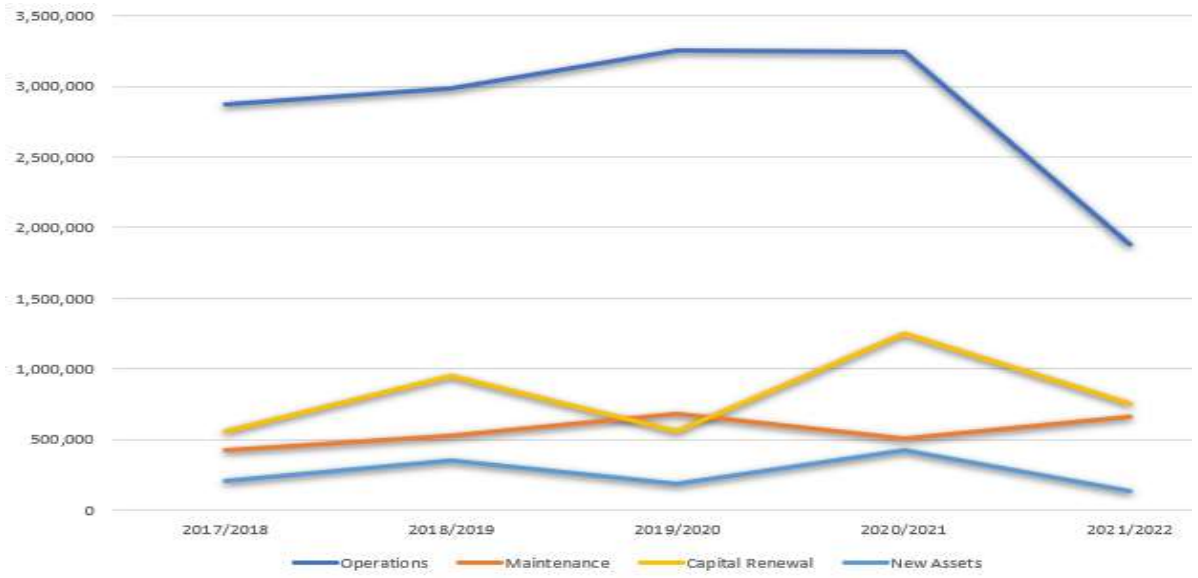


Figure 7-3: Water Expenditure 2017/18 – 2021/22

7.4 Identification for Prioritisation of Operational and Maintenance Works

Water related works have been identified through review of understanding of the performance of the water system and assets, and 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.

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.

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*"[12].

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 7-6.

Table 7-6: Reactive Operations and Maintenance Activites

ASSETS	OPERATIONS & MAINTENANCE REACTIVE ACTIVITIES
Reticulation and distribution mains	Broken water mains Broken services Jammed hydrants Out of water Dirty water Water leaks Missing hydrant and valve lids Leaking tapping, ferrules, stop taps Poor water pressure
Water Meters	Water hammer Faulty or damaged water meters
Reservoirs	Leaks in reservoir walls. Seizing of valves Dust ingress
Pump Stations	Faulty or failing pumps, impellers Pump failures Lost power WHS issues
Casino Water Treatment Plant	Manual handling of chemicals Fluoride breaches of drinking water quality WHS issues Filtration issues High level organics from raw water source

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

In the past few years, maintenance at the Casino Water Treatment Plant 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 Water Treatment Plant is undergoing a process of automation in the plant e.g., converting valves to automated and finalising SCADA implementation which will permit the operations of the plant to be automated as well as tracking when assets fail. This will enable speedier responsiveness to faults, analysis of faults and smoother operations.

7.5 Inspections

Inspections are undertaken on a regular basis to ensure that the water 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, water 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.

7.6 Renewal Plan

From an initial planning perspective following the condition assessments, Table 7-7 to Table 7-17 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.

Table 7-7: Water Pump Stations Asset Condition Renewals

	Pump Pit	Control Cabinets	Vehicular Access
Age based Condition	4	4.5	4.5
No. Assets	1	2	1
Rem. Life (Yrs.)	34	1	10.5
Repl. Cost ($)	65,899	15,364	16
Funding over 10 years ($)	6,590	1,536	2
Timeframe	2051 - 2061	2023 - 2024	2031 - 2041

Table 7-8: Water Reservoirs Asset Condition Renewals

	Electrical Mains Power Supply	Fence	Vehicular Access	Vehicular Access	Reservoir Roof - Tank 2	Radtel	Telemetry
Age based Condition	4	4	4	4.5	4.5	5	5
No. Assets	1	2	2	1	1	2	1
Rem. Life (Yrs.)	3	3	20	13	18	0	0
Repl. Cost ($)	36,050	3,412	29,799	2,321	58,037	-	3,000
Funding over 10 years ($)	3,605	341	2,980	232	5,804	-	300
Timeframe	2022 - 2026	2022 - 2026	2041 - 2051	2031 - 2041	2031 - 2041	No longer used	2022

Table 7-9: Water Treatment Plant Asset Condition Renewals

	Mechanical Devices	Pits	Safety Equipment	Structures	Tanks	Valves Pipes Fittings	Valves Pipes Fittings	Valves Pipes Fittings
Age based Condition	4.5	4.5	4	4	4.5	4	4.5	5
No. Assets	5	1	1	2	2	10	3	5
Rem. Life (Yrs.)	11	13	5	27	11	29	20	-
Repl. Cost ($)	32,654	23,277	3,158	203,564	9,546	180,515	43,379	245,166
Funding over 10 years	3,265	2,328	316	20,356	955	18,051	4,338	24,517
Timeframe	2031 - 2041	2031 - 2041	2023 - 2033	2041 -2051	2031 - 2041	2051 - 2061	2041 - 2051	2022 - 2023

Table 7-10: Water Valves Asset Condition Renewals

	Air Valves		Stop Valves		
	150	100	200	300	300
Age based Condition	4	4	4	4	5
No. Valves	1	18	4	3	1
Rem. Life (Yrs.)	29	29	29	29	-
Repl. Cost ($)	2,553	25,614	9,353	12,472	4,157
Funding over 10 years ($)	255	2,561	935	1,247	416
Timeframe	2041 -2051	2041 -2051	2041 -2051	2041 -2051	2022 - 2023

Table 7-11: Hydrants Asset Condition Renewals

		Hydrants		
Diameter (mm)	75	100	150	100
Age based Condition	4	4	4	5
No. Hydrants	1	7	4	2
Rem. Life (Yrs.)	29	29	29	-
Repl. Cost ($)	1,914	16,860	10,423	4,817
Funding over 10 years ($)	191	1,686	1,042	482
Timeframe	2051	2041 -2051	2041 -2051	2022 - 2023

Table 7-12: Water Connections Asset Condition Renewals

Water Connections								
		Copper					Poly	
Diameter (mm)	20	25	32	40	50	100	25	63
Age based Condition	4	4	4	4	4	4	4	4
No. Connections	193	11	4	3	5	1	1	1
Rem. Life (Yrs.)	29	29	29	29	29	29	34	34
Repl. Cost ($)	205,607	19,701	2,176	1,979	6,697	7,405	280	16,916
Funding over 10 years ($)	20,561	1,970	218	198	670	741	28	1,692
Timeframe	2041 -2051	2042 -2051	2043 -2051	2044 -2051	2045 -2051	2046 -2051	2056	2056

