

# Stormwater

## Asset Management Plan

2022-2032



Richmond  
Valley  
Council

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



# Executive Summary

Richmond Valley Council (RVC) is custodian of an extensive range of community assets that it provides to facilitate delivery of its services to the community. This includes the stormwater drainage infrastructure for which it has responsibility within the Local Government Area (LGA). The purpose of this plan is to provide a structured process of management of Council's Stormwater Drainage network, documenting the quantity, condition, level of service provided, financial planning, risk management, operation, maintenance and renewal of the assets. The plan takes into consideration the legislative requirements of Council in managing 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 stormwater network is valued at \$65,627,359 at 30 June 2022, which consists of 81 km of conduits with supporting pits, headwalls and structures.

## Stormwater Infrastructure

Asset Group	Asset Type	Quantity of Water Assets	Length of Assets (km)	2022 Gross Replacement Cost
Conduits	Stormwater conduits pipes and boxes		81.01	\$ 55,155,761
Pits	Junction pits, Kerb inlet pits, Surface Inlet Pits, Surcharge Pits, Grated Pits	2700		\$ 7,846,209
Headwalls	Stormwater Headwalls	684		\$ 528,528
Structures	Gabions, aprons, retention pond, gross pollutant traps, sediment traps, weir walls, and fences.	60		\$ 2,096,862
			<b>Total</b>	<b>\$ 65,627,359</b>



## Key Issues

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

### Key Issues

Asset	Key Issues
<b>Strategic and Forward Planning</b>	<ul style="list-style-type: none"><li>• Network camera survey for accurate condition assessments including programming maintenance programs. This requires substantial funding.</li><li>• Network priority plan.</li><li>• Definition of strategic sub-catchments to allow for planning of possible flood mitigation, and the feasibility of upgrading existing networks.</li><li>• Consistency in modelling drainage catchments.</li><li>• Coordination of drainage studies with flood level mapping.</li></ul>
<b>Conduits</b>	<ul style="list-style-type: none"><li>• Drain cleaning, which requires substantial funding.</li></ul>
<b>Outfall Structures</b>	<ul style="list-style-type: none"><li>• Protection of outfall structures from high flow damage where the network flows into the Richmond River.</li></ul>
<b>Litter Traps</b>	<ul style="list-style-type: none"><li>• Further development of litter traps to contribute to the waterway health.</li></ul>

## Levels of Service - Performance

Levels of service help Council meet the community's needs, and work towards achieving our strategic goals. They ensure that an asset is fit for purpose, whilst balancing costs and future demands. Service levels of stormwater infrastructure assets is determined through customer expectations, strategic goals, and statutory requirements which is divided into two types: community and technical based.

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 localised flooding, maintenance activities, safety, and environmental considerations. Measurable technical service levels are in draft format which will be implemented with Council's Stormwater Management Policy.

## Demand - New Infrastructure

Specific government projects that will impact on the stormwater network infrastructure include the Regional Jobs Precincts, draft Growth Management Strategy, Casino Place Plan and the Northern Rivers Rail Trail project. The draft Growth Management Strategy<sup>1</sup> 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 stormwater infrastructure.

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<sup>1</sup> [https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft\\_RV\\_Growth\\_Management\\_Strategy\\_221124.pdf](https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft_RV_Growth_Management_Strategy_221124.pdf)

The Casino Place Plan<sup>2</sup> identifies improving stormwater management including reuse at development sites and large-scale capture and treatment as part of the employment and residential development expansion.

### Demand - Existing Stormwater Infrastructure

Council is undertaking a Stormwater Drainage Study for Casino and the Mid-Richmond to assist in the planning and risk management solutions for existing urban stormwater infrastructure. This planning incorporates climate change, urban growth, and improving existing urban areas subject to frequent localised flooding. The feasibility, practicality, and effectiveness of possible options will be investigated, and costed in due course.

#### Flood Recovery

*This Stormwater Asset Management Plan uses baseline condition information from the 2018/19 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 stormwater 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 has identified a need to undertake stormwater studies and build solutions for better stormwater management.*

### Life Cycle Analysis Stormwater Infrastructure

It can be seen that a very large percentage (90.4%) of the assets range between condition 0 (As New) to condition 3 (Fair) representing total value of \$61.28M. This infers that asset condition is not a significant problem for Council.

The Asset Renewal Funding Ratio is a critical indicator of the stormwater drainage programs long term stability. An ideal indicator is 1.0; therefore, Council's indicator of 0.76 needs to be addressed. Asset planning is progressive, driven by Level of Service (LOS) agreements and ultimately the communities' willingness to pay for the service. The following facts provide perspective:

- Asset Consumption Ratio =  $\$53.8M/\$65.63M = 82\%$ .
- Renewals Ratio (RR) = 0.94 average.
- Assets reaching the end of their design life this Long-Term Financial Plan (LTFP) \$0.106M. Assuming all condition 4.5 to 5 reach the end of their life = \$0.113M over 10 years.
- Renewal works for stormwater assets programmed this LTFP \$1.2 million over 10 years.
- Technical level of service for stormwater assets in a backlog condition (either condition 4 or 5), average value for LTFP \$105,697.
- Therefore, Bring to Satisfactory (BTS) average measure equals 0.06 (greater than benchmark value of 0.02).

Council's Stormwater position shows the fair value of assets (gross replacement cost) is \$65.6 million; and the written down value totalling \$53.8 million. Annual depreciation of \$0.21 million reflects an asset consumption rate of 0.32%. The asset renewal funding ratio is 0.94 this indicates Council plans to renew assets at approximately the rate they are being consumed, thereby maintaining current asset stock levels.

Whilst it is recognised Stormwater infrastructure assets are long life assets, additional condition assessments of the entire network will provide a better accurate representation of the consumption and condition of the assets.

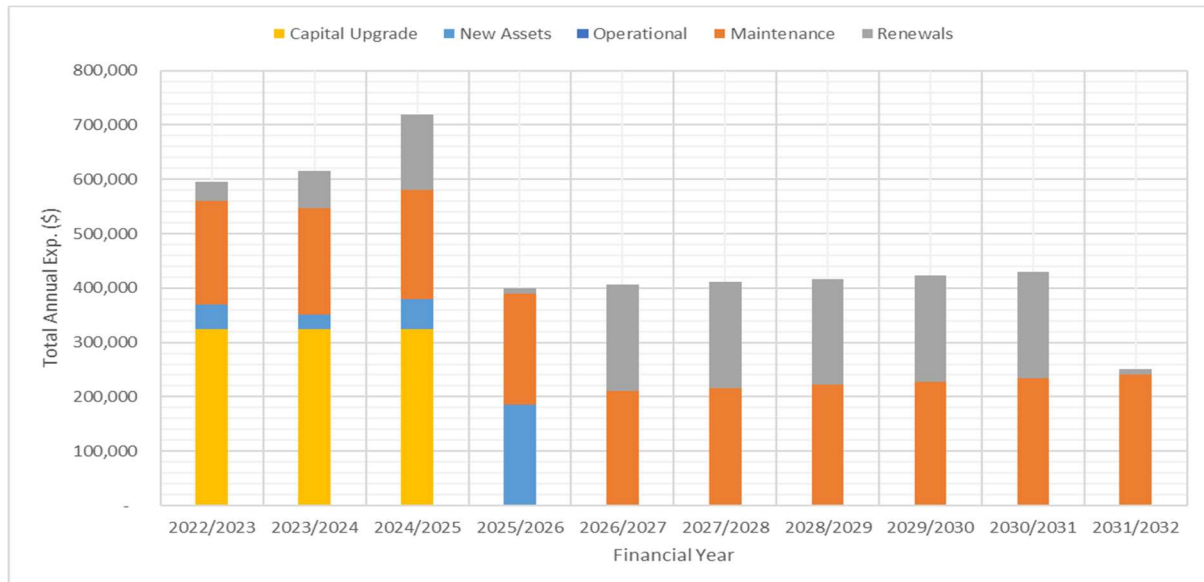
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<sup>2</sup> [https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft\\_Casino\\_Place\\_Plan\\_221123-2.pdf](https://richmondvalley.nsw.gov.au/wp-content/uploads/2022/11/Draft_Casino_Place_Plan_221123-2.pdf)

## Ten Year Financial Forecast

The 10-year financial forecast is detailed within **Appendix G** for Councils stormwater infrastructure including new, upgrades and capital works for each asset group. The 10-year forecasted financial projection (excluding unapproved grant and unapproved disaster funding) is summarised below.

### Ten Year Financial Projections



Councils' stormwater drainage requires further long-term planning where major investment will be required to improve drainage within Casino and surrounding urban villages. The current drainage does not meet demands with recent modelling identifying that the Casino main stormwater trunk main is designed under capacity. As the customer demands increase with the Casino Place Plan and implementation of the Regional Jobs Precinct will further highlight the need for increased infrastructure.

A major issue concerning stormwater drainage 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.

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

- Rating charges for stormwater management;
- Special rates or charges schemes;
- Development funded upgrades and contributions; and
- Available grants, e.g., special purpose State Government grants.

Council has been unsuccessful in obtaining grant funding for stormwater over the past 5 years.



## Asset Management Improvements

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

- Continue the capture of data for all stormwater assets and monitor condition. The data capture can be updated as part of normal operations or when servicing/inspecting assets. Link assets data to the GIS.
- Complete the identification of the infrastructure risk register for Council's stormwater infrastructure and assets considering current controls, actions and funding required to decrease risk levels.
- Development of Stormwater Management Policy.
- Identify the standards to apply for future stormwater projects.
- Based on the criticality framework develop the maintenance plan across the stormwater assets and apply.
- Undertake ongoing analysis of future renewal requirements using the condition data collected.
- Analyse the customer request results to address problem areas and maintain performance.
- Collect and monitor defect histories to identify trends in performance of asset types.
- Confirm target service levels, monitor, and report outcomes.
- Develop and apply the asset criticality framework to stormwater assets.
- Develop and apply the asset risk framework to stormwater 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.
- Complete the stormwater strategy to provide initial direction and future capital program and cost requirements.
- Update the stormwater strategy to confirm the future direction of projects and timing together with project costs and benefits to drive the AM plan.
- Identify critical demands on assets and use these demands and to identify actions in Council's Strategic Plans.
- Add questions related to the stormwater system regarding satisfaction, odour levels, overflows etc.
- Develop Council reporting templates for whole of life costs for future capital works projects.





# 1. Introduction

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

This Stormwater Asset Management Plan (SDAMP) has been developed to assist Council to manage Council's stormwater drainage system, taking into consideration the important links with the whole of the Northern Rivers.

This plan is to be read in conjunction with the IWCM Plan, Business Continuity Plan, Drought Management Plan, Demand Management Plan, Risk Management Strategy Drainage Supply, Long Term Capital Plan and Community Strategic Plan.

The Stormwater network is valued at \$65.6M and consists of 81.4km of conduits, and associated infrastructure including headwalls, pits, and structures.

