FLOOD MITIGATION
Asset Management Plan
2022-2025

DRAFT March 2022

ROUS
COUNTY COUNCIL

BULK WATER SUPPLY | WEED BIOSECURITY | FLOOD MITIGATION

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Operations Engineering Manger	Review & Endorse		
Group Manager Operations			
Asset Planning Engineer			
Strategic Planning Engineer			
Group Manger Planning & Delivery			
Finance Manager			
Group Manager Corporate & Commercial			
Leadership Team	Approve		

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1. Executive Summary

This Asset Management Plan provides an overview of how we manage and operate our flood mitigation assets.

Levels of Service

Our level of service objectives are:

- Prevent/mitigate menace to the safety of life and property from flooding
- Natural resource management relating to the environmental consequence of our infrastructure on the broad environment
- Hydrological research, flood surveying, modelling, flood risk management studies and plans
- Partnering with our member councils to deliver agreed regional and local projects, including coordination of the preparation and submission of grant funding applications
- Provide maintenance support to match funding commitments

Risk Management

- Critical assets – we are utilising an initial desktop assessment of our flood assets risk ranking to drive frequency of our inspection program
- Asset, Operational & Environmental risks – high level risks associated with our assets and their operation have been identified

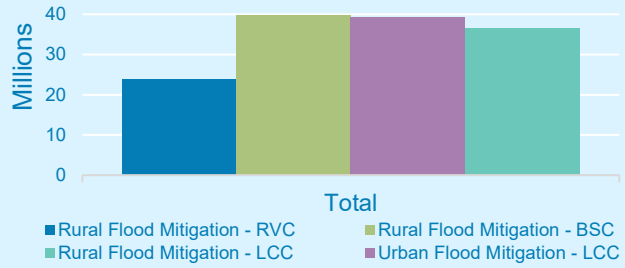
Demand

We currently do not undertake demand forecasting for our flood mitigation assets. Our focus is on maintaining current levels of service of our existing asset base.

Asset Information

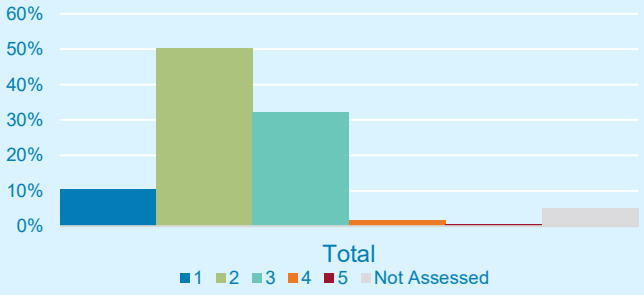
We maintain an asset base valued at $139 million across three of our constituent councils.

Total Asset value by LGA



An inspection program has been in place since July 2017 to assess the condition of our assets. Over 90% of our flood assets are condition one, two or three.

Asset Condition



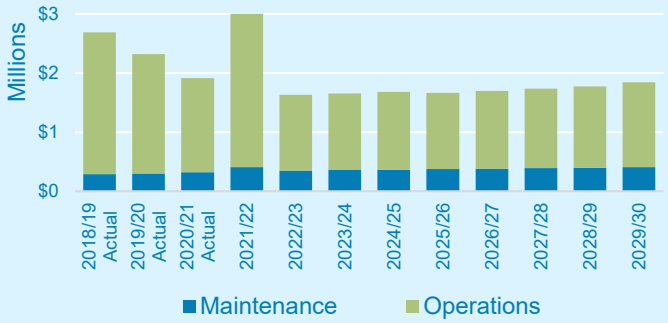
Monitoring & Improvement

We are committed to continual improvement of our asset management practices. A detailed improvement program has separately been identified and documented with implementation of improvement actions underway.

Lifecycle Management

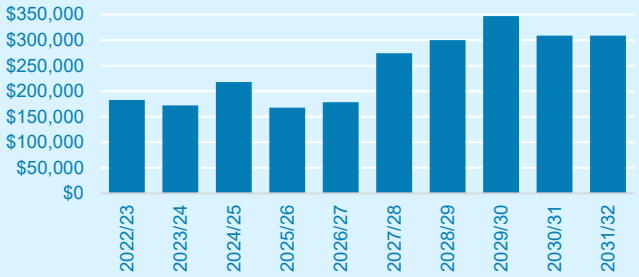
- Operations - Our flood mitigation assets are operated in a manner that ensures our objectives are achieved at least cost with the impact of breakdowns minimised during pre/post flood and normal conditions.
- Maintenance - is currently reactive in nature. An inspection program is in place to identify condition and defects. Defects identified are entered into our asset information system Confirm. There are currently no planned maintenance activities beyond inspections.

10 Year projected maintenance & operations expenditure



- Capital Works - Asset renewals are undertaken to ensure the continuing reliability of existing infrastructure to deliver its required level of service.

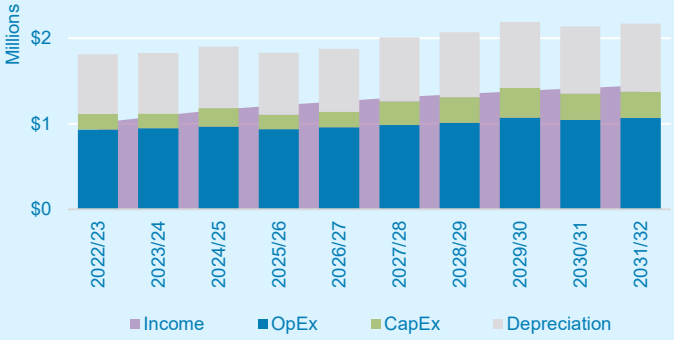
10 year projected capital expenditure



Finance

We undertake long term financial modelling for flood mitigation on an annual basis to ensure we meet funding requirements of the capital works program and other lifecycle costs associated with operating and maintaining our assets. Over recent years, our flood mitigation fund has recorded operating losses, however it has returned to a positive operating result in 2021/22 and is expected to remain positive over the next ten years. This positive result is dependent on adoption of increases to constituent council contributions and no other events occurring which would cause unplanned expenditure.

10 year projected financials



2. Introduction

2.1. Scope

2.1.1. Purpose of plan

The ISO55000 standard defines asset management as the coordinated activity of an organisation to realise value from assets. The realisation of value involves the balancing of cost, risks and performance while achieving the organisation's business objectives over the entire lifecycle of assets and should have a service delivery focus.

This Asset Management Plan (the Plan) details the actions required to manage our flood mitigation assets to ensure they deliver the required level of service in the most cost-effective manner. The plan documents our current practices regarding the operation, maintenance, and identification of capital requirements for the renewal and upgrade of our assets. This plan will identify and provide a summary of:

Required services	Flood mitigation assets
Demand drivers	Asset related risks
Capital works requirements	Operations plan
Maintenance plan	Funds required
Improvement actions	Performance indicators

This Asset Management Plan should be read in conjunction with our:

Documents	Relationship
Business Activity Strategic Plan	Outlines organisational strategic objectives. Links to section 2
Asset Management Policy	Outlines principles, requirements and responsibility for asset management. Links to section 2
Asset Management Strategy	Outlines objectives, practices and improvement actions for asset management. Links to section 2 and 9
Long Term Financial Plan	Links to financial summary and projections in Sections 7 and 8
Capital Works Plan	Links to planned asset renewals, new assets and upgrades in section 7
Service Level Agreements	Links to levels of service in section 3
Delivery Program / Operational Plan	Links to lifecycle management and planned capital works in section 7

2.1.2. Description of assets covered by plan

This plan covers our flood mitigation infrastructure assets. Full details of asset types, values, condition, and age can be found in section 6 of this plan.

Flood Mitigation	Rural	Levees	Floodgates	Canals	Drains	Bank Protection
		Outlets	Pipes & Culverts	Access Control	Weir	Dataloggers
	Urban	Levees	Floodgates	Bank Protection	Pump Stations	
		Pipes	Culverts	Drains	Access Control	

Assets not covered by this plan:					
	Water Supply	Commercial	Land & Building	Parks & Recreation	Plant & Fleet

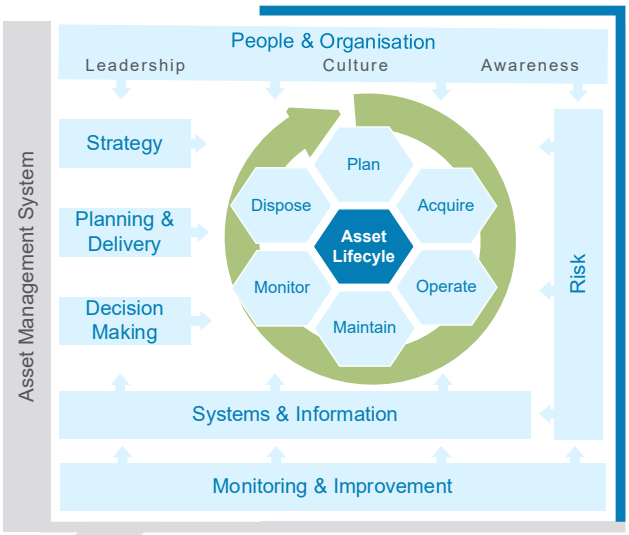
2.1.3. Duration of plan

This plan covers a planning horizon of ten years with a major review and update every four years.

2.2. Asset Management Practices

2.2.1. Asset management system

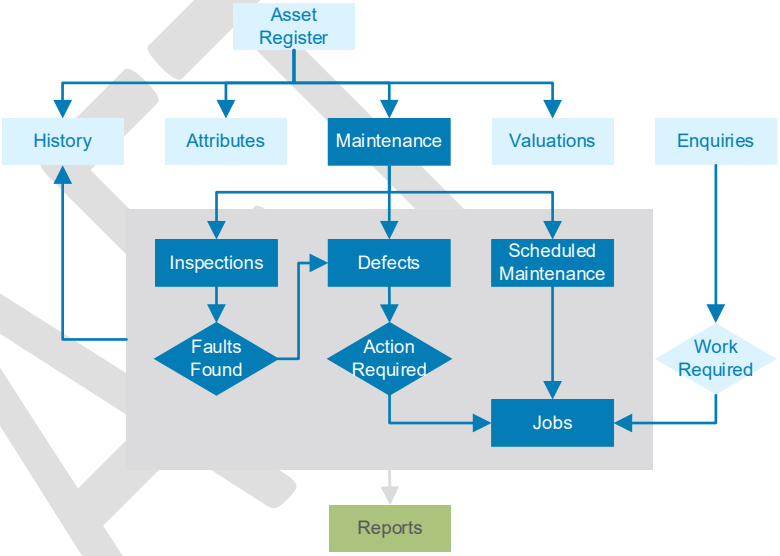
Our asset management system includes the policies, strategies, plans, documented processes, and activities related to the planning, management, operation and maintenance of our infrastructure assets as well as the people and systems involved.



Asset information system

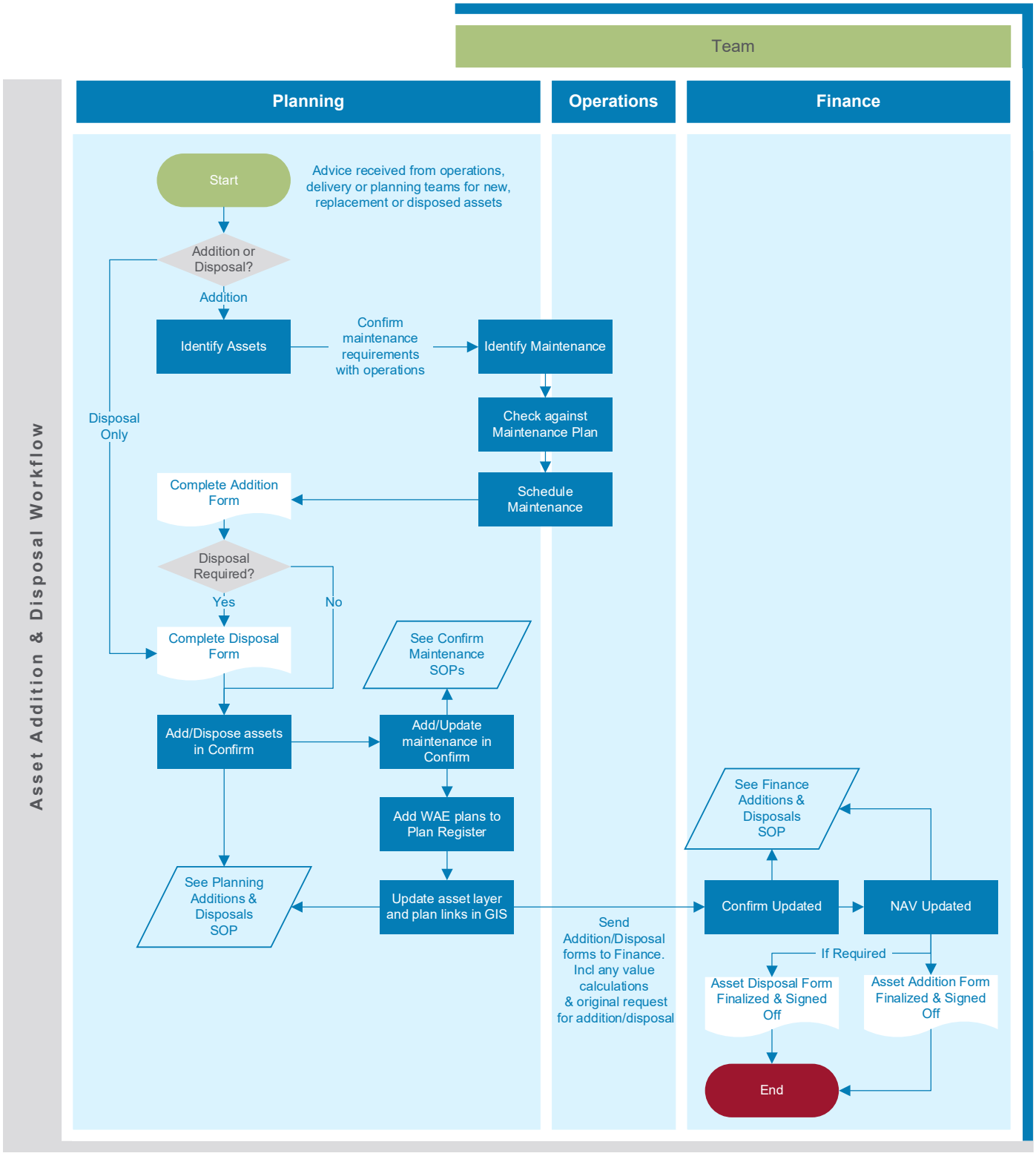
Asset information systems are a software solution to store, maintain and manage the information related to an organisation's assets. The system needs to provide sufficient information to support asset management decision making. These systems can be simple or complex depending on the needs of the organisation. Having an effective asset information system is a key component of asset management as it ensures the right information is available to the right users at the right time, allowing them to make decisions to achieve asset management objectives.

Our corporate asset information system is Confirm, with the Confirm Connect app used within the field. Staff can access and view asset and maintenance data within Confirm, with the Asset Planning team responsible for managing the system. A Confirm Development Plan is in place to guide improvements to the system. Confirm is utilised for the following functions:



Function	Description
Asset register	Identifies all discrete fixed infrastructure assets. Includes all attributes necessary to describe and identify the assets and their location. Eg material, age, dimensions. Generally, assets with different useful lives, maintenance regimes or attributes information are separated into discrete assets, eg buildings are componentised into roof, sub structure, fixtures & fittings etc. Valuations, maintenance programs and their history are linked to the asset.
Asset valuation	Stores the replacement cost, current fair value, accumulated depreciation of assets, along with the history of changes to those values over the lifetime of the asset and annual indexation. Valuation data is exported from Confirm and reconciled against our general ledger within Navision annually.
Inspection programs	Scheduled inspections determine the condition of our assets and identify defects or risks. Inspections use defined observation checklists and are scheduled to reoccur a set intervals. Ad hoc inspections may also be undertaken as required. An inspection program is in place for the majority of our flood assets. Inspections are completed in the Connect app on mobile devices in the field.
Planned maintenance programs	Maintenance activities that are planned and scheduled with a reoccurring frequency against specific assets. A job is raised with set tasks to be completed and assigned to an action officer when planned maintenance is due. These are completed either in the Connect app or Confirm. Planned maintenance for flood assets are not currently programmed.
Reactive maintenance	Maintenance tasks not part of planned reoccurring maintenance. E.g. repairing a flood gate damaged during a flood or other defects. Defects for flood assets can be raised from inspections or ad hoc in either the Connect app or Confirm, with a job raised for any requiring action. Defects are reviewed by Operations Engineering Manager. Major defects are considered under capital works planning.
Customer service requests	Enquiries or service requests from internal or external sources related to assets. Action officer required to complete task or inspect assets to determine if further action required. E.g. landholder reports blocked floodgate etc. Can be completed in either the Connect app or Confirm.