Table 7-13: Pipelines Asset Condition Renewals

Water Pipelines							
Diameter (mm)	75	100	150	200	225	250	300
Age based Condition	4	4	4	4	4	4	4
No. Pipelines	3	99	22	13	7	2	9
Rem. Life (Yrs.)	26.63	24.59	26.12	25.37	28.90	23.80	27.01
Repl. Cost ($)	1,670	539,993	183,909	60,877	171,426	15,677	162,983
Funding over 10 years ($)	167	53,999	18,391	6,088	17,143	1,568	16,298
Timeframe	2041 - 2051	2041 - 2051	2041 - 2051	2041 - 2051	2041 - 2051	2041 - 2051	2041 - 2051

Table 7-14: Water Meters Asset Condition Renewals (Condition 4)

Diameter (mm)	20	25	32	40	50	100
	Condition 4					
Age based Condition	4	4	4	4	4	4
No. Meters	2,160	60	18	27	9	1
Rem. Life (Yrs.)	1.5	1.5	1.5	1.5	1.5	1.5
Repl. Cost ($)	695,299	19,938	15,533	32,763	16,064	2,627
Funding over 10 years ($)	69,530	1,994	1,553	3,276	1,606	263
Timeframe	2023 - 2033	2023 - 2024	2023 - 2024	2023 - 2024	2023 - 2024	2023 - 2024

Table 7-15: Water Meters Asset Condition Renewals (Condition 4.5)

Diameter (mm)	20	25	32	40	50	100
	Condition 4.5					
Age based Condition	4.5	4.5	4.5	4.5	4.5	4.5
No. Meters	246	9	4	4	4	2
Rem. Life (Yrs.)	1	1	1	1	1	1
Repl. Cost ($)	79,187	2,991	3,452	4,854	7,140	5,255
Funding over 10 years ($)	7,919	299	345	485	714	525
Timeframe	2023 - 2024	2023 - 2024	2023 - 2024	2023 - 2024	2023 - 2024	2023 - 2024

Table 7-16: Water Meters Asset Condition Renewals (Condition 5)

Diameter (mm)	20	25	32	40	50	80	100
	Condition 5						
Age based Condition	5	5	5	5	5	5	5
No. Meters	535	30	9	15	12	1	1
Rem. Life (Yrs.)	-	-	-	-	-	-	-
Repl. Cost ($)	172,215	9,969	7,766	18,202	21,419	2,112	2,627
Funding over 10 years ($)	17,222	997	777	1,820	2,142	211	263
Timeframe	2022 - 2023	2022 - 2023	2022 - 2023	2022 - 2023	2022 - 2023	2022 - 2023	2022 - 2023

Table 7-17: Swabbing Pits Asset Condition Renewals

	Water Swabbing Pits
Diameter (mm)	100
Age based Condition	4
No. Swabbing Pits	1
Rem. Life (Yrs.)	29
Repl. Cost ($)	1,693
Funding over 10 years ($)	169
Timeframe	2041 - 2051

7.7 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 $415,000 has been allowed for the next two years. There are no further allowances for upgrades in the Long-Term Financial Plan.

$415,000 has been provided for the upgrade of the South Booster Station SCADA upgrade, Coraki Booster Pump Station, North Reservoir Backbone Comms upgrade, High Level sensor upgrade, High zone switchboard upgrade, Chlorine and pH Monitor upgrade, Utility Water upgrade at WTP and North Reservoir Backbone Comms upgrade.

7.8 New Works Plan

New water assets are commonly identified in response to Growth (demand), Risk, Safety Audits; and recommendations identified in planning and strategy documents.

An allowance of $3.32 million has been budgeted between 2022/23 and 2025/26. From 2026/27 to 2031/32 there is no allowance for new assets.

The $3.32 million is budgeted for:

- implementation of smart meters within Mid Richmond (Broadwater, Woodburn and Coraki);
- Emergency source design;
- Emergency/additional reservoir storage;
- Water Strategy Plan; and
- Raw water pump station air compressor replacement and potassium permanganate.

7.9 Disposal Plan

There is currently no plan to dispose of existing water assets. Radtel are of poor condition (5) and are identified as being not in use. These remain onsite within the facilities and no formal plans have been considered to formally dispose and remove the assets.

Richmond Valley awarded the best tasking drinking water IXOM 2021.

8. Financial Summary

This section outlines the long-term financial requirements for the operation, maintenance, renewal and development of water 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 water. 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	18,718,250	40,316,441
Maintenance	2,966,303	6,347,561
Renewals	9,174,500	14,089,500
Upgrades	415,000	415,000
New	3,320,000	3,320,000
TOTAL	34,594,053	64,488,502

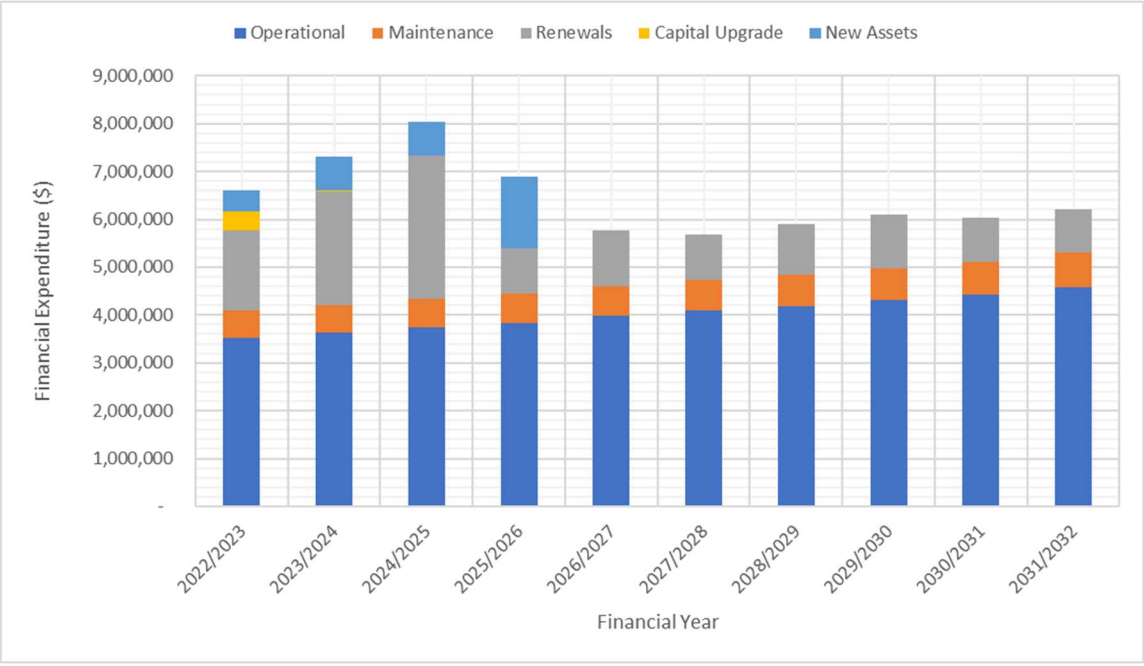


Figure 8-1: 10-Year Financial Projections

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

- Long-Term Financial Plan.
- Water Supply budget.
- 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 water 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 water infrastructure assets has a current written down replacement value of $108.8M.

