Edward River Council

Drainage and Flood Mitigation

Asset Management Plan

May 2019

Version No.: 0.2

How to use this Plan

This Asset Management Plan (AMP) is a tactical document to support Councils understanding of its Drainage and Flood Mitigation assets, service levels, risks, and to provide operational and capital expenditure forecasts that will deliver the community outcomes detailed in the Community Strategy 2030. The AMP is set out in the following format to support easy navigation of its contents such that specific information can be readily identified to suit the reader's need.

- **Executive Summary**
  This provides an overview suitable for obtaining a high-level understanding of the key issues and outcomes of the AMP. This is intended for senior decision makers and is supported by the detail in the following sections that make up the body of the AMP.
- **Section 1 - Introduction**
  This section is the introduction that defines the plan's purpose, its scope, and how the AMP aligns with corporate objectives and goals. It 'sets the scene' for the AMP and how it relates to the wider organisational plan framework.
- **Section 2 - Data Details**
  Defines the AMP's data inputs and assumptions. It includes the Asset Summary, Prior Year Infrastructure Delivery, Asset Age, Asset Condition Assessment Criteria, Results Summary, Asset profiling, Hierarchy, Useful Life, and Data Confidence ratings.
- **Sections 3, 4, and 5 – AMP Inputs (Service levels, Risk and Growth)**
  Defines Council's service levels, current risks and demand considerations that have been used in developing this AMP. This is the basis on which the following sections have been developed.
- **Sections 6, 7, 8, 9, and 10 - 10-year forecasts**
  Provides the detailed 'output' of the AMP development process with forecasts over a 10-year horizon of the works required to maintain the current service levels, mitigate identified risks, and cater for service growth and increased demand.
- **Sections 11, 12, and 13 - Financial forecasts**
  focus on the financial aspects of delivering these service levels including anticipated 'financial sustainability' performance. This section is particularly relevant to inform decision making and guide continual improvement in both the AMP and achieving corporate goals.
- **Section 14 – Findings and Recommendations**
  Provides a summary of the key issues and actions to be considered by Council. It includes a statement on the reliability and confidence of information to also be considered.
- **Section 15 – AMP Improvement Plan**
  Provides an action plan to improve future iterations of the AMP, particularly the improvement of the plan's accuracy and reliance as a decision-making tool.
- **Appendices**
  Information which is required in the AMP as reference is in the appendices. It also includes detailed works programs for new and renewal capital works that align with funding requirements and are to be aligned with short to medium term detailed operational planning.

Document Control

Distribution / Stakeholder list

All key stakeholders are to be included on the distribution list.

Name	Initial	Date	Title / Business Unit
Oliver McNulty			*Director Infrastructure*
Mark Dalzell			*Manager Engineering & Assets*
Michael Todd			*Assets & Procurement Administrator*
Warwick Newell			*Manager Operations*
Rindayi Matienga			*Manager Finance*

** Stakeholders are to initial the final document to indicate that the report has been sighted and reviewed.*

Revision History

Document Version	Date	Comments	Author	Reviewer
0.1	*14/01/2019*	*Initial Draft*	*Randall Scott*	*Michael Todd*
0.2	*22/03/2019*	*Revised Draft*	*Randall Scott*	*Hans Muller*
0.3	*22/05/2019*	*Final Draft*	*Randall Scott*	*Peterson Asante*

Certification

As the Principal officer/Asset Custodian responsible for preparing this AMP, I certify that it:

- Has been based on a series of assumptions and the best available data at the time;
- Provides a rationale for and underpins the renewal funding as specified in the related 10-year service financial forecasts; and
- Provides a strong platform from which to continue asset management advancement by identifying several areas for further improvement.

Principal Officer (if applicable): _____Signature: _____

Asset Custodian: _____Signature: _____

Date: _____

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Executive Summary

Purpose

The purpose of this Asset Management Plan (AMP) is to consolidate Councils understanding of its Drainage and Flood Mitigation assets, service levels, risks, and to provide operational and capital expenditure forecasts that will deliver the community outcomes detailed in the Community Strategy 2030.

The plan will support informed decision making, guide Long Term Financial Planning budget requirements and provide a path to further improve the accuracy and confidence in future iterations of this Plan.

Scope

This Asset Management Plan (AMP) covers the Drainage and Flood Mitigation Assets (the Assets) that support the delivery of services to the Edward River Council (Council) Community. It has been prepared based on the International Infrastructure Management Manual (IIMM) the recognised guideline for asset management in Australia.

This AMP uses data available within Council in 2017 including Council's audited financial asset register, based on revaluations undertaken by APV in 2017. Where possible, the financial register has been supplemented by historical condition data.

The Assets

The Drainage and Flood Mitigation assets are valued at $52.5 M and are apportioned into asset categories as detailed in Table 1 and shown in Figure 1 below.

Table 1 Drainage and Flood Mitigation Assets Summary

Asset Type	*Quantity (No. of Assets)*	*Replacement Value (June 2018)*
Conduit	*3,166*	*$24,350,272*
Open Drain	*8*	*$226,701*
Lagoon	*15*	*$3,259,675*
Levee	*52*	*$18,970,544*
Inlet/outlet	*311*	*$307,810*
Pit	*1,990*	*$5,126,710*
GPT	*10*	*$181,521*
Other	*2*	*$43,073*
Kerb and Gutter	*9*	*$72,121*
Total		**$52,538,426**

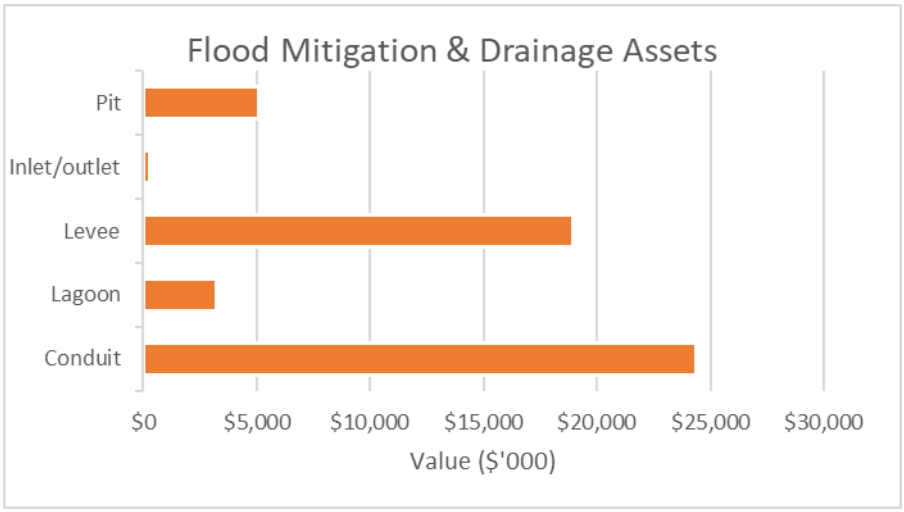


Figure 1: Drainage and Flood Mitigation Assets Summary

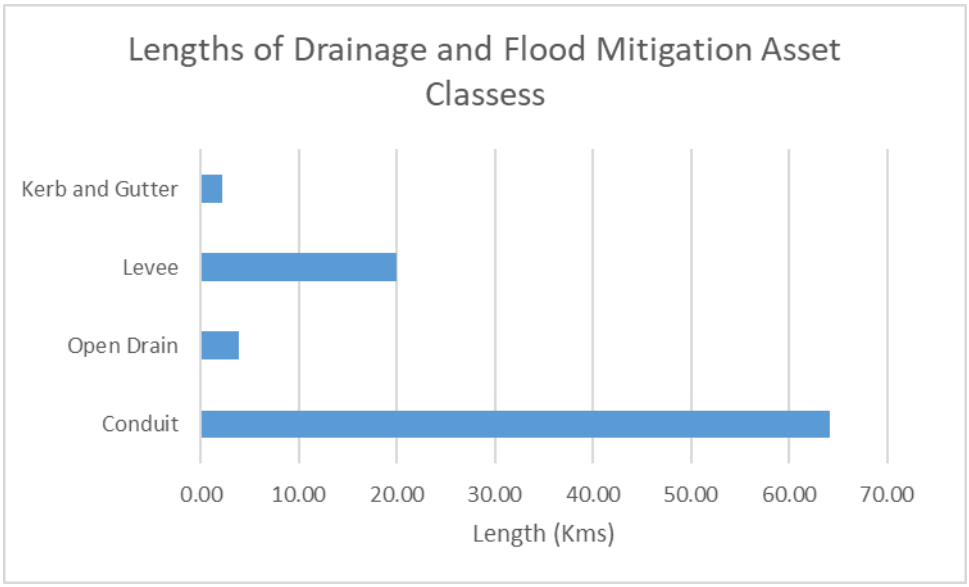


Figure 2:Length of Drainage and Flood Mitigation Assets.