Addition and disposal of assets from the asset register is carried out following our Asset Addition & Disposal procedure. An overview of the workflow for this process is shown below:



Geographical information systems (GIS) are a software solution for capturing, storing, analysing, querying, displaying and managing spatial data. GIS integrates many types of data, arranged by spatial location and visualised as maps. Understanding the spatial relationships between data provides deeper insight allowing users to analyse and visualise data to communicate, share and access information to make decisions. Our corporate geographic information system is MapInfo. The spatial location of our assets are managed within MapInfo and linked to the assets within Confirm via a unique asset identifier. Staff have access to view, query and print asset mapping, with the Asset Planning team responsible for managing asset spatial data. A GIS Development Plan is in place to guide improvements to the system.

Finance system

Our accounting and financial management system is Navision, which has a suite of accounting/financial modules to meet our day to day operational and reporting requirements. All capital and operational costs are recorded in this system.

		Description
Capital Expenditure (CAPEX)	New Upgrade Renewal	Relatively large (material) expenditure, which has benefits (service potential) expected to last for more than 12 months. In addition to new assets capital expenditure includes renewal/replacement and expansion/upgrade of existing assets
Operational Expenditure (OPEX)	Operating	Recurrent expenditure such as power, fuel, telephone, employee costs, materials, cleaning, minor equipment, overheads, and depreciation. These costs are the day to day expenses associated with providing the service during a year of operations.
	Maintenance & Repair	Maintenance costs for retaining assets in a serviceable condition. Includes planned and reactive maintenance activities. Excludes rehabilitation or renewal actions which increase the service potential or extend the useful life of the asset.

The Manager Corporate and Commercial is delegated with the statutory responsibility as our 'Responsible Accounting Officer'. The Responsible Accounting Officer is responsible for ensuring we have adequate control systems, processes and procedures in place and that these are applied to meet all financial operating and reporting requirements.

The Local Government Act, 1993 sets out the requirements for management reporting, accounting, auditing and financial reporting requirements for Council. The NSW Division of Local Government also issues the 'Local Government Code of Accounting Practice and Financial Reporting', which assist in the interpretation and application of the Act, and the application of Australian Accounting Standards to the audit and financial reporting functions. The Government Code of Accounting Practice and Financial Reporting also provide a mechanism which ensures appropriate accounting policies and practices are undertaken. For infrastructure, significant accounting policies are detailed in the annual financial reports. These include policies on the acquisition of assets, initial asset recognition, subsequent costs, indexation adjustments, asset revaluations, capitalisation thresholds, depreciation and disposal and de-recognition.

The following standards and guidelines have been used in the development of this AMP:

AAS27, 'Financial Reporting by Local Governments', Australian Accounting Standards, June 1996	'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, 2015
Asset Management Guidelines for Water Supply and Sewerage Schemes	Condition Assessment & Asset Performance Guidelines

Accounting standards (particularly AASB 116 – Property, Plant and Equipment) require a distinction to be made between expenditure that is consumed immediately in operations and expenditure on physical assets that will provide service over more than one financial year (capitalised assets). Our capitalisation policy sets appropriate thresholds for the capitalisation (recognition) of assets.

2.2.2. Asset management objectives

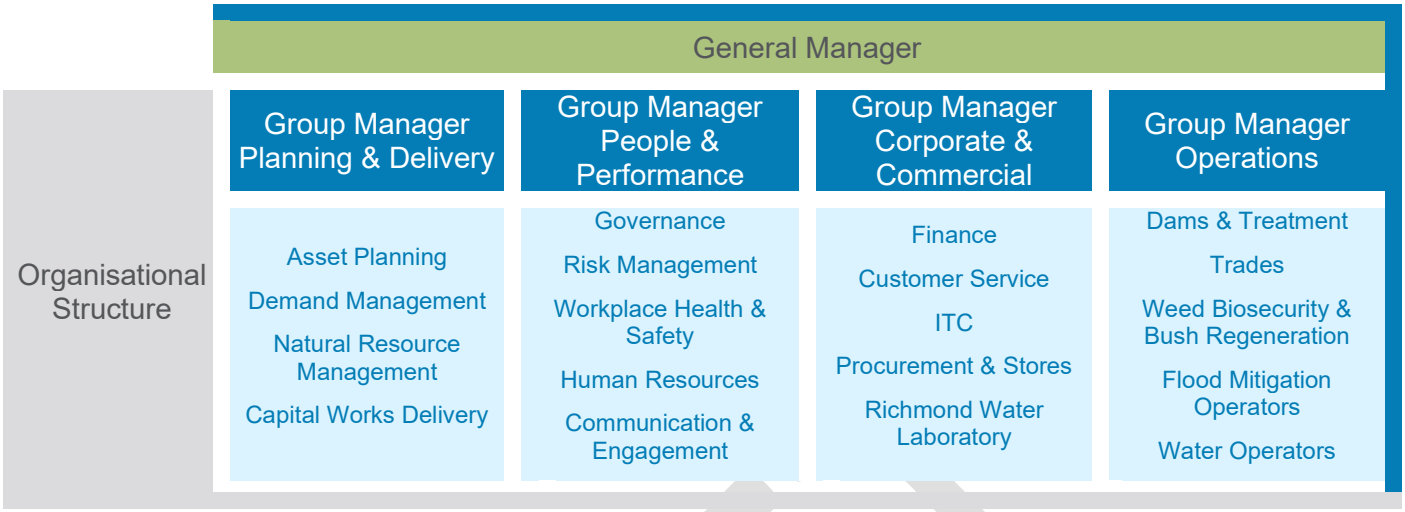
Our asset management objectives are outlined below. These objectives come from our Asset Management Policy and Asset Management Strategy and are aligned with our organisational objectives. These objectives guide our asset management activities across Council.

	Mission	Objectives	
Our asset management mission is to…	✓ deliver affordable, quality services while safeguarding assets for the future, ✓ grow internal awareness and capability, and ✓ have transparent and accountable processes aligned with industry best practice	Sustainable Delivery	Convert strategies and plans into actions to deliver agreed service outcomes that balance cost, risk, and performance of assets
			Embrace a strategic whole of life approach to the long-term management of assets to realise value and delivery of required services now and into the future
			Commit to consistent, evidence based decision-making processes that utilise the knowledge and expertise of our people and the information embedded in our systems
			Assets maintained to a suitable level to meet performance and service requirements
			Responsive action to maximise the time that assets are available within appropriate levels service, and that service requests are attended to in a timely manner
We will do this by delivering…	– a reliable, quality service to meet demand now and in the future – notification and responsive action to minimise interruption of services – sustainable whole of life value through proactive, prioritised actions – the resources to meet strategic long-term outcomes from our assets – evidence of outcomes and the condition of our assets	External Relationships	Engage with stakeholders ~~to~~ understand sustainable service expectations and gain trust as a valued service provider for the region
		Our People	Develop capable and motivated people with the skills to deliver asset management objectives who take ownership of assets and service outcomes
		Leadership & Innovation	Foster an asset management culture that is accountable, transparent and aligns across the organisation to achieve our business objectives
			Implement a robust asset management system with a focus on continual improvement

This Asset Management Plan will help to achieve these objectives by…	Documenting services to be provided, expected service levels and cost of providing services	Document our core flood mitigation responsibilities and service levels required to meet these responsibilities in consultation with constituent councils. Document the cost to deliver and maintain these service levels.
	Communicating consequences for service levels where desired funding is unavailable and financial sustainability of services	Assessment of our assets will provide data required to identify funding requirements and identify any consequences or risks where funding not available to improve or maintain condition of assets over the long term.
	Developing a plan to address key infrastructure requirements	Review asset data to identify asset renewals required to maintain services.

2.2.3. Key stakeholders

Asset management activities are carried out by staff across Council. A summary of our current organisational structure is shown in the diagram below. Responsibility for our asset management strategy and Asset Management Plans resides with our Planning & Delivery group.



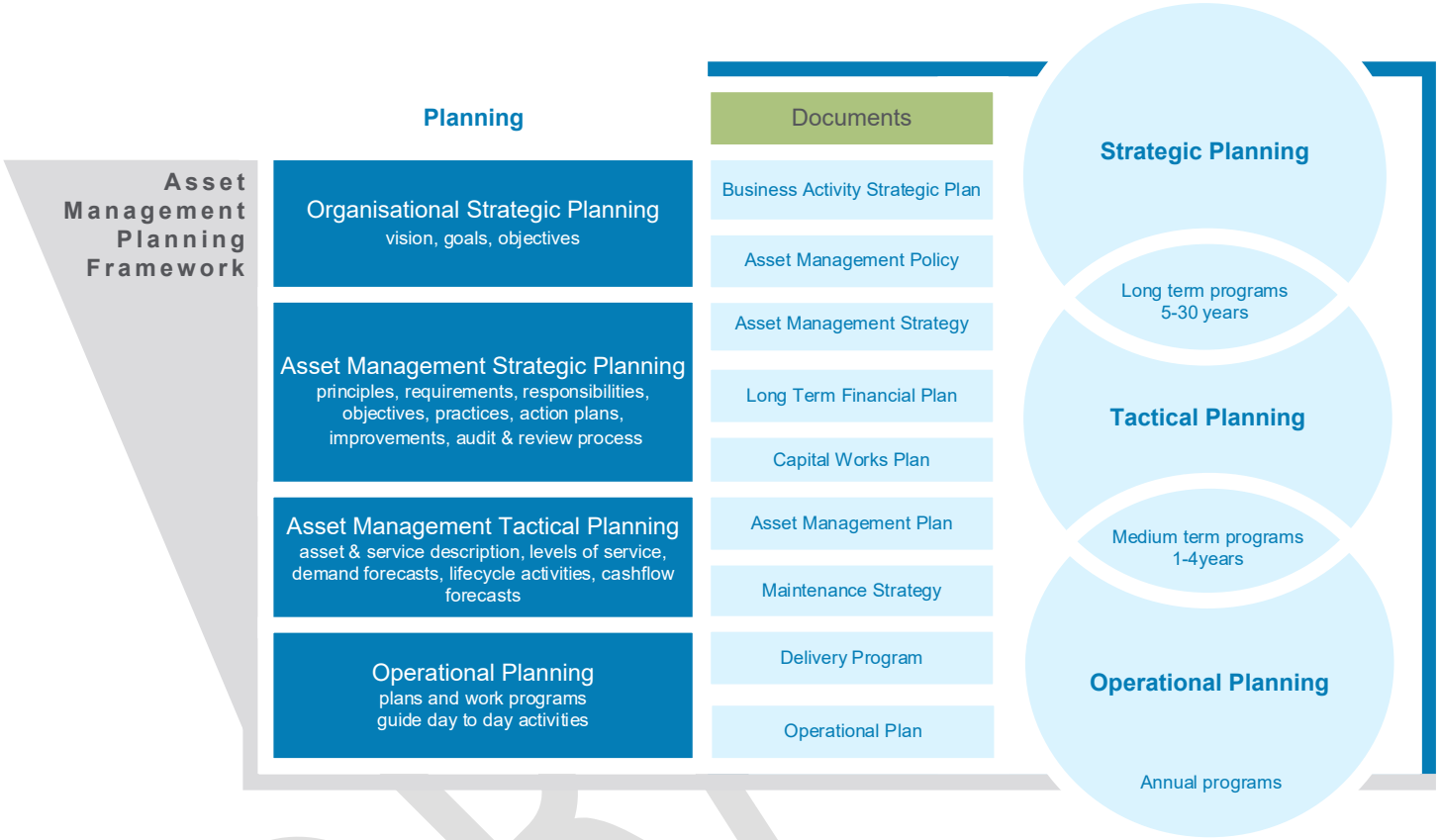
Our flood mitigation team consists of four operators overseen by the Operations Engineering Manager. This team is responsible for undertaking maintenance and operation of our flood assets, including the manufacture and installation of repaired or replacement aluminium floodgates and the delivery of minor capital projects. Strategic planning support, natural resource management, engagement and delivery of significant capital projects is provided by the Planning & Delivery group. Administration support such as human resources and finance are provided by the People & Performance and Corporate & Commercial groups.

The table below provides an overview of key stakeholders and their role within asset management and development of this plan.

	Stakeholders	Role
Internal	Councillors	Adopt Asset Management Plan. Liaise with constituent councils on priorities, levels of service, and funding. Allocate resources to meet organisational objectives. Ensuring organisation financial sustainability.
	Leadership Team	Determine organisational objectives. Endorse service levels. Oversee allocation of resources. Provide direction and commitment to asset management.
	Planning & Delivery Team	Undertakes planning activities for capital works. Manage the delivery of capital works projects. Manage asset information system (AIS) and data. Assists in the development of maintenance programs and input into AIS. Management of asset management documentation. Determine service levels.
	Finance Team	Manage valuations and financial reporting on assets. Budget allocations.
	Operations Teams	Responsible for the ongoing operation and maintenance of assets, including condition assessment, defect identification and maintenance planning. Deliver minor capital works within areas of speciality. Determine service levels.
	Other Staff	Compliance with asset management practices.
External	Constituent Councils	Input into required service levels and customer value. Provide funding.
	Community	Input into required services and cost prepared to pay for services.
	Regulatory Bodies	Monitoring and compliance. Legislation and regulations guiding asset management and service levels.

2.2.4. Planning framework

This Asset Management Plan is part of a suite of documents that form our asset management system. It has been prepared after a review and update of our previous Asset Management Plan and in accordance with ISO55000 Asset Management Standards and the International Infrastructure Management Manual. It is informed by our Asset Management Strategy which defines our asset management objectives, provides an overview of our asset management system and contains a detailed plan for improvement to our systems, processes and outcomes for asset management as we strive for continual improvement and move towards more advanced asset management practices.



The NSW Government's Integrated Planning & Reporting Framework (IP&R) requires Council to develop a Business Activity Strategy which:

- Outlines our main business activity priorities
- Sets our strategic objectives
- Determines where Council would like to be in 10 years and how we intend to get there

Council is required to develop the suite of documents outlined in the diagram to the right to meet IP&R requirements. We have developed these documents in consultation with our constituent councils. This Asset Management Plan forms part of the IP&R Resourcing Strategy.

Integrated Planning & Reporting Framework

2.3. Rous County Council Services

We are responsible for a wide range of physical assets including bulk water supply, retail water supply and flood mitigation infrastructure to deliver our core services. This Asset Management Plan covers assets associated with the delivery of our flood mitigation services.

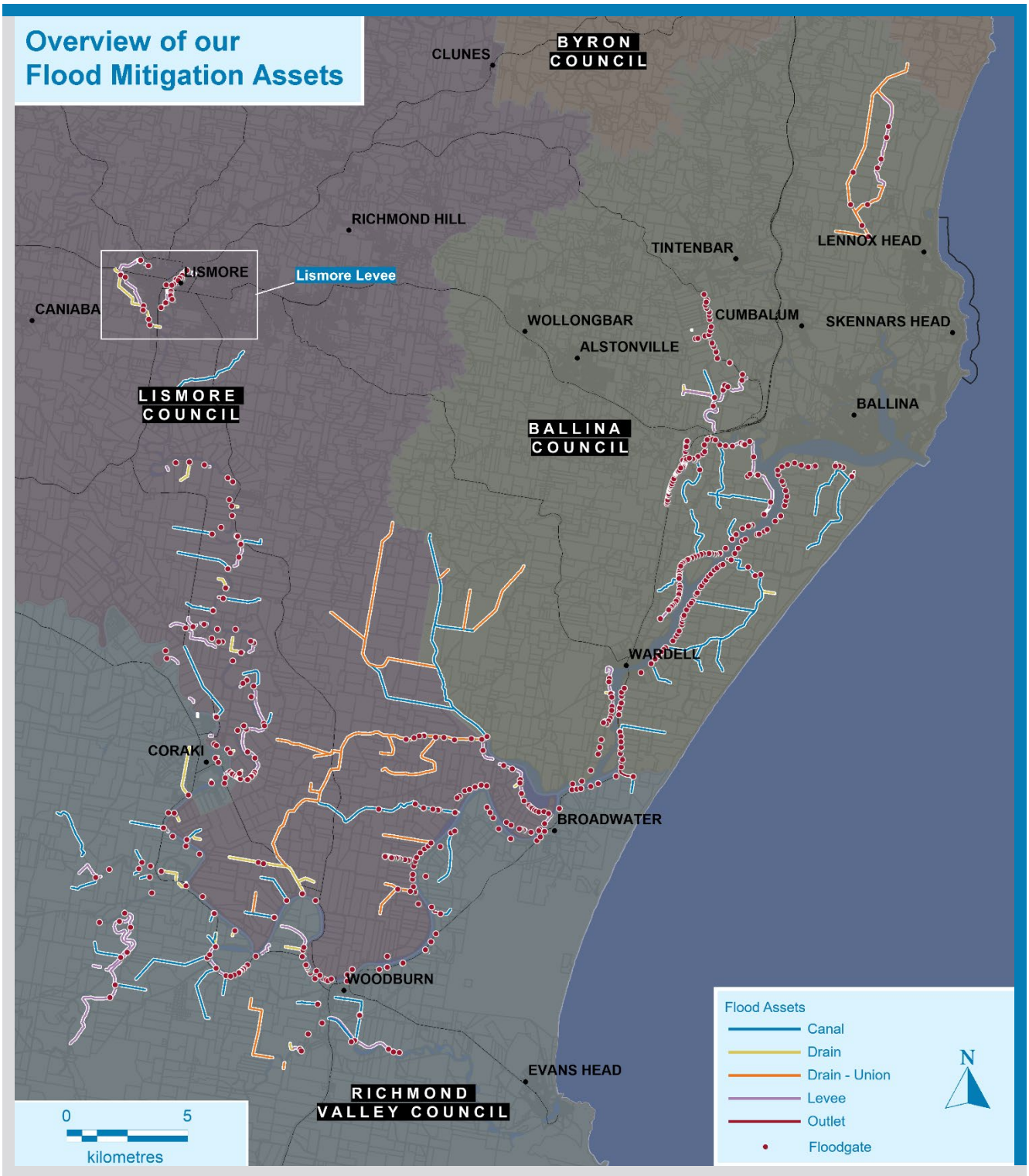
2.3.1. Flood mitigation

We are responsible for flood mitigation and related natural resource management within the constituent council areas (excluding Byron Shire Council). In 1959 we were constituted to exercise the powers and duties for "the prevention or mitigation of menace to safety of life or property from flood". The powers and duties were amended in 2008 to include natural resource management (NRM) issues arising from flood mitigation activities.