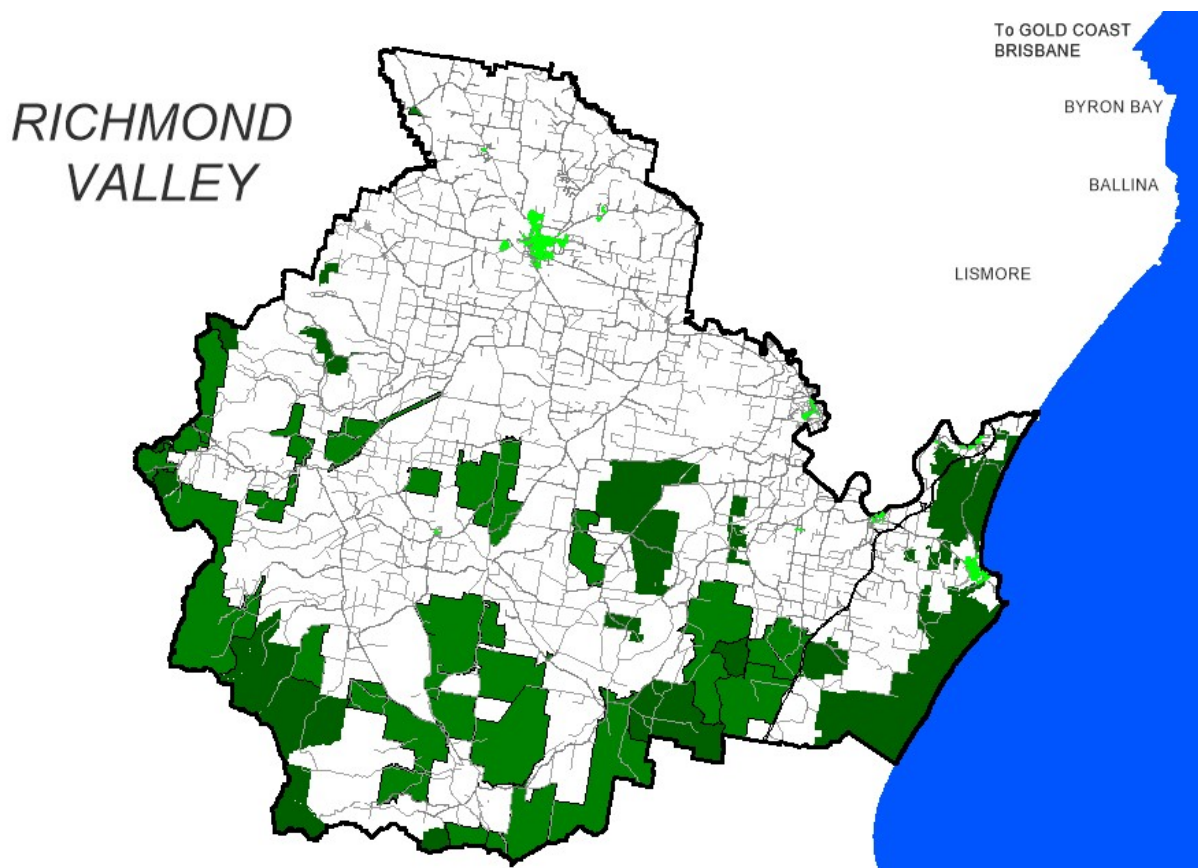


Figure 1-1: Stormwater Drainage Network for Richmond Valley Council

## 1.1 Purpose of this Plan

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

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

- Demonstrate responsible stewardship.
- Translate the Council Strategic Goals into drainage strategies and action plans.
- Determine the services to be provided, the target service standards that RVC aims to achieve, and the measures used to monitor the performance of the drainage 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 AM Plan is required to be regularly reviewed to ensure its continued relevance and alignment with demand and strategic alignment.

## 1.2 The Asset Management Plan Process

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

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

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

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

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



### 1.3 Relationship with the Corporate Planning Process

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

**Community Strategic Plan:** Council's current Community Strategic Plan (CSP) is a three-year recovery plan in response to the 2022 national disaster flooding event. This plan focuses 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).

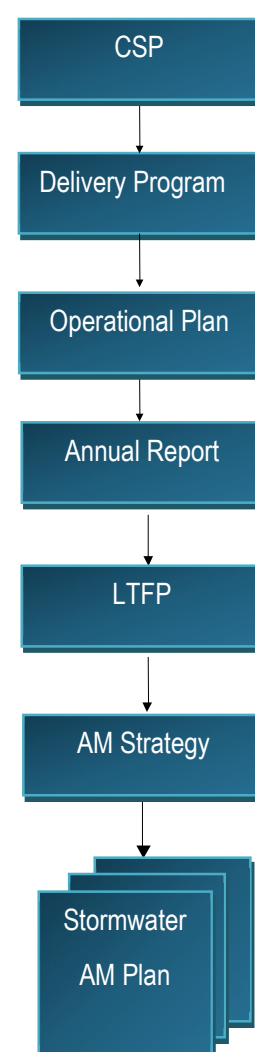
**Long-Term Financial Plan:** The Long-Term Financial Plan (LTFP) is a 10-year rolling plan that informs decision-making and demonstrates how the objectives of the CSP and commitments of the DP and OP will be resourced and funded. The LTFP captures financial implications of asset management and workforce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

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

The AM strategy is reviewed every 4 years in alignment with IP&R planning cycle ensuring 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 stormwater assets include the Asset Management Policy, Stormwater Management Charge Policy, and Risk Management Policy.





## 1.4 Asset Management Plan Format

This SDAMP 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, and 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 Stormwater Network

Richmond Valley has a stormwater drainage network of 81.4km servicing urban areas consisting of kerb and guttering, pipes, gross pollutant traps, detention basins and natural drainage lines. The system discharges urban stormwater to local creeks, sediment ponds, wetlands, lagoons, the Richmond and Evans River and ultimately the ocean. The kerb and guttering assets which connect to the stormwater drainage network form part of the roads and transport asset classification and are excluded from this plan.

The definitions for each of the asset types across the stormwater drainage asset network are:

- **Conduits (pipes):** buried pipe, conduit or constructed open channel that conveys stormwater runoff.
- **Headwalls:** a structural retaining wall at the end of a culvert or drainage conduit. Used primarily to control seepage from behind the wall and to prevent under mining of the structure due to velocity of water entering/exiting the conduit.
- **Inlet and Junction Pits:** reinforced concrete/brick chamber constructed below ground designed to accept rainwater runoff prior to draining away through drainage conduits.
- **Structures:** include gabions, gross pollutant traps, litter traps, trash racks, culverts, sediment traps, retention ponds, channels and the weir wall.

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

**Table 2-1: Summary of Stormwater Asset Network**

Asset Group	Asset Type	Quantity of Stormwater Assets	Length of Assets (km)	2022 Gross Replacement Cost
Conduits	Stormwater conduits, open channel, pipes and boxes		81.01	\$ 55,155,761
Pits	Junction pits, kerb inlet pits, surface inlet pits, surcharge pits, grated pits	2700		\$ 7,846,209
Headwalls	Stormwater headwalls	684		\$ 528,528
Structures	Gabions, aprons, retention ponds, gross pollutant traps, sediment traps, weir walls, energy dissipator and fences	60		\$ 2,096,862
			<b>Total</b>	<b>\$ 65,627,359</b>



A purpose of Council is to supply services to meet the needs of the community. In the case of stormwater services, the need is met by the creation, operation, maintenance, and rehabilitation (collection / discharge, treatment, fieldwork, system planning, customer services and administration) of pipelines, pits, watercourses, and retarding basins. There is also an increasing demand to address stormwater quality issues.

Local government is responsible for stormwater infrastructure within urban areas including the operations and maintenance of the assets. For the purpose of this definition “urban” means land within a city, town or village. Richmond Valley Council is spread across 3,051 square kilometres with six townships, including Casino, Evans Head and the villages of Woodburn, Coraki, Broadwater, Rileys Hill and Rappville.

The Council-owned stormwater network is provided to protect people, property, and public health by safely and efficiently collecting and transporting stormwater runoff. The key objectives for the management of the stormwater system are to:

- Maintain, preserve, and help rehabilitate where possible existing natural features of the stormwater system, such as natural channels, wetlands and riparian vegetation.
- Reduce stormwater pollution transported to receiving waterways.
- Encourage integration of the stormwater system into the urban landscape to maximise the visual and recreational amenity of developments and take advantage of the stormwater resource.
- Confirm that when stormwater and flood protection works are constructed those existing habitable buildings are protected from flooding in major storms up to the 100-year event and ensure that all new habitable buildings have floor levels at least 300mm above the 1% AEP flood level.
- Confirm that stormwater flood waters do not present an unacceptable risk to the community.
- Check that piped drains have sufficient capacity to prevent the frequency of flash flooding/inundation.
- Check new subdivisions so that no overland flow is directed onto the building envelope of any allotment from roadways or upstream properties during major flood events; and
- Check that new developments shall not have an adverse impact on downstream properties and environments in terms of major and minor flooding and quality of water discharged from the stormwater system.

Council prepared a Stormwater Management Plan (SMP) in 2006 to minimise the ecological and economic effects of urban stormwater on the receiving environment. Community consultation identified litter, water-quality, weeds, funding, and network maintenance as issues. The SMP identified erosion in the upper catchments of Rocky Mouth Creek and Evans River, pollutants from agriculture, landfill, sewerage, industrial and acid sulphate soils affecting water quality.

Measures to improve the situation included the construction of wetlands and sediment basins at Evans Head, maintenance of stormwater devices and GPT's, litter control and alleviation measures like rainwater tanks. Water sensitive urban design outlines further principles for water quality control and catchment management.

## **2.2 Stormwater Functional Hierarchy**

Council has a role in setting required building floor heights in relation to flood levels and declaring areas subject to flooding including in which special designs are necessary to respond to potential flood conditions for the whole LGA.

Stormwater is the management of rainfall from the roof of buildings, paved and unpaved areas into drains or other appropriate storage systems.

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

The stormwater classifications reflect the perceived risk associated with each asset type and are used to differentiate service levels and maintenance standards.

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

## 2.3 Asset Performance

Adequate stormwater infrastructure is designed to protect the community and property from flooding. As custodians of drainage, it is Council's responsibility to ensure a safe, clean, and free flowing stormwater network that is adequate to cater for peak storm water events. Council provides the following services through the provision of stormwater assets:

- Transportation of stormwater into the collection system including the Richmond River.
- Protection of the environment.
- Flood mitigation.
- Property protection.
- Pollution reduction.
- Risk mitigation.

There are several internal factors that influence the performance of the assets being material used, pipe and pit capacity, and the pipe condition. External factors that influence asset performance are discussed further in the Demand Section.

The Casino Drainage Study (EES Report 2018 & 2019) and the modelling report being The Casino Stormwater Flooding Assessment Report (October 2022 Ardill Payne) indicated that the Casino's stormwater drains are under capacity. The report further provides mitigation options that will increase the stormwater capacity.

The flood model developed as part of this report has been used to identify local issues and performance assessment. The pilot study using the hydraulic model shows that future development at certain locations of the town may create unacceptable local and regional stormwater- related adverse impacts.

The hydraulic modelling results indicate the town's main stormwater trunk main is excessively under capacity and at some locations is expected to overflow in a 1-year design event.

The mitigation options are:

1. 770m of 1800mm diameter pipe at an average depth of 4.5m along public roads; or
2. 730m of 1800mm diameter pipe at an average depth of 4.0m along public roads and three private properties.