In valuing the water 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 Council's asset register;
- 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.

Table 8-2 below identifies the 30 June 2022 financial valuation for the water network.

Table 8-2: Asset Network Valuation June 2022

Asset Group	Asset Type	Quantity of Water Assets	Length of Assets (km)	2022 Gross Replacement Cost ($)	Accumulated Depreciation ($)	Fair Value (WDV) ($)
Water connections	Service connection pipes	7642	96.35	6,299,194	850,194	5,449,000
Water filling stations	Filling stations, batteries, card readers, signs	15		90,208	6,070	84,138
Water hydrants	Fire hydrants	2224		5,699,238	1,147,400	4,551,838
Water meters	Water meters	7137		2,703,628	1,963,641	739,987
Water pipelines	Pipes main, encasement, fire service	5403	197.64	47,255,585	7,520,485	39,735,100
Water pump stations	Pits, control cabinets, pumps, pipes etc.	160		5,248,712	2,268,828	2,979,885
Water reservoirs	Pits, control cabinets, pumps, pipes etc.	298		19,717,865	9,104,195	10,613,670
Water RTU PLC	PLC	8		35,654	11,588	24,067
Water swabbing pits	Tee and elbow pipes,	41		69,358	5,821	63,537
Water treatment plants	Pits, air conditioners, flow meters, pumps, pipes etc.	413		19,171,211	7,944,396	11,226,815
Water valves	Stop valves, scour valves etc.	1385		2,512,544	491,707	2,020,847
	Total	24,726	293.99	108,803,208	31,314,324	77,488,884

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 Water Treatment Plant. The reason for these changes includes 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 principle 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. For other assets, the increase in replacement value was not as great as the main asset groups.

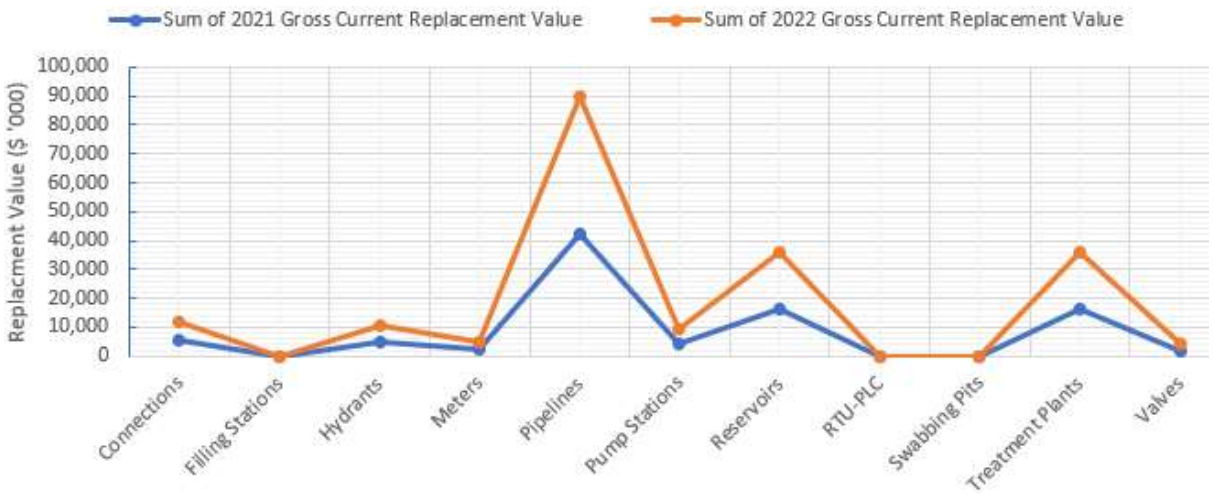


Figure 8-2: Water Valuation Comparison 2020/21 – 2021/22

8.4 Asset Sustainability

The Asset Renewal Funding Ratio is a critical indicator of the water programs long term stability. An ideal indicator is 1.0; therefore, Council's indicator of 0.96 needs to be addressed. Asset planning is progressive, driven by LoS agreements and ultimately the communities' willingness to pay for the service. The following Local Water Utility (LWU) facts provide perspective:

Renewal Ratio = Renewal Expenditure / Annual Depreciation = $1,686,000 / $1,754,911 = 0.96

- Renewals Ratio (RR) 0.96 average.
- Assets reaching the end of their design lives this Long-Term Financial Plan (LTFP) $0.2 million.
- Capital works programmed this LTFP $20 million (average $2.0 million).
- Technical LoS 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).
- Water fund retained profits increasing by $12.6 million over the LTFP.

8.5 Funding Strategy

A major issue concerning water 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:

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

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. Included is a program includes revising this AM plan.

9.1 Water Supply and Sewerage Strategic Plan

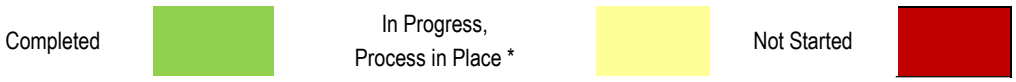
In 2018, Council adopted the Water and Sewer Strategic Plan which consolidated previous plans, reports and findings and objectives. From this consolidation process, a direction regarding the water supply was developed and implemented using a risk-based approach. In summary, the improvement actions are 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 standardization of key and high use assets e.g., Valves, PLC's, RTU's etc.	Process in Place

No.	Recommendation	Status
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



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 program reflects the overall aim of improving asset management practices, which is to deliver the right LoS 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 and Action Plan

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Data Management	Continue the capture of data for all water 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 water 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 collected during the period of the second Water AM Plan.	2023/24
Asset Performance	Analyse the customer request results to address problem areas and maintain performance.	2022/23 and ongoing

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Asset Performance	Collect and monitor defect histories to identify trends in performance of asset types.	2022/23 and ongoing
Levels of Service	Confirm target service levels, monitor and report outcomes.	Annually
Levels of Service	Enhance the analyse of customer request data by asset or asset type and failure type to identify assets or asset types of concern. Identify trends for failures, cause of failures to establish future strategy and maintenance programs.	2023/24
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	There is a lot of noise impacting on demand in the Demand Section of this plan. Identify the critical demands on the assets and use these demands and actions in the Strategic Plans	2022/23
Financial Planning	Develop Council reporting templates for WOL costs for future capital works projects.	Year 1
Financial Planning	Data improvements plan to improve clarity on ownership, definitions and naming conventions.	2023/24 and ongoing
Financial Planning	Operations Manuals should be updated to ensure the data is current and accurate or at least reference the asset register. Establish service standards and technical service levels to support the quantity and quality of data captured.	2022/23

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 LoS.
- 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' e.g., 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 LoS 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 LoS. 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 LoS. 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 LoS 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.
Operations	The active process of utilising an asset that will consume resources such as manpower, energy, chemicals, cleaning products and materials. Operation costs are part of the life cycle costs of an asset.

Optimised Decision Making (ODM)	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 LoS (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, to provide a similar or agreed alternative, LoS.
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 risk 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.
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 water.
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

Legislative Requirements and Local Laws

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 Government's 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 resources[13].

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's are 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	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long-term financial plan supported by asset management plans for sustainable service delivery. The purposes of this Act are as follows: (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:

[13] Source: EPA, 2012, NSW State of the Environment.