We receive contributions from the relevant constituent councils to fund delegated responsibilities and for maintenance of flood mitigation assets. The NSW government also provides minor contributions for maintenance of floodgates, drains and levees.

The key activity in the provision of flood mitigation services is the procurement, maintenance, operation, and replacement of our assets.

All assets associated with the provision of flood mitigation services as described in section 6 are covered by this Asset Management Plan.



The map above provides an overview of our Flood Mitigation Assets.

2.3.2. Service not covered by this Plan

Bulk water supply

We are the regional water supply authority providing bulk potable water to the constituent council areas of Lismore (excluding Nimbin), Ballina (excluding Wardell), Byron (excluding Mullumbimby) and Richmond Valley (excluding land to the west of Coraki).

Bulk water supply assets are not included in this Asset Management Plan. They are covered in a separate document: *Asset Management Plan – Water*.

Retail water supply

We provide water supply services to 2,032 rural and urban connections (retail customers) direct from the bulk supply trunk main system.

Retail water assets are not included in this Asset Management Plan. They are covered in a separate document: *Asset Management Plan – Water*.

Weed Biosecurity

We undertake weed management services across the four constituent council areas and are responsible for administering the Noxious Weeds Act 1993 in the region. Weed biosecurity services are also provided to Kyogle Council and Tweed Shire Council under a fee for service arrangement.

Assets associated with our weed biosecurity operations are not included in this Asset Management Plan.

Other

We have a number of commercial and investment properties such as the Perradenya Estate, Richmond Water laboratory and other commercial premises (non-core business activities).

Assets associated with our commercial activities are not included in this Asset Management Plan.

3. Levels of Service

3.1. Organisational strategic objectives

As an organisation we have developed and adopted a set of values that we collectively believe in. Our organisation and our people will conduct our day-to-day business in alignment with these values.

Mission, Vision, Values	
Our mission	Partner with our constituent councils to provide quality services that support a sustainable and productive region.
Our vision	Thrive and evolve as a valued regional service provider.
Our values	**Safety:** safety first 24/7 **Accountability:** own it, solve it, achieve it **Teamwork:** one team, one purpose **Respect:** be honest, be fair

Activities we undertake, including asset management, are aligned to the priorities outlined in our Integrated Planning & Reporting Framework as outline below:

Integrated Planning & Reporting Priorities	
Sustainable Delivery	• Sustainable service provision in relation to water supply, flood mitigation and weeds management. • Financial sustainability of the organisation (including in relation to its workforce and asset management responsibilities) • Environmental sustainability in relation to Council's operations • Planning for and responding to climate change impacts in the environment.
External Relationships	• Relationships Rous has with constituent councils, customers and the broader Northern Rivers community, State and Commonwealth Government. • Opportunities for partnerships and collaboration to achieve desired outcomes for our customers and community more effectively and efficiently.
Our People	• Our workforce – ensuring we have the right people with the right skills in the right place to achieve our objectives within a Values based culture. • Creating a working environment and a workplace culture where our people value their work and feel valued by the organisation and its customers.
Leadership & Innovation	• Our role as a regional leader. • How we conduct ourselves as an organisation. • How we use technology and apply innovation to be more effective and efficient.

3.2. Legislative requirements

There are several legislative requirements we must meet, including Federal and State legislation and regulations. Relevant legislation is summarised in the table below.

Legislative Requirements

Local Government Act, 1993 and Local Government (General) Regulation 2005	This Act provides the legal framework for the system of local government in NSW. Under the Local Government Act, 1993, the responsibility for provision of flood management services in non-metropolitan NSW is delegated to local councils. This responsibility has been delegated to us by Ballina, Lismore and Richmond Valley Councils under the act. The.
Local Government Amendment (Planning and Reporting) Act 2009	Local Government Amendment (Planning and Reporting) Act 2009 includes the preparation of a long term financial plan supported by AMPs for sustainable service delivery.
Local Government (Water Services) Regulation,1999	The Regulation supplements the provisions of the Local Government Act 1993 relating to the carrying out of water supply, sewerage and stormwater drainage works by councils and regulates the use of such works.
Environmental Planning and Assessment (EP&A) Act, 1979	The Act requires that all proposals, activities and functions which are investigated, designed, planned, constructed and operated should be studied during all stages of their environmental impact on the basis of scale, location and performance. Environmental impact assessments may also be required to satisfy Commonwealth legislation processes. The Act provides the basis for the preparation of environmental planning instruments.
Protection of the Environment Operations Act, 1997	We are required to exercise due diligence to avoid environmental impact.
Occupational Health and Safety Act 2000 and Rehabilitation Act 1987	The Acts places emphasis on risk management and consultation with staff to minimise work related accidents and health impacts. We need to train staff in safety issues and provide a safe working environment and supply equipment to ensure safety. We and our staff may be liable for breaches of these requirements.
Fisheries Management Act, 1994	The objects of this Act are to conserve, develop and share the fishery resources of NSW for the benefit of present and future generations. Works associated with flood mitigation structures involve works that trigger certain approval requirements under the Act.
Coastal Management Act, 2016	The new Coastal Management Act communicates the NSW Government's vision for coastal management. The Act reflects the vital natural, social, cultural and economic values of NSW coastal areas and promotes the principles of ecologically sustainable development in managing these values. The legislative and policy framework introduced by the coastal reforms recognises natural coastal processes and the local and regional dynamic character of the coast, and promotes land use planning decisions that accommodate them. The reforms ensure coordinated planning and management of the coast and support public participation in these activities.
Water Management Act, 2000	This Act provides for the sustainable and integrated management of the water sources of NSW. The Act provides a framework for water sharing plans and environmental flows, sets out bulk water supply regimes, defines local water utility access licences and requires water utilities to levy developer charges.
The Australian Accounting Standards	The Australian Accounting Standards Board standards require assets be valued and reported in the annual accounts, including depreciation value of assets.

3.3. Stakeholder expectations

We consult with our stakeholders in relation to management of our assets and natural resource management extension activities. We have developed Service Level Agreements (SLA) with our constituent councils that set out service expectations, roles and responsibilities in relation to flood mitigation. These Agreements are reviewed every four years to adapt and respond to changing needs.

3.4. Customer & technical service levels

Our service levels for flood mitigation activities as agreed with our constituent councils are outlined in the following table.

Objective 1 Prevent/mitigate menace to the safety of life and property from flooding	**Desired Achievement:**	Provide reliability in the performance of flood prevention/mitigation assets
	Performance Indicator:	Flood mitigation infrastructure in working order
	Service Level Minimum:	Routine inspections, repairs to or replacement of equipment or asset including necessary clearing of vegetation
Measure:		**Target:**
Provide routine inspections to ensure infrastructure is functioning within expected parameters.		Complete condition assessment and inspection program
Provide scheduled maintenance to ensure infrastructure is functioning within expected parameters.		80% of assets are in satisfactory working order (condition 3 or above)
Renew / replace infrastructure in line with asset management plans / schedules.		No asset is at 'very poor' working order (condition 5) for more than 12 months from date of identification 80% of planned capital expenditure is spent within the financial year
Long term capital expenditure is in line with asset lifecycle planning.		Average annual capital expenditure over 5 years is within 80% of depreciation costs (excluding Lismore Levee)
Mitigate the impact of development on the function of flood mitigation assets		Seek Rous County Council concurrence on the proposed development where the development is in an area which may impact on the functionality of flood mitigation assets and/or the function
Objective 2 Natural resource management relating only to the environmental consequence of operating this infrastructure on the broad environment	**Desired Achievement:**	Minimise environmental impacts from flood mitigation infrastructure management
	Performance Indicator:	Environmental impacts considered and reasonably mitigated
	Service Level Minimum:	All necessary permits obtained prior to works being carried out
Measure:		**Target:**
Work will be carried out to best practice.		Rous will undertake or oversee all technical, environmental, heritage and risk assessments, and obtain the necessary consents in accordance with NSW legislative requirements and accepted best practice guidelines. Rous will determine and provide REFs prepared for works in the local government area.
Constituent Council is kept informed of and is provided technical advice on natural resource management issues relating to RCC's flood mitigation assets as required.		Provide technical advice and information on post-flood water quality conditions related to deoxygenation and acid events.
Management of RCC's Active floodgate management program		Active Floodgate Management Plans reviewed and updated and publicly available on Rous County Council's website. Management of landowner volunteer floodgate operator program.
Objective 3 Hydrological research, flood surveying, modelling, flood risk management studies and plans	**Desired Achievement:**	Participating in the delivery of regional priorities where funded Maximise beneficial and deliverable grant funding opportunities for the region
	Performance Indicator:	Supporting our constituent councils to work collaboratively to deliver on regional priorities
	Service Level Minimum:	Work with constituent councils to identify and agree on regional priorities
Measure:		**Target:**
Identify opportunities for Rous County Council to add value in increasing understanding and knowledge of flood mitigation systems.		Involvement in at least one project across Rous operational area per annum. Inform Rous County Council of any proposed Hydrological research, flood surveying and modelling. Provide all local and regional flood models to Rous County Council
Preparation and/or update of flood modelling and assessment of flooding impacts, flood risk management studies and plans		Accurate flood modelling and flood impact data, flood risk management studies and plans. Create and maintain a central repository for all local and regional flood models, including managing access to data.
Sharing of Hydrological research, flood surveying, modelling data, studies and plans		Sharing all data, modelling, studies and plans between councils
Objective 4 Partnering with our member councils to deliver agreed regional and local projects, including coordination of the preparation and submission of grant funding applications	**Desired Achievement:**	Continue to provide technical advice and strategic planning direction.
	Performance Indicator:	Respected regional authority on flood mitigation
	Service Level Minimum:	Maintain and develop flood mitigation knowledge and understanding for the region
Measure:		**Target:**
Coordinate delivery of Stage 1 of the Coastal Management Program		Deliverables meet the targets in the grant conditions
Coordinate the preparation and submission of a grant application for Stage 2 CMP Implementation		Grant application submitted on time
Implement actions detailed in Council's Delivery program and Operational plans relating to Coastal Zone Management Plan (CZMP) and future Coastal Management Program (CMP)		Annually as per the CZMP and future CMP.
Identify partnerships and/or funding opportunities to implement other agreed regional and local projects		Applications endorsed by participating councils and/or government agencies and submitted on time
Monitoring of water quality within the lower Richmond river catchment for understanding broader catchment processes and impacts		Provide water quality logger data on Rous County council website when available and in line with available funding.
Objective 5 Provide maintenance support to match funding commitments	**Desired Achievement:**	Private infrastructure maintained in accordance with funding
	Performance Indicator:	Ex-drainage union drains, Mynumi, Bora Creek, maintained to match available funding
	Service Level Minimum:	Account for available funds
Measure:		**Target:**
Provide routine inspections to ensure infrastructure is functioning within expected parameters		Complete condition assessment and inspection program
Provide scheduled maintenance to ensure infrastructure is functioning within expected parameters.		80% of assets are in 'satisfactory' working order (condition 3 or above) in line with available funding.

4. Demand

4.1. Demand drivers

Demand for our flood mitigation infrastructure is largely determined by the risk associated with potential loss of life and damage to property caused by flooding, land use, development, and the management of existing assets. Services provided are routine with some seasonal variation. Impacts of climate change, and changes to land use, regulation, and expectations of environmental performance may be future drivers in demand for service.

4.2. Demand forecast

We currently do not undertake demand forecasting for our flood mitigation assets. Our focus is on maintaining current levels of service from our existing asset base. However, we support our constituent councils with the performance of hydrological research, flood surveying, flood modelling and the development of flood risk management plans.

4.3. Demand management plan

There is currently no demand management plan in place for our flood mitigation assets.

4.4. Climate change

Climate change is an important consideration for strategic asset planning, particularly in coastal areas where the combined effects of sea level rise and increased extreme weather events are considered key threats. Climate change is predicted to have a significant effect on weather patterns with more intense rain events and longer dry spells, which will change the assessment of flood periodicity. In addition, tidal propagation up the estuary and potential changes in salinity regime may be expected. There may be increasing pressure to reduce saline intrusion into low-lying farmlands. Long-term flood mitigation asset management policies will need to consider the implications of sea level rise and potential salinity increases. The asset management implications of climate change on our asset management have yet to be determined.

5. Risk Management

5.1. Critical assets

A desktop assessment of the risk level of our flood mitigation assets was undertaken in 2017. This assessment assigned a risk ranking to assets of low, medium, or high, and has been used as an initial identification of asset criticality. These risk rankings were used to determine frequency of our condition and risk inspection program that has been in place since 2017. A multi-year strategic review of our flood mitigation function is currently underway. This review will consider further assessment of the function and criticality of our flood assets.

The table below summarises the risk rankings of our flood assets as undertaken in 2017:

Risk criteria		% asset class		
Size of asset eg floodgate diameter (larger = greater risk)	Floodgates	3% high	47% medium	50% low
	Levees	2% high	84% medium	14% low
Primary or secondary floodgate	Drains & Canals	1 medium	All others low	
Protection of buildings based on aerial imagery & best judgement	Pipes	All low		
	Culverts	57% medium	43% low	
Protecting urban or rural areas	Lismore levee system	All high		

The definition of primary and secondary floodgates is below:

Primary gates	Secondary gates
Connect directly to the river or tributary or provide protection to a levee system. Primary gates will have no other gates downstream and form the main mitigation barrier in flood events	Upstream of a primary gate. They supplement the operation of the primary gates and may be used on branch lines or on minor catchments. Flooding likelihood beyond the secondary gate is reduced as failure of the primary and secondary gate is required.