For a 2-year design storm event the model shows that the contribution of the proposed pipe in the stormwater discharge will prevent surcharging of the stormwater system in a 2-year event.

It is intended that future modelling of the stormwater networks will be undertaken to assist future planning and provide mitigation options in the towns as they are identified.

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

Performance monitoring of the stormwater assets includes asset condition; age profile; customer requests; and maintenance inspections.

### 2.3.1 Condition Assessment

Full network condition assessments are conducted every 5 years through the statutory revaluation process. The condition assessment of the stormwater network was based upon assessment completed 2018-2019.

Condition assessments are conducted on an inspected sample percentage and proportioned using age profiles due to a cost and resourcing limitation. The condition rating is in line with current IPWEA Practice Note 3 - "Stormwater Condition & Performance Assessment Guidelines."

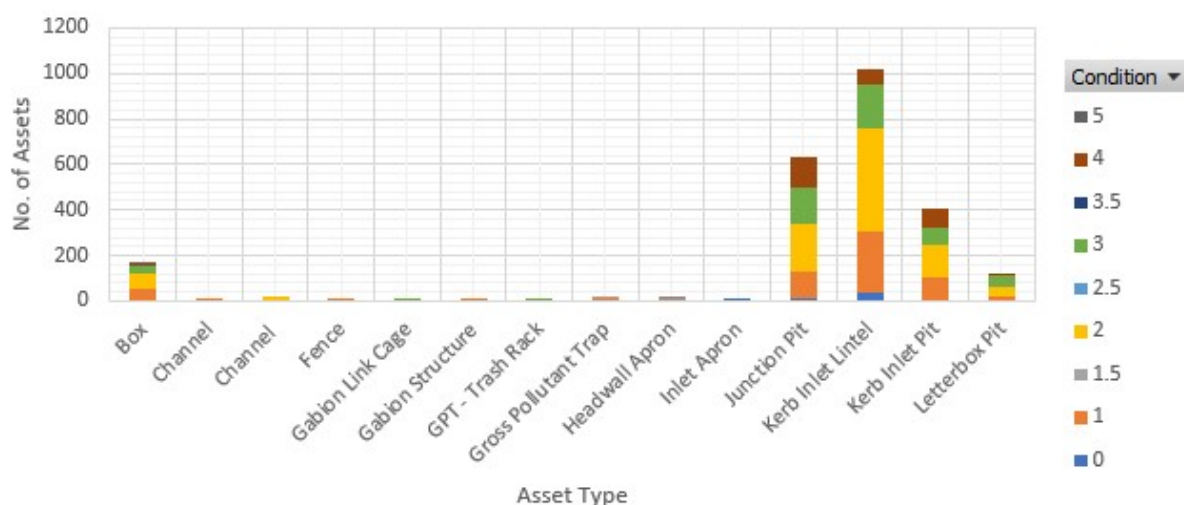
Council identifies Stormwater infrastructure as long-life assets (Asset Management Steering Committee assigned useful life of 120 years) therefore these assets are generally low risk and not subject to significant changes in condition ratings over a 5-year period. Council has never conducted a full condition assessment of the entire network. Given the increase in rainfall and flooding events the stormwater network requires an extensive inspection and condition assessment for accurate condition identification.

It is recommended that Council will move towards conduit visual inspections utilising technology such as automated intelligence for condition and defect assessments aligning the WASA codes. This will provide a more accurate representation of actual asset conditions and improved business planning and decision making. This improved methodology will be implemented over different phases in alignment with the closed-circuit TV (CCTV) of sewerage pipeline which is currently in capture phase.

The following graphs identify the overall stormwater network by condition, and the associated tables identify assets currently identified for renewal via condition rating. Condition scores and evaluation methodology is referenced in **Appendix D**.

It can be seen that a very large percentage (90.4%) of the assets range between condition 0 (As New) to condition 3 (Fair) representing total value of \$61.28M. This infers that asset condition is not a significant problem for Council.

**Table 2-2: Asset class by condition**



Council is embarking on annual CCTV inspections to confirm the condition of the conduits as the condition initially was based on the year installed and assumed asset life in years.

The age profile chart below illustrates that most stormwater pipes and pits have a significant time (approximately 38 years) before replacement expenditure is required. This implies that even though the headwalls and structures may have a shorter life, the replacement amount is well within the range for replacement expenditure in the short term.

Therefore, we can conclude for the existing assets, assuming the asset lives are achieved, and growth is not significant, Council has sound control of the assets.



### 2.3.2 Customer Requests

Customer requests can be used as a measure of asset performance. Stormwater related customer requests received over the four years are included in Table 2-3 below. While Casino has the greater of requests by town, the number of requests (69) over the four years is extremely low.

**Table 2-3: Stormwater related Customer Requests**

Town/Villages	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL	Trends
Broadwater	0	0	0	3	3	↑
Casino	7	9	19	11	46	↘
Coraki	1	0	1	0	2	↔
Evans Head	2	3	3	4	12	↔
Rappville	0	0	1	0	1	↔
Rileys Hill	0	0	1	0	1	↔
Woodburn	2	1	0	1	4	↔

**Table 2-4: Number of Requests by Request Type**

Request Type	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL	Trends
Blockage/Cleaning	2	0	0	11	13	↗
Maintenance/Repairs	10	13	25	8	56	↘

Trend Legend:

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

The customer request highlights that Casino and Broadwater are the only town trending upwards by the number of requests. Overall, the number of requests is very low considering the LGA being affected by a significant number of natural disasters and high stormwater events. All other town requests have been static over the four years.

Table 2-4 identifies that 56 repairs are identified as maintenance activities while 13 requests are blockages that required cleaning. Council has implemented a new Customer Request Management system in 2021-2022 which is difficult to extract topic related requests. Unfortunately, there was no further data available to dissect the data further.

## 3. Strategic Environment

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

### 3.1 Corporate Vision

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

Council's vision is:

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

Council's mission is:

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

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

- 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).

- 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 Stormwater Infrastructure**

During the 2022 Flood Natural Disaster essential community infrastructure of Council's stormwater network systems were affected by damage. Council is focused on improving the local stormwater and drainage networks.

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

### ***Objective #6 – Improve Disaster Resilience of Public Assets***

Council has identified the requirement to undertake an inspection of the Casino and Evans Head stormwater systems to identify the current state and performance of these assets.

Forward planning involves Council reviewing the Casino stormwater model and develop a stormwater risk management works program.

Council has provided the commitment to develop stormwater models and risk management works for the Mid-Richmond communities.

The Objectives of relevance to this AM plan include:

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

Progress against these objectives will be measured by community satisfaction with 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
<b>Projects and performance</b>	Specification, tendering and delivery of major capital works projects.
<b>Infrastructure services</b>	Survey, design and specification for capital and renewal projects.
<b>Asset planning</b>	Asset information compilation, database management, mapping, works prioritisation and programming, financial reporting, valuations. Grant funding.
<b>Asset operations</b>	Operations of the stormwater network and developing the operations budget.
<b>Asset maintenance</b>	Maintenance planning, resource management, establishing the maintenance budget and defect inspections.
<b>Asset renewal</b>	Developing the renewals works program.
<b>Asset disposal</b>	Proposing the disposal of assets and decommissioning them.

Key initiatives associated with the stormwater network include:

- Further develop an integrated approach to asset management that is consistent with National Asset Management framework;
- Deliver the Richmond Valley Recovery Plan (Delivery program);
- Deliver the 2022-2023 Operational Plan;
- Deliver the Casino Drainage Study;
- Finalise the Casino risk assessment for stormwater and flooding;
- Finalise the Stormwater Model and Risk Assessment for the Mid-Richmond communities.

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

The Annual Report further identifies achievements for the drainage infrastructure attributed to each department with a capital works program achieving an 83 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;
- Encouraging and supporting the economic and social development of the LGA.



Key objectives of the policy include.

- Provide an appropriate level of service to meet the 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, Finance system, and Document Management System, integrating Asset Management with all of Council's operations.

### 3.2.3 Integrated Water Cycle Management (IWCMP)

The IWCMP is a 30-year strategic planning tool for Council to manage urban sewer, water, and stormwater services in a holistic manner within a catchment context. Utilities have the goal of providing an appropriate, affordable, cost-effective, and sustainable urban stormwater network that meet community needs, protect public health and the environment, and make best use of regional resources.

IWCMP involves looking at the three components of the urban water services (water supply, sewerage, and stormwater) in an integrated way when identifying all the IWCMP issues and developing scenarios to address these issues. The scenarios are evaluated and compared based on their social, environmental, and economic impacts. Council completed its IWCMP Plan in 2008 and updated the plan in 2017/18.

The objectives of the IWCMP are:

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

The issues addressed by the IWCMP are:

- Town water supply security;
- Ground and surface drainage sharing plans. Council must be involved in the drainage 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 drainage 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 Australia; and

- Poor demand management in terms of consumption and water losses.

The IWCM Plan has set the future direction for Council 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.

Performance monitoring is an essential part of the IWCM process to ensure that the implementation of strategies which have been identified have been successful at addressing the water cycle issues. Annual reporting to the Office of Water should provide an indication of the success of Council's IWCM Plan and the other Best-Practice planning documents in achieving sustainability and progress in meeting Council's business goals and social and environmental responsibilities.

### 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, stormwater 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 demonstrates to the various stakeholders that Council is managing its drainage assets responsibility. The above list does not exclude the role and interest of other stakeholders.



## 4. Levels of Service

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This section defines the service levels or performance standards of stormwater assets that are required and the basis of the decision behind their selection. The service levels support Council's strategic goals and are based on customer expectations and statutory requirements.

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

- To inform customers of the characteristics of; and level of service to be offered;
- As a focus for the AM strategy developed to deliver the required level of service;
- 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 levels of service for stormwater 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. regulations, safety legislation). These requirements set the minimum level of service that must be provided.

Service levels are divided into two types being Community and Technical based. Setting key performance indicators allows Council to monitor progress and measure performance. Community based service levels relate to the function of the service and needs to be in line with customers' expectations as part of service delivery. Technical based level of service supports the process to meet community expectations.



## 4.1 Customer Research and Expectations

Understanding customer expectations is a key input into levels of service 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. Customer survey results are represented in Table 4-1

There are several Council programs in place where the community is invited to submit their concerns about specific issues or to be involved in the development of the LGA.

**Table 4-1: Community Survey Results**

PERFORMANCE MEASURES	Customer Survey Satisfaction Results	Customer Survey Satisfaction Results	Customer Survey Satisfaction Results
	2013	2016	2021
Overall satisfaction with Performance	82%	94%	86%
Maintaining local drainage 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

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. 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. Compared to an 'All of NSW'



measure for metropolitan and regional councils, Richmond Valley Council's performance is in line with regional benchmarks.

Regarding level of investment, there is no desire for cost cutting based on the following results:

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

There were very few issues related to drainage infrastructure identified by the community.

#### 4.1.2 Customer Expectations

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

**Table 4-2: Typical Community Expectations for Stormwater**

Community LOS	Community Expectation
<b>Safety</b>	Public safety and amenity for stormwater management.
<b>Quality</b>	Maintenance is undertaken regularly to maintain assets for litter, nutrients, chemicals and sediments.
<b>Quantity</b>	Planning is being undertaken to ensure quantity and reliability of drainage is available at different levels of rainfall events.
<b>Service Cost</b>	Lifecycle costs are managed to deliver services within budget constraints.
<b>Legislative Compliance</b>	Compliance with all relevant applicable legislation.
<b>Environmental</b>	Aquatic habitats, riparian vegetations, stream stability, environmental flows, and minimal/no pollution from rain events.