Asset Condition

The majority (89%) of the DFM assets are in good condition and do not require any attention other than routine maintenance. However, Council's asset data indicates that 2.6% ($1.3M) are in very poor condition and are failing or have failed and an additional 8% ($4.2M) are in poor condition and showing significant deterioration.

The majority (97%) of the poor and very poor assets are the underground conduits and pits. The condition of these assets is based on the assets age, therefore further investigation and condition assessments are required to confirm these ratings and the need for action.

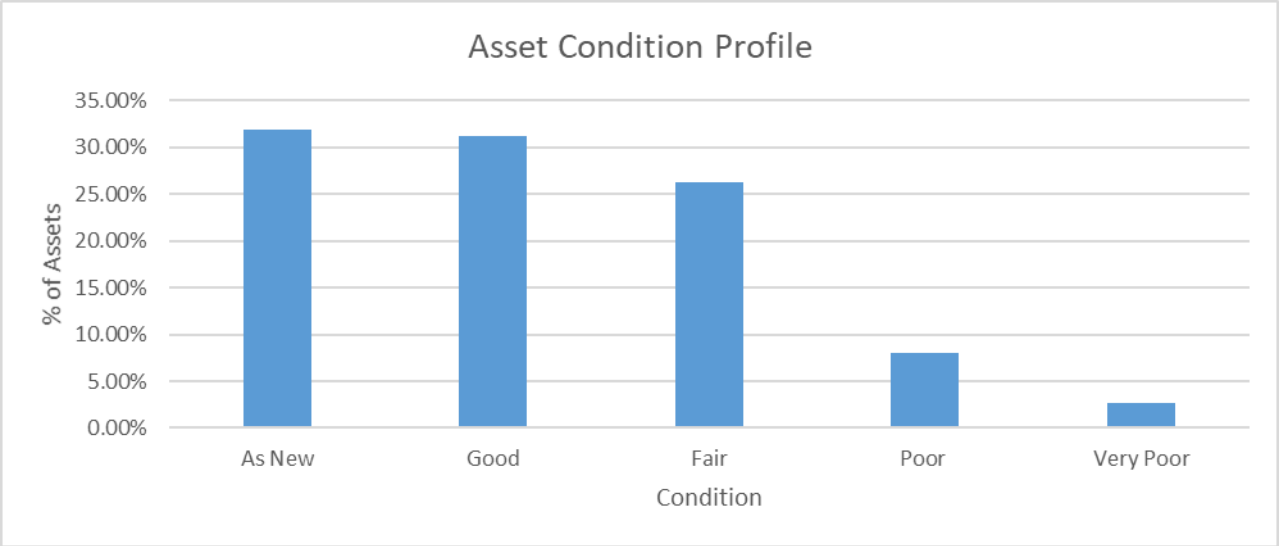


Figure 3: Drainage and Flood Mitigation Assets Condition Profile

Are We Meeting Our Adopted Service Levels?

Council is currently developing levels of service standards and performance measures. The maintenance and operations expenditure projections in this AMP are based on historical spending and therefore it may be assumed that similar future funding and if supported with appropriate investment in renewals will continue to provide current service levels.

Are We Managing Growth?

This AMP uses Council's adopted growth rate of 1%. The current assets are expected to meet the required service capacity for increased population, Council must consider the future implications that a growing asset base has on its operations and maintenance costs.

Are We Managing Our Risks?

Council has a 'duty of care' to the community, its customers, in relation to the management of the assets. This AMP identifies possible service delivery risks and any mitigating action. The risks were assessed by Council based on their likelihood and consequences to generate solutions to mitigate or eliminate them. It is expected that the current maintenance activities will continue to assist in mitigating the service risks to an acceptable level. Additional funding is required to mitigate risks associated with AM practices and reliance on this AMP.

The Financials

Based on renewing current assets at the end of their useful lives, meeting current levels of service and to meet the adopted annual demand growth, over the next 10 years the projected asset expenditure requirements are shown in Table 2.

Table 2 10-Year Forecast Expenditure

Financial Year Ending	Risk Treatment	New or Upgrade	Operations	Maintenance	Renewals	Total
2020	$0	$240,000	$1,005	$113,600	$0	$354,605
2021	$0	$2,250,000	$1,047	$116,440	$0	$2,367,487
2022	$0	$450,000	$1,056	$119,351	$0	$570,407
2023	$0	$450,000	$1,065	$122,335	$0	$573,399
2024	$0	$450,000	$1,073	$125,393	$0	$576,466
2025	$0	$450,000	$1,082	$128,528	$0	$579,610
2026	$0	$450,000	$1,090	$131,741	$0	$582,831
2027	$0	$250,000	$1,095	$135,035	$0	$386,130
2028	$0	$250,000	$1,100	$138,411	$0	$389,510
2029	$0	$250,000	$1,104	$141,871	$0	$392,975
Total	**$0**	**$5,490,000**	**$10,717**	**$1,272,704**	**$0**	**$6,773,421**

Council's Long-Term Financial Plan (LTFP) has allocated funding for Drainage and Flood Mitigation Capital expenditure as shown in *Table 3 Long Term Financial Plan* below. In preparing this plan is has been assumed that the Current levels of operation and maintenance funding will continue.

Table 3 Long Term Financial Plan

Financial Year Ending	New/Upgrade	Operations & Maintenance	Renewals	Total
2020	$240,000	$114,605	$0	$354,605
2021	$2,250,000	$117,487	$0	$2,367,487
2022	$450,000	$120,407	$0	$570,407
2023	$450,000	$123,399	$0	$573,399
2024	$450,000	$126,466	$0	$576,466
2025	$450,000	$129,610	$0	$579,610
2026	$450,000	$132,831	$0	$582,831
2027	$250,000	$136,130	$0	$386,130
2028	$250,000	$139,510	$0	$389,510
2029	$250,000	$142,975	$0	$392,975
Total	**$5,490,000**	**$1,283,421**	**$0**	**$6,773,421**

The 10-year expenditure forecast for the delivery of Drainage and Flood Mitigation services is $6.8M or $680K per annum. This figure is fully funded in the LTFP.

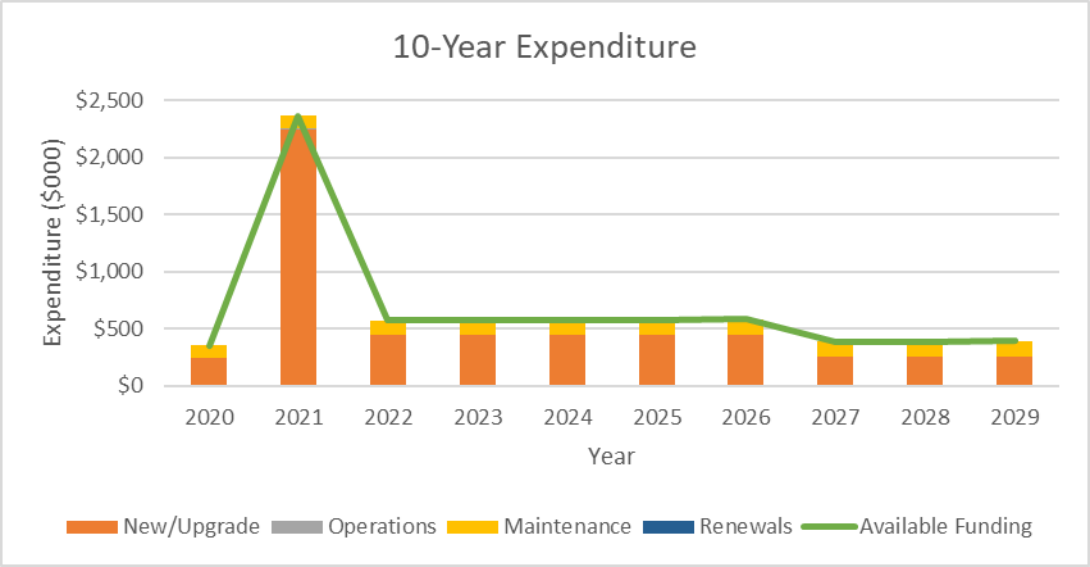


Figure 4: 10 Year Expenditure Forecasts

Note;

1. There is a $2,000,000 budget allocation in both the LTFP and DFM for the planned North Deniliquin Levee project.
2. There is no separate allocation or program for infrastructure renewals. The drainage network was initially constructed to the “standards of the day” however these standards have since been revised to include increased flood capacity. Therefore, all future renewals have been included in the upgrade expenditure forecast.
3. Until the condition of culverts and pits is confirmed a summary estimate of funding requirements has been included in the expenditure forecasts.