Reference	Details
	• 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 • the responsibility for administering some regulatory systems under this Act • a role in the management, improvement, and development of the resources of their areas, • (e) To require council's, councillors, and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.
Public Works and Procurement Act 1912	Sets out the role of Council in the planning and construction of new assets.
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 (EIS).
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, 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.
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.
Soil Conservation Act 1938	An Act to make provision for the conservation of soil resources and farm water resources and for the mitigation of erosion. It addresses preservation of watercourse environments.
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.
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 diligence plans to ensure that procedures are in place to prevent or minimise pollution.
Water Management Act 2000	An Act to provide for the protection, conservation, and ecologically sustainable development of the water sources of NSW, and for other purposes. Allows Council to levy developer charges and addresses water sharing and environmental flows.
Dams Safety Act 2011	Act that provides regulation for the safety and risk minimisation for management relating to dams.

Appendix C – Asset Quantities

Asset Quantities (at 30 June 2022)

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Connections	Copper	85	64.74 km	4,922,888
Water Connections	Poly	100	30.25 km	1,282,944
Water Connections	uPVC	100	1.03 km	93,362

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Hydrants	Water Hydrants	85	2,224	5,699,238

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Meters	Water Meters	15	7,137	5,699,238

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Pipelines	Asbestos Cement	70	42.0 km	12,427,613
Water Pipelines	Cast Iron	85	12.0 km	446,522
Water Pipelines	Ductile Iron Cement Lined	80	25.94 km	1,962,076
Water Pipelines	Fibrous Cement	75	29.97 km	512,777
Water Pipelines	Poly	100	2.0 km	290,807
Water Pipelines	Steel	80	0.3 km	187,431
Water Pipelines	uPVC	100	146.53 km	31,428,359

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Swabbing Pits	Water Swabbing Pits	85	41	69,358

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Valves	Water Valves	85	1,385	2,512,554

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water RTU-PLC	Water RTU-PLC	10	8	35,654

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Filling Station	Electrical	10 - 20	7	75,137
Water Filling Station	Mechanical Device	15	2	2,409
Water Filling Station	Site Infrastructure	10	2	1,792
Water Filling Station	Structure	50	2	4,373
Water Filling Station	Valves, Pipes, Fittings	85	2	6,498

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Pump Stations	Bunding	100	1	3,944
Water Pump Stations	Electrical	20 – 100	24	542,421
Water Pump Stations	Gantry	50	2	84,706
Water Pump Stations	Ladders, Platforms, Handrails	30	2	171,931
Water Pump Stations	Mechanical Device (pump, motor, gear box etc)	20 - 50	29	1,085,411
Water Pump Stations	Pit	100	3	78,091
Water Pump Stations	Safety Equipment	15	5	12,929
Water Pump Stations	Site Infrastructure	50	8	131,828
Water Pump Stations	Structure	50	8	2,133,886
Water Pump Stations	Tank	65	5	32,920
Water Pump Stations	Valves, Pipes, Fittings	50	73	970,644

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Treatment Plant	Bunding	100	1	77,341
Water Treatment Plant	Earthworks	100	2	465,615
Water Treatment Plant	Electrical	10 – 100	102	3,489,657
Water Treatment Plant	Gantry	50	7	136,691
Water Treatment Plant	Ladders, Platforms, Handrails	50	19	165,425

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Treatment Plant	Mechanical Device	10 - 60	83	1,892,658
Water Treatment Plant	Pit	60 - 85	16	437,510
Water Treatment Plant	Safety Equipment	15	9	50,173
Water Treatment Plant	Site Infrastructure	25 - 100	12	291,220
Water Treatment Plant	Structure	10 - 100	11	2,782,893
Water Treatment Plant	Tank	10 - 50	28	5,302,063
Water Treatment Plant	Valves, Pipes, Fittings	50 - 100	123	4,079,964

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST ($)
Water Reservoirs	Earthworks	Non Depreciable	2	34,503
Water Reservoirs	Electrical	10 - 85	74	1,322,645
Water Reservoirs	Gantry	50	9	252,000
Water Reservoirs	Ladders, Platforms, Handrails	50 - 100	30	889,380
Water Reservoirs	Mechanical Device	10 - 50	12	69,670
Water Reservoirs	Pit	60 - 120	29	720,804
Water Reservoirs	Site Infrastructure	25 - 120	30	599,691
Water Reservoirs	Structure	50 - 100	36	14,871,723
Water Reservoirs	Tank	50	1	2,060
Water Reservoirs	Valves, Pipes, Fittings	10 - 100	75	1,045,389

Appendix D – Asset Condition

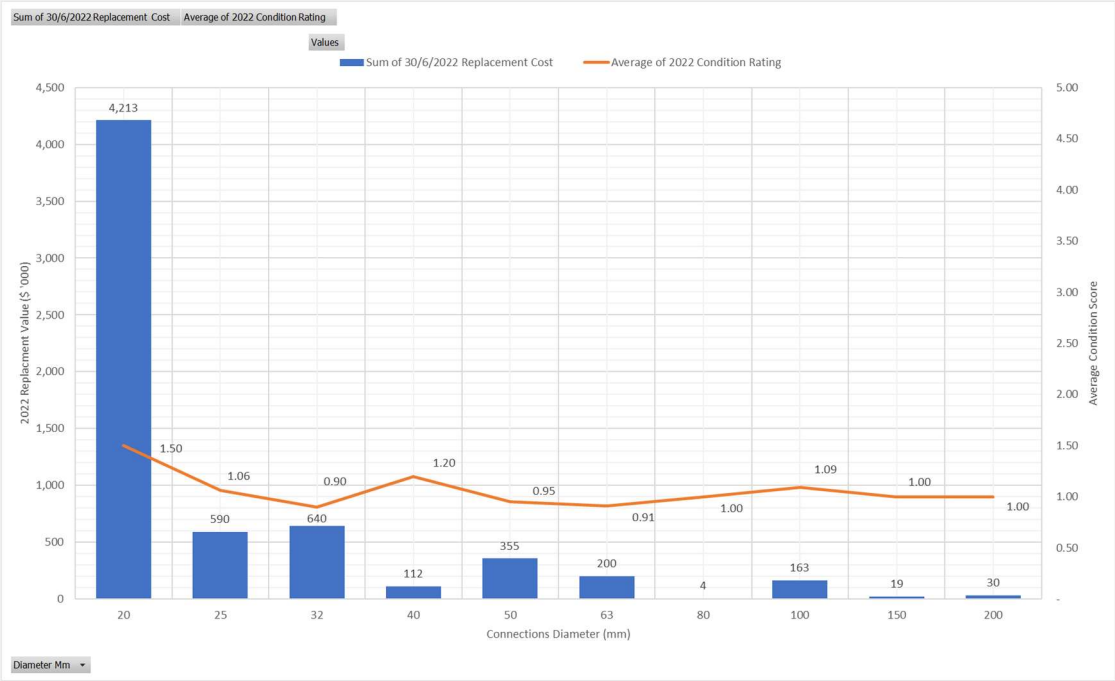
The following table identifies the type of assessment undertaken for each asset type. Financial condition classification is simplified into a 1-5 scoring.

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	Excellent	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	Excellent	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	Average	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	Average	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 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 LoS. 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.