## 4.2 Target Customer Levels of Service

Council has not previously pre-defined formal technical level of service for stormwater network infrastructure. The levels of service are currently in initial form. Council plans to consistently measure and test these levels of service in consultation with the community. Monitoring the level of service for a period enables an assessment of achievable targets and measured performance. Council has developed the following levels of service with community expectations in mind which will be reviewed as part of the planning framework schedule.

**Table 4-3: Customer Level of Service – Stormwater**

Service Attribute	Service Level Characteristic	Performance Measurement Process	Current Performance	Expected Position in 10 Years based on Current LTFP
QUALITY	Well maintained drainage fit for purpose.  No overflow or flooded properties or inconvenienced.  No property damages  No environmental damage to receiving waters.	Condition surveys.  Community Surveys.  Customer requests – Councils CRM system (TechnologyOne).  Response time taken to inspect failures.	Condition survey to be inspected 2024/2025.  To be provided from the Community Survey.	Aim for reduction in requests. At minimum requests received should not increase relative to a percentage of network.
FUNCTION	Water drained stormwater  Well maintained drainage fit for purpose.	Reduce number of drainage assets that fall below condition rating 3.  Community Surveys.  Customer requests – Council's CRM system (TechnologyOne).	Condition survey to be reinspected 2024/2025.  To be provided from the Community Survey.	Aim for reduction in requests. At minimum maintenance requests received should not increase annually.
SAFETY	Design to reduce dangers such as drowning, injury, safe flow depths and velocity at crossings.  Maintain dangerous areas fenced/signage.	Condition surveys.  Number of injury accidents (Accident History).  Response time taken to respond to unsafe issues.	Accident monitoring.  Condition survey to be reinspected 2024/2025.  To be provided from the Community Survey.	Aim for reduction in requests. At minimum requests received should not increase relative to a percentage of network.

## 4.3 Target Technical Levels of Service

The technical LOS support the customer service levels being operational or technical KPI's. The desired position is identified in Table 4-4. The measure relates to allocation of resources to service activities including:

- Operations – Regular activities to provide services (eg inspections).
- Maintenance – Activities necessary to retain asset to an appropriate service condition. Maintenance activities enable an asset to provide service for its planning life (eg cleaning rubbish, debris, or vegetation).
- Renewals – Activities to return service capability of an asset (eg relining pipe).
- Upgrade/New – Activities to provide a higher LOS (eg new conduit installation, new inlet pit).

**Table 4-4: Technical Level of Service – Stormwater**

Service Attribute	Service Level Objective	Performance Measurement Process	Current Performance	Expected Position in 10 Years based on Current LTFP
OPERATIONS	Ensure services provided are best value for money.	Number of complaints localised flooding.	Ad hoc based on CRM from community and staff.	Maintenance/renewals implemented optimal times achieving best value for money.
MAINTENANCE	Ensure stormwater infrastructure is well maintained.	Quantity of work (eg repairs completed, number pits cleaned from debris)	Ad hoc based on CRM from community and staff. Condition survey.	Formalised program of works for stormwater network assets infrastructure.
RENEWAL	Maintain safe and effective stormwater network for all users.	Delivery annual stormwater renewal program on budget and time.	Determined from stormwater assets condition 3 rating or below.	Intervene when stormwater asset condition declining to an unserviceable state and start to decline in condition.
UPGRADE/NEW	Develop and maintain a safe and sufficient stormwater network. Upgrade only if need arises. Encourage/facilitate new development.	Monitor to determine upgrade requirements.	New stormwater infrastructure is inherited or contributed through development or subdivision.	All stormwater assets meet the capacity and safety requirements of the community.

#### 4.4 Performance Management

Council will be required 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. The current CRM system is very difficult to extract reporting data used for accurate performance measurements. Additional improved KPI and dashboard reporting will aid monitoring performance decision making in managing Council's stormwater network infrastructure into the future.





## 5. Demand Forecast

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

### 5.1 Demand Drivers

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

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

### 5.2 Demand Forecast

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

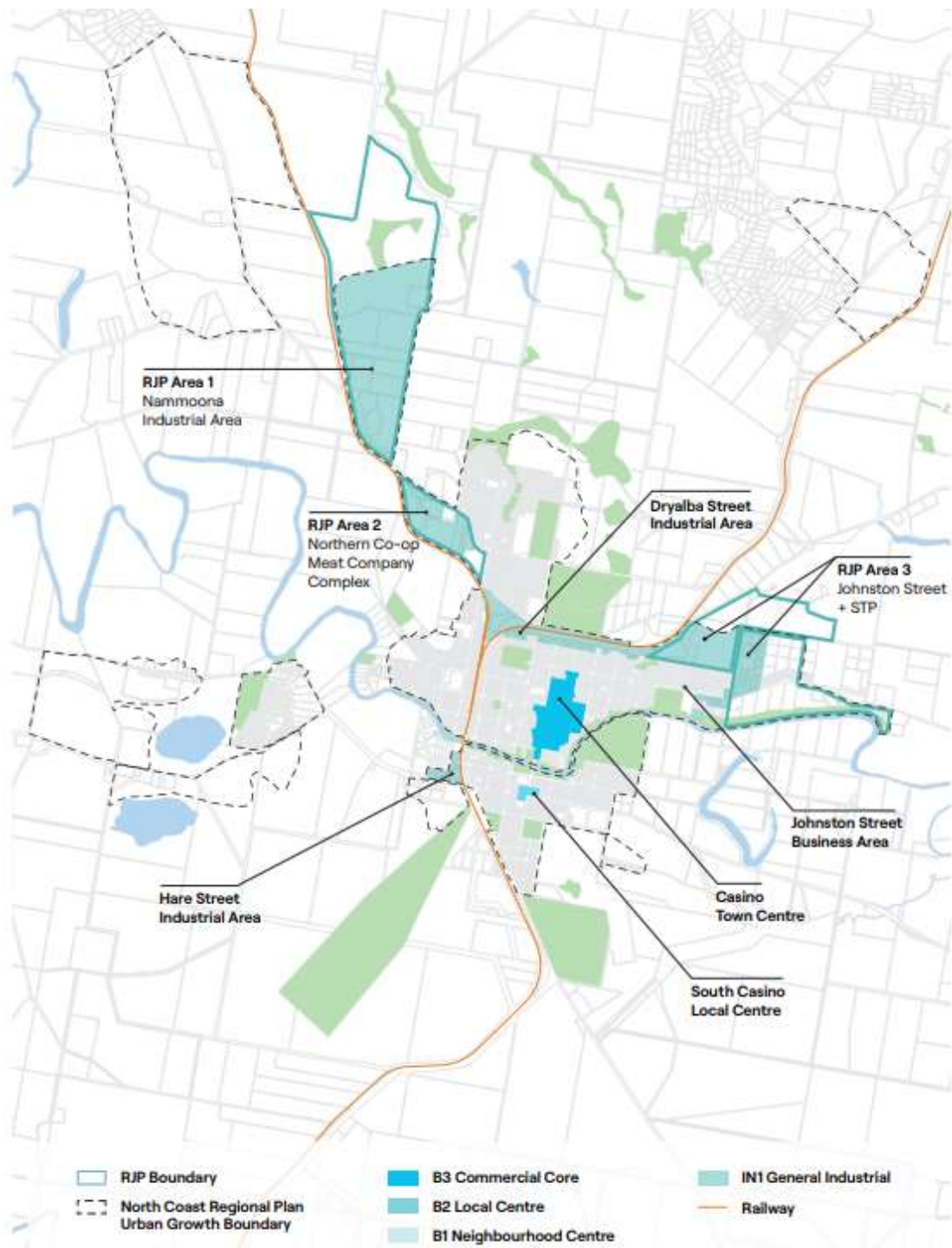
Table 5-1: Population Change 2021– 2031<sup>3</sup>

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%
<b>TOTAL</b>	<b>23,550</b>	<b>25,400</b>	<b>27,650</b>	<b>0.81%</b>

<sup>3</sup> Source: Draft Growth Management Strategy, GYDE Consulting, November 2022.



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



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

The draft Casino Place Plan provides planning towards supporting growth for population, employment, and housing.

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

The areas in conjunction with the status of the development areas are identified in Table 5-3: Status of Existing Developments using this information, the impacts on existing and new infrastructure can be identified and discussed further in 5.3 Demand Impact on Assets.

**Table 5-2: Recent Developments**

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

Development that will result in the need for new or upgraded stormwater and 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.
Reardons Lane, Swan Bay	2017	58 lots	Stage 1 Constructed. Stage 2 Approved / under construction.
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	People	Vehicles	Status type
Gregors Road, Spring Grove			19 lots			Rezoned.
Hills Road, Rileys Hill			35 lots			Future potential.
Casino Industrial estate extension						Future potential.
Hotham Street / Light Street, Casino						Future potential.
Forest Grove, Fairy Hill						Future potential.
Nordenfeldt Street, Broadwater			65 lots			Future potential.
Barling Street, Casino						Future potential.
Airport Land, Evans Head			50 lots			Future potential / strategic redevelopment area.
Manifold Road Casino, Rural Residential			20 lots			Scoping phase of rezoning.
Fairy Hill			1644 lots			Scoping phase of rezoning.

### 5.3 Demand Impact on Assets

Urban growth requires careful mitigation of concerns including flooding, stormwater, environmental and infrastructure growth. The RJP will focus on studies to include land use, stormwater drainage and groundwater studies for improved planning considerations.

### 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 Stormwater infrastructure such as water sensitive urban design and open drains can be estimated from 2022 - 2037. New infrastructure projects subject to investigation are:

- Develop an overland flow path to Barling Creek,
- Trace 5-year design flood capacity back up the main drainage stormwater trunk until the existing drain can cope then develop a new pipe to the river,
- Pipe the catchment to the west of the railway to the river,
- Pipe North Street to Loco Lane and Railway triangle detention pond,
- Pipe the railway triangle to the golf course wetlands.

The Casino township flood mitigation options are summarised in Section 6 of this AMP. Other ideas for potential mitigation options have been developed for future planning.

#### 5.4.2 Existing Drainage Infrastructure

Council is finalising the Casino Drainage Study based upon a Stormwater Flooding Assessment Report and modelling. These works include identify a risk assessment and forward planning implementing recommendations to improve stormwater services within Casino urban areas.

These options include maximise existing mitigation measures including:

- Colley Park detention pond,
- Warren Park detention pond,
- Overland flow path to Barling Creek, past the town sewer treatment plant.

Develop overland flow path(s) along the existing main drain potentially at:

- Walker St service station,
- Hickey Street,
- Wheat Street,
- East Street.

The feasibility, practicality, and effectiveness of these options will be investigated, in due course.

## 5.5 Climate Change

### 5.5.1 Impacts of Climate Change

The main risks associated with climate change is the potential for increased frequency of rainfall events, affecting the capacity and maintenance of stormwater infrastructure. There are likely to be significant damage costs and environmental spills if stormwater systems are unable to cope with extreme events or multiple events in a season.