Can We Financially Sustain our Current Levels of Service?

Yes

Based on the analysis of Council’s expenditure requirements for asset renewal, operations and maintenance, there is enough funding in the LTFP to sustain current service levels.

Other Considerations

There is a mis-alignment between the remaining life data and the condition rating that needs to be addressed before any condition-based renewal programs (bottom up) can be confidently generated. Until such time a nominated funding require has been included in the LTFP.

There is no separate allocation or program for infrastructure renewals. The drainage network was initially constructed to the “standards of the day” however these standards have since been revised to include increased flood capacity. Therefore, all future renewals have been included in the upgrade expenditure forecast.

Next steps

1. Council adopts the LTFP, this AMP and the associated works programs
2. Council confirm the condition, standard asset lives, and remaining life estimates of its DFM assets.
3. The initiatives identified in the AMP improvement plan be implemented.

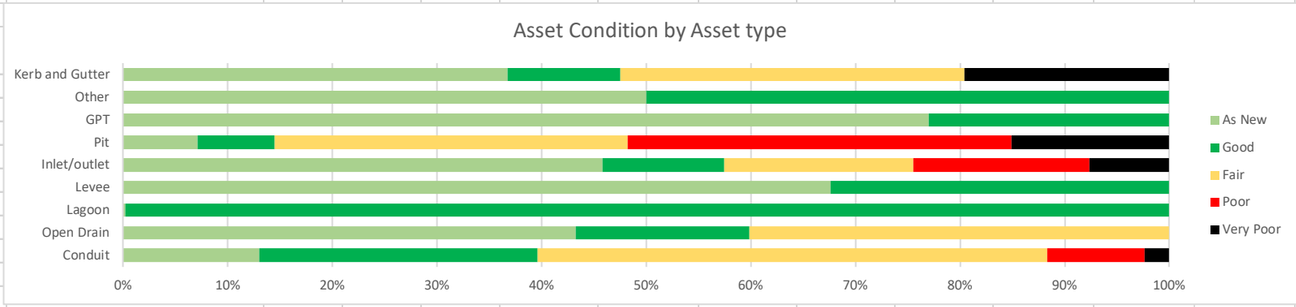
AMP Summary

Edward River Council
State of the Assets - Flood Mitigation & Drainage
25-May-19

Asset Value

Asset Class	Replacement Cost	Accumulated Depreciation	Current Value	Average Annual Asset Consumption
Conduit	$24,350,272	$10,164,113	$14,186,159	$314,690
Open Drain	$226,701	$56,418	$170,284	$2,423
Lagoon	$3,259,675	$157,584	$3,102,091	$19,326
Levee	$18,970,544	$718,287	$18,252,256	$135,476
Inlet/outlet	$307,810	$102,607	$205,203	$3,747
Pit	$5,126,710	$1,378,746	$3,747,965	$48,350
GPT	$181,521	$7,110	$174,411	$1,370
Other	$43,073	$1,967	$41,106	$324
Kerb and Gutter	$72,121	$33,265	$38,856	$1,202
Total	$52,538,426	$12,620,096	$39,918,330	$526,908

Asset Condition



Current Levels of Service

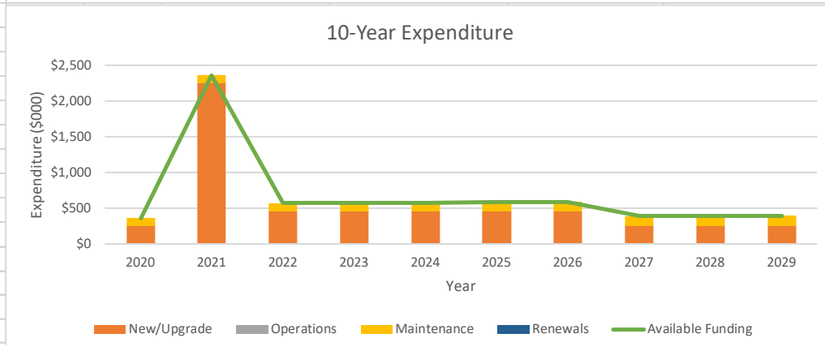
The levels of service for the services that the Infrastructure assets deliver have been defined. Council should conduct a base budget review to establish the link between operations and maintenance activities, and levels of service.

Current Risks

Council has identified several risks for the infrastructure assets.

Conclusion

The forecast expenditure on the Authorities infrastructure assets is based on aged and incomplete data. The levels of funding are provided to inform the development of a Long-Term Financial Plan that will form the basis of sustainability forcasts.



Financial Forecasts

	Expenditure ($000)										
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Renewal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New/Upgrade	$240	$2,250	$450	$450	$450	$450	$450	$250	$250	$250	$5,490
Maint. & Ops	$115	$117	$120	$123	$126	$130	$133	$136	$140	$143	$1,283
Total	$355	$2,367	$570	$573	$576	$580	$583	$386	$390	$393	$6,773
	Long Term Financial Plan										
Renewal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New/Upgrade	$240	$2,250	$450	$450	$450	$450	$450	$250	$250	$250	$5,490
Maint. & Ops	$115	$117	$120	$123	$126	$130	$133	$136	$139	$143	$1,283
Total	$355	$2,367	$570	$573	$576	$580	$583	$386	$389	$393	$6,773
Surplus	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Cumulative Surplus	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	

Sustainability

		Target	Value
Consumption Ratio	Indicates the Written Down Value of Council's Depreciable assets relative to their 'as new' value in up to date prices (highlights aged condition)	40%-80%	76%
Sustainability Ratio	Indicates whether Council's funding for Infrastructure asset class is sufficient for the long-term delivery of current service levels	>90%	100%
New/Upgrade Funding Ratio	Indicates the extent to which the planned new/upgrade projects are funded in the long-term budget allocation.	100%	100%
Renewal Funding Ratio	Indicates the extent to which the proposed renewal works are funded in the long-term budget allocation.	100%	100%
Operations & Maintenance	Assumed that current expenditure levels for operations and maintenance actibities will be maintained for the 10-year planning period.	100%	100%

Council's Infrastructure services are sustainable (Assuming Expenditure forecasts are fully funded).

The funding ratios indicate the levels of funding for the 10-year planning period to operate and maintain the Infrastructure assets.

Introduction

Purpose

The purpose of this Asset Management Plan (AMP or Plan) is to:

- Consolidate Edward River Council's (Council's) understanding of its assets within the Drainage and Flood Mitigation Asset class
- Document levels of service and risk
- Provide short- and medium-term capital works plans
- Support informed decision making and guide Long-Term Financial Planning budget requirements
- Provide a plan to work towards improved accuracy and confidence in future iterations of this Plan.

Scope

This AMP relates to the management of Drainage and Flood Mitigation Infrastructure assets (the Assets) which are recognised as assets owned by Council. Assets in this class typically comprise of the following asset types:

- Conduit (Drainage pipe network)
- Open Drain
- Lagoon
- Levee
- Inlet/outlet Structures
- Pit
- Gross Pollution Traps (GPT)
- Other drainage Assets
- Kerb and Gutter

Corporate Context

In 2009 a new Integrated Planning and Reporting (IP&R) framework for NSW local government was introduced. The IP&R framework requires councils to prepare a suite of long-term strategic documents, including a Community Strategic Plan, Resourcing Strategy and Delivery Program, as well as an annual Operational Plan. Integration of these strategic documents is key to effective long-term planning and assist us in providing ratepayers with the best level of service that we can.