Assessment of our flood assets was completed against our risk matrix

Likelihood	Consequence: Negligible: Inundation to land with no damage as flood water recedes	Minor: Interruption of grazing land use, with no damage as flood water recedes	Moderate: Damage to cropping land with possible economic loss	Major: Damage to dwellings and/or cropping land with economic loss	Severe: Risk to life and/or property damage including flooding to homes and businesses
Certain to occur: Expected to occur in most circumstances	Low	Medium	High	High	High
Very Likely: Will probably occur in most circumstances	Low	Medium	Medium	High	High
Possible: May occur occasionally	Low	Medium	Medium	High	High
Unlikely: Could happen at some time	Low	Low	Medium	Medium	High
Rare: May happen only in exceptional circumstances	Low	Low	Medium	Medium	Medium

5.2. Risk assessment

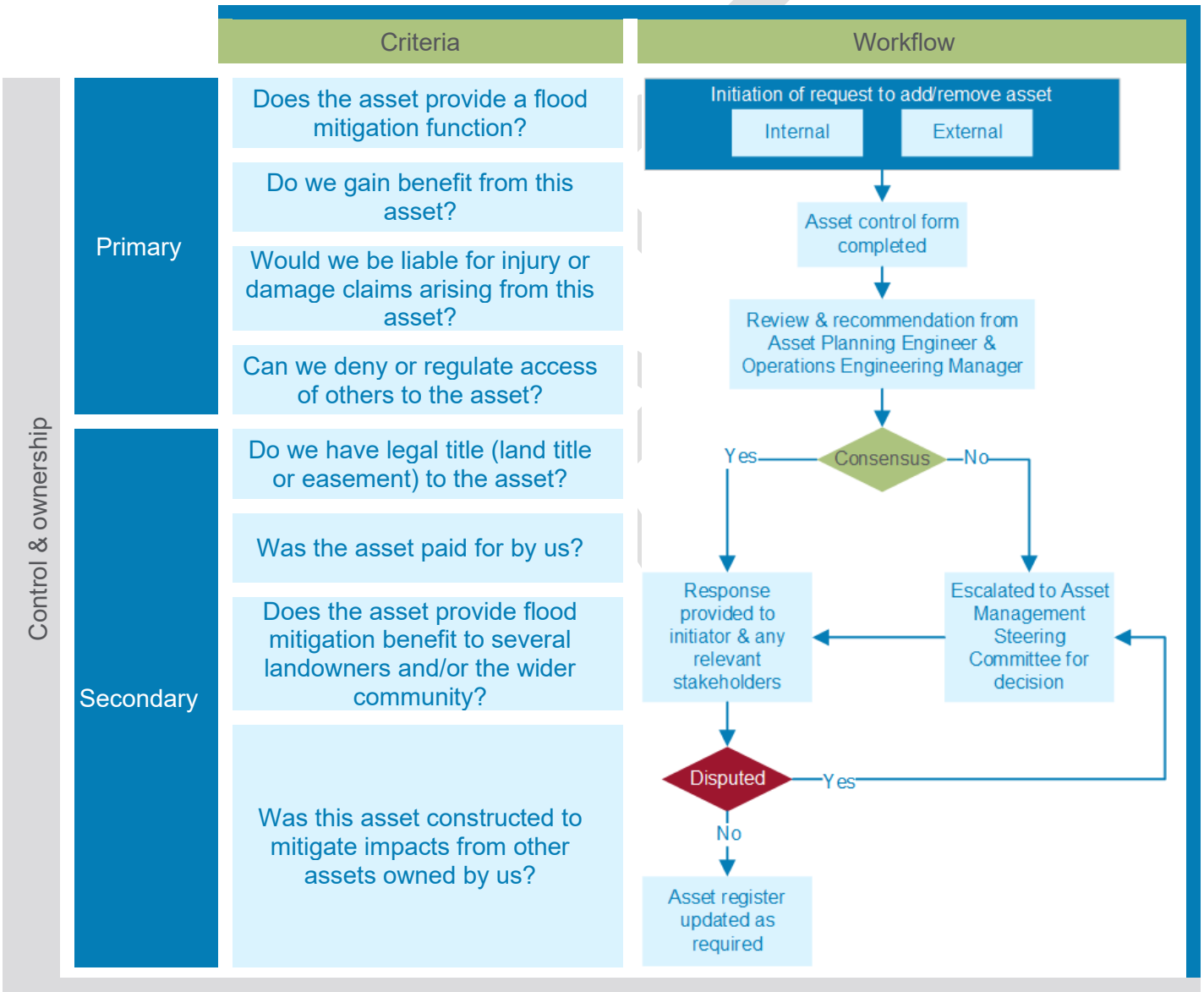
The operation or failure of our assets can potentially result in accident, injury, loss of life or damage to property.

	Identified risks:	Description
Asset Risks	Aquatic weeds	Aquatic weeds in drains/canals can block floodgates preventing opening/closing causing inundation with salt water (if gates cannot close) &/or flooding (if gates cannot open). Build-up of weeds, debris & sediment in drains restricts conveyance of flood flows & may cause overtopping of canals/drains, exacerbating flooding. Similar risks are associated with dysfunctional floodgates and lifting gear
	Slumping of drains	Slumping of drain walls (due to erosion, sedimentation, terrestrial weed growth) modifies the drain cross-section compromising hydraulic capacity of the drain & drain may be unable to adequately convey flood flows & upstream flooding may result
	Slumping of levees	Slumping of the top of levees, reduces the height of the levee & may allow flood flows to overtop the levee & inundate surrounding land.
	Overtopping of levees	Overtopping of levees may cause erosion & potential failure of the levee & inundate surrounding land
	Physical damage	Physical damage to assets may result in inability for asset to operate effectively or asset failure & inundate surrounding land
Operational Risk	Safe access	In order to prevent accident or injury safe access is required to all our assets so staff can undertake operations & maintenance activities. Safe access is also required to actively managed floodgate locations so landholders can adequately access gates, & assets in public areas such as guard rails, handrails, footpaths etc. need to be maintained in safe working
	Lismore levee	While operation of the Lismore levee is currently undertaken by LCC, our exposure to risk, in association with this asset, during a flood is unclear
Environmental Risk	Rotting organic matter	Rotting organic matter creates monosulfidic black ooze (MBO) which when disturbed and transported by flood flows, rapidly deoxygenates water & disrupts the ecology of waterways. MBOs have been associated with fish kills in the Richmond River. Build-up of aquatic weeds causes diurnal fluctuations in dissolved oxygen & provides a source of organic matter for MBO production
	Blocked floodgates	Blocked floodgates can restrict active floodgate management which is necessary to assist with submerging acid sulphate soil & reducing the extent of MBO accumulation behind the floodgate.
	Fish movement	Some floodgates include fish gates which allow fish movement with the tides. Gates blocked with debris prevent upstream/downstream migration of the fish
	Erosion	Erosion of drain banks causes scour, loss or destabilisation of vegetation, increased turbidity & mobilisation of nutrients & contaminants to the river

6. Asset Information

There has been some contention around our ownership of flood mitigation infrastructure on the floodplain. Our current position is that we have maintenance responsibility for those assets currently listed within our asset register, as summarised in section 6.1.

There are other flood mitigation structures on the floodplain beyond this which we do not have any ownership of, or responsibility for. Addition or removal of assets from our asset register is considered on a case-by-case basis with a review of evidence and cause for an asset to fall under our responsibility assessed against set criteria. A form outlining how an asset meets or does not meet these criteria is completed and forwarded to our Asset Planning Engineer and Operations Engineering Manager for review and recommendation. The outcome will be communicated with any relevant stakeholders, such as landowners or suggested owner of the asset, if determined it does not fall under our ownership and responsibility. Any dispute of the decision will be escalated to our Asset Management Steering Committee. If the outcome results in a change to the asset register, our asset addition/disposal process is to be followed.

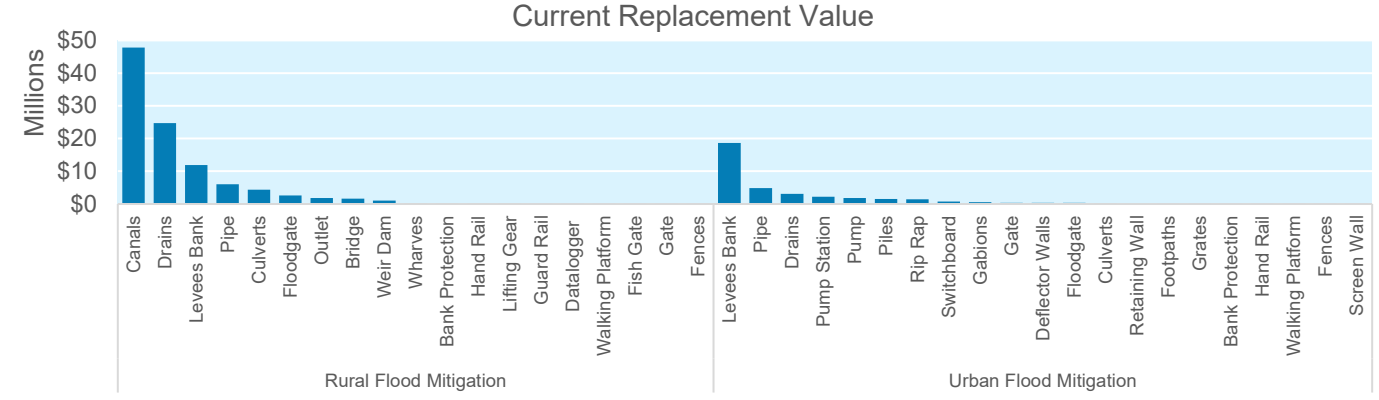


6.1. Asset value

Below is a summary of flood mitigation assets for rural and urban areas (as at July 2020). For the purposes of this classification, rural flood assets are assets that are owned, operated, and maintained by us. Funding for these activities is provided by our constituent councils and state government grants. Urban flood assets are those comprising the Lismore levee system. These urban flood assets are included in our asset register, however the operation, maintenance and renewal of these assets is undertaken and funded by Lismore City Council under a Memorandum Of Understanding (MOU). Urban flood assets remain under on our asset register to allow possible future funding to be more easily accessed from grant sources. The ownership of urban flood assets is under review.

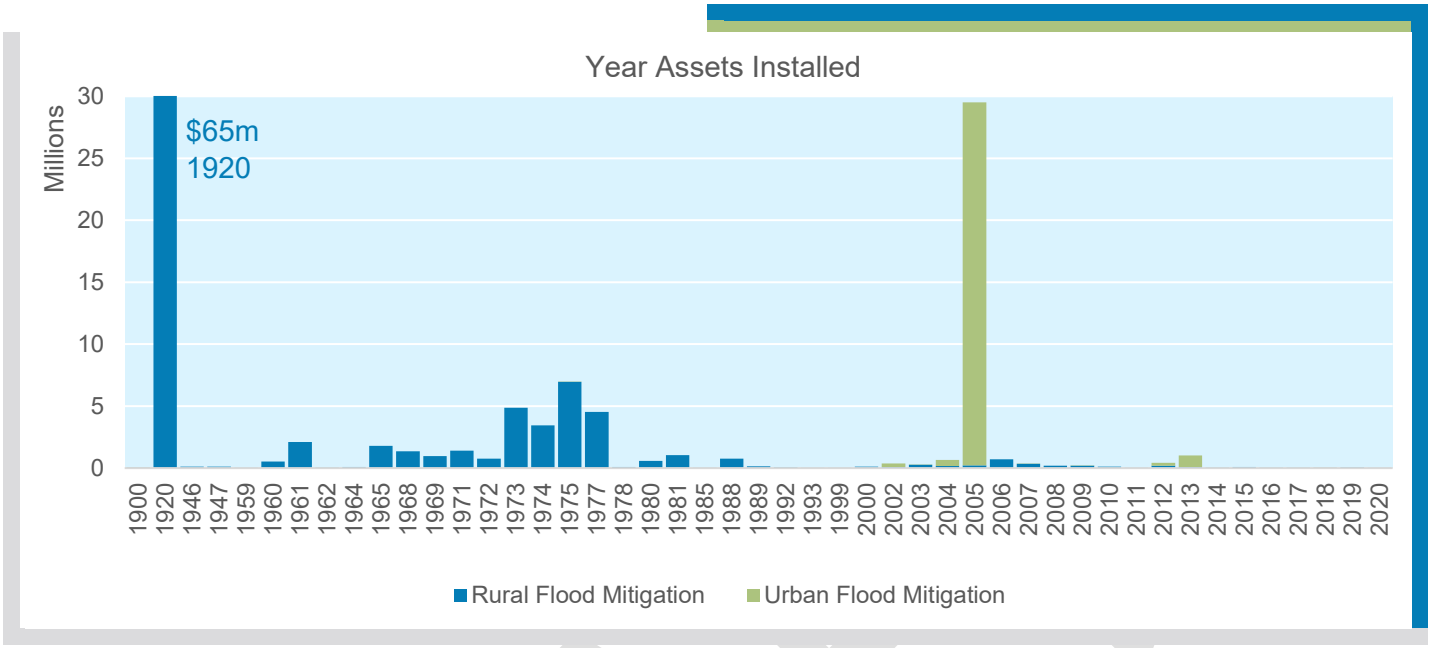
	Asset Type	Description	Current Replacement Value
Rural	Earthworks Levees	41 Earthworks levees with a total length of 73km to prevent inundation of land by flood waters	$11,955,946
	Floodgate	A hinged flap attached to a pipe or culvert to control the flow of flood water. 756 individual gates at 522 floodgate sites, including 100 tidal flushing gates designed to allow a small amount of tidal exchange. Floodgates range in size from 150mm to 3600mm, majority of aluminium construction	$2,602,380
	Fish Gate	10 floodgates fitted with a window to allow the passage of fish	$23,568
	Lifting Gear	85 Lifting gear consisting of cable and winch mechanisms to allow the manual opening and closing of floodgates.	$140,435
	Walking Platform	7 walking platforms which provide safe access to lifting gear or floodgates to allow servicing and operation	$34,878
	Handrail	53 handrails with a total length of 830m to assist access to floodgates for servicing and operation or prevent falls from flood structures	$153,720
	Canals	108km of canals used to convey floodwater to river	$48,702,570
	Drains	16.5km of drains to convey floodwater to river	$2,728,701
	Ex Union Drains	65km of ex union drains to convey floodwater to river. These drains were originally constructed by drainage unions, but by agreement, are now owned by us with separate maintenance funding from Councils	$21,119,612
	Outlets	66 outlets with a total length of 3.8km which are open drains between the culvert/floodgate and the river	$1,852,484
	Pipes	260 drainage pipes with a total length of 4.7km intended to drain water under roads or through levees	$6,844,684
	Culverts	40 box culverts to drain water under or through roads or levees	$4,389,901
	Fences	131m rural livestock fencing at three sites	$19,013
	Bridges	18 bridges for vehicle or stock access across drains and canals	$982,292
	Guard Rail	6 guard rails with a total length of 181m to prevent vehicles exiting a road or bridge	$53,823
	Weir	2 weirs to prevent upstream movement of rising tide waters while allowing downstream movement or rising flood waters	$1,073,314
	Bank Protection	3 areas of bank protection to protect riverbank from erosion with a total length of 1.8km	$191,634
	Dataloggers	6 data loggers to sample water	$42,000
	Wharves	Coraki wharf	$200,000
		Total Replacement Value	**$103,110,955**

	Asset Type	Description	Current Replacement Value
Urban	Concrete Levee	13 concrete levees with a total length of 1km	$15,561,471
	Earthworks Levee	13 earthen levees with a total length of 4.7km	$3,134,646
	Deflector Wall	4 deflector walls with a total length of 85m which are small sections of levee used to deflect water flow away from important infrastructure	$386,342
	Floodgate	A hinged flap attached to a pipe or culvert to control the flow of flood water. 33 individual floodgates. Floodgates range in size from 300mm to 4200mm	$371,239
	Road Gate	25 steel floodgates used to close openings in the levee allowing cars and pedestrian through. Are closed during flood events.	$401,455
	Bank Protection	1 area of bank protection to prevent riverbank erosion with a total length of 251m	$27,287
	Gabions	2 areas of rock/wire baskets intended to prevent erosion of riverbank covering an area of 2,700 square meters	$580,949
	Piles	3 areas of piles with a total length of 183m. Interlocking bored piles used as foundation for levee in critical areas	$1,543,275
	Retaining Wall	2 retaining walls with a total length of 100m to support earth levee around important structures	$108,627
	Rip Rap	5 areas of rock protection to prevent erosion of riverbanks	$1,423,173
	Pump Station	6 buildings to house major pumps and associated equipment	$2,199,260
	Pump	9 pumps used to remove water from inside the levee during wet periods	$1,786,119
	Switchboard	5 switchboards to control major levee pumps	$718,791
	Drain	1 drain to convey floodwater with a total length of 3.6km	$3,137,262
	Pipe	17 drainage pipes with a total length of 706m to drain water under or through roads or levees	$4,821,912
	Culvert	1 box culverts to drain water under or through roads or levees	$146,265
	Fences	2 cyclone wire fences with a total length of 53m	$6,658
	Handrail	6 handrails with a total length of 37m	$18,888
	Footpath	4 footpaths constructed to protect crest of earthen levee or protect from levee overtopping with a total length of 423m	$85,498
	Screen	1 screen to protect from debris	$5,972
	Grates	2 grates to protect from debris from entering pumps	$31,724
	Walking Platforms	3 walking platform to access assets	$7,277
		Total Replacement Value	**$36,504,088**