Asset Type	Condition Assessment Type	Description
Water Connections	Condition is rated via age and material due to inaccessibility to infrastructure.	Material of the pipelines has an expected useful life which is used to predict condition rating.
Water Filling Stations	Asset condition is collected for all water filling stations via a visual inspection.	The water filling stations condition is calculated using a series of parameters as identified below: • Base station • Surface defects • Deterioration • Public safety.
Water Hydrants	Asset condition is collected for all water hydrants via visual inspection and age-based information.	The water hydrants condition is calculated using a series of parameters as identified below: • Operational (opened/closed) • Surrounding condition
Water Meters	Condition is age-based information.	Material of the pipelines has an expected useful life which is used to predict condition rating. Readings identify non-functional meters. CRM identify replacement via reported leaks.
Water Pipelines	Condition is rated via age and material due to inaccessibility to infrastructure.	Material of the pipelines has an expected useful life which is used to predict condition rating.
Water Pump Stations	Asset condition is collected for all water pump stations via visual inspection	All elements within the pump station are condition rated via an external valuer which is conducted every five years.
Water Reservoirs	Asset condition is collected for all water reservoirs via a visual inspection.	All elements within the pump station are condition rated via an external valuer which is conducted every five years.
Water RTU PLC	Condition is age-based information.	Structure/material of the RTU PLC has an expected useful life which is used to predict condition rating.
Water Swabbing Pits	Condition is age-based information.	Structure/material of the RTU PLC has an expected useful life which is used to predict condition rating.
Water Treatment Plant	Asset condition is collected for all elements within the treatment plant are done via visual inspection.	All elements within the treatment plant are condition rated via an external valuer which is conducted every five years.

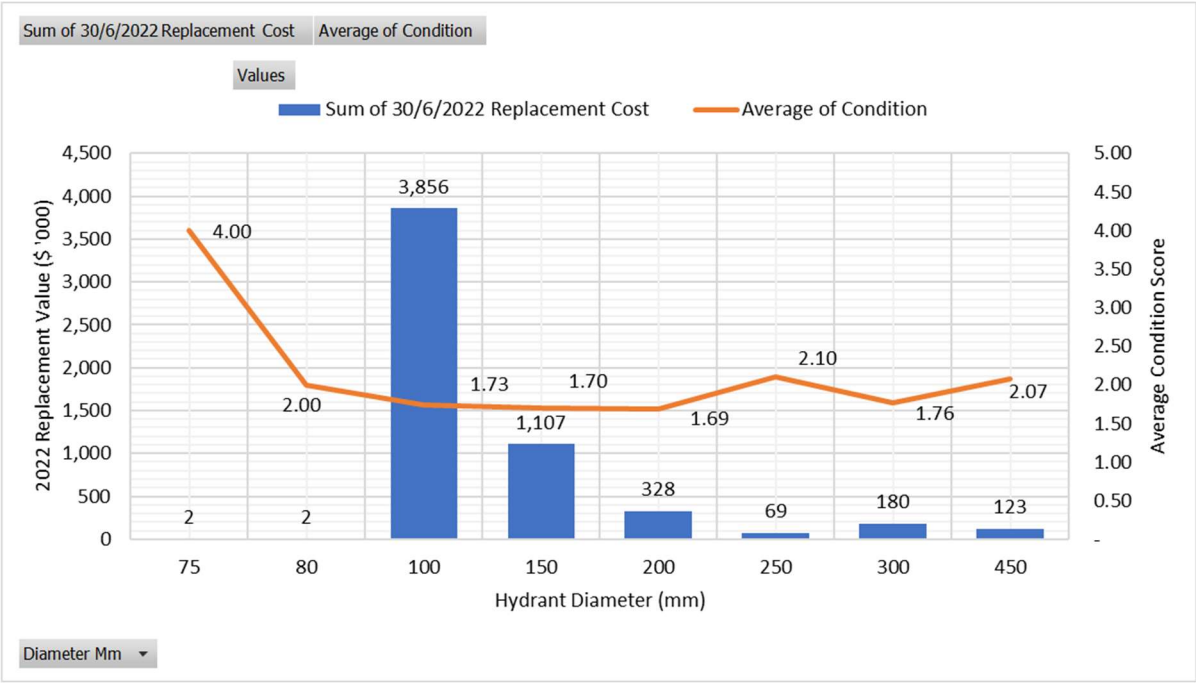
Asset Condition Charts

Water Connections



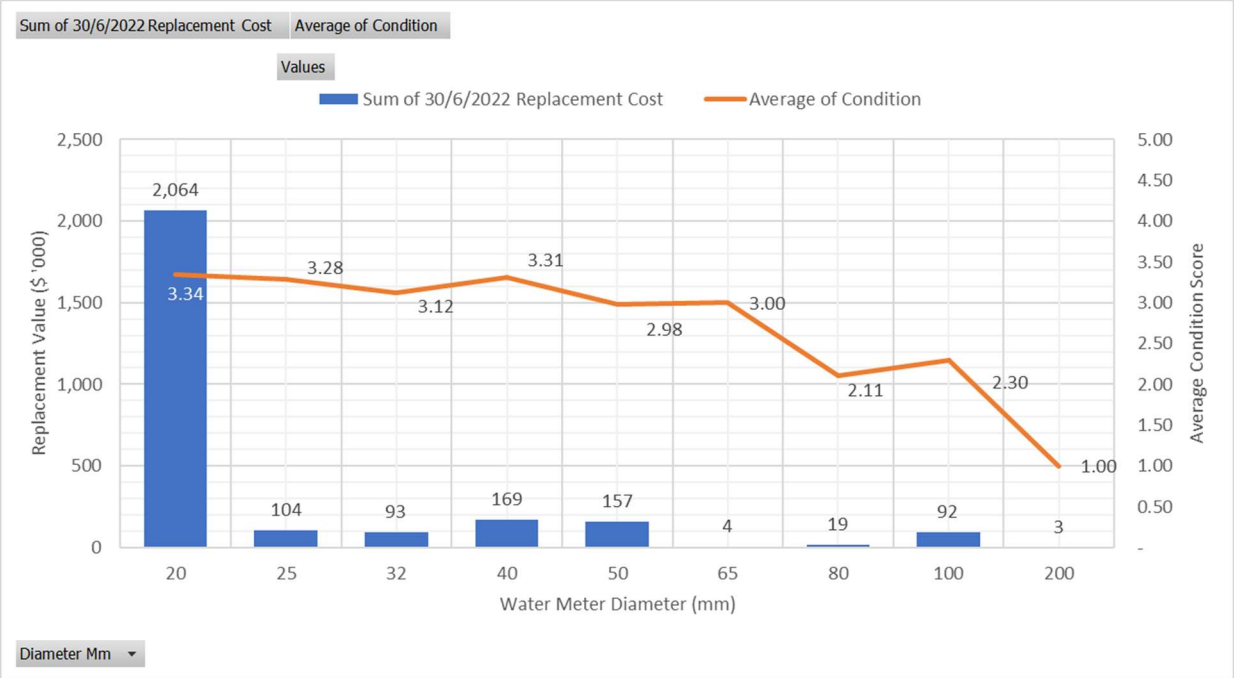
Replacement Value and Average Condition Score by Water Connection Diameter (mm)