Figure 5 illustrates how the IP&R framework ensures that local planning and reporting is informed, relevant, and responsive to community needs.

Figure 5 Integrated Planning and Reporting Hierarchy

Community Strategic Plan

The Community Strategic Plan is the highest-level plan that Council prepares. The purpose of the Plan is to identify our community's main priorities and aspirations for the future and to plan strategies for achieving these goals. In doing this, the planning process considers the issues and pressures that may impact the community and the level of resources that will realistically be available to achieve its aspirations.

Informed by extensive community and stakeholder consultation, the Edward River 2030 Community Strategic Plan seeks to answer four key questions:

- Where are we now?
- Where do we want to be in 10 years?
- How will we get there?
- How will we know when we have arrived?

At an operational level, the *Community Strategic Plan* is implemented through Council's Delivery Program and annual Operational Plans, which outline the activities and actions that are the responsibility of Council in achieving our shared vision.

Resourcing Strategy

The *Edward River 2030 Community Strategic Plan* provides a vehicle for expressing our community's long-term aspirations. However, the vision set out in this Plan will not be achieved without sufficient resources – time, money, assets, and people – to carry them out.

The Resourcing Strategy comprises the following components:

- **Asset Management Planning:** Council's asset management planning is supported by an Asset Management Policy, Asset Management Strategy, and individual Asset Management Plans for all assets under Council's control. Considering 'whole of life' asset management from planning, purchase, operation, and maintenance – to disposal of assets; the Asset Management Strategy forecasts community requirements and the capacity to meet them on a short-, medium-, and long-term basis.
- **Long Term Financial Planning:** The Long-Term Financial Plan (LTFP) tests community aspirations as contained in the Community Strategic Plan against the financial realities of delivering on those aspirations. The LTFP integrates with Edward River 2030 through the Delivery Program and one-year Operational Plan.
- **Workforce Management Planning:** The Workforce Management Plan addresses the human resourcing requirements of the Community Strategic Plan, including what people, skills, experience and expertise are required to achieve its strategic objectives.

This AMP is prepared under the above hierarchy and direction of Council's mission, values, goals and objectives.

Through consultation with government, community, business, and industry, we have developed a clear vision as to what we want the Edward River region to look like in 2030.

During this consultation, we developed a vision for the Edward River to strive toward:

We are the centre of the Southern Riverina. Home to a connected and engaged community, driven by a diverse economy. We work together to lead our community, achieve our potential and embrace our future.

This vision is designed to encourage commitment to our future and engender a sense of common purpose and responsibility in all stakeholders responsible for delivering Edward River 2030.

In 2030, our community wants the Edward River region to be:

A great place to live

A prosperous and vibrant economy

A valued and enhanced natural environment

A region with quality and sustainable infrastructure

A community working together to achieve its full potential

C495 – Edward River Council

Relationship to Other Asset Related Council Documents

This AMP aligns and should be read in conjunction with the framework of Council documents as shown in Figure 6 below:

Figure 6 Asset Management Document Hierarchy

The table below shows the key documents that support this AMP:

Document	*How Related*	*Reference*
AMP Related Documents		
Asset Management Policy	The Asset Management Policy includes the defining principles of asset management within Council. This AMP supports such principles by: • Considering the entire life cycle of the assets, • Supporting the development of cost-effective management strategies for the long term, • providing a defined level of service which can be monitored and used as the basis for aligning affordability with community aspirations, • understanding and meeting the demands of growth through demand management and asset investment, • managing risks associated with the assets; and • Defining actions required to support continuous improvement in asset management practices.	

Document	How Related	Reference
Condition Assessment Plan	Contains the methodologies, defect assessment procedures, and the condition rating system used to formally assess the structural integrity and appearance of assets.	
Service Level Agreement (including Maintenance Specifications)	Contains all maintenance and operational specification requirements for assets under this AMP.	
Risk Register	Contains all identified asset related risks applicable to this AMP.	
Maintenance Manual	Contains details on how maintenance activities are to be delivered to meet adopted levels of service.	
Other Related Documents		
Land Development Guidelines	Contains design and construction details for new assets.	Council website
Others…		
External/Specialist Reports	Catchment Analysis, etc.	

Stakeholder Input

Various stakeholders were considered in the preparation of this AMP who will have different roles in implementing its outcomes. These stakeholders and their role are shown in Table 4.

Table 4: Key Stakeholders

Key Stakeholder	Role
Councillors	• Represent needs of community. • Allocate resources to meet Council's objectives in providing services while managing risks. • Ensure the organisation is financially sustainable. • Custodians of the assets and services, providing the interface with the community regarding the levels of service, good governance, and management practices.
CEO	• Manage organisation operational activities and future planning strategic direction.
Director Corporate Services	• Long-Term Financial Plans and operational financial data. • Defining information requirements for audit and reporting purposes.
Director Infrastructure	• Manage delivery of the AMP and initiatives. • Capital works projects planning and deliver. • Operational and service levels, data information and analysis.
Community and Ratepayers	• User of services. • Source of funding.

State and Commonwealth Government	• Active in the management of assets and services across the region.
Council Staff	• Directly involved with the renewal, maintenance and operation of the network and the management framework, both operationally and financially. • Delivery of operational plans informed by this AMP.
Emergency Services	• Respond to community needs and emergency situations.

Legislative Requirements

Council is required to meet many legislative requirements including Federal and State legislation and regulations. Key relevant legislation is shown in Table 5.

Table 5: Legislative Requirements

Legislation	*Requirement*
Local Government Act NSW (1993)	**8B Principles of sound financial management** The following principles of sound financial management apply to councils: (c) Councils should have effective financial and asset management, including sound policies and processes for the following: (i) performance management and reporting, (ii) asset maintenance and enhancement, **403 Resourcing strategy** (1) A council must have a long-term strategy (called its **"resourcing strategy"**) for the provision of the resources required to implement the strategies established by the community strategic plan that the council is responsible for. (2) The resourcing strategy is to include long-term financial planning, workforce management planning and asset management planning.

This Drainage and Flood Mitigation AMP contributes to supporting Council's legislative requirements.

Plan Maturity

This AMP is targeted at a first cut, 'core-level' AMP as defined in the International Infrastructure Management Manual. Detailed information is in Table 6 below.

Core level AMP's are developed to meet minimum legislative and organisational requirements and provide basic technical management outputs, including:

- Statements on current levels or aspirational levels of service
- Forward asset replacement programs
- Associated cash flow projections.

Table 6 Core Level Asset Management Capabilities

AM CATEGORY	Core Assessment requirements
Asset Management Plans	• Plan contains basic information on assets, service levels, planned works, and financial forecasts (5-10 years) and future improvements. • The plan also includes executive summary, description of services and key/critical assets, top-down condition and performance description, future demand forecasts, description of supporting AM processes, 10-year financial forecasts, and 3-year AM improvement plan.

Other "Core" Assessment requirements that can be included in the AMP include the following:

Risk Management	• Risk framework developed. • Critical assets and high risks identified. • Documented risk management strategies for critical assets and high risks.
Quality Management	• Defined quality policy and basic Quality Management System. • All critical activity processes documented.
Levels of Service and Performance Management	• Customer groups defined, and requirements informally understood. • Levels of service and performance measures in place covering a range of service attributes. • Annual reporting against performance targets.
Demand Forecasting	• Demand forecasts based on robust projection of a primary demand factor (e.g.: population growth) and extrapolation of historic trends. • Risk associated with demand change broadly understood and documented. • Demand management is considered in major asset planning.
Operational Planning	• Emergency response plan is developed. • Asset utilisation is measured for critical asset groups and is routinely analysed.
Maintenance Planning	• Asset criticality considered in response processes. • Fault tracking and closure process. • Strategy for prescriptive versus performance-based maintenance developed. • Key maintenance objectives established and measured.
Capital Works Planning	• Projects have been collated from a wide range of sources such as hydraulic models, operational staff, and risk processes. • Capital projects for the next three years are fully scoped and estimated.
Financial and Funding Strategies	• 10+ year financial forecasts based on current AMP outputs. • Significant assumptions are specific and well-reasoned. • Expenditure captured at a level useful for AM analysis.
Asset Register Data	• Sufficient information to complete asset valuation — basic physical information recorded in a spreadsheet or similar (e.g. location, size, type), but may be based on broad assumptions or not complete. • Replacement cost and asset age/life. • Asset hierarchy, asset identification and asset attribute systems documented.
Asset Condition	• Condition assessment programme in place for major asset types, prioritised based on asset risk. • Data supports asset life assessment. • Data management standards and processes documented.