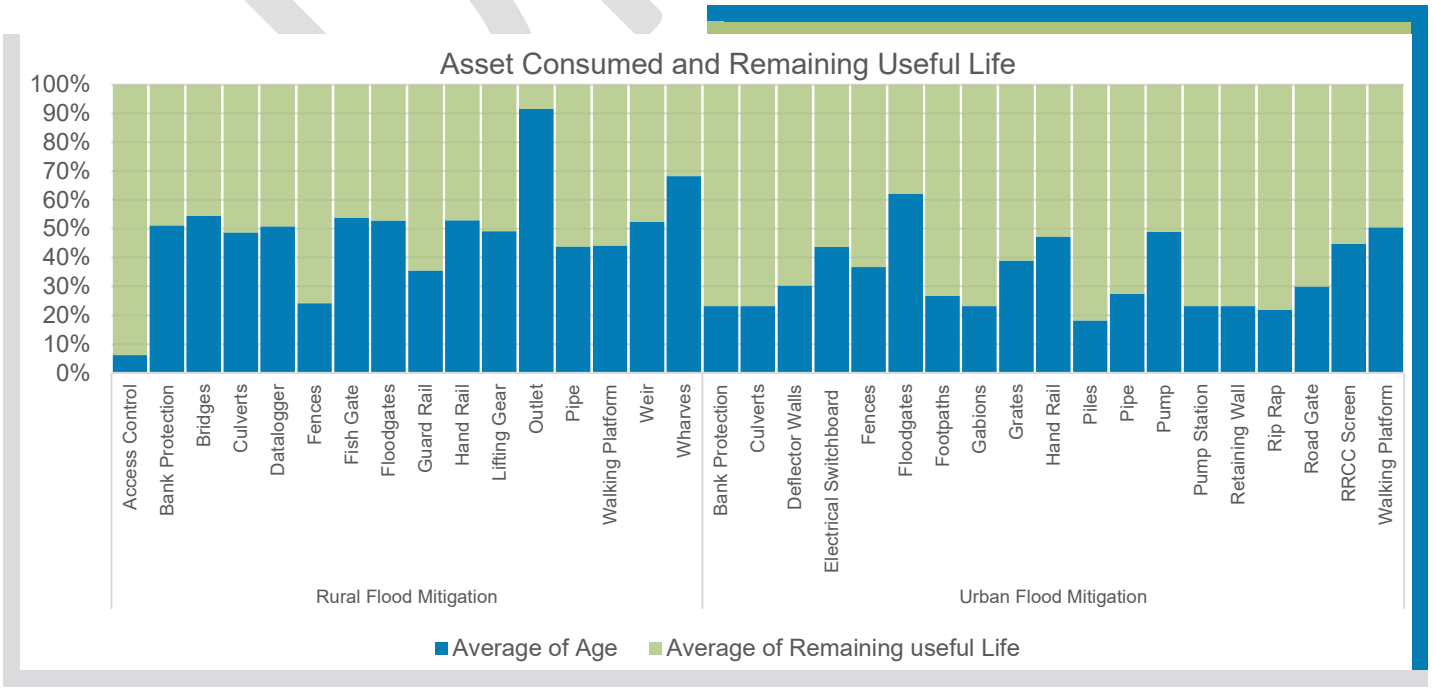
6.2. Asset age

Our asset register records the installation date for most of our flood assets. The construction date is unknown for many of our canal, drain and levee assets, currently an assumed date of 1920 has been adopted for these assets, however it is likely they were constructed after this time. The graph below shows the installation year for our flood assets.

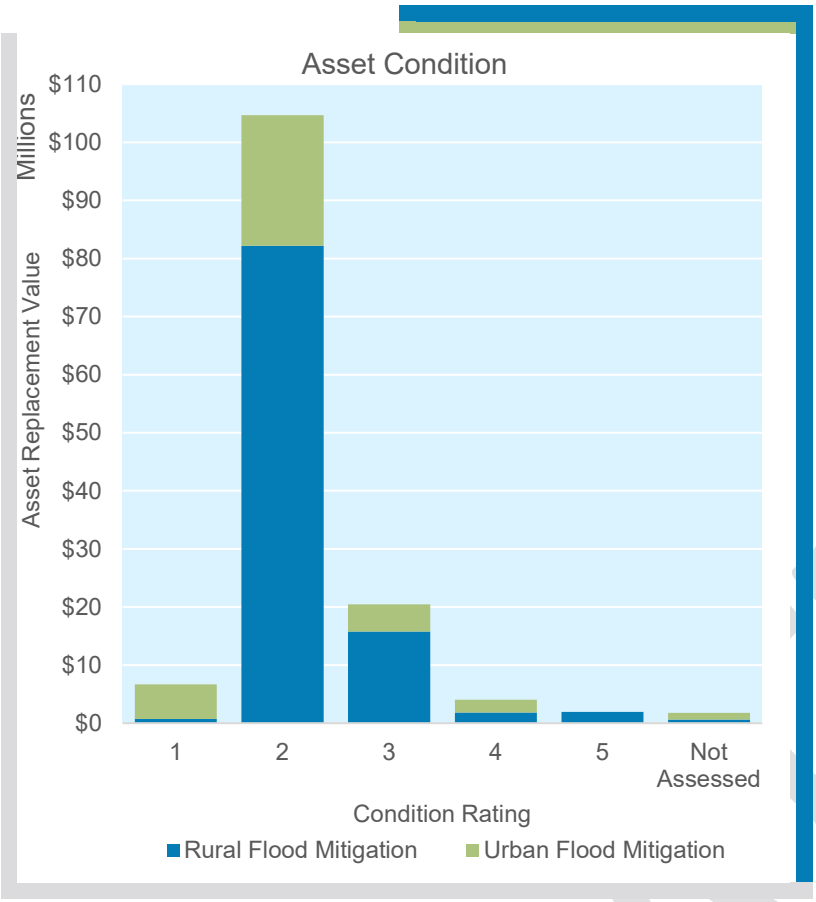


The useful life of an asset provides an indication of the theoretical timeframe before an asset is due to be renewed. Useful life is currently stored within our asset register as the difference between the active from and active to dates. The remaining useful life is the time between the current date and the active to date. There are some discrepancies known with these dates, however it is currently the best data available. The useful life previously adopted for floodgates was identified as unreflective of actual performance, with gates beyond assumed useful life remaining in acceptable condition. As part of the revaluation process in 2020, these were reviewed and a useful life more reflective of actual performance was adopted. Canal, drain & levee assets have been given a useful life of 100 years, due to the unknown installation date being recorded as 1920, these asset types are showing as at the end of their life, however this is not a true reflection of their status.

The graph below shows the average current age and remaining useful life for flood mitigation asset types, excluding canal, drain and levee assets due to the uncertainties surrounding their install dates.



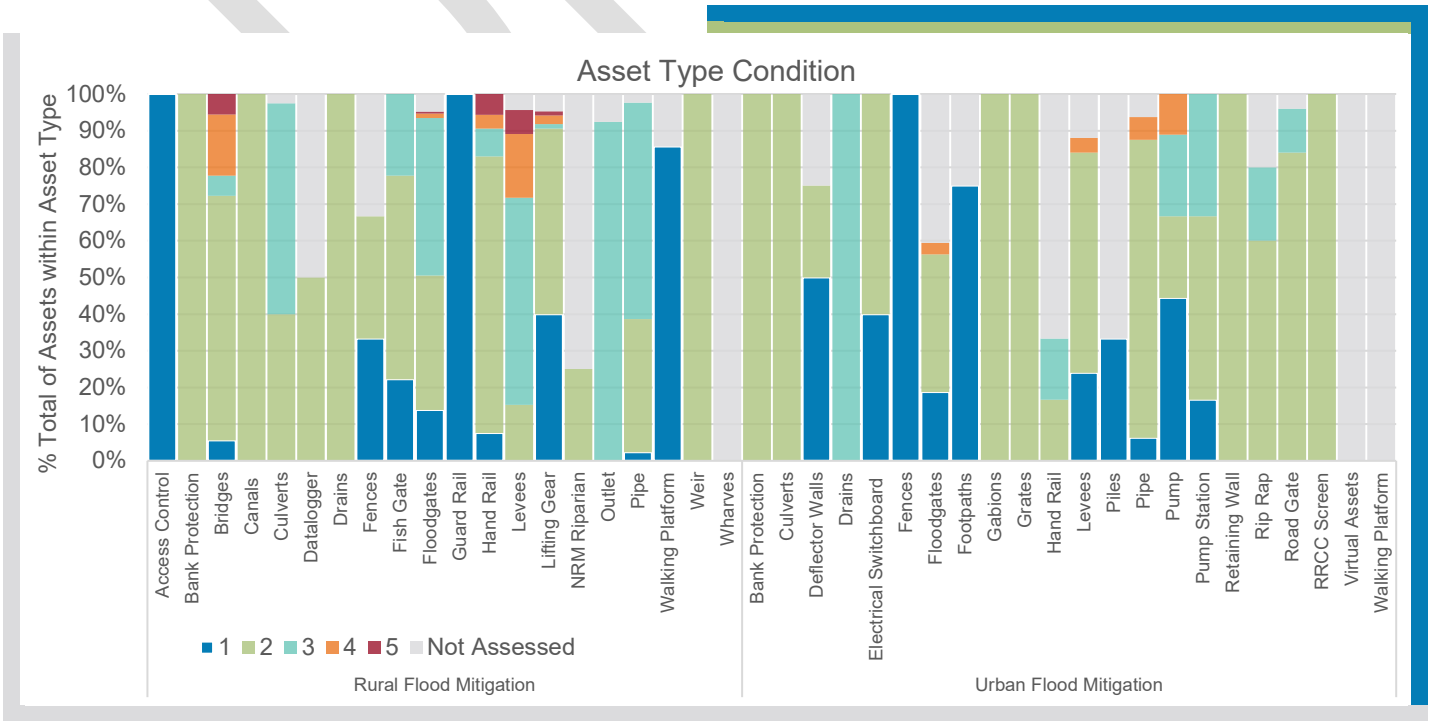
6.3. Asset condition



Condition Rating	Description
1	**Very good condition** Insignificant deterioration. No adverse service reports.
2	**Good condition** Minor defects only, meeting all service requirements
3	**Fair or average condition** Deterioration/defects evident, minor components or sections of asset may need replacement or repair but asset still functions, action required to return to acceptable service level
4	**Poor condition** Serious deterioration evident with defects affecting function of asset, high level of maintenance required to remain operational, consider renewal
5	**Very poor condition** Major deterioration, approaching unserviceable, failed or failure imminent, immediate need to replace most or all of asset, excessive maintenance costs incurred, health and safety hazard exist, unable to be serviced due to technical obsolescence

An inspection program has been in place since July 2017 to assess condition of our flood assets. An audit of the Lismore levee is undertaken in conjunction with Lismore City Council every six months. Rural flood assets are inspected by our Flood Mitigation Team Leader with support from the other flood mitigation operators. The frequency of these inspections is based on the risk level/criticality of the assets. Improvements to the consistency and reliability of condition assessments are ongoing. This includes developing a condition assessment manual and training with staff.

The graph below provides a summary of condition of rural and urban flood assets by types.



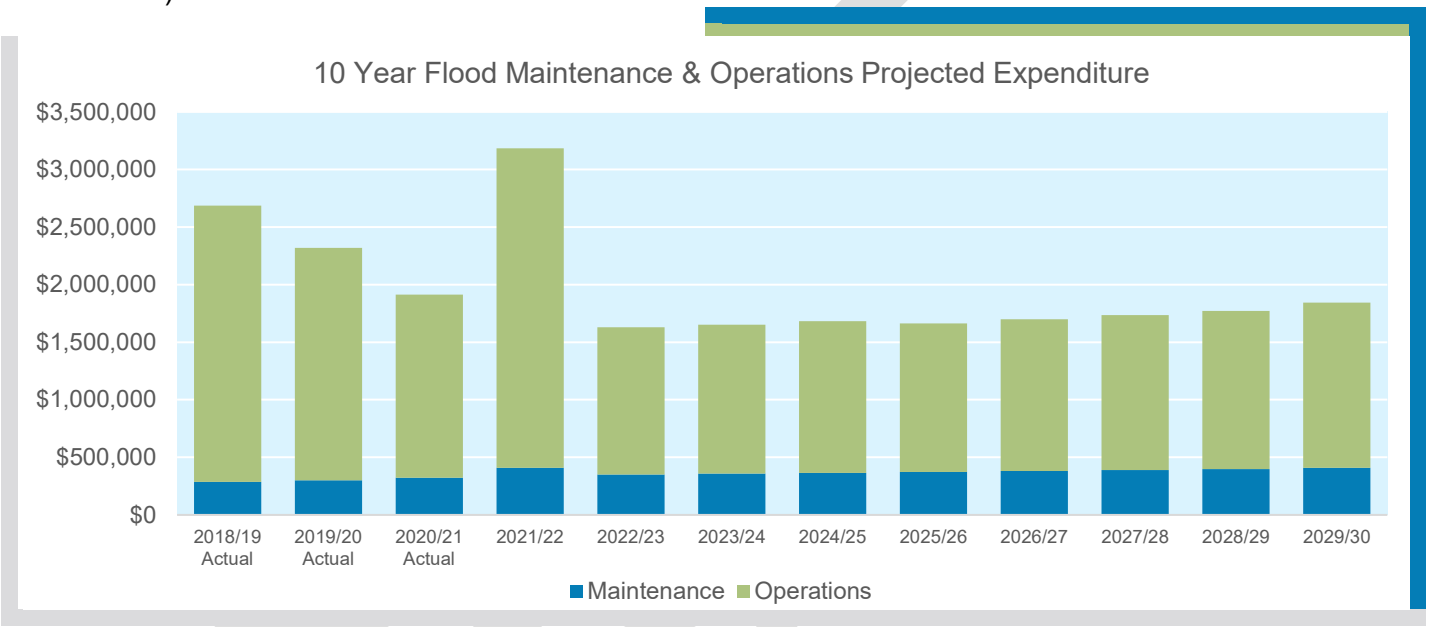
6.4. Asset capacity and performance

The capacity and performance of flood assets is currently not well understood or documented. An assessment of risk and criticality was completed in 2017. This was a desktop assessment, based on the size of floodgates, whether floodgates were primary or secondary, and use of best judgment for whether an asset was potentially protecting buildings based on aerial imagery. Understanding how our assets function, including what level of flood protection they provide, interdependencies with other assets, and what they are protecting, is required to define service expectations and enable assessment of the capacity and performance of our flood assets to meet those requirements. This work is part of the multi-year strategic review of our flood mitigation function which is currently underway.

7. Lifecycle Management

7.1. Operations and maintenance plans

The graph below provides an overview of operations and maintenance expenditure for flood mitigation (as at March 2022).



7.1.1. Operations framework

Our flood mitigation assets are operated in a manner that ensures our objectives are achieved at least cost with the impact of breakdowns minimised. Operational activities for our flood assets are summarised below.

Operational Activities

	Normal Conditions	Pre-Flood	Post-Flood
Actively Managed Floodgates	Open & close as specified in Active Floodgate Management Plans	Close actively managed floodgates	Open actively managed floodgates
All Floodgates	Monitor water quality as required	Check floodgates operational, prioritising critical gates	Inspect for blockages from flood debris or any damage Monitor water quality or any trapped fish
Levees Drains & Canals Pipes & Culverts	Activities for these assets tend to fall under maintenance as there are no operational tasks to undertake.		
Urban (Lismore levee system)	Operation of the Lismore levee system is conducted by Lismore City Council. They are responsible for operation of the floodgates, pumps and associated assets during normal condition as well as pre/during/post flood events.		