Hydrants



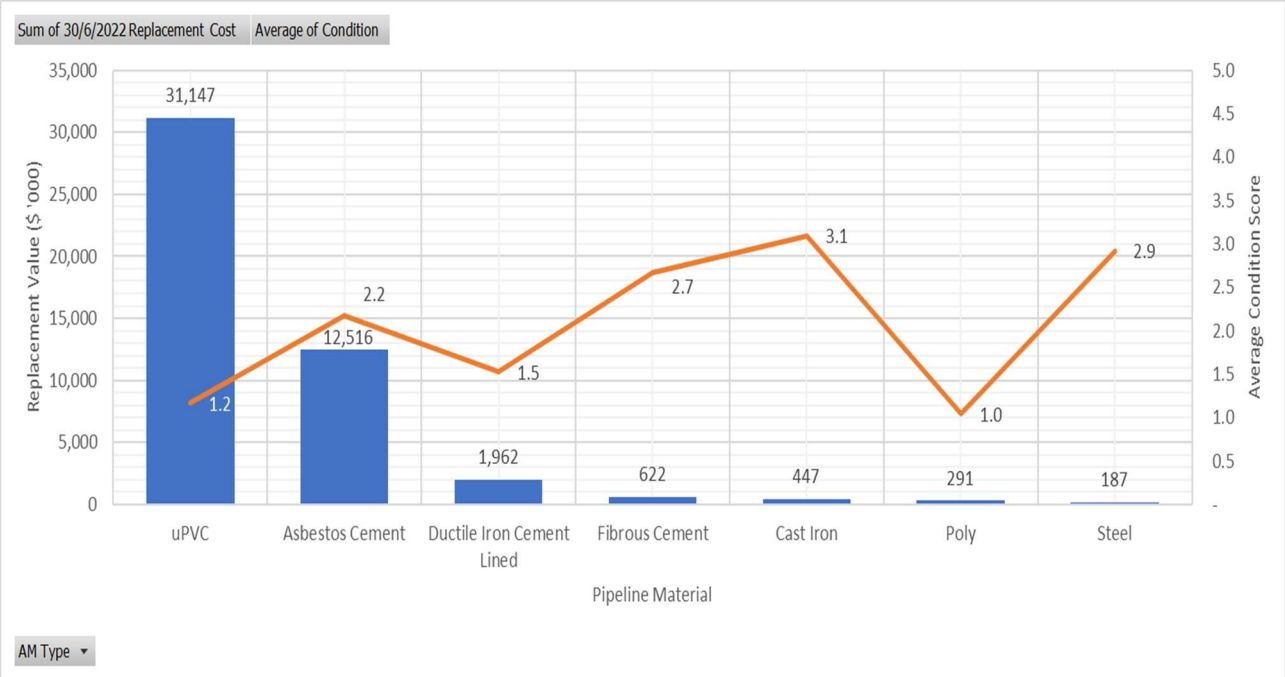
Replacement Value and Average Condition Score by Hydrant Diameter (mm)

Meters



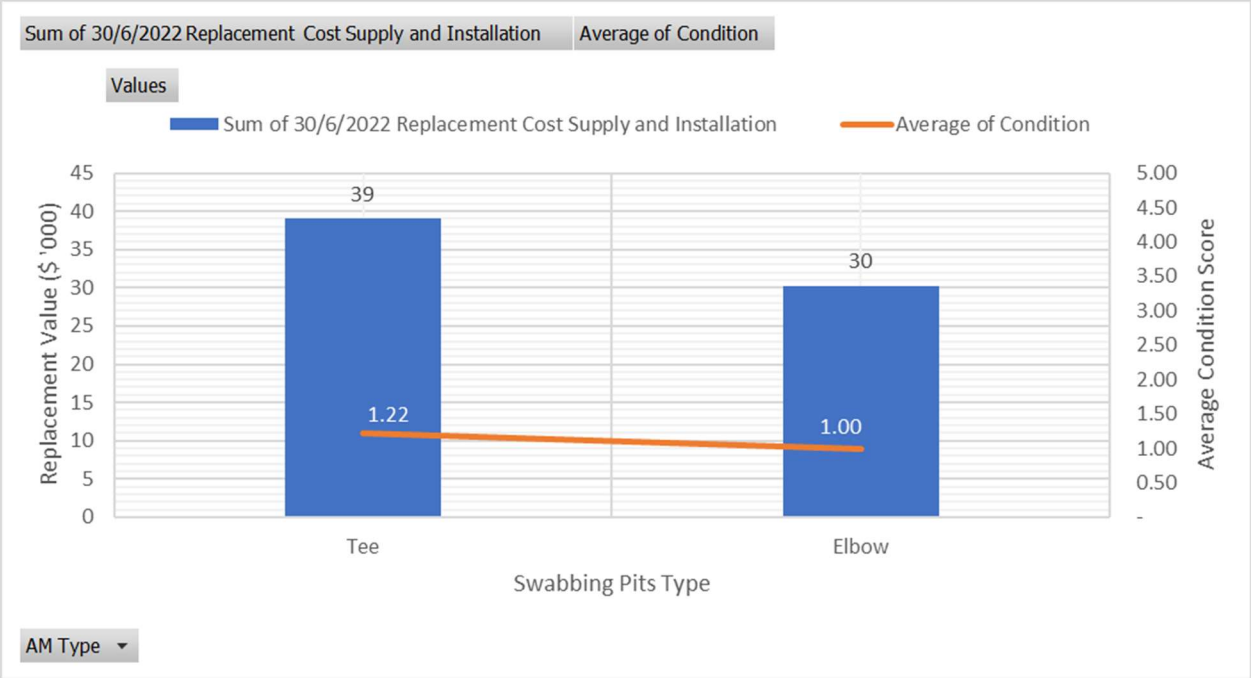
Replacement Value and Average Condition Score by Water Meter Diameter (mm)

Pipelines



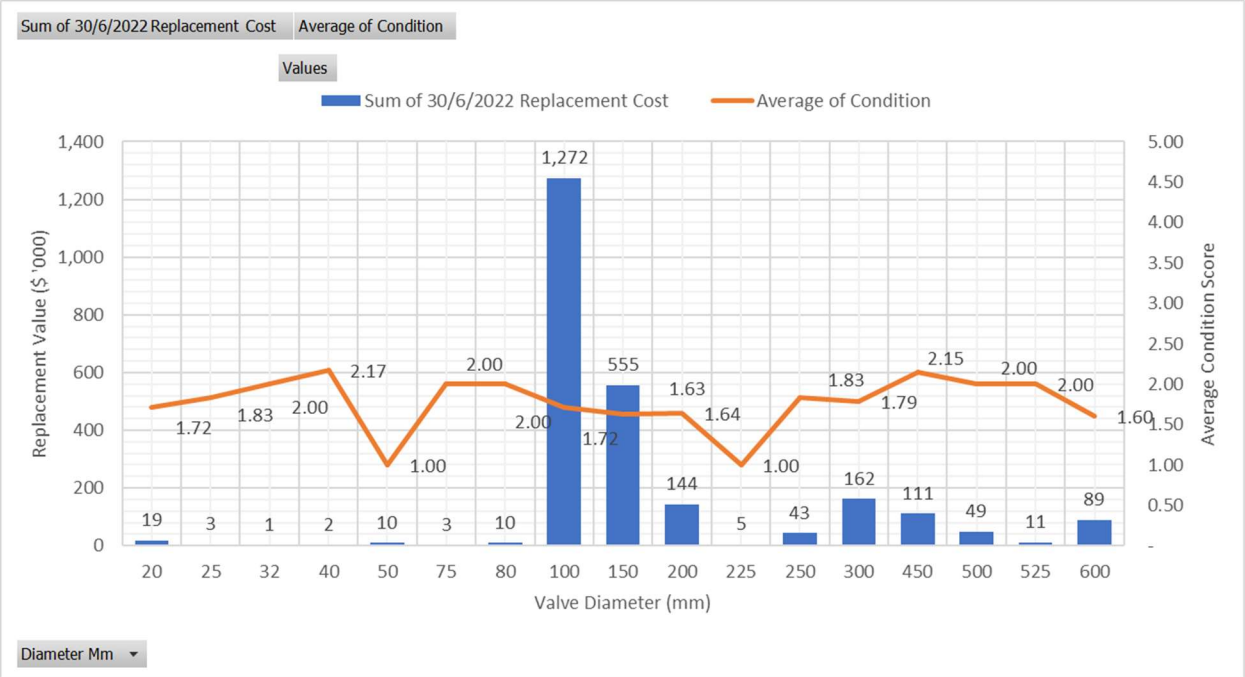
Replacement Value and Average Condition Score by Pipeline Material