	• Programme for data improvement developed.
Information Systems	• Asset register enables hierarchical reporting (at component to facility level). • Customer request tracking and planned maintenance functionality enabled. • System enables manual reports to be generated for valuation, renewal forecasting.
Service Delivery Mechanisms	• Service delivery roles clearly allocated (internal and external), with contracts in place for external service provision.

Existing Infrastructure Base

This section provides an overview of the infrastructure assets covered by this AMP. The overview provides an understanding of the age, value, and condition of Council's existing infrastructure asset base.

Asset Summary

A summary of the Drainage and Flood Mitigation Assets covered by the AMP are included in Table 7.

Table 7: Asset Summary

Asset Type	*Quantity*	*Replacement Value (June 2018)*
Conduit	*3,166*	*$24,350,272*
Open Drain	*8*	*$226,701*
Lagoon	*15*	*$3,259,675*
Levee	*52*	*$18,970,544*
Inlet/outlet	*311*	*$307,810*
Pit	*1,990*	*$5,126,710*
GPT	*10*	*$181,521*
Other	*2*	*$43,073*
Kerb and Gutter	*9*	*$72,121*
Total		***$52,538,426***

The total length of FMD assets is

Conduit	64,172 m
Kerb and Gutter	2,250 m
Levee	19,955 m
Open Drain	3,869 m

Totalling 90,246 metres.

Asset Hierarchy and Useful Life

Implementing an asset hierarchy is one of the most important steps in building an effective asset management program. Such a hierarchy provides both context and organization to the asset register.

The asset register is the fundamental building block for asset management and when organised in hierarchical order is the vehicle by which the information system most effectively enables the assessment of the assets as individual components, composite assets, or groups of assets.

While it is not absolutely necessary to organise asset records in a hierarchical structure (they could simply be listed in date of creation order for example), doing so greatly simplifies the search for the proper record when entering data and greatly facilitates the roll up/drill down concept for data reporting.

An asset's useful life is the period over which a depreciable asset is expected to be fully consumed. This period can be significantly impacted by Council's maintenance practices.

The useful life of an asset is initially based on the manufacturer's recommended (expected) life. This is subject to change however, based on historical evidence of the impact of the local environment on the expected life.

The hierarchy and useful lives of Council's assets are provided in

Table 8 below.

Table 8: Asset Lives and Hierarchy

Asset type	Component	Recorded Standard Life
Conduit	Box Culvert	70
	Gravity Main	80
		90
		100
	Pipe Culvert	70
	Rising Main	90
	Subsoil	100
GPT	Litter	130
	Oil and Grease	120
Inlet/outlet	Floodgate	130
	Wing Wall	100
Kerb and Gutter	Barrier	60
	Dish Drain	60
	Dissipator	60
	Kerb only	60
Lagoon	Lagoon	150
	Retention Basin	150
Levee	Box Culvert	130
	Concrete Bank	150
		160
	Crib Wall	140
		160
	Earthen Bank	150
		160
	Floodgate	130
	Pipe Culvert	130
	Weir	120
		130
	Wing Wall	130
Open Drain	Concrete Lined	100
	Earthen Bank	100
Other	Pump	120
		140
Pit	Junction	90
	Side Entry	90
Grand Total		

Asset Remaining Useful Life

The remaining useful lives of the assets are based on:

- Inspections by a suitable qualified person
- Calculated from supplied construction dates and adopted asset lives, or
- Estimated from the condition of the asset as a percentage of the expected life.

A summary of the value of Drainage and Flood Mitigation Assets categorised by their asset type and remaining lives is listed in Table 9 and displayed in Figure 7.

Table 9: Asset Remaining Lives by Replacement Values

Remaining life (yrs)	Conduit	Open Drain	Lagoon	Levee	Inlet/outlet	Pit	GPT	Other	Kerb and Gutter
0	$0	$0	$0	$0	$0	$0	$0	$0	$0
5	$698,764	$0	$0	$0	$2,977	$0	$0	$0	$0
10	$479,857	$0	$0	$0	$1,073	$0	$0	$0	$3,044
15	$305,957	$0	$0	$0	$12,707	$0	$0	$0	$0
20	$305,102	$0	$0	$0	$3,821	$0	$0	$0	$0
25	$2,043,774	$0	$0	$0	$56,512	$37,428	$0	$0	$7,778
30	$3,152,219	$0	$0	$0	$6,127	$443,316	$0	$0	$0
35	$1,726,691	$0	$0	$0	$5,219	$578,729	$0	$0	$0
40	$830,526	$0	$0	$0	$28,633	$919,250	$0	$0	$23,712
45	$3,287,203	$90,927	$0	$0	$8,409	$343,482	$0	$0	$0
50	$2,854,637	$0	$0	$0	$7,305	$172,033	$0	$0	$0
55	$749,913	$0	$0	$0	$2,727	$501,525	$0	$0	$14,142
60	$687,404	$0	$0	$0	$24,015	$399,706	$0	$0	$0
65	$2,512,636	$6,695	$0	$7,392	$0	$0	$41,810	$0	$23,444
70	$2,055,276	$0	$0	$0	$0	$850,019	$0	$0	$0
75	$327,898	$30,973	$0	$0	$0	$90,265	$0	$0	$0
80	$0	$0	$0	$0	$15,301	$46,952	$0	$0	$0
85	$268,054	$0	$0	$0	$13,600	$96,245	$0	$0	$0
90	$254,228	$0	$0	$0	$56,434	$5,616	$0	$0	$0
95	$3,028	$0	$0	$0	$532	$0	$0	$0	$0
100	$0	$0	$0	$0	$1,065	$131,868	$0	$21,536	$0
105	$479,381	$0	$0	$0	$0	$112,336	$0	$0	$0
110	$231,034	$0	$0	$0	$0	$0	$0	$0	$0
115	$40,856	$0	$0	$54,606	$29,423	$98,453	$61,188	$0	$0
120	$508,689	$0	$0	$51,736	$14,712	$140,370	$66,285	$0	$0
125	$362,679	$98,106	$0	$348,263	$11,034	$43,952	$0	$0	$0
130	$0	$0	$0	$0	$3,678	$107,074	$0	$0	$0
135	$184,465	$0	$0	$4,687,122	$2,505	$5,700	$12,238	$0	$0
140	$0	$0	$3,259,675	$1,105,001	$0	$2,391	$0	$21,536	$0
150	$0	$0	$0	$9,722,944	$0	$0	$0	$0	$0
160	$0	$0	$0	$2,975,326	$0	$0	$0	$0	$0
165	$0	$0	$0	$18,155	$0	$0	$0	$0	$0

The remaining life data suggests that conduit assets to the value of $700,000 will require renewal in the next 5 years with a total of $1.18M in the next 10 years. The assets in with remaining life less than 10 years have been included in *Appendix C – Renewals Plan* along with their current condition rating.