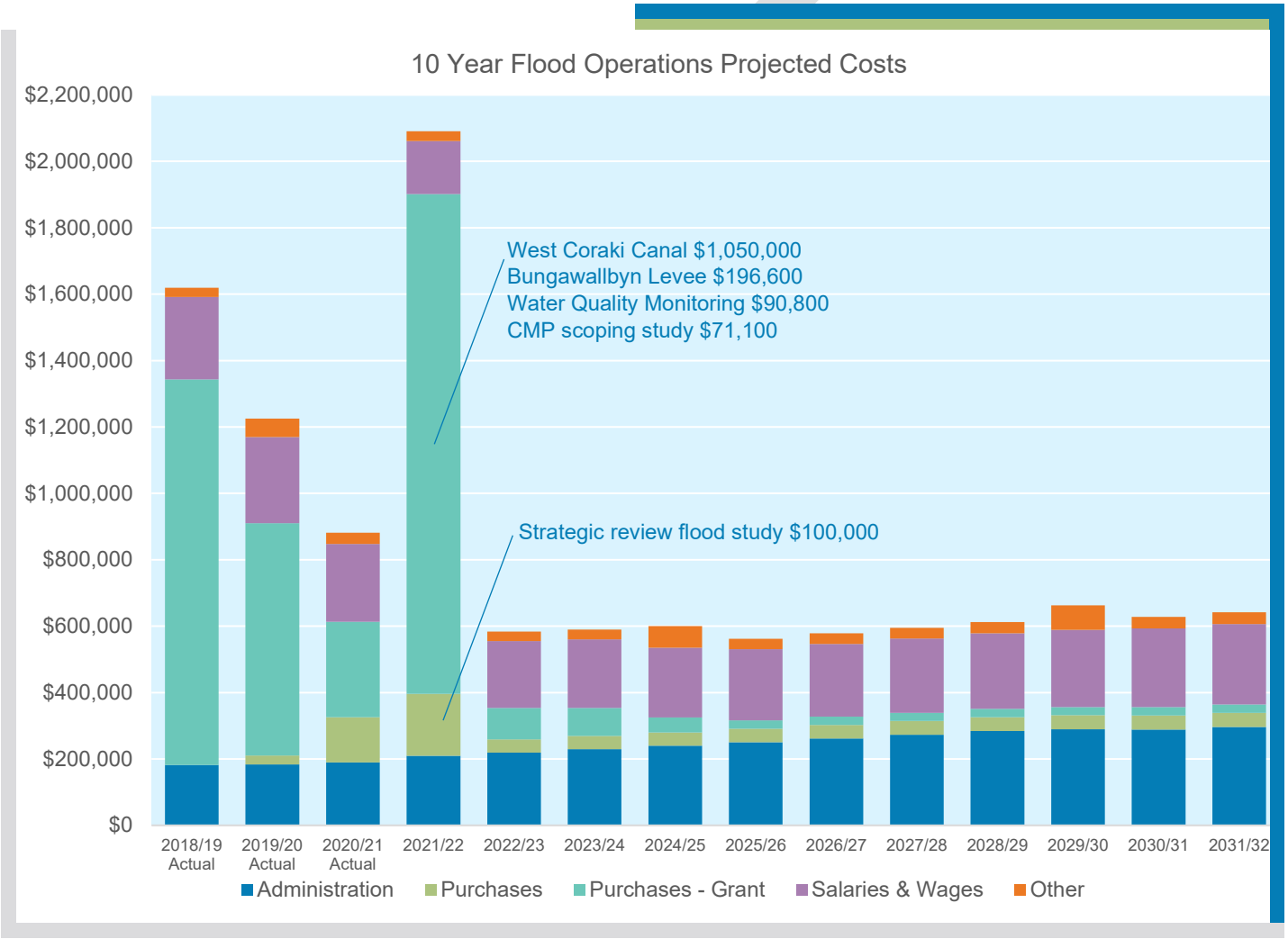
Management of these activities is undertaking with consideration of:

Performance Requirements	Constraints	Normal Operating Rules	Pre/Post Flood Operating Rules	Resources & Costs

In some situations, our floodgate assets are attached to an asset that is not owned or controlled by us. For example, we have floodgates attached to culverts under roads, where the road and culvert are owned by a constituent council or NSW Transport. In some cases, issues with these assets not owned by us, may impact on the ability of our asset to provide its required service, such as a blocked or broken pipe or culvert. Currently these issues are handled between our operational staff and their equivalent at the relevant organisation involved.

7.1.2. Summary of operations expenditure

Below is a summary of actual operational expenditure for flood assets from the previous three years and projected expenditure over the next ten years (as at March 2022).



Periodically, Council has the ability to access specific grant funding that is not included in the original budget process. By accessing these funds, large fluctuations occur in actual operating expenditure. Grant funded projects included in 'Purchases – Grant' in the graph above that have increased expenditure over the past four years include:

- Natural Disaster Relief Assistance Program – 2017 floods $1.3million
- Natural Disaster Relief Assistance Program – 2021 floods $1.2million
- Voluntary House Raising $285k
- Water Quality Monitoring $160k
- CMP scoping study $150k

7.1.3. Maintenance framework

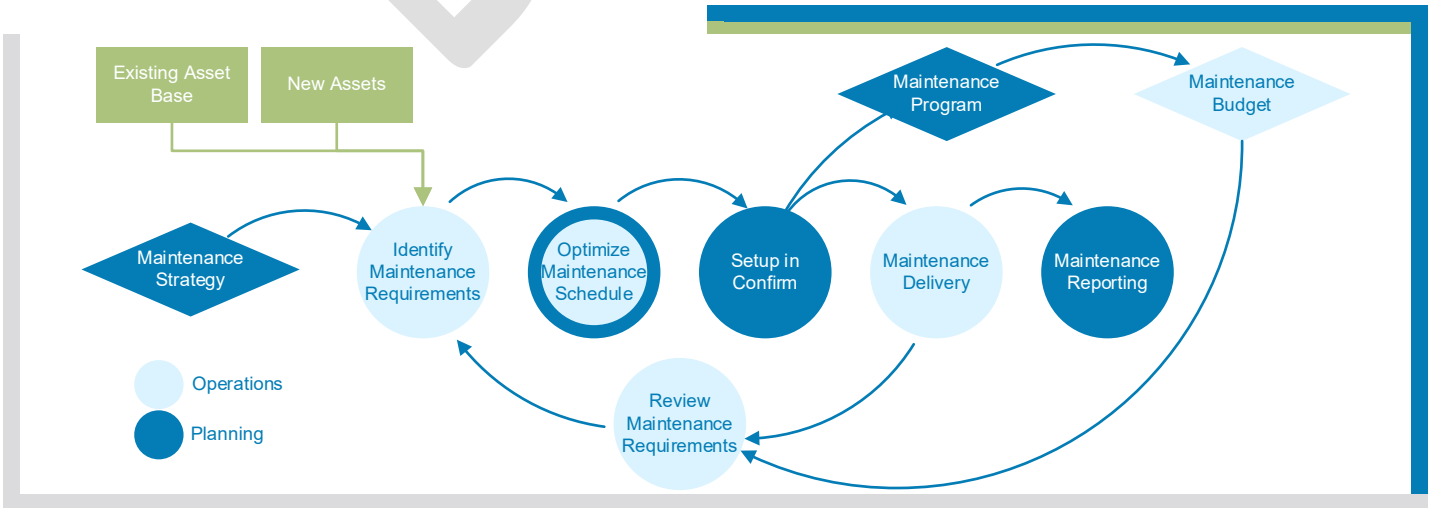
Our Asset Maintenance Strategy discusses our systems and approach to planned and reactive maintenance across the organisation. Our flood maintenance is currently reactive in nature. An inspection program is in place for flood assets to identify condition and defects. Defects identified are entered into our asset information system Confirm and referred to the Operations Engineering Manager to determine suitable response. There are currently no planned maintenance activities beyond inspections for our flood mitigation assets.

The table below provides a summary of maintenance activities undertaken on flood assets. This list is not exhaustive and other activities may be carried out as required.

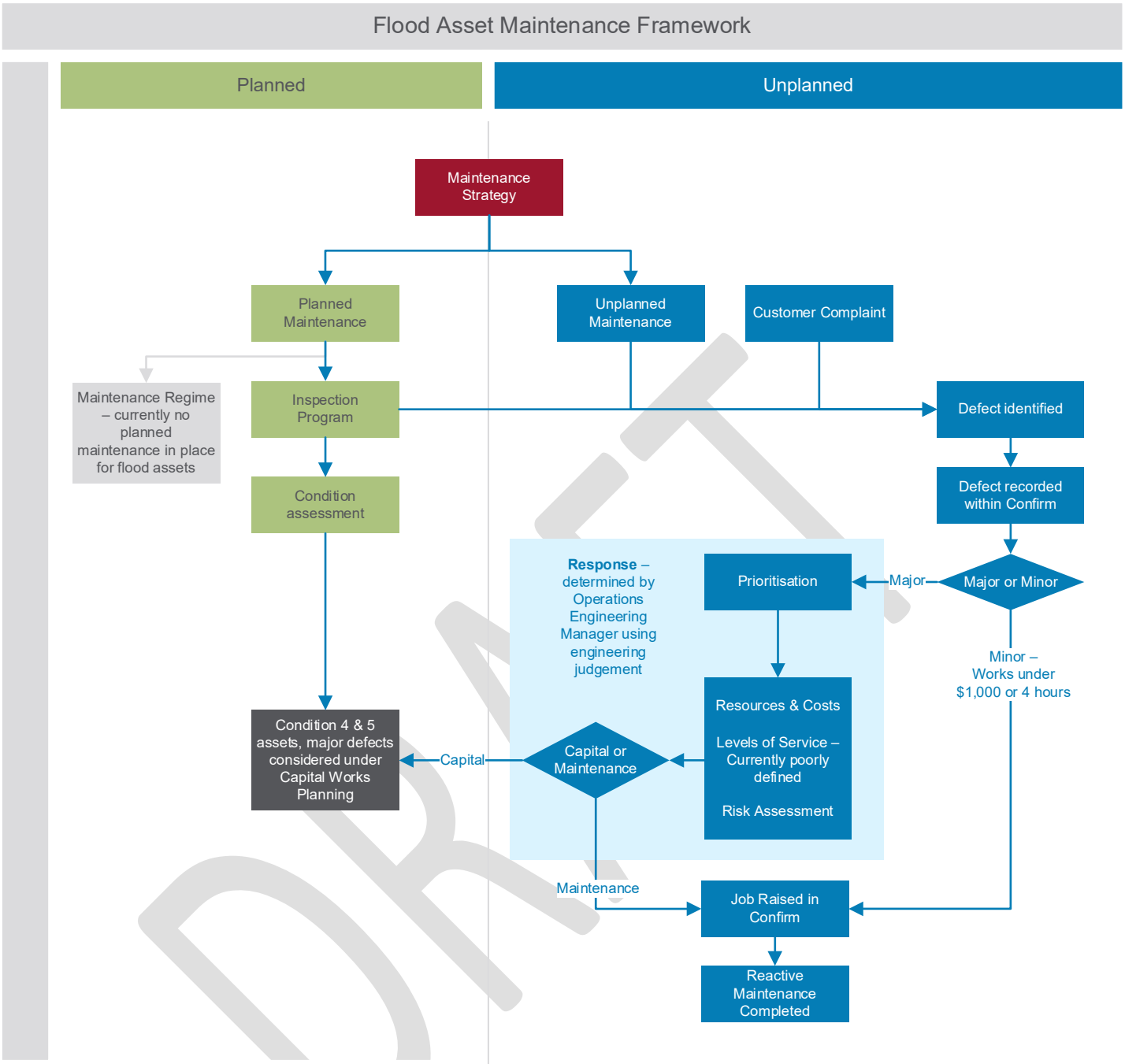
NA, mowing Maintenance Activities

	Inspections - Planned Reoccurring schedule managed in Confirm		Repairs – Reactive	Maintenance – Reactive
Floodgates	Risk	High Risk – 6 monthly Medium Risk – 2 yearly Low Risk – as needed	Replacing seals Replacing lifting gear cables, straightening floodgates	Clearing blockages, mowing around headwalls, clearing vegetation, proactive replacement of lifting gear components
	Active Floodgate Status	All actively managed floodgates – monthly		
Levees	Condition	High Risk – yearly Medium Risk – 2 yearly Low Risk – 5 yearly	Filling holes, animal burrows & other depressions, clearing vegetation	Mowing & slashing
Drains & Canals	Weeds	6 monthly	Minor bank stabilisation	Mechanical drain cleaning, weed spraying, mowing, slashing & vegetation control
	Condition	High Risk – N/A Medium Risk – 2 yearly Low Risk – 2 yearly		
Pipes & Culverts	Risk	High Risk – N/A Medium Risk – 2 yearly Low Risk – as needed	NA	NA
Urban (Lismore Levee System)	6 monthly condition inspection/audit completed in conjunction with Lismore City Council. Additional inspections after flood events.		All maintenance on the Lismore levee system conducted by Lismore City Council	

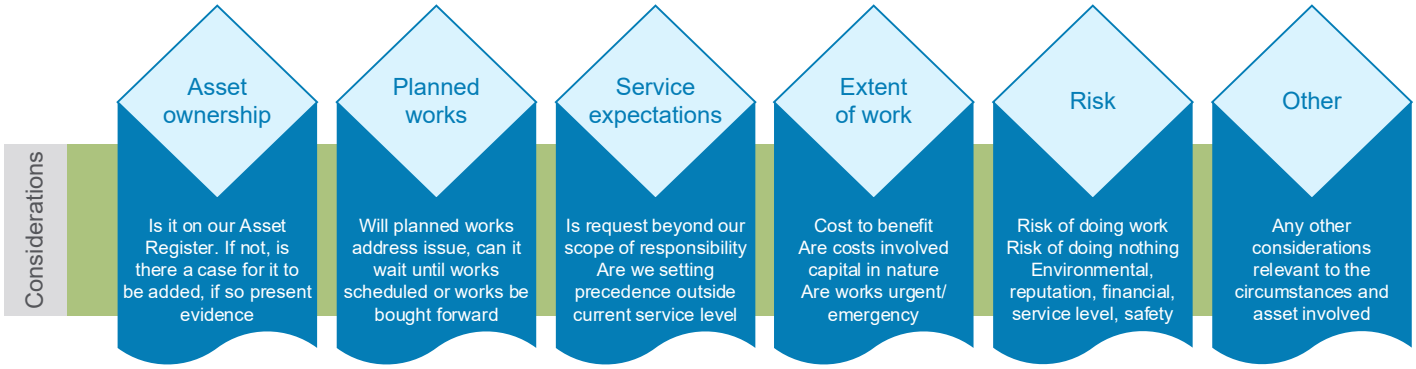
The diagram below provides an overview of how we identify and review maintenance requirements.



The framework below depicts our process for managing maintenance activities.

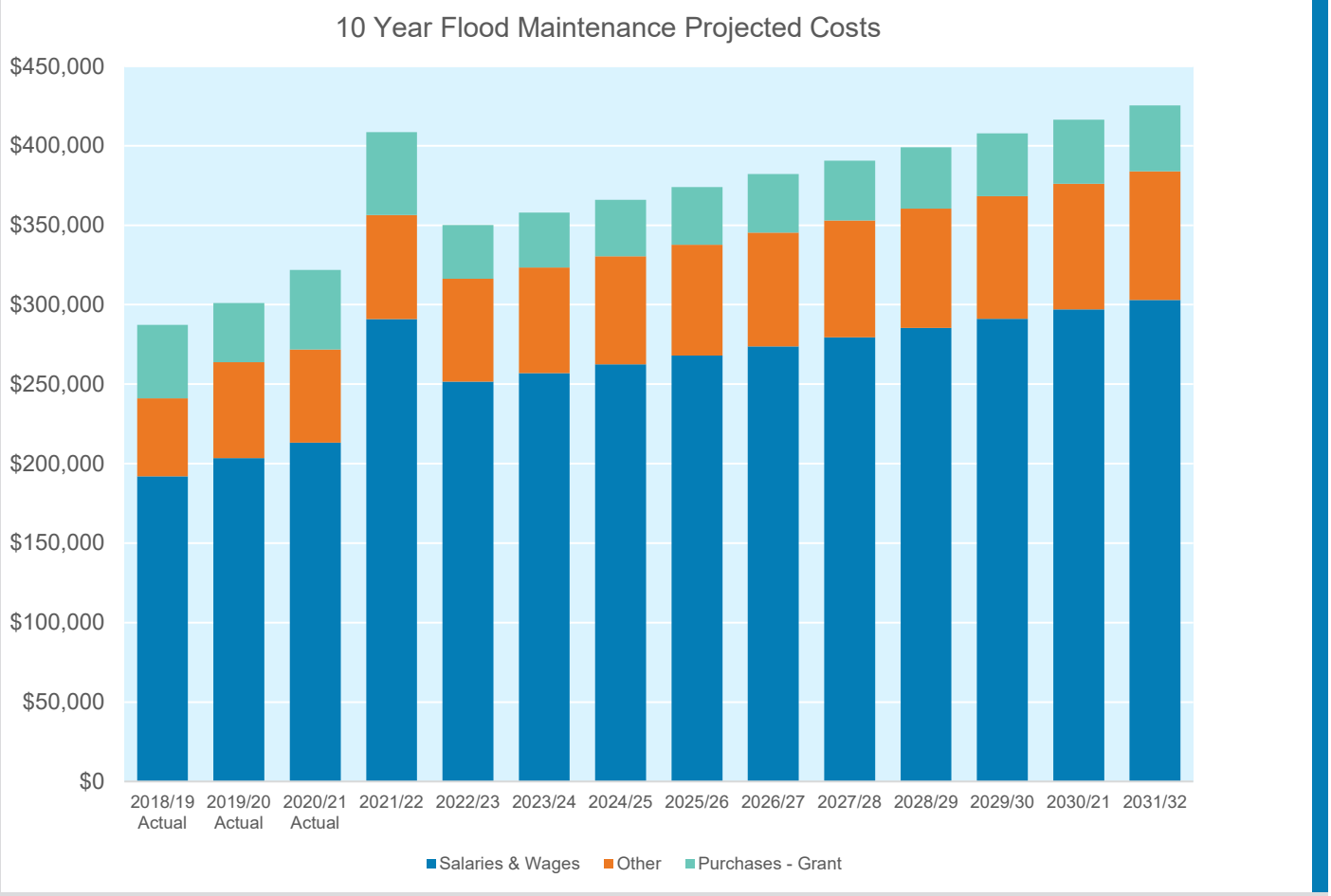


When looking at customer requests and maintenance to rectify defects, the following considerations form part of the decision-making process.