Swabbing Pits



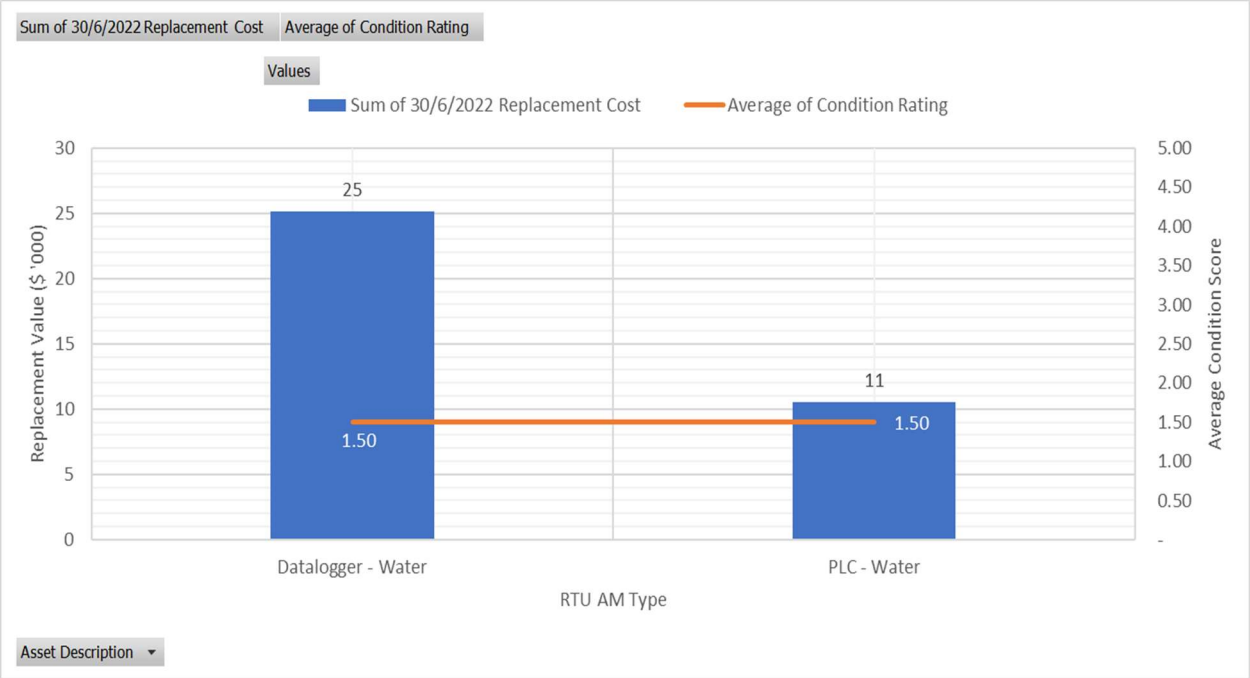
Replacement Value and Average Condition Score by Swabbing Pit Type

Valves



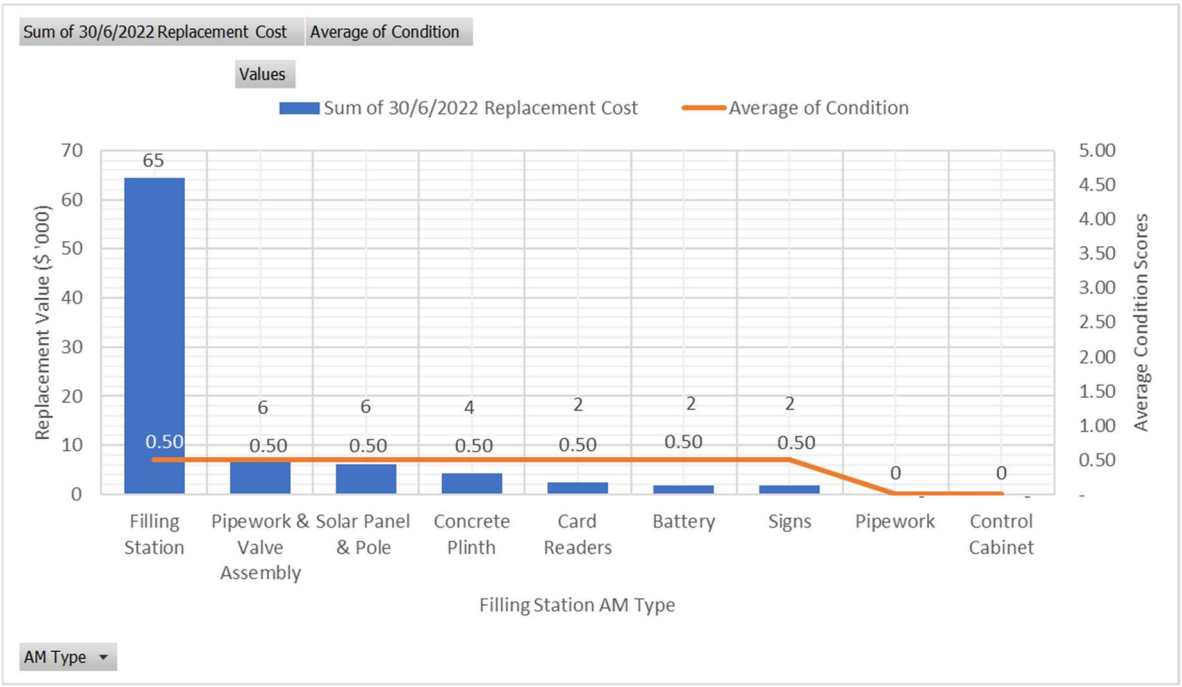
Replacement Value and Average Condition Score by Valve Diameter (mm)