Acceleration of the degradation of materials and structural integrity of stormwater pipelines may occur through increased ground movement and changes in groundwater.

**Table 5-5: Climate Change Risks**

Risk Scenario	Climate Variable	Risk Rating			
		2030		2070	
		Low	High	Low	High
Stormwater and Flood Damage	Increase in extreme daily rainfall. Decrease in available moisture. Sea level rises.	High	High	Extreme	Extreme
Degradation and failure of stormwater infrastructure	Increase in extreme daily rainfall. Increase in frequency and intensity of storms.	Moderate	Moderate	Moderate	High

The above table indicates that state-wide, stormwater infrastructure will pose a significant risk in 2030 and 2070 which represent the dates used for the CSIRO modelling. It has however become apparent that climate change impacts identified for 20 years' time are being experienced today.

Climate change has the potential to generate more frequent high intensity storm events implying that today's 1 in 5 and 1 in 100-year events may be tomorrow's 1 in 2<sup>4</sup> or 1 in 25-year events. This means that the pipes

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<sup>4</sup> 1 in 2 and 1 in 25 are examples only



constructed by Council and developers previously are not sufficient now or in the future, leading to a stormwater network that is severely under capacity.

This will result in the need to upgrade the stormwater network or undertake alternative solutions such as water harvesting or the inclusion of additional flood management infrastructure (onsite detention basins) to mitigate the flood risk.



## 5.6 Potential Asset Programs to Address Demand

Demand management strategies provide alternatives to the creation of new assets to meet demand and look at ways of modifying customer demands such that the capacity of existing assets is maximised and the need for new assets is deferred or reduced.

The following are some of the possible strategies to manage the impact on Council drains due to demand growth:

- Increase the capacity of the stormwater network by duplication and/or augmentation.
- Undertake upgrades of stormwater assets when redevelopment occurs.
- Introduction of storage tanks to reduce the load on the stormwater system during storm events.
- Introduction of bypasses/diversions between drains to reduce the load on one stormwater branch by transferring water to a larger capacity branch.
- Encourage the use of water tanks in Council open space for re-use.
- Enforcing developers through the planning scheme process to build storage capacity into new developments to retain and re-use stormwater (eg sewer, open space, agriculture or wetlands).
- Encourage the community to use stormwater from their properties for watering gardens.
- Treating the quality of water prior to discharge; and
- Introduction of Water Sensitive Urban Design practices.

Urban consolidation assumes existing infrastructure and services can be enhanced to meet a larger and more densely settled population. This enhancement will most likely involve a combination of improvements to existing infrastructure, including drainage, as well as other means of reducing the impact of run-off from storms in the face of likely increased imperviousness. Water Sensitive Urban Design practices are an essential means of catering for the latter.

Technology changes are forecast to affect the delivery of services covered by this Plan are identified in Table 5-6.

**Table 5-6: impacts of Technology Changes**

Technology Change	Effect on Service Delivery
Water Sensitive Urban Design (WSUD).	<p>This offers an alternative to the traditional conveyance approach to stormwater management, attempting to: reduce the extent of impervious surfaces; increasingly achieve provision of water that is fit-for-purpose; and permit more water in the landscape through projects such as stormwater harvesting and temporary storage for sediment capture.</p> <p>However, WSUD is not entirely without some downsides. On-street raingardens have increasingly become a matter of contention in other councils as their life-cycle costs are high, maintenance regimes are relatively intensive and initial capital costs also high alongside the benefits they bring, especially compared with much larger stormwater harvesting opportunities.</p> <p>On-street raingardens no longer play a part in Council's 10-year capital program, although simpler on-street sediment and leaf litter trapping devices have been trialled.</p>
Camera equipment (e.g., CCTV) – Maintenance / rectifying defects.	CCTV improves accuracy of condition inspections, therefore allowing improved selection of treatments and greater precision in forecasting renewal expenditure.
In-situ relining of pipes as an alternative to replacement.	Industry experience indicates that the life of a well-constructed, reinforced concrete drain is likely to be more than the currently adopted 120 years and that future rehabilitation strategies will extend this even further.
Treatment system – new technologies for the removal of pollutants from stormwater.	To be used for improving water quality prior to the discharge of stormwater into the stormwater system. They are becoming more affordable, although scale is still an important consideration.
Underground storage solutions.	Provide for storage and reuse of stormwater thereby reducing demand on the downstream system capacity.
Water recycling systems.	The use of stormwater for recycling is being encouraged in local areas across Australia. It is also becoming affordable for the population to use locally. It has the impact of reducing the load on the stormwater network.

## 6. Risk Management

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

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

### 6.1 Key Risks and Risk Appetite

Council has identified infrastructure as one of the 10 Key Risk Areas that have potential impacts on our organisation. Ensuring that 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.



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 meets statutory requirements, 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 stormwater are those that have major consequences or impacts if they fail and a high probability or likelihood of failing.

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

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

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

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



**Table 6-1: Risk Matrix**

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

### 6.2.1 Probability of Failure

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

**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 stormwater infrastructure assets. Consequence of failure ratings are applied to asset classes and are defined in Table 6-3.

**Table 6-3: Consequence of Failure**

Consequence	Level	Criticality Factors			
		Operational & Technical	Financial	Social	Environmental
<b>Major</b>	C5	Essential and non-essential services unavailable.	Financial loss > \$1M	Loss of life. Extensive state/national media coverage. Unacceptable exposure to litigation.	Toxic release off site.
<b>Serious</b>	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.
<b>Moderate</b>	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.
<b>Minor</b>	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.
<b>Minimal</b>	C1	None or negligible service disruptions.	Financial Loss < \$10K	No injuries. No litigation exposure. No medical interest.	None or negligible environmental impacts.

### 6.2.3 Operational and Technical Risk Analysis

The following section includes risk methodology for applying weighting classifications for stormwater infrastructure for the operational and technical impacts as part of the consequence of failure. The current infrastructure risks for stormwater includes localised flooding, aging infrastructure, environmental and safety issues. Each class is reviewed based upon different variables relevant to the type of asset and its purpose that are identified in Table 6-4.

**Table 6-4: Operational and Technical Critical Factors**

Asset Class	Criticality Weightings	Asset Class	Criticality Weightings
Conduits/Pipes/ Headwalls/Pits	Pipe Diameter Hierarchy. Subject to flooding. Capacity limits within rainfall events. Grade Quality/Condition of construction. Maintenance activity (hot spots). Historical failures other assets (eg roads). Accident history. Environmental Impact.	Structures	Capacity. Surrounding land impacts. Grade quality/condition of construction. Subject to flooding. Environmental impact.

### 6.3 High Priority Assets

Criticality is used to identify the stormwater assets that carry the most consequences should a failure occur. These assets are currently priorities with capital programs, maintenance schedules or identified for grant/disaster funding.

- Trunk mains within each town/village.
- Detention ponds (Colley Park, Warren Park, Richmond Park, Crown Reserve Beech Street Evans Head, Stan Payne Oval).
- Illawong Lane.

### 6.4 Flood Management

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

Previous attempts to manage floodwaters have included the installation of floodgates at Rocky Mouth Creek, Swan Bay, Bora Ridge Canal and Boggy Creek and the construction of Tuckombil Canal. Constructed in the early 1900s the canal diverts floodwater down the Evans River which can result in saline intrusion and impacted biodiversity in the estuary. Mitigation measures have included the installation of an inflatable rubber dam (fabridam) and a now temporary weir. A committee has previously considered options to resolve this situation.

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.

## 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 life cycle basis, with full knowledge of the social, environmental and financial costs, benefits and risks associated with the asset. The life cycle model must give proper consideration to each phase of an asset's life from inception through to disposal. This life cycle model is illustrated in the figure 7-1 below. The asset treatments and work categories for lifecycle plans are defined within Table 7-1.

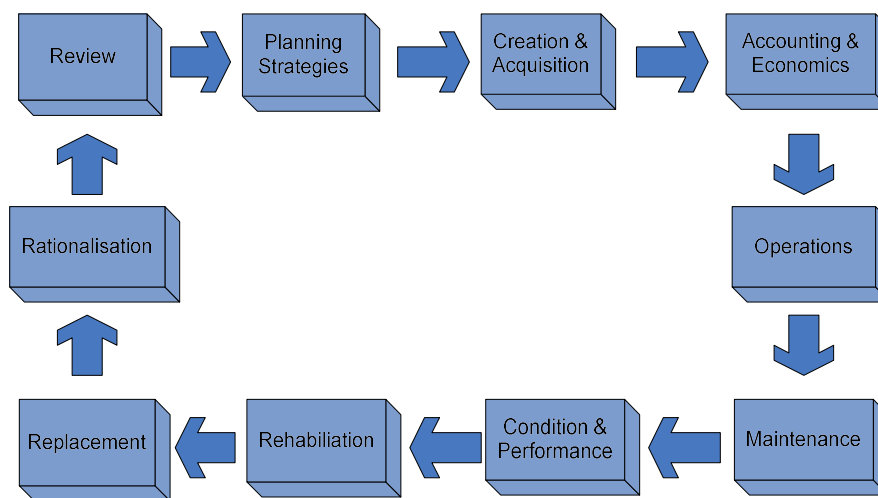


Figure 7-1: Lifecycle for Asset Management

Table 7-1: Asset Treatment Definitions

TREATMENT	DEFINITION
Operations	<p>An activity that has no direct effect on asset condition and is necessary to keep the asset functioning. The operations expenditure can be distinguished from maintenance expenditure in the Council's financial systems.</p> <p>Typical operational activities include path condition surveys, and water quality testing.</p>
Maintenance	<p>An activity that will retain / maintain the asset's current condition or performance level. Routine maintenance is the day-to-day work required to keep assets operating at required service levels, and falls into two broad categories:</p> <ul style="list-style-type: none"> <li>Planned (proactive) Maintenance: Proactive inspection and maintenance works planned to prevent asset failure; and</li> <li>Unplanned (reactive) Maintenance: Reactive action to correct asset malfunctions and failures on an as required basis (e.g., emergency repairs).</li> </ul> <p>Maintenance is defined in each section of the lifecycle plan and includes all repairs and maintenance that are not classified as renewals (see below).</p>

TREATMENT	DEFINITION
	A key element of AM planning is determining the most cost-effective blend of planned and unplanned maintenance.
Renewal Replacement	<p>An activity that replaces an asset with one that meets contemporary functional requirements. These works are defined as being the:</p> <ul style="list-style-type: none"> <li>• Renewal and rehabilitation of existing assets to their original size and capacity, or,</li> <li>• Replacement of the entire component of the asset with the equivalent size or capacity, or,</li> <li>• 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).</li> </ul> <p>Examples of renewals expenditure include:</p> <ul style="list-style-type: none"> <li>• Relining existing conduits/pipes.</li> <li>• Replacing aging grates with high flow equivalent.</li> </ul>
Upgrades	<p>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:</p> <ul style="list-style-type: none"> <li>• Works which improves an asset beyond its original size or capacity; or</li> <li>• Works which increase the capacity of an asset; or</li> <li>• Works designed to produce an improvement in the standard and operation of the asset beyond its original capacity.</li> </ul> <p>Upgrade activities may include:</p> <ul style="list-style-type: none"> <li>• Replacing pipe with larger diameter.</li> </ul>
New Works	<p>Acquisition, purchase or inheritance of an asset. Projects (including land purchase) for the extension or upgrading of assets required to cater for growth or additional LOS, including:</p> <ul style="list-style-type: none"> <li>• Works which create an asset that did not exist in any shape or form, or</li> <li>• Works which improves an asset beyond its original size or capacity, or</li> <li>• Upgrade works which increase the capacity of an asset, or</li> <li>• Works designed to produce an improvement in the standard and operation of the asset beyond its original capacity.</li> </ul> <p>New assets required for growth are distinguished from those required for improvements to LOS, because of differences in how these assets can be funded. Growth related works can also be separated into those that are Council funded (including those funded by developer contributions), and those that are vested in the Council as a condition of development.</p>
Disposal	<ul style="list-style-type: none"> <li>• Sale, removal or decommissioning of an asset.</li> </ul>