7.1.4. Summary of maintenance expenditure

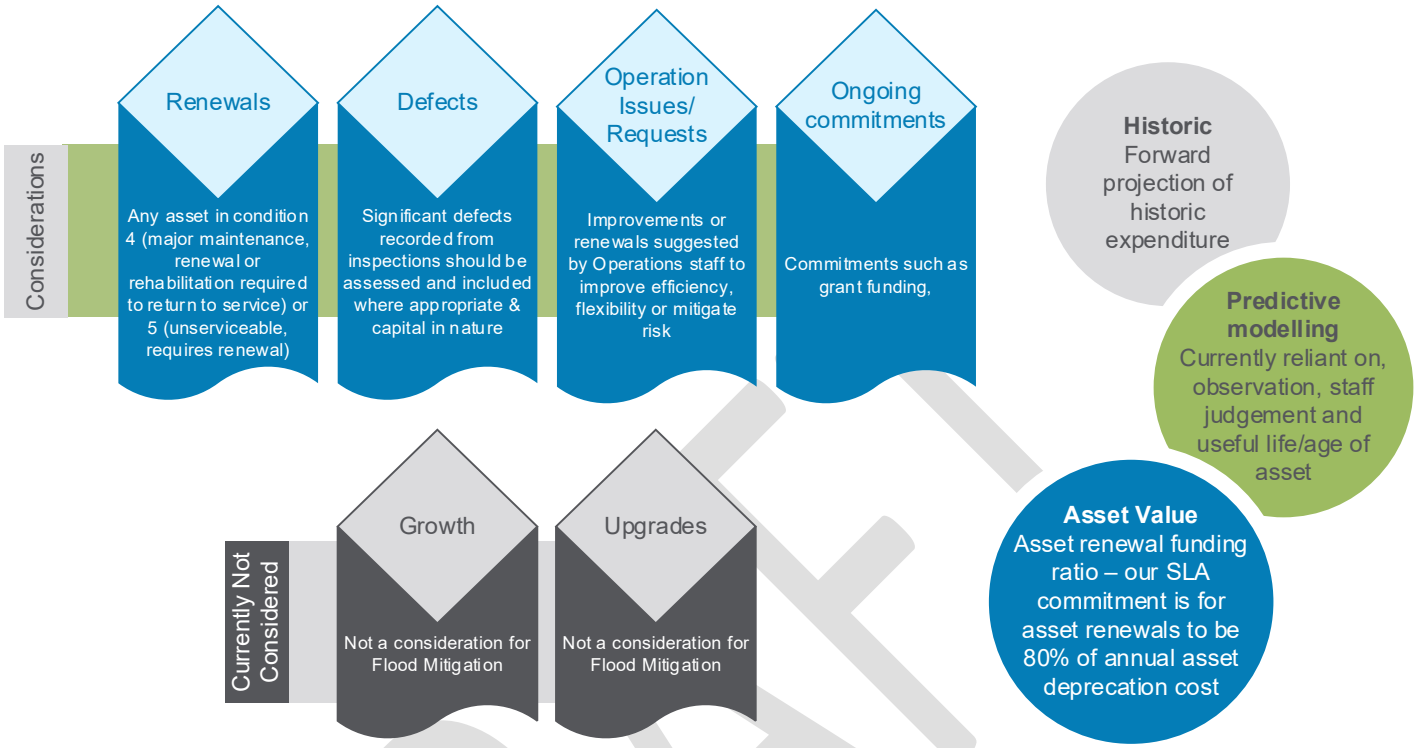
Below is a summary of actual maintenance expenditure for flood assets over the previous three years and projected expenditure over the next ten years (as at March 2022).



7.2. Capital works

7.2.1. Renewal/Replacement

Asset renewals are undertaken to ensure the ongoing reliability of existing infrastructure to deliver its required service. Our capital works planning process begins in October each year, with our 10-year budget adopted at our June Council meeting in the subsequent year. The following inputs are considered in the capital works planning process:



Renewal activities identified for our flood mitigation assets generally consist of the following:

Renewal Activities	Description
Floodgates	Fabrication and installation of replacement floodgates. Replacements undertaken on a priority basis considering age, condition, risk ranking of the floodgate, and in accordance with available budget and resourcing. A lifting gear replacement program is in place to replace lifting beams and galvanising to increase corrosion resistance.
Pipe & Culverts	Installation of replacement pipes and culverts undertaken on a priority basis.
Levees	A 4-year program of works has been identified and prioritised for renewal works on levees based on condition assessments undertaken in 2017. This work includes actions to address low spots, erosion, slumps, holes and vegetation clearing. Much of this work is heavy maintenance that is being capitalised due to the value of the work and extension of the useful life of the assets.
Drains & Canals	There are currently no planned renewal works undertaken on canals or drains.
Other – eg walking platforms, fencing, handrails etc	Replacement of assets such as walking platforms etc is undertaken as they fail or to address safety risks.

Renewal strategy

The table below provides a general summary of the strategies used when planning flood mitigation asset renewals. Approaches may vary depending on individual situations, such as emergency works for example.

	Renewal Strategy
Floodgates	Low Risk - Run to fail Our low risk floodgates are small diameter gates with a low asset value. These gates are replaced as they fail. Replacement stock kept in store to allow fast action in event of a failure
	Medium Risk – asset flagged for intervention when assessed at a condition 4
	High Risk – asset flagged for intervention when assessed at a condition 4.
Levees	Going forward, focus is on preventative maintenance, with renewals largely to address emergency works as result of damage caused by a flooding event
Drains & Canals	Currently no renewal program in place beyond emergency works and works to address significant defects
Other – eg walking platforms, fencing, handrails etc	Low risk – run to fail or rectification of identified safety issue
Pipes & Culverts	Low risk – run to fail

Renewal ranking criteria

Renewals are prioritised by assessing proposed works against the following criteria to determine the risk and consequence of the asset failing should the works not be completed:

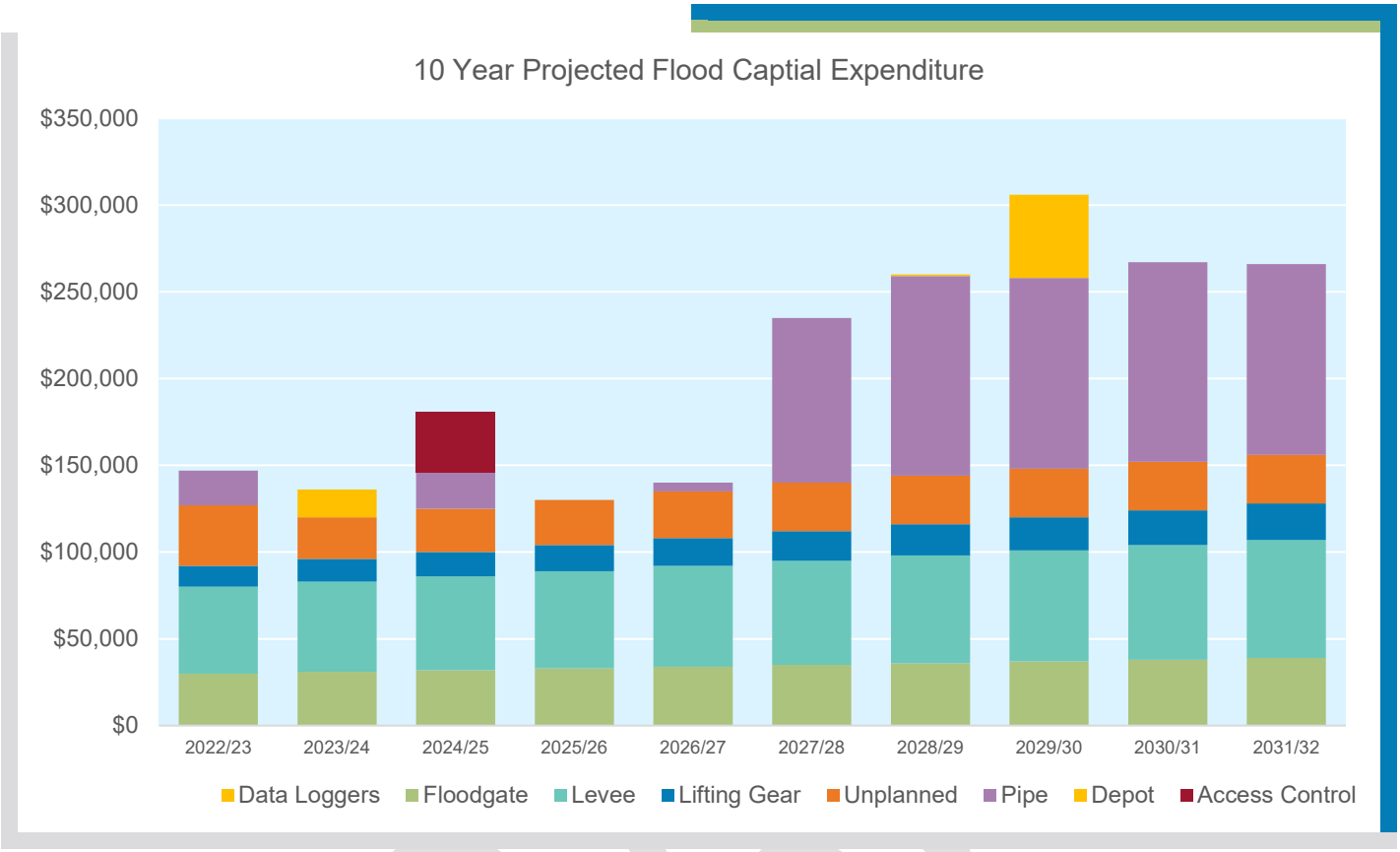
	Description
Safety	The potential for injury to staff or public due to operation or failure of an asset/service
Staff Morale	The subjective assessment of impacts on staff morale from ongoing operational issues
Loss of Service	The ability of the asset to perform its required service
Reputation	The potential for reputation damage/media attention from the operation or failure of an asset/service
Redundancy	Are there alternative options to provide service (generally not applicable for flood assets)
Water Quality	Impact of ongoing operation on water quality
Environmental	The potential for environmental damage as the result of the operation or failure of an asset/service
Third Party Losses	The potential for damage to third parties from non-functional asset/provision of service
Business Cost	The cost to repair/replace the asset so it can provide its required service along with any other incidental costs to business

The impact of each of these criteria are ranked as:

Insignificant | Minor | Moderate | Major | Catastrophic

Summary of future renewal expenditure

The graph below provides an overview of our projected expenditure on capital renewals over the next ten years (as at March 2022).



Major works

1. *Unplanned* – an ongoing budget item for unplanned capital renewals is included annually. This budget covers unexpected failures and allows for run to fail of low value/low risk assets.

2. *Levee works program* – in 2017, condition and risk assessments were undertaken on all rural levees. This assessment identified many defects to be addressed. A prioritised program of works has been identified. An ongoing annual budget has been put in place for heavy maintenance to be undertaken on our levees to address impairments.

3. *Pipes and Culverts* – A review of forward capital expenditure against depreciation, and current condition identified a potential funding gap for pipe and culvert assets. Additional expenditure has been included to minimise this gap and improve asset sustainability. Condition assessments will be undertaken in the next two years to prioritise renewals with more accurate cost estimates and timing being developed to replace the nominal forecast expenditure included in the second half of the program.

7.2.2. Creation/Acquisition/Upgrade plan

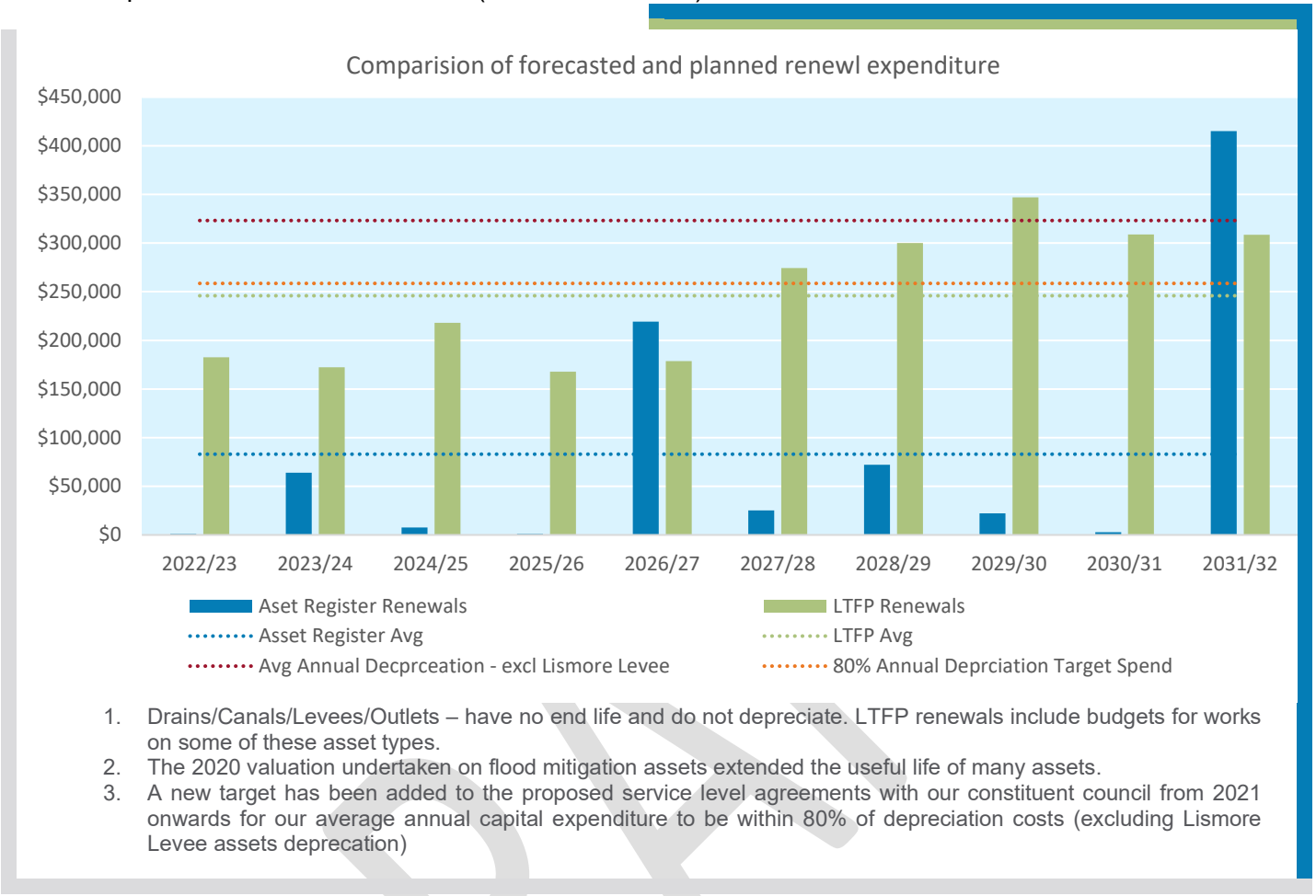
The focus of our flood mitigation function is on maintaining and operating our current asset base and the services they provide. There are no plans for upgrading or creation of new assets.

7.2.3. Disposal plan

Disposal includes any activity associated with the disposal of a decommissioned asset. We will dispose of an asset when it becomes uneconomical to maintain and/or replace, or the service it provides is deemed as no longer required or within our scope of responsibility. Assets identified for disposal will be investigated to determine the required levels of service and the available options for alternate service delivery, if any. Disposal of assets from our asset register require the approval of the General Manager.

7.3. Service consequences

The graph below depicts the variance between the expected renewal of assets from our asset register data, asset renewals identified in our long-term financial plan and our target of spending approximately 80% of our annual depreciation on asset renewals (as at March 2022).