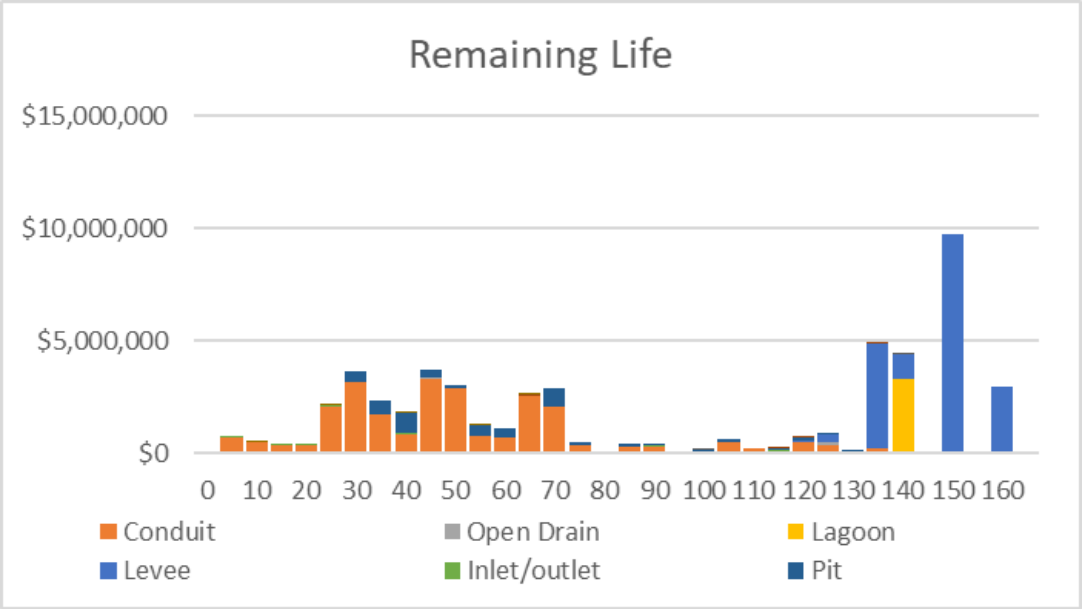


Figure 7: Asset Remaining Life

Age Profile

The age profile of the assets can be seen in Figure 8 below.

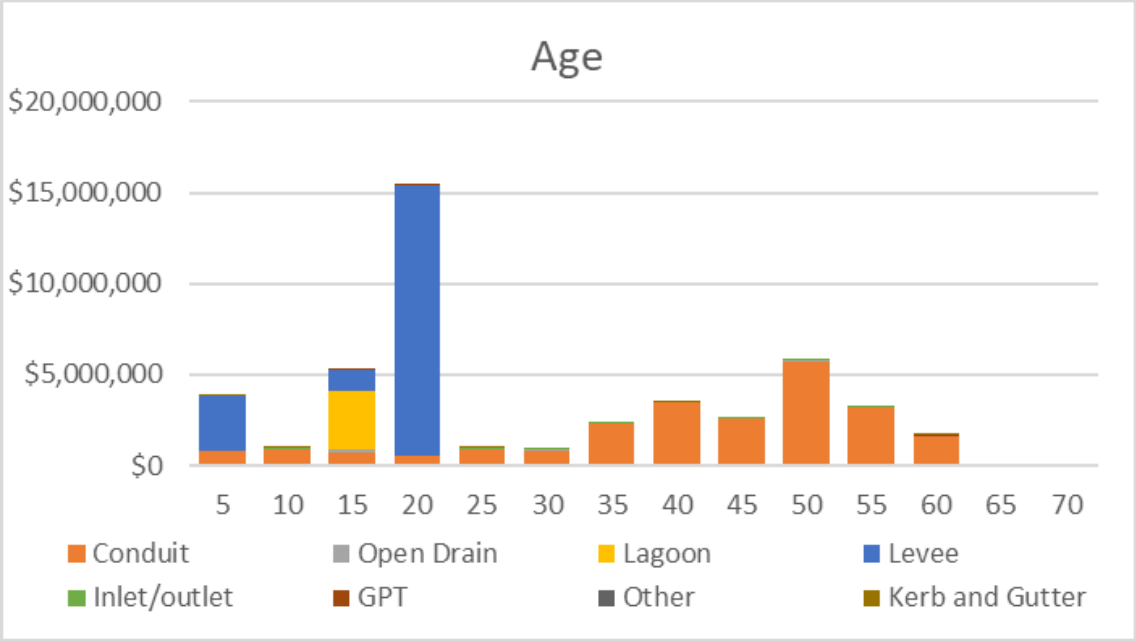


Figure 8: Asset Age Profile

Asset Condition

Council has adopted a condition assessment method using a 5-point scale rating, varying from 'Very Good' to 'Very Poor' condition as can be seen in Table 10 below.

Table 10: Structural Condition Grading Model

Grade	*Condition*	*%Remaining Useful Life*	*Description*
1	Very Good	>70%	Sound physical condition. No signs of deterioration Only normal maintenance required.
2	Good	70% - >50%	Acceptable physical condition; minor deterioration visible, no short-term failure risk. Minor defects only. Only minor work required, if any.
3	Fair	50% - >10%	Acceptable physical condition; minimal short-term failure risk but potential for deterioration in long-term. Minor defects only. Minor components or isolated sections of the asset may need replacement or repair now but asset functions safely at adequate level of service. Work may be required but asset is serviceable. Maintenance required to restore the asset to an acceptable level of service.
4	Poor	10% - >4%	Significant deterioration evident. Failure likely in short-term. Likely need to replace most or all of the asset. No immediate risk to health or safety but works are required to ensure asset remains safe. Substantial work required in short-term, asset barely serviceable. Asset requires renewal – works to be programmed.
5	Very Poor	<4%	Failed or failure imminent. Immediate need to replace most or the entire asset. Health and safety hazards exist which present a possible risk to public safety, or asset cannot be serviced/operated without risk to personnel. Asset is effectively unserviceable. Major work or replacement required urgently.

The majority (89%) of the DFM assets are in good condition and do not require any attention other than routine maintenance. However, Council's asset data indicates that 2.6% ($1.3M) are in very poor condition and are failing or have failed and an additional 8% ($4.2M) are in poor condition and showing significant deterioration.

The majority (97%) of the poor and very poor assets are the underground conduits and pits. The condition of these assets is based on the assets age, therefore further investigation and condition assessments are required to confirm these ratings and the need for action.

The summary of asset condition by asset type shown in *Table 11: Asset Condition Profile (as a percentage of the Asset Base)* and *Figure 10*.

Table 11: Asset Condition Profile (as a percentage of the Asset Base)

Asset Type	Condition (% of Asset Base)					
	As New	Good	Fair	Poor	Very Poor	Total
Conduit	*6.01%*	*12.34%*	*22.60%*	*4.30%*	*1.10%*	*46.3%*
Open Drain	*0.19%*	*0.07%*	*0.17%*	*0.00%*	*0.00%*	*0.4%*
Lagoon	*0.01%*	*6.19%*	*0.00%*	*0.00%*	*0.00%*	*6.2%*
Levee	*24.41%*	*11.70%*	*0.00%*	*0.00%*	*0.00%*	*36.1%*
Inlet/outlet	*0.27%*	*0.07%*	*0.11%*	*0.10%*	*0.04%*	*0.6%*
Pit	*0.69%*	*0.73%*	*3.29%*	*3.58%*	*1.48%*	*9.8%*
GPT	*0.27%*	*0.08%*	*0.00%*	*0.00%*	*0.00%*	*0.3%*
Other	*0.04%*	*0.04%*	*0.00%*	*0.00%*	*0.00%*	*0.1%*
Kerb and Gutter	*0.05%*	*0.01%*	*0.05%*	*0.00%*	*0.03%*	*0.1%*
Total	*31.93%*	*31.23%*	*26.21%*	*7.97%*	*2.64%*	*100.0%*