### 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 e.g., 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 e.g., 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, e.g., costs to transfer ownership, trade-in, re-tender, auction or recycle or transiting/closure of a service.

$$\text{WOL} = \text{Acquisition Costs} + \text{Operating Costs} + \text{Maintenance and Support Costs} + \text{Disposal Costs}$$

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



### 7.1.2 Management Structure

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

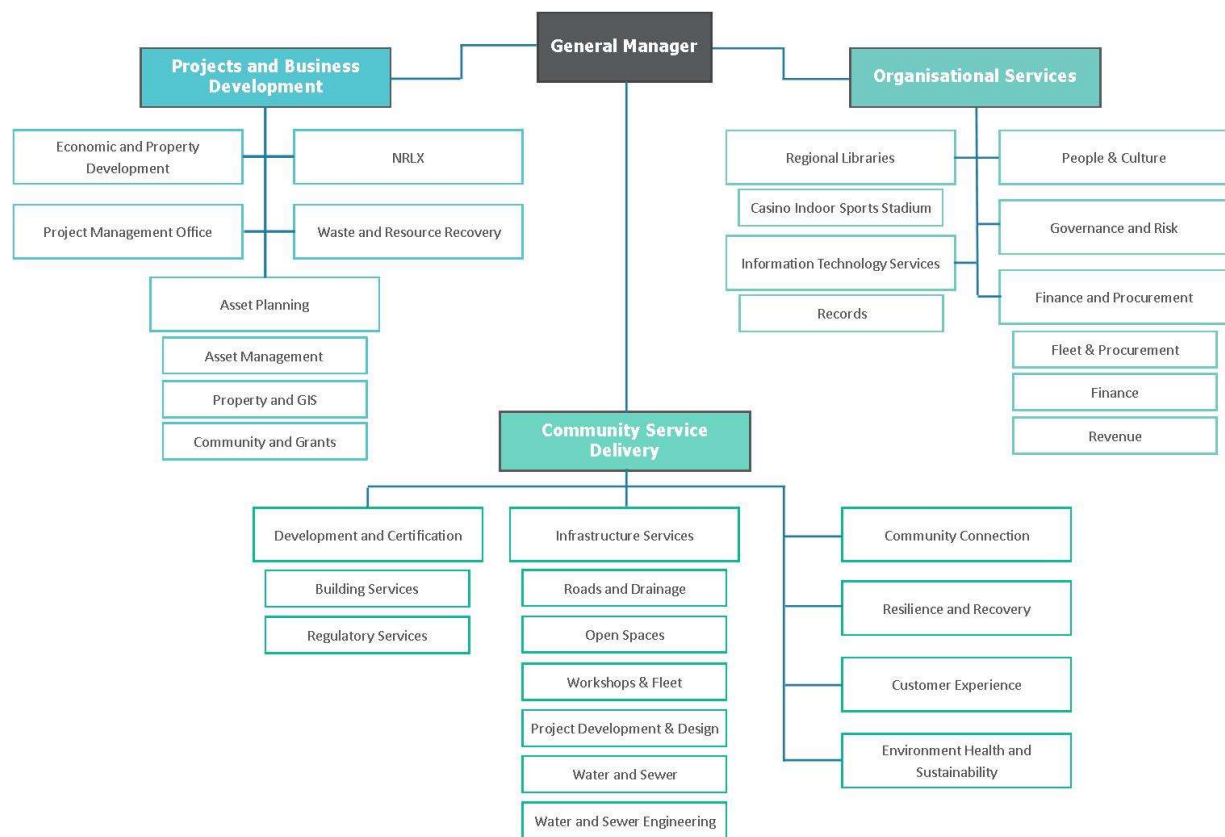


Figure 7-2: Management Structure

### 7.1.3 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 stormwater 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 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 (Stormwater)**

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

**Legend**

**GM** General Manager

**DPABD** Director Projects and Business Development

**DCSD** Director Community Service delivery

**COS** Chief of Staff

**\*MAP** Manager Asset Planning

**MIS** Manager Infrastructure Services

**DPM** Designated Project Manager

**CSAPP** Coordinator Strategic Asset Planning and Property

**CAM** Coordinator Asset Management

**MPMO** Manager PMO

**MFS** Manager Finance & Procurement

**CPDAD** Coordinator Project Development and Design

**CRAD** Coordinator Roads and Drainage

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



## 7.2 Key Issues

The key issues related to the management of stormwater infrastructure are identified in table 7-3.

**Table 7-3: Issues related to Stormwater Infrastructure**

Asset	Key Issues
Strategic and Forward planning	<ul style="list-style-type: none"> <li>• Network camera survey for accurate condition assessments including programming maintenance programs. This requires substantial funding.</li> <li>• Network priority plan.</li> <li>• Definition of Strategic sub-catchments to allow for planning of possible flood mitigation, and the feasibility of upgrading existing networks.</li> <li>• Consistency in modelling drainage catchments.</li> <li>• Coordination of drainage studies with flood level mapping.</li> </ul>
Conduits	<ul style="list-style-type: none"> <li>• Drain cleaning, which requires substantial funding.</li> </ul>
Outfall Structures	<ul style="list-style-type: none"> <li>• Protection of outfall structures from high flow damage where the network flows into the Richmond or other rivers/ocean.</li> </ul>
Litter Traps	<ul style="list-style-type: none"> <li>• Further development of litter traps to contribute to the waterway health.</li> </ul>

## 7.3 Historical Expenditure

Historical expenditure for the stormwater network is detailed below. The following table illustrates the investment Council has made towards its stormwater network.

**Table 7-4: Drainage Historical Expenditure**

Cost Category	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
Operations	-	-	-	-	-
Maintenance	15,793	166,960	140,506	235,806	186,250
Capital Renewal	-	50,000	103,000	154,000	35,000
New Assets	158,000	181,000	248,000	236,000	50,000
TOTALS	312,793	397,960	491,506	625,806	271,250

It should be noted that works from Natural disasters such as floods and bushfires are excluded from the above summary. Table 7-4 also excludes subdivision dedicated assets. The chart supporting the above table is **Figure 7-3** below.



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



## 7.4 Identification for Prioritisation of Operational and Maintenance Works

Stormwater related works are identified by customer requests (reactive) or by the proactive inspections as undertaken by operations and asset staff.

**Table 7-5: Operation and Maintenance Activities**

ASSETS	OPERATIONS & MAINTENANCE REACTIVE ACTIVITIES
Reticulation and trunk mains.	<ul style="list-style-type: none"><li>• Closed Circuit T.V. (CCTV) inspections.</li><li>• Cleaning of pits and pipes.</li><li>• Removal of blockages in pipes.</li><li>• Pipe repairs.</li><li>• Pit repairs.</li></ul>
Headwalls.	<ul style="list-style-type: none"><li>• Debris and litter removal.</li><li>• Vegetation management.</li></ul>
Litter baskets, gross pollutant traps.	<ul style="list-style-type: none"><li>• Debris and litter removal.</li><li>• Vegetation management.</li></ul>

As a result of the flood mapping study, Council has been provided with options to improve the capacity of the stormwater system. Council needs to obtain costs to determine the viability of the recommendations to understand the costs associated with the recommendations. At this time the recommendations represent a pseudo prioritisation together with opportunities to improve the existing assets.

The next step prior towards project prioritisation is to develop a drainage strategy consolidating the existing reports and drainage performance issues into one concise document which ideally the AM plan should respond to. The strategy would summarise the findings and identify the works required, costs of the projects and timing of projects.

## 7.5 Inspections

Inspections are to be undertaken to ensure that the stormwater 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.
- Gangers.
- Assets Engineers.
- Engineering Assistants; or
- Contractors.

Inspections include safety audits, condition assessments, works inspections, defect inspections and quality audits. Reactive investigative inspections are performed in response to customer requests. Council is aiming towards proactive inspections of stormwater infrastructure to obtain greater confidence in asset decision which drives business decisions.

## 7.6 Renewal Plan

From an initial planning perspective, Table 7- to Table 7- the condition assessments indicate the required funding required to renew the assets 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 to determine the most appropriate treatments for the assets.

**Table 7-6: Conduits/Pipes at condition 4 to 5**

Age based Condition 2022	Condition Rating 4	Condition Rating 4.5	Condition Rating 5
Number of assets	55	2	17
Remaining life (Yrs.)	54	30	0
Replacement cost (\$)	3,212,074	7380	105,697
Funding over 10 years	321,207	738	10,570
Timeframe	2071-2081	2051-2061	2022 - 2032

**Table 7-6: Pits at condition 4 to 5**

Age based Condition 2022	Condition Rating 4
Number of assets	84
Remaining life (Yrs.)	54
Replacement cost (\$)	814,865
Funding over 10 years	81,486
Timeframe	2071-2081

**Table 7-8: Headwalls at condition 4 to 5**

Age based Condition 2022	Condition Rating 4	Condition Rating 4.5	Condition Rating 5
Number of assets	39	4	3
Remaining life (Yrs.)	54	30	0
Replacement cost (\$)	41,869	2249	1,594
Funding over 10 years	4,187	225	159
Timeframe	2071-2081	2051-2061	2022 - 2032

## 7.7 Upgrade Plan

The planned and budgeted upgrade works apply to Illawong Lane, Evans Head. The stormwater drainage study has identified further upgrade to the trunk drainage mains with poor capacity which is currently unfunded.

## 7.8 New Works Plan

New stormwater assets are commonly identified in response to:

- Growth (demand);
- Risk and safety audits; and
- Recommendations identified in planning and strategy documents.

Potential new works related to the trunk system are subject to further analysis related to level checking and cost estimations are around \$6 Million. This assessment does not include costs for acquisition of private property or easements.

New works over next 4 years within budget.

- Increase drainage points on Hotham Street from Railway Parade to the Richmond River.
- Increase drainage points in Johnston Street, Colches Street, Cypress Street, Richmond Street.
- Acid Sulphate Management Plans.
- Currajong Street - Continuous Deflection Separation Units Rehabilitation.
- Replace concrete pipes River St / Walker St, Railway Station.
- New Drainage line for Nandabah Street Rappville, and Crown Road Reserve at Rileys Hill.

While the above works have been identified, it is not clear whether the pipes will be duplicated (new), upgraded by re-alignment of larger pipes replacing the existing pipes with larger diameter pipes.

## 7.9 Disposal Plan

There is currently no plan to dispose of disused / occupied drainage reserves / easements.