RTU-PLC



Replacement Value and Average Condition Score by RTU AM Type

Filling Stations



Replacement Value and Average Condition Score by Filling Station AM Type

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
- Richmond Valley Topline
- Nixon Clarity Strategic Output Plan Draft AL - W&S AMP - Draft (1)
- Operational-Plan-including-Financial-Estimates-2022-2026-presented-to-Council-28-June-2022_1
- Operations Manual - Casino WTP
- PUB22-498-Regulatory-and-assurance-framework-for-local-water-utilities
- Report - Richmond Valley Community Research 2013
- RVC 2010 Development Servicing Plan - Water Supply Services
- RVC DSP Sewer Standard of Service
- RVC FINAL-Delivery-Program-2017-2022-Adopted-by-Council-22-June-2021
- RVC Safety Hazard-Risk Register 3.0
- RVC-Annual-Report-2019-2020-FINAL_WEB
- RVC-End-Of-Term-Report-Web
- RVC Water and Sewer Strategic Plan 2018_FINAL
- Water Asset Management Plan Adopted by Council on 27 June 2017

Appendix F – Risk Management Actions and 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 comminutor 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 & 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	In Progress

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					
										timelines for implementation	
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 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.	Investigation	Assets and Ops	Functionality and LoS to be determined for the assets so that information obtained through regular inspections is relevant to operation and maintenance.	Not Started
20		Develop maintenance management standards including return periods for all key items to drive automation.	1		Low						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					
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 management, purchaser/provider, Inflow & Infiltration; asset operation requirement; condition assessment, maintenance, scheduling, and reporting; SCADA, electrical & IT, process, and trade waste	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. 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.	Investigation 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 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	In Progress / Completed W&S Assets staff were restructured

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					
										development area, assets area and operational capacity information to assist.	to fall under the same Manager as Ops Urban Reginal Growth Management Plan is underway and RJP is identifying future growth areas
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	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					
								infrastructure. To be assessed following revaluation 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.	In progress/Completed All W&S staff now utilize CRM to record identified issues that require repairs. Vault is used to register WHS issues/incidents positive and negative Fulcrum is used to record asset inspections and the report generated can then be used to appoint contractors to do repair works or generate CRMs for repairs

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					
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 eb 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 insure 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	Completed Operational and Strategic staff has a good working relationship with

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					
										an MOU is required to formalize any position.	RCC staff and issues are flagged asap.
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 resourcing plans and forward budgets.	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 May 2021 which will provide direction	Planning	Assets and Ops	Review of AM Plans to be undertaken and draft produced prior to end of 2021, aligning with CSP process for	In Progress

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					
										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	3,528,243	3,629,768	3,739,260	3,836,329	3,984,650	4,090,602	4,187,560	4,311,092	4,423,564	4,585,372	18,718,250	40,316,441
Maintenance	563,735	577,825	592,277	608,106	624,360	641,049	658,191	675,774	693,847	712,397	2,966,303	6,347,561
Renewal	1,686,000	2,384,500	3,004,000	950,000	1,150,000	950,000	1,050,000	1,105,000	905,000	905,000	9,174,500	14,089,500
Upgrade	392,000	23,000	-	-	-	-	-	-	-	-	415,000	415,000
New	430,000	685,000	705,000	1,500,000	-	-	-	-	-	-	3,320,000	3,320,000
Total	6,599,978	7,300,093	8,040,537	6,894,435	5,759,010	5,681,651	5,895,751	6,091,866	6,022,411	6,202,769	34,594,053	64,488,502

Appendix H - 10 Year Capital Improvement Program

Project	Description	Budget 2021/2022 ($)	Budget 2022/2023 ($)	Budget 2023/2024 ($)	Budget 2024/2025 ($)	Budget 2025/2026 ($)	Budget 2026/2027 ($)	Budget 2027/2028 ($)	Budget 2028/2029 ($)	Budget 2029/2030 ($)	Budget 2030/2031 ($)
849141	Water Main Replacement - Casino Location to be allocated			297,500	360,000	360,000	360,000	360,000	360,000	360,000	360,000
	Stapleton Ave - Diary St to West St										
	Pratt St; Hickey St to Wheat St		65,000								
	Colches St; Lennox St to Stapleton Ave + Hare	65,000									
	Colches St Nth; Waratah to Sandiland St	22,500									
	Division Street; West St to Rifle range Road	70,000									
	Hickey St; Lennox St to Cope St	38,000									
	Lees Ave; Hare St North to existing uPVC		15,000								
	Morwick St; North St to Apsley St	32,500									
	Cope St; Hickey St/Windsor Ave to Adam St	39,000									
	Sandilands St; Colches St Nth to Hotham St		56,000								
	Stapleton Ave; Colches St to Diary St	56,000									
	Wharf St; East Street to drain		22,500								
	Dean St; Hickey St to Wheat St			62,500							

Project	Description	Budget 2021/2022 ($)	Budget 2022/2023 ($)	Budget 2023/2024 ($)	Budget 2024/2025 ($)	Budget 2025/2026 ($)	Budget 2026/2027 ($)	Budget 2027/2028 ($)	Budget 2028/2029 ($)	Budget 2029/2030 ($)	Budget 2030/2031 ($)
	Division St; West St to Centre St		56,000								
	Hartley St; Adam St to East St		60,000								
	High St; Apsley St to PVC @ 30 High St		112,000								
	Teak St; Short St to dead-end		67,500								
849200	Mains to be allocated (Coraki)				45,000	45,000	45,000	45,000	45,000		
	Spring St; Surry St to Union St	42,000									
	Queen Elizabeth Dr; Yabsley north to Lagoon Rd		78,000								
	Queen Elizabeth Dr; Yabsley north to Lagoon Rd			78,000							
	Bridge Str; Adam St crossing		26,000								
849250	Mains to be allocated (EH)		70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000
849400	Planned Renewals	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
849401	Meter and Service Installations	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
849460	South Reservoir Backbone Panel	10,000									
	South Booster Station SCADA upgrade	10,000									
	Coraki Booster PS upgrade	60,000									
	Chlorine and pH Monitor upgrade	12,000									
	Chlorine and pH Monitor upgrade	65,000									
849719	Emergency Source Design	20,000	500,000								
849750	Filters Investigation & Upgrades	340,054									
849754	Zone Meter Refurbishment	35,000									
849756	Renew Alum Tank	70,000									
849758	Renew PAC Slurry Dosing	62,000									

Project	Description	Budget 2021/2022 ($)	Budget 2022/2023 ($)	Budget 2023/2024 ($)	Budget 2024/2025 ($)	Budget 2025/2026 ($)	Budget 2026/2027 ($)	Budget 2027/2028 ($)	Budget 2028/2029 ($)	Budget 2029/2030 ($)	Budget 2030/2031 ($)
	Process Augmentation Design	320,000									
849736	RWPS Solar Installation	347,250									
	SCADA upgrade	65,000									
	Chemical dosing system integration	25,000									
	Service water pumps upgrade										
	Pre-settled pH probe installation	10,000									
	Redundant Raw Water flow control valve	25,000									
	Soda Ash dosing manifold & rotameter	25,000									
	Water softner relocation & integration			35,000							
	VSD replacement (pump 2)	50,000									
	PAC/PP system optimisation	15,000									
	Programable Logic Controller	60,000									
	Pump review	30,000									
	Supply System Improv Casino			75,000							
	Provide Water to new release areas Casino								100,000		
	Supply System Improv Lower River			200,000							
	Provide Water to new release areas Lower River	194,000		200,000			200,000			200,000	
849950	Future Water Renewals	336,500	306,500	3,665,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
849800	Plant Purchases	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

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, finding 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.