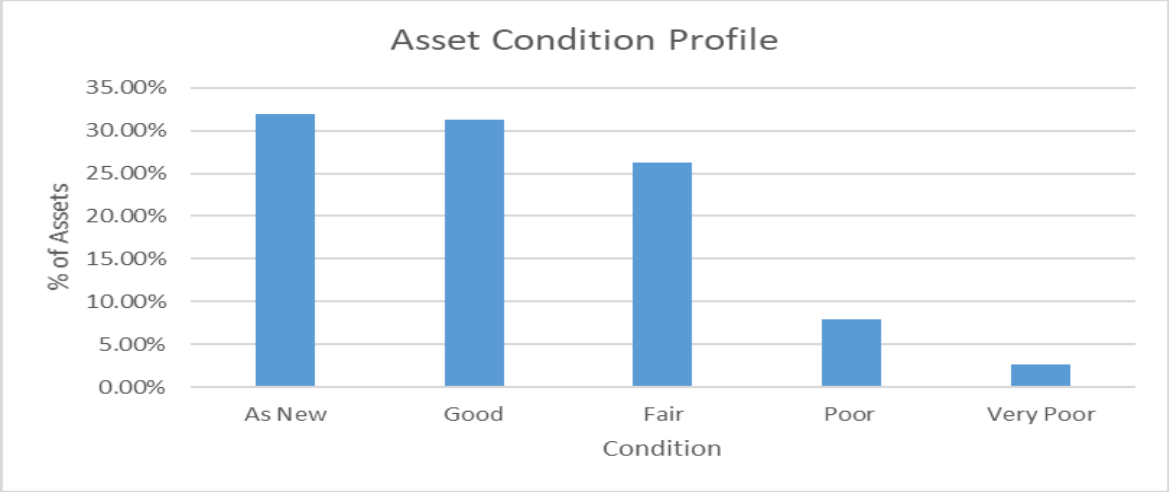


Figure 9: Asset Condition Profile

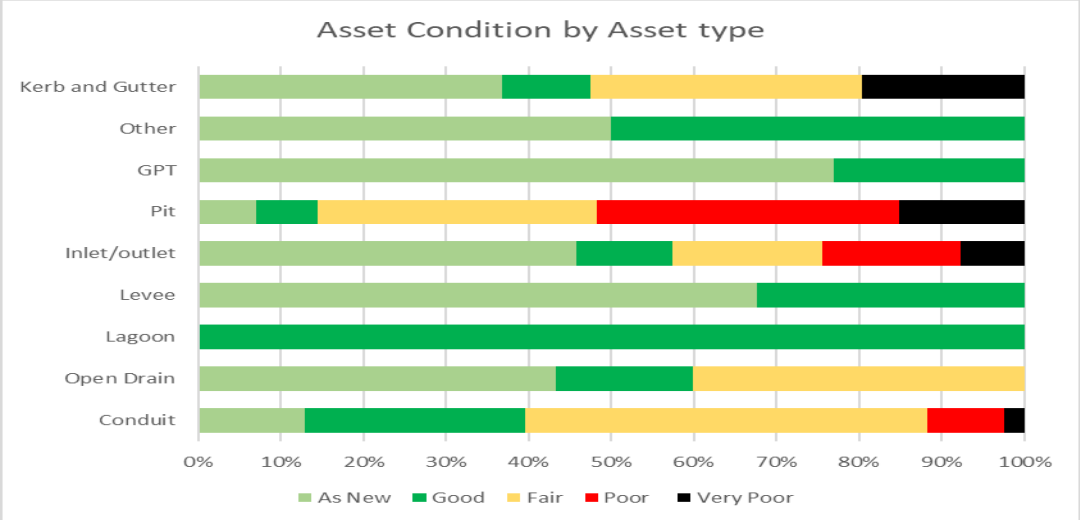


Figure 10: Asset Condition Profile by asset type

Figure 10: Asset Condition Profile by asset type indicates the percentage of each asset type with assets in very poor condition. These are the drainage conduits, pits, kerb and gutter and the inlet/outlet structures.

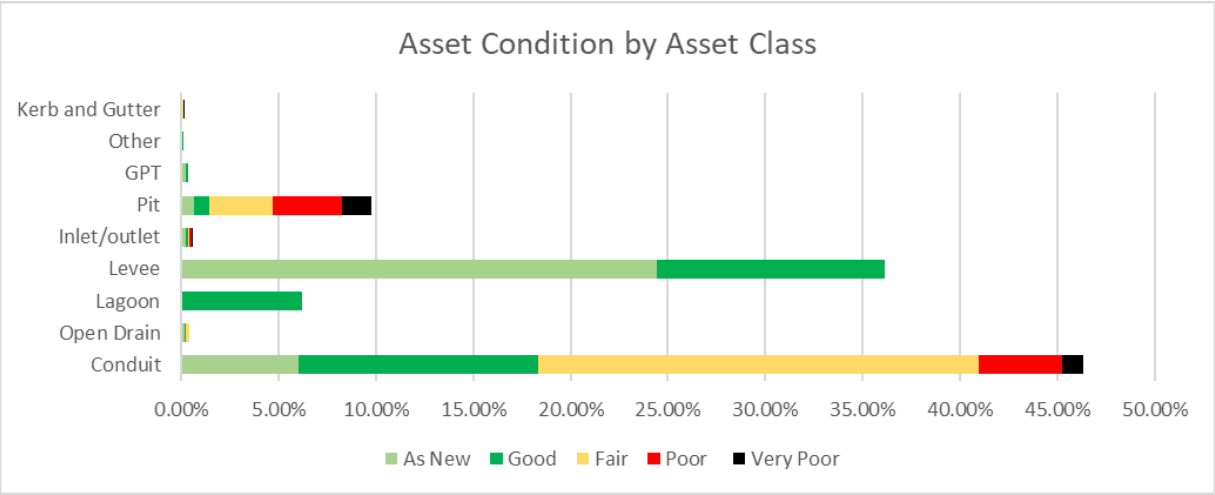


Figure 11: Asset Condition Profile by asset class

Figure 11: Asset Condition Profile by asset class provides a further view of the asset class that focuses attention on the poor and very poor assets as a percentage of the network.

Note:

The remaining life data indicated $700K of works needs to be undertaken in the next 5 years while the condition data identified $5.78M of significantly deteriorated, failing or failed assets. This variation indicates a mis-alignment between the remaining life data and the condition ratings in the Financial and Technical asset data sets.

Asset Criticality

A critical asset is an asset 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.

Although critical assets have a high consequence of failure, they don't necessarily have a high likelihood of failure

Asset Criticality is a measure of how critical an asset is to the functioning of and/or the services provided by Council.

The importance or degree of asset criticality has been proposed to be based on the consequences of failure, i.e. consequences of failure are assigned a criticality factor.

Elements that may impact on asset criticality include:

- Safety
- Cost of Failure
- Complexity
- Severity of Duty
- Impact of failure
- Impact on Environment
- Location
- Loss of service
- Number of Customers Serviced
- Site function
- Public image impact

Social, environmental & economic factors may be considered.

Social may include

- Community disruption
- Health and safety
- Litigation

Environmental factors that may need to be considered are

- natural waterways
- parks
- national parks
- recreational grounds

Economic

- business and commercial activities being disrupted
- costs to the community

Criticality has been assigned using the ratings in

Table 12.

Table 12 Criticality Ratings

Criticality Rating				
1	*2*	*3*	*4*	*5*
Insignificant	*Minor*	*Moderate*	*Major*	*Extreme*

Based on the above criteria preliminary criticality levels have been assigned by asset types as indicated in *Table 13* below. The resultant criticality profile is shown in *Figure 12* and *Table 14*.

Further iterations of this plan will develop council's asset criticality models and improve the quality of the criticality assessment for individual assets.

Table 13: Asset Criticality Levels (Default value based on Asset Type)

Asset Types	*Component Type*	*Criticality Ratings*
Levee Banks	Concrete Bank	5
	Earthen Bank	5
	Weir	5
GPTs	all	3
All other Assets		2

Table 14: Drainage and Flood Mitigation Network Criticality by Current Replacement Cost

Asset Type	1	2	3	4	5
Conduit		$24,303,248			
Open Drain		$226,701			
Lagoon		$3,259,675			
Levee		$98,950			$18,871,594
Inlet/outlet		$305,304			
Pit		$5,123,401			
GPT			$181,521		
Other		$43,073			
Kerb and Gutter		$72,121			

Figure 12: Drainage and Flood Mitigation Network Criticality Profile

Data Confidence

The lifecycle assessment is only as precise as the accuracy of the data Council holds. This data includes revaluation data of the assets, financial data, and asset register details.

Table 15: Data Confidence Rating

Grade	*Description*	*Accuracy*
1	Accurate	100%
2	Minor Inaccuracies	95%
3	50% Estimated	80%
4	Significant Data Estimated	70%
5	All Data Estimated	60%

(Section 4.3.7 of the IIMM, Version 3.0, 2006)

The Drainage and Flood Mitigation data has been given subjective data confidence rating of 3.

Further iterations of this plan will develop council's data confidence models and improve the quality of the assessment for each asset class.

Council's records indicate that Council has drainage conduits valued at $ $567,693 with an age in excess of 115 years constructed in 1904. These asset records s need to be considered further.