## 8. Financial Summary

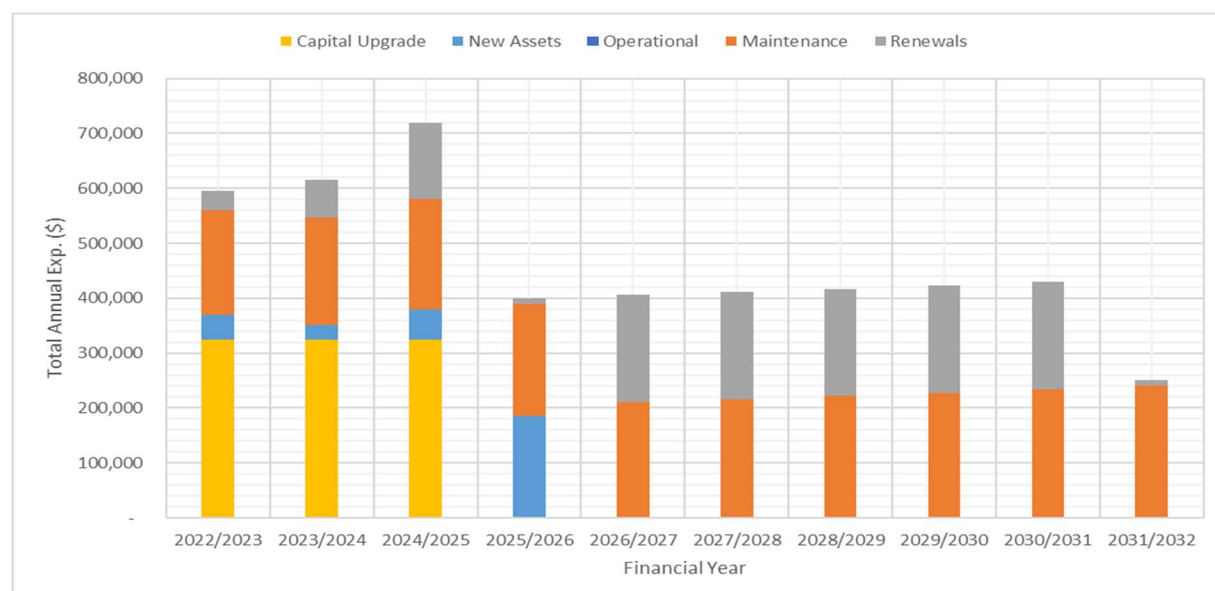
This section outlines the long-term financial requirements for the operation, maintenance, renewal, and development of building assets based on the long-term strategies outlined earlier in the plan. Funding issues are discussed, and key assumptions made in preparing financial forecasts. These forecasts are an indication of funding requirements over the next 20 years and are recommended for inclusion in RVC's Long Term Financial Plan (LTFP).

### 8.1 10 Year Financial Forecast

**Appendix G** summarises the 10-year financial forecast for Council's Stormwater. 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 Projections**

COST CATEGORY	TOTAL FINANCIAL PROJECTIONS	
	1-5 Years	1-10 years
Operations	-	-
Maintenance	\$ 1,001,708	\$ 3,145,233
Renewals	\$ 448,000	\$ 1,686,000
Upgrades	\$ 974,955	\$ 1,949,910
New	\$ 312,000	\$ 624,000
<b>TOTAL</b>	<b>\$ 2,736,663</b>	<b>\$ 7,405,143</b>



**Figure 8-1: Ten Year Financial Projections**

Expenditure identified within the financial forecasts was obtained from the Long-Term Financial Plan; Stormwater budget; Annual budget for Operational & Maintenance budgets; and Demand Forecasting.



## 8.2 Financial Forecast Assumptions

The basis for the financial forecasts is explained in the lifecycle management section of this 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. 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 2022

The accounting asset register for stormwater infrastructure indicates a current written down replacement value of approximately \$53.85M.

In valuing the stormwater assets, the following approach was adopted in accordance with the Australian Accounting Standards for Financial Reporting purposes. All assets are 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 the Asset Register.
- Replacement values have been determined from current contract rates based on the cost of replacing the asset with modern materials that provide the equivalent service in terms of capacity to the user.
- Where the useful life of the asset is extended or reduced, the resultant impact will be on future depreciation rates and charges and will not be 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 identifies the June 2022 financial valuation of the stormwater network.

**Table 8-2: Asset Network Valuation June 2022**

ASSET CLASS	Quantity of Drainage Assets	2021/22 Gross Replacement Cost (\$)	2021/22 Accumulated Depreciation (\$)	2021/22 Fair Value (WDV) (\$)	Annual Depreciation (\$)
Stormwater Conduits	3,197	55,155,761	9,774,912	45,380,850	462,803
Stormwater Headwalls	684	528,529	117,956	410,572	4,415
Stormwater Pits	2,700	7,846,207	1,669,914	6,176,293	65,402
Stormwater Structures	60	2,096,862	219,343	1,877,519	20,417
<b>Total</b>	<b>6,641</b>	<b>65,627,358</b>	<b>11,782,125</b>	<b>53,845,234</b>	<b>553,038</b>

The Council stormwater network includes 4 asset classes consisting of 6,632 unique assets with a Fair Value Current Replacement Cost (CRC) of \$53.8 million. The average remaining useful life (RUL) for all stormwater assets as a percentage of total life is approximately 82%.

Long life assets have modified depreciation schedules reflecting reduced consumption patterns in earlier years and increasing consumption as the asset integrity declines towards end of useful life standard lifecycle asset terms include:

- Current replacement cost (CRC) - the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset with the same economic benefits or service potential.
- Depreciated replacement cost (DRC) - CRC less accumulated depreciation; and
- Asset valuations by the valuer employ a modified depreciation pattern which results in asset valuations as a percentage (DRC/CRC) being higher than the age percentage (RUL/Useful Life).

Council's stormwater position shows the fair value of assets (CRC) is \$65.6 million; and DRC or the written down value (WDV) totalling \$53.8 million. Annual depreciation of \$0.21 million reflects an asset consumption rate of 0.32%. The asset renewal funding ratio is 0.94 this indicates Council plans to renew assets at approximately the rate they are being consumed, thereby maintaining current asset stock levels.

## 8.4 Asset Sustainability Ratios

The Asset Renewal Funding Ratio is a critical indicator of the stormwater programs long term stability. An ideal indicator is 1.0; therefore, Council's indicator of 0.76 needs to be addressed. Asset planning is progressive, driven by Level of Service (LOS) agreements and ultimately the communities' willingness to pay for the service. The following facts provide perspective:

- Asset Consumption Ratio =  $\$53.8\text{M}/\$65.63\text{M} = 82\%$ .
- Renewals Ratio (RR) = 0.94 average.
- Assets reaching the end of their design lives this Long-Term Financial Plan (LTFP) \$0.106M. Assuming all condition 4.5 to 5 reach the end of their life = \$0.113M over 10 years.
- Renewal works for stormwater assets programmed this LTFP \$1.2 million over 10 years.
- Technical level of service for stormwater assets in a backlog condition (either condition 4 or 5), average value for LTFP \$105,697.
- Therefore, Bring to Satisfactory (BTS) average measure equals 0.06 (greater than benchmark value of 0.02).

## 8.5 Funding Strategy

A major issue concerning stormwater infrastructure management is the question of who pays for needed works including:

- The community through special rates.
- The developer through development contributions, or
- The consumer through recurrent charges (eg Stormwater Levy).

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

- Stormwater management charges.
- Development funded upgrades and contributions; and
- Available grants, e.g., special purpose State Government grants.

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

Council has been unsuccessful in obtaining grant funding for stormwater over the past 5 years.

## 9. Improvement and Monitoring

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

### 9.1 Asset Management Improvement Program

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

**Table 9-1: Improvement Program and Action Plan**

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Data Management	Continue the capture of data for all stormwater 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 stormwater infrastructure and assets considering current controls, actions and funding required to decrease risk levels.	2024/25
Maintenance Planning	Develop a Stormwater Management Policy.	2023/24
Maintenance Planning	Identify the standards to apply for future stormwater projects.	2023/24
Maintenance Planning	Based on the criticality framework develop the maintenance plan across the stormwater assets and apply.	2024/25
Asset Performance	Undertake ongoing analysis of future renewal requirements using the condition data collected during the period of the second stormwater AM Plan.	2023/24 and annually
Asset Performance	Analyse the customer request results to address problem areas and maintain performance.	2022/23 and ongoing
Asset Performance	Collect and monitor defect histories to identify trends in performance of asset types.	2022/23 and ongoing
Levels of Service	Confirm target service levels, monitor, and report outcomes.	Annually
Asset Planning	Develop and apply the asset criticality framework to stormwater assets.	2022/23
Asset Planning	Develop and apply the asset risk framework to stormwater assets.	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.	2024/25
Asset Planning	Complete the stormwater strategy to provide initial direction and future capital program and cost requirements.	2022/23

AM PROCESS	IMPROVEMENT ACTIVITIES	TIMEFRAME (over 4 Years)
Asset Planning	Update the stormwater strategy to confirm the future direction of projects and timing together with project costs and benefits to drive the AM plan.	2025/26
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
Community Surveys	Add questions related to the stormwater system regarding satisfaction, odour levels, overflows etc.	2023/24
Financial Planning	Develop Council reporting templates for WOL costs for future capital works projects.	2022/23

## 9.2 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 and 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 level of service in the most cost-effective manner.
Asset Management Plan (AM Plan)	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the lifecycle of the asset in the most cost-effective manner to provide a specified level of service. A significant component of the plan is a long term cashflow projection for the activities.
Asset Management Policy	Provides an overall policy framework to guide the strategic management of Council's infrastructure assets.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Asset Register	A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Basic Asset Management	Asset management which relies primarily on the use of an asset register, maintenance management systems, job/resource management, inventory control, condition assessment and defined levels of service, to establish alternative treatment options and long term cashflow predictions. Priorities are usually established based on financial return gained by carrying out the work (rather than risk analysis and optimised renewal decision making).
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Cash Flow	The stream of costs and/or benefits over time resulting from a project investment or ownership of an asset.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk, or criticality.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement, and interpretation of resulting data, to indicate the condition of a specific component to determine the need for some preventive or remedial action.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.

Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Demand Management	The active intervention in the market to influence demand for services and assets with forecast consequences, usually to avoid or defer CAPEX. Demand management is based on the notion that as needs are satisfied expectations rise automatically and almost every action taken to satisfy demand will stimulate further demand.
Depreciated Replacement Cost (DRC)	The replacement cost of an existing asset after deducting an allowance for wear or consumption to reflect the remaining economic life of the existing asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the historical cost (or revalued amount) of the asset less its residual value over its useful life.
Design Life	The theoretical life of an asset assumed in its design.
Disposal	Activities necessary to dispose of decommissioned assets.
Economic Life	The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life however obsolescence will often ensure that the economic life is less than the physical life.
Geographic Information System (GIS)	Software that provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Infrastructure Assets	Stationary systems forming a network and serving whole communities, where the system is intended to be maintained indefinitely at a particular 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 (e.g., 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.
Life Cycle	Life cycle has two meanings: (a) The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset, e.g., 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.
Life Cycle 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.
Operation	The active process of utilising an asset that will consume resources such as manpower, energy, cleaning products and materials. Operation costs are part of the life cycle costs of an asset.