1. Drains/Canals/Levees/Outlets – have no end life and do not depreciate. LTFP renewals include budgets for works on some of these asset types.
2. The 2020 valuation undertaken on flood mitigation assets extended the useful life of many assets.
3. A new target has been added to the proposed service level agreements with our constituent council from 2021 onwards for our average annual capital expenditure to be within 80% of depreciation costs (excluding Lismore Levee assets deprecation)

7.3.1. What we cannot do

Our financial reserves for flood mitigation have been in decline over the last few years. To continue to provide the current level of service, an increase in operating income over the next few years will be required to move the fund back into a positive cash result. If this increase does not occur, actions will need to be taken to address shortfalls that will have a consequence on service levels.

Recently, the Keith Hall options study has been funded by accessing grants. Undertaking any similar studies in the future that could provide benefit to the strategic planning and operation of our assets would be reliant on accessing grant funding or other outside income. Projects such as the ongoing strategic review of flood mitigation have been funded by our reserves. These types of projects are currently not funded by our existing income structure.

7.3.2. Service consequence

Our capability to continue delivering current service levels is reliant on increases that have been proposed to the financial contributions from our constituent councils, as outlined in section 8.3. Without this increase, we would need to adjust the level of service we provide as our cash reserves would be depleted by 2023. These adjustments may include reducing staff or lowering spending on asset renewals or maintenance, which would result in ongoing impairment of our assets and have an impact on the service level able to be provided.

7.3.3. Risk consequence

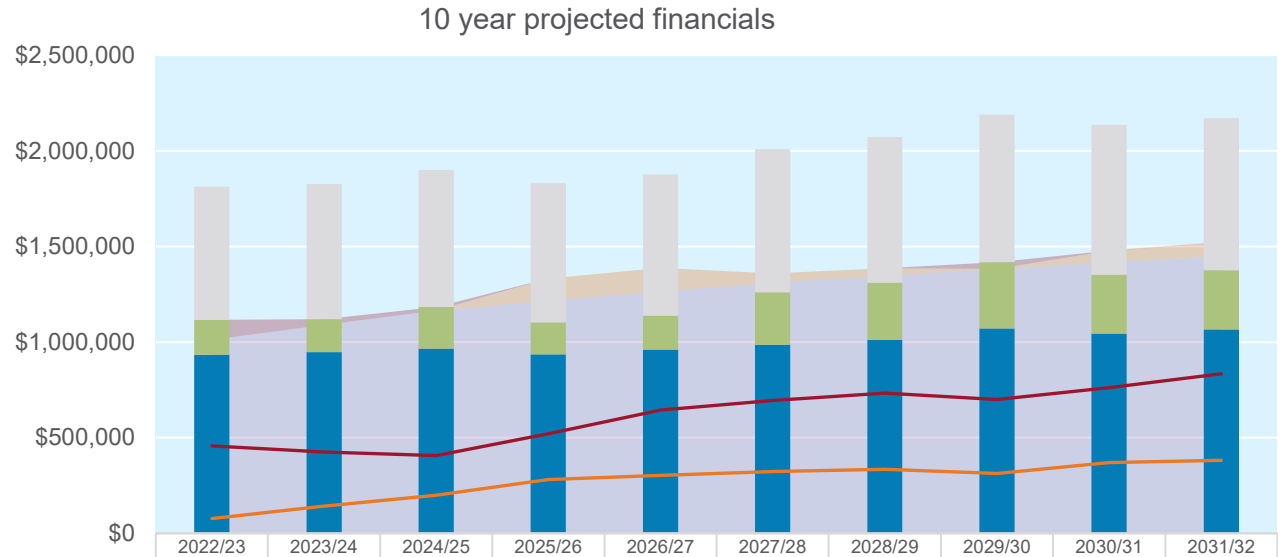
If proposed constituent council contributions are not implemented, the possibility of increased risk due to declining asset health would need to be considered. As assets become impaired due to reduced spending on maintenance and renewals, failure would be more likely.

8. Financial Summary

8.1. Financial projections

We undertake long term financial modelling for flood mitigation on an annual basis. The aim of this modelling is to ensure we meet funding requirements of the capital works program and other lifecycle costs associated with operating and maintaining our assets, to ensure we maintain an appropriate level of cash reserves and forecast our pricing structure over the long term.

The table below provides a summary of our flood mitigation operating expenses, income and cash reserve over the next 10 years (as at March 2022).



	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32
From Reserve	$105,300	$30,700	$19,000	$0	$0	$0	$0	$34,600	$0	$0
To Reserve	$0	$0	$0	$114,300	$124,100	$49,600	$39,000	$0	$62,000	$73,300
Income	$1,011,600	$1,089,100	$1,165,200	$1,217,700	$1,263,000	$1,309,500	$1,346,400	$1,383,200	$1,415,300	$1,449,000
Depreciation	$695,300	$705,700	$716,300	$727,000	$737,900	$749,000	$760,200	$771,600	$783,200	$794,900
CapEx	$182,700	$172,400	$218,100	$167,800	$178,600	$274,400	$300,200	$347,000	$308,800	$308,600
OpEx	$934,200	$947,400	$966,100	$935,600	$960,300	$985,500	$1,011,200	$1,070,800	$1,044,500	$1,067,100
Reserve Balance	$456,300	$425,600	$406,600	$520,900	$645,000	$694,600	$733,600	$699,000	$761,000	$834,300
Operating Result	$77,400	$141,700	$199,100	$282,100	$302,700	$324,000	$335,200	$312,400	$370,800	$381,900

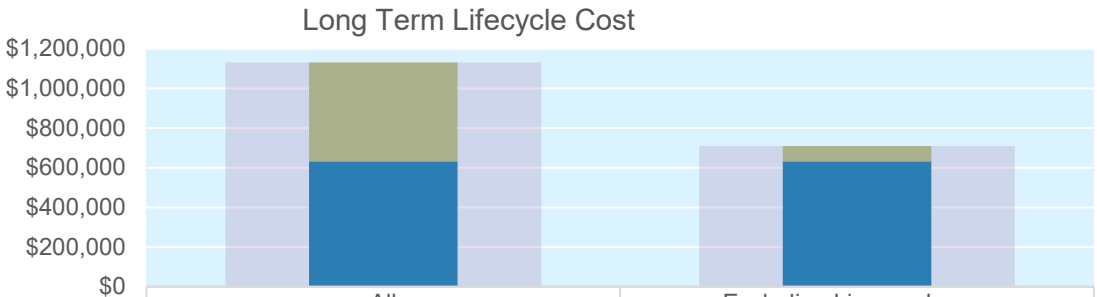
8.2. Financial Sustainability of service delivery

Over recent years our flood mitigation fund has recorded operating losses however it has returned to a positive cash result in 2021/22. This positive result was dependent on adoption of increased constituent council contributions as outlined below. These operating losses have resulted in our cash reserves falling below our adopted cash reserve policy and it is expected to remain below the target reserve balance until 2026/27. Our flood mitigation cash reserve is forecasted to fall from $2.3 million in 2018 to $406,600 in 2025, before gradually increasing to $834,300 in 2032.

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the asset life. Life cycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure will vary depending on the timing of asset renewals. A shortfall between life cycle cost and life cycle expenditure is the life cycle gap. A gap between life cycle costs and life cycle expenditure gives an indication as to whether present expenditure covers the assets that are being consumed each year.

Ownership and depreciation for the assets comprising the Lismore levee system are included in our asset register, however Lismore City Councill fund the operational, maintenance and capital renewal costs of these assets. Therefore, it is more realistic to look at the outcome excluding depreciation of the Lismore levee system.

The graph below shows the sustainability of our lifecycle costs (as at March 2021).



	All	Excluding Lismore Levee
Lifecycle gap	$498,250	$77,330
Annual Lifecycle expenditure	$632,800	$632,800
Annual lifercycle cost	$1,131,050	$710,130
Lifecycle sustainability index	0.56	0.89

8.3. Funding strategy

Our flood mitigation fund has been under financial pressure. We have a comparatively large asset base to maintain given the level of assured income. Recurrent operating deficits have occurred, and cash reserves are below preferred levels.

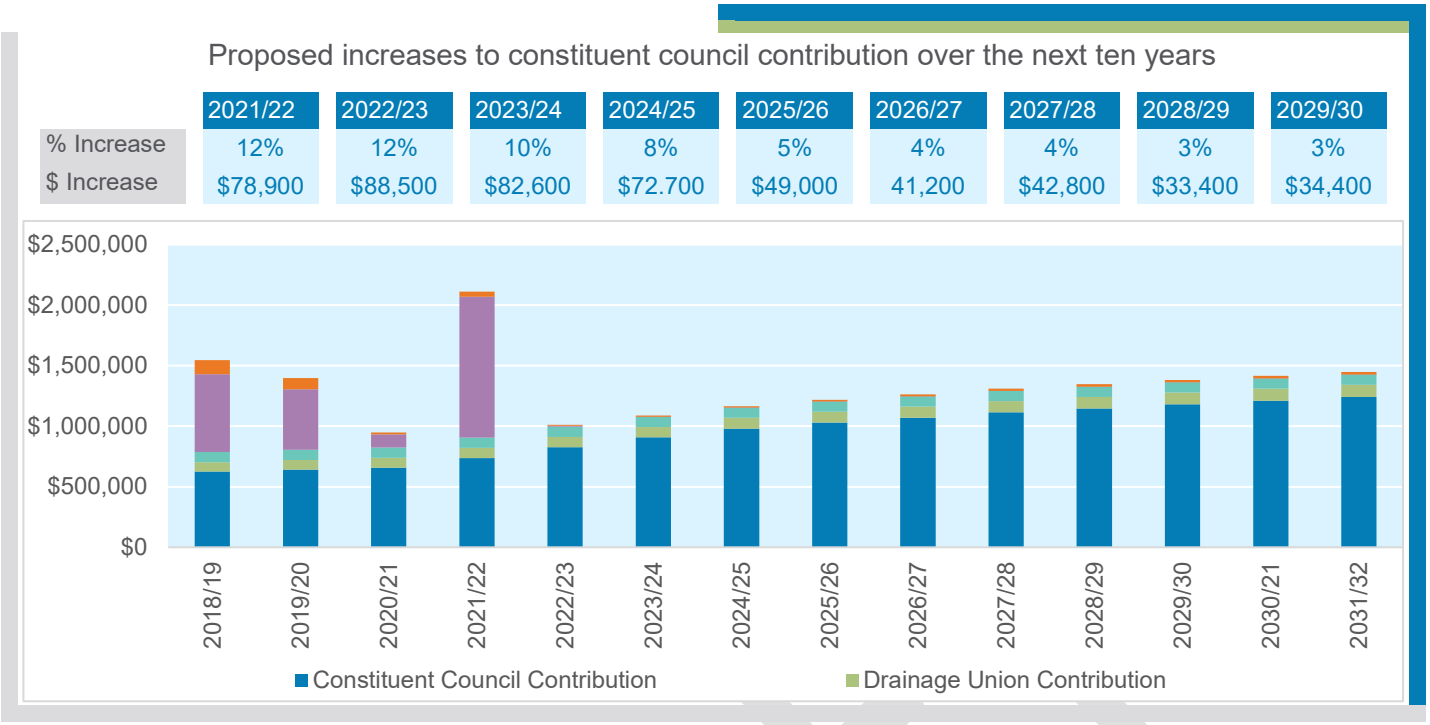
Our funding sources are outlined below.

Funding sources	Description	% of Total*
Constituent Council Contributions	Income contributed by the three constituent councils that benefit from the works and services provided by Flood Mitigation. Each council contributes an equal share.	48%
Drainage Union Contribution	The constituent councils pay an annual Drainage Union contribution. These contributions are restricted for works on ex-drainage union assets. These contributions are collected by the constituent councils from properties that benefit from ex-drainage union assets that Rous now owns.	6%
State Government Grant	Annual grant funding from for the State Government for maintenance activities. This grant provides $84,600 annually. This amount has not increased since the 1980s and is unlikely to increase in the future. It is also provided under a one for one funding arrangement requiring we match funding for the activities covered by the grant.	6%
Other grant funding	Other grant funding that we may receive, such as grants for voluntary house raising in flood prone areas, to undertake studies, or disaster recovery funding. These grants provide funding for one off agreed works or services. They are not predictable as income in forward forecasts.	36%
Other income	Includes items such as interest from cash reserves	4%

*average percentage of total funding over last 4 years

Increases in constituent council contributions have been limited to the nominated rate peg cap as determined by the Independent Pricing and Regulatory Tribunal for several years as set out in the previous service level agreements with our constituent councils. To ensure our flood mitigation fund remains sustainable new service level agreements have been developed for 2021-2025 which remove this restriction. A proposed increase in contributions has been communicated with the constituent councils to ensure we can continue to meet service levels for our flood assets into the future. These increases will be split evenly across the three contributing councils. The total constituent councils' contribution in 2022 is $737,100 and by 2032 the contribution is forecast to be $1,241,500 (68% increase).

The diagram below depicts the proposed contribution increases beyond cost-of-living indexation (as at March 2021).



8.4. Forecast reliability and confidence

8.4.1. Assumptions

This section details the key assumptions made in developing this Asset Management Plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to provide an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this AMP are:

- Asset inventory is correct as at 30 June 2021 for the purpose of providing annual depreciation costs for the asset classes and condition assessments
- Maintenance allocations are largely based on maintaining the current level of expenditure
- All cost values are presented in current (2022) dollars

Accuracy of future financial forecasts may be improved in future revisions of this AMP by the following actions:

- Implementation of improved systems for better capture of asset data
- Update and refining the required renewal expenditure based upon improved data within the asset register
- Improving asset inspection and reporting procedures
- Review of the renewals program based on condition and useful life data
- Review of asset renewal profiles and depreciation rates/calculations as improved information becomes available
- Ongoing review and update of the levels of service and the required operating and maintenance regimes

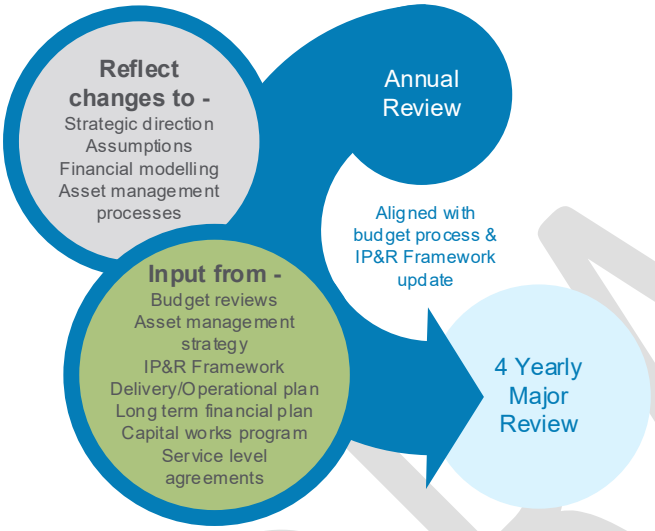
9. Plan Improvement & Monitoring

9.1. Improvement program

Our Asset Management Strategy was adopted by Council in August 2020. It outlines our commitment to continual improvement of our asset management practices. This strategy identified improvement actions to be implemented over the next four years to advance our overall asset management maturity. These improvement actions cover all aspects of our infrastructure asset management across our functional areas and services. A detailed implementation plan is currently being developed to outline the issues being addressed, desired outcomes, indicators of success and general approach to the improvement actions. There is significant work to be undertaken, and part of the monitoring and review process outlined below will include reviewing both the approach and resources required to carry out our improvement plan and adjust implementation of actions as required.

9.2. Monitoring and review

This Asset Management Plan forms part of our overall asset management system. Monitoring and review of the document and outcomes achieved is undertaken as part of our planned review process for the asset management system.



9.2.1. Monitoring and review procedure

Review of our Asset Management Plan will incorporate any changes to our processes from implementing asset management improvement actions, as well as reflecting any financial or strategic direction adjustments or changes to any assumptions the plan is based upon. The updated plan will be presented to Council for formal adoption.

9.2.2. Review Frequency

Our Asset Management Plan will be reviewed and updated on an annual basis. A major review and update will be undertaken every four years in line with our IP&R framework updates.

9.2.3. Performance measures

The performance and outcomes of our asset management, including implementation of this plan is monitored by our asset management steering committee. Formal performance measures and reporting are currently under development.

9.3. Roles & Responsibilities

The table below outlines the roles and responsibilities for the Asset Management Plan.

Asset Management Plan		
Development	Asset Management System Officer	Utilise industry standards to develop and draft the document
Review	Asset Management Steering Committee Relevant Operations, Planning & Finance staff Leadership Team	Review and provide input on content
Update	Asset Management System Officer	Complete annual update of document
Adoption	Leadership Team Council	Formally adopt the document
Delivery	Operations, Planning & Finance teams	Deliver the actions outlined in the plan