Levels of Service

Level of Service Document Hierarchy

- ***Edward River Community Strategy 2030***

  The Community Strategy establishes, through community consultation, Council's aspirational goals and objectives for the delivery of Drainage and Flood Mitigation services.

- ***Asset Management Plan***

  This Asset Management Plan (AMP) develops technical measures against which the aspirational goals and objectives can be measured (Technical Levels of Service).

- ***Service Delivery Plan***

  The service Delivery Plan (SDP) is a formal agreement between those responsible for the assets and the services they deliver, and the operational areas of Council charged with maintaining, operating, and upgrading existing assets or constructing new infrastructure.

- ***Activity Specification***

  The activity specification defines the target performance measures for maintenance, operations, or construction activities. It sets routine inspection and maintenance frequencies and for reactive maintenance sets intervention levels, response times, activity duration targets.

- ***Maintenance Management Plan***

  The Maintenance Management Plan (MMP) details how each activity is to be completed and may include the following:

  - Standard Operating Procedures
  - Work Instructions
  - Hazard Risk Assessment
  - References to Equipment Maintenance Manuals (particularly fleet, plant, mechanical and electrical assets)

Community Strategy 2030 (Community Levels of Service)

The Community Strategy relevant to this AMP is

Outcome 4 - A region with quality and sustainable infrastructure

The outcome targets relevant to Drainage and Flood Mitigation services are:

4.1 Our built environment is managed, maintained and improved

Table 16: Council's Goals

Council Role
• Undertake sound asset management planning and asset mapping • Where appropriate upgrade existing or provide new infrastructure

In addition to Council's Drainage and Flood Mitigation Aspirational goal and roles as detailed in Table 16 above, the Community Levels of Service relate to subjective service delivery outcomes that the community wants in terms of safety, quality, quantity, reliability, responsiveness, value, and legislative compliance.

Community levels of service measures used in this service management plan are:

- *Quality - How good is the service?*
- *Function - Does it meet users' needs?*
- *Capacity/Utilisation - Is the service over or under used?*

These community levels of service promised by Council are outlined in Table 17.

Table 17: Community Levels of Service

Service Level Outcome	Principle Activity	Strategic Elements	Performance Outcome	Assessed by
Reliability	Drainage and Flood Mitigation doesn't impact other services	Unobtrusive service	No disruptions from Drainage and Flood Mitigation network	Number of interruptions/year
Quality	Good value Drainage and Flood Mitigation services No Odours	Stormwater collection, transport and treatment remains affordable	Agreed level of service delivered within budget allocations while maintaining an acceptable level of risk and asset life expectations. Cost of Drainage and Flood Mitigation services does not increase more than inflation	Quantitative cost assessment
Function	Provide an effective method of collection and disposal of wastewater No backup of sewage into properties No overflows of sewage into public places/waterways Drainage and Flood Mitigation re-use	Drainage and Flood Mitigation system functions as designed Water re-use from treatment plants is optimised Drainage and Flood Mitigation network doesn't impact the environment	Water re-use from treatment plants is optimised Sewage treatment meets all relevant environmental guidelines	Water quality testing Environmental impact assessment
Condition	Drainage and Flood Mitigation network is maintained in good condition.	The condition of the Drainage and Flood Mitigation Assets is regularly assessed.	Condition rating for the Drainage and Flood Mitigation Network assets.	Movement in the assessed condition of the assets % of renewal programs delivered
Capacity & Utilisation	Provides adequate population capacity	Network has sufficient capacity to meet community expectations.	The capacity of the Drainage and Flood Mitigation network will have capacity to meet population growth expectations	% of Drainage and Flood Mitigation network by value that has poor or very poor capacity or utilisation compared with criteria set out in technical service levels for various.

Technical Levels of Service

Technical levels of service support the community levels of service by turning subjective requirements of the Community Levels of Service into objective assessments. These technical measures aim to quantify the performance of the assets and services they provide and relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing frequency, mowing frequency, etc.
- Maintenance – the activities necessary to retain an assets as near as practicable to an appropriate service condition (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide an higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or

- New – a new service that did not exist previously (e.g. a new library).

Asset managers plan, implement and control technical service levels to influence the community service levels.[1]

These technical Levels of Service are outlined in Table 18 by asset classification.

[1] *IPWEA, 2011, IIMM, p 2.22*

Table 18: Technical Levels of Service

Classification	*Drainage and Flood Mitigation*		
Service Statement	*Cost effective improvement of stormwater transport, treatment and disposal with minimal environmental impact*		
Performance Measure	*Number of complaints per annum*		
Service Factors	**Community Levels of Service**	**Technical Levels of Service**	**Performance Measures**
Quality			
Effective Drainage and Flood Mitigation transport and treatment	*An unobtrusive service*	*No nuisance from sewage services* *Operations & Maintenance* • *Inspect assets on a routine basis to identify their condition* • *Inspect assets on a routine basis to identify and address any defect and safety concerns* • *Maintain assets in a tidy, safe, and functional condition*	*100% of Activities identified in the SLA met.* *30% of Asset Base condition assessed annually* *Defect inspections 90% of Drainage and Flood Mitigation Assets* *<1 complaint / month*
		Renewal • *Renew/replace components when they no longer function.* • *Renew/replace assets when they degrade to a dangerous level.*	*Average network condition remains constant or improves.* *90% delivery of renewal programs*
Function			
Environmental Compliance *Affordability and whole of life management*	*Drainage and Flood Mitigation treatment meets all relevant environmental guidelines* *Drainage and Flood Mitigation collection, transport and treatment remain affordable*	*New/Upgrade* • *Provide new/upgraded infrastructure to cater for community growth in accordance with infrastructure plan, and existing community demand* • *Provide new/upgraded infrastructure as required to comply with industry standards or statutory requirements* • *Ensure new/upgraded infrastructure is designed and constructed in accordance with Council's Guidelines.*	*90% delivery of CAPEX programs* *100% Compliance with design standards and guidelines* *5> complaints / annum*
Capacity/Utilisation			
Drainage and Flood Mitigation re-use	*Water re-use from treatment plants is optimised*	*Conduct studies for beneficial use of bio-solids and reclaimed water* *New/upgraded* • *Ensure new/upgraded infrastructure for re-use is designed and constructed in accordance with Council's Guidelines.*	*100% Compliance with design standards and guidelines* *Customer surveys* *Promote water reuse*

Growth

Development

The new assets required to meet development growth will be acquired free of cost from land developments and constructed/acquired by Council.

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

Demand

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices, and environmental.

Specific to Council, the demand factor that may impact on service delivery are summarised in Table 19.

Table 19: Demand Impact

Demand Driver	*Current Position*	*Projected Position*	*Potential Impact*	*Response Required*
Community Growth*	8949 residents	*No current prediction available.	Population growth will result in an increase in asset use and have an impact on the lifecycle cost of the assets.	There is not enough growth to have a significant impact on services.
Demographic*	Median age 44.7 22.2% >65 years of age	*No current prediction available.	Increases in the median age increases the importance for service accessibility.	The average population being relatively young will increase the need for community Drainage and Flood Mitigationinfrastructure.
Tourism	Tourism and related industries account for less than XX% of the total employed in the Council area.	*No current prediction available.	An increase in visitors to the area will have a larger effect on infrastructure services.	Council will not have to increase size of the asset base specifically for tourism increases.

*(*Australian Bureau of Statistics – [Edward River Council])*

Growth/Demand Response

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Non-asset solutions focus on providing the required service without the need for Council to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures.

Opportunities for demand will be developed in future revisions of this asset management plan.

Council's current adopted growth rate is 1% per annum. There is existing capacity in the Drainage and Flood Mitigation network to cater for this level of growth for the foreseeable future.

Risk Management

Risk Management Objectives

Council has a 'duty of care' to the community in relation to management of the assets and appropriate management of risk. Council must reduce risk where it is reasonable to do so. Risks that affect Council include:

- Risks associated with the loss of service by the failure of critical assets
- Financial risks from a lack of due diligence in the management of funding for the renewal, maintenance, and operation of the assets.
- Operational risks where data and information are not maintained to standards which enable competent decision making and management outputs.

The objectives to be achieved in managing risks under the AMP are:

- Identify high risk assets
- Maintain Levels of Service
- Mitigate risks to the public
- Reduce the number and magnitude