Optimised Renewal Decision Making (ORDM)	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses net present value analysis and risk assessment.
Performance Measure	A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.
Performance Monitoring	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
Physical Life	The actual life of an asset.
Rehabilitation	Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally, involves repairing the asset using available techniques and standards to deliver its original level of service (e.g. Re-roofing, replacing doors etc.) without resorting to significant upgrading or replacement.
Renewal	Works to upgrade, refurbish, rehabilitate, or replace existing facilities with facilities of equivalent capacity or performance capability.
Repair	Action to restore an item to its previous condition after failure or damage.
Replacement	The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative, 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 a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
Service Potential	The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.
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, 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 stormwater drainage service
Valuation	Estimated asset value which may depend on the purpose for which the valuation is required, e.g., replacement value for determining lifecycle costing or insurance valuation.

## Appendix B – Legislative Framework

### Legislative Requirements and Local Laws

The primary legislation that impacts on how stormwater is managed or used is briefly described below. You can find further information regarding these acts at [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au).

Reference	Details
Local Government Act 1993	<p>Sets out role, purpose, responsibilities, and powers of local governments including the preparation of a long-term financial plan supported by asset management plans for sustainable service delivery.</p> <p>The purposes of this Act are as follows:</p> <ul style="list-style-type: none"> <li>(a) to provide the legal framework for an effective, efficient, environmentally responsible, and open system of local government in NSW,</li> <li>(b) to regulate the relationships between the people and bodies comprising the system of local government in NSW,</li> <li>(c) to encourage and assist the effective participation of local communities in the affairs of local government,</li> <li>(d) to give councils: <ul style="list-style-type: none"> <li>• 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</li> <li>• the responsibility for administering some regulatory systems under this Act</li> <li>• a role in the management, improvement, and development of the resources of their areas,</li> </ul> </li> <li>(e) To require councils, councillors, and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.</li> </ul> <p>Provides guiding principles for Council:</p> <ul style="list-style-type: none"> <li>• Provide strong and effective representation, leadership, planning and decision making</li> <li>• Carry out functions in a way that provides the best possible value for residents and ratepayers</li> <li>• Plan strategically, using the integrated planning and reporting framework, for the provision of effective and efficient services and regulation to meet the diverse needs of the local community.</li> </ul>
Environment Protection Act 1997	The legislative framework for the protection of the environment in NSW. Legal requirements in relation to stormwater quality and construction work sites.
Work Health and Safety Act 2011	Legal requirements for employers/employees in relation to workplace safety. Requirements on those who design, manufacture, import or supply any plant for use in the workplace.



Reference	Details
Australian Human Rights Commission Act 1986	<p>The Australian Human Rights Commission Act 1986 established the Human Rights and Equal Opportunity Commission (now known as the Australian Human Rights Commission) and gives it functions in relation to the following international instruments:</p> <ul style="list-style-type: none"> <li>• International Covenant on Civil and Political Rights (ICCPR).</li> <li>• Convention Concerning Discrimination in Respect of Employment and Occupation (ILO 111).</li> <li>• Convention on the Rights of Persons with Disabilities.</li> <li>• Convention on the Rights of the Child.</li> <li>• Declaration of the Rights of the Child.</li> <li>• Declaration on the Rights of Disabled Persons.</li> <li>• Declaration on the Rights of Mentally Retarded Persons, and</li> <li>• Declaration on the Elimination of All Forms of Intolerance and of Discrimination Based on Religion or Belief.</li> </ul>
Environmental Planning and Assessment Act 1979	<p>An Act to institute a system of environmental planning and assessment for the State of NSW. 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). This legislation outlines requirements for environmental assessment in relation to stormwater management in NSW. Councils have a responsibility to undertake due diligence in relation to managing environmental values, including threatened species, usually by way of an assessment called a Review of Environmental Factors (REF), and are their own consent authority in this regard.</p>
Public Health Act 2010	<p>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.</p>
Work Health and Safety Act 2011 and Workers Compensation Act 1987	<p>Sets out roles and responsibilities to secure the health, safety, and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work. Council is to provide a safe working environment and supply equipment to ensure safety.</p>
Public Works and Procurement Act 1912	<p>Sets out the role of Council in the planning and construction of new assets.</p>

## Appendix C – Asset Quantities

### Asset Quantities (at 30 June 2022)

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Stormwater Conduits	Concrete	120	78.34 km	54,273,812
Stormwater Conduits	Poly	80	0.13 km	54,277
Stormwater Conduits	Relined	120	0.13 km	120,727
Stormwater Conduits	uPVC	80	2.39 km	701,389
Stormwater Conduits	Vitreous Clay	80	0.02 km	5,556

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Stormwater Headwalls	Concrete	120	679	525,995
Stormwater Headwalls	Rock	80	5	2,533

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Stormwater Pits	Concrete	120	2696	7,842,139
Stormwater Pits	uPVC	80	4	4,069

ASSET GROUP	ASSET TYPE	DESIGN LIFE	QUANTITY	REPLACEMENT COST (\$)
Stormwater Structures	Concrete	120	18	753,351
Stormwater Structures	Concrete – Trash Rack	30	1	1,435
Stormwater Structures	Earth	250	15	366,419
Stormwater Structures	Rock	80	14	955,000
Stormwater Structures	Steel	30	12	20,656

## 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 level of service. If action is not taken, asset will need to be closed or decommissioned.
99	Not Maintained/Not Owned by Council	Condition of the asset is unknown. This is an asset that is not maintained by Council.

Asset Type	Condition Assessment Type	Description
Stormwater Conduits	Asset condition is collected for all conduits within the LGA via visual inspection.	<p>The conduits condition is calculated using a series of parameters as identified below:</p> <ul style="list-style-type: none"> <li>• Loss of surface aggregate</li> <li>• Surface defects</li> <li>• Surface deformations</li> </ul>
Stormwater Headwalls	Asset condition is collected for all headwalls within the LGA via visual inspection.	<p>The headwalls condition is calculated using a series of parameters as identified below:</p> <ul style="list-style-type: none"> <li>• Loss of surface aggregate</li> <li>• defects</li> <li>• deformations</li> </ul>
Stormwater Pits	Asset condition is collected for all pits within the LGA via visual inspection.	<p>The pits condition is calculated using a series of parameters as identified below:</p> <ul style="list-style-type: none"> <li>• Loss of surface aggregate</li> <li>• defects</li> <li>• deformations</li> <li>• Deterioration</li> <li>• Public safety</li> <li>• Pollution</li> </ul>
Stormwater Structures	Asset condition is collected for all structures within the LGA via visual inspection.	<p>The structures condition is calculated using a series of parameters as identified below:</p> <ul style="list-style-type: none"> <li>• Capacity</li> <li>• Vegetation</li> <li>• Pollution</li> <li>• Contaminates</li> </ul>



## Appendix E – Relevant Council Documents

### References and incorporated documents.

- IPWEA, 2015, 3rd ed., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM).
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
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- IPWEA, 2020 'International Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney.
- IPWEA, 2018, Practice Note 12.1, 'Climate Change Impacts on the Useful Life of Assets', Institute of Public Works Engineering Australasia, Sydney.
- IPWEA, 2012, Practice Note 6 Long-Term Financial Planning, Institute of Public Works Engineering Australasia, Sydney, <https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn6>.
- IPWEA, 2014, Practice Note 8 – Levels of Service & Community Engagement, Institute of Public Works Engineering Australasia, Sydney, <https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn8>.
- ISO, 2014, ISO 55000:2014, Overview, principles, and terminology.
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines.
- Ardill Payne - Casino Stormwater Flooding Assessment Report 2022.
- Drainage pit operation for Chemical fill.
- IOM Manual for Drainage Pump.
- SW Network Update.
- Coraki drainage study - summary of modelling.
- EES Report - Casino Drainage Study - Stage 1.
- EES Report - Casino Drainage Study - Stage 2.
- GHD Evans Head Drains model.
- Liveability\_Indicators\_2016\_A\_report\_pre.
- Profile ID 2021 Population Survey Results, .id Community <https://profile.id.com.au/richmond-valley>.
- RVC-Annual-Report-2020-21-WEB-Final.
- RVC Asset Management Policy 2022.
- RVC CSP Community Engagement Strategy 2022.
- RVC Rebuilding the Richmond Valley Recovery Plan.
- RVC Integrated Water Cycle Management Strategy.
- RVC-End-Of-Term-Report-Web.
- RVC Sewer Asset Management Plan Adopted by Council on 27 June 2017.
- Northern Rivers Local Government Development and Design Manual.

## Appendix F – 10 Year Capital Improvement Program

Project	Description	Renewal vs Upgrade	Budget (\$) 2022/2023	Budget (\$) 2023/2024	Budget (\$) 2024/2025	Budget (\$) 2025/2026	Budget (\$) 2026/2027	Budget (\$) 2027/2028	Budget (\$) 2028/2029	Budget (\$) 2029/2030	Budget (\$) 2030/2031	Budget (\$) 2031/32
835030	Drainage Improvements	Renewal	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
835056	Increase Drainage Points Hotham St from Railway Pde to River	New	30,000									
	Increase Drainage Points in Johnston St	New		27,000								
	Replace concrete pipes -River St/ Walker St (75566)	Renewal		58,000								
	Replace concrete pipes -Railway station (76152, 76157)	Renewal			40,000							
	Increase Drainage Points in Colches St	New			30,000							
835303	Replace concrete pipes - Church Lane	Renewal	10,000									
	Acid Sulphate Management Plans	Renewal			20,000							
	Illawong Ln Drainage Improvements	Upgrade	324,985	324,985	324,985							
	Currajong St - CDS Unit Rehab	Renewal	15,000									
	Stormwater Network Camera Investigation	Renewal			20,000							
	Carabeen St Swamp Improvements to Open Drain	Renewal			50,000							
	Increase Drainage Points in Cypress St	New			25,000							
	Drainage Rappville - Construct Drainage Line	New				105,000						
	Nandabah Street	New				80,000						
	Drainage Rileys Hill - Construct Open Drain	New										
	Crown Rd Reserve	New										
	Increase Drainage Points Richmond St	New	15,000									
835950	Renewals to be allocated	Renewal					185,000	185,000	185,000	185,000	185,000	

## Appendix G – 10 Year Financial Forecast

FORECAST EXPENDITURE											
Asset Category	Forecast Expenditure	2022/2023 (\$)	2023/2024 (\$)	2024/2025 (\$)	2025/2026 (\$)	2026/2027 (\$)	2027/2028 (\$)	2028/2029 (\$)	2029/2030 (\$)	2030/2031 (\$)	2031/2032 (\$)
Stormwater	Operations	-	-	-	-	-	-	-	-	-	-
	Maintenance	190,370	195,130	200,011	205,351	210,846	216,477	222,265	228,203	234,302	240,570
	Renewal	35,000	68,000	140,000	10,000	195,000	195,000	195,000	195,000	195,000	10,000
	Upgrade	324,985	324,985	324,985	-	-	-	-	-	-	-
	New Assets	45,000	27,000	55,000	185,000	-	-	-	-	-	-

## Appendix H – Capital Works Evaluation Module

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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 of 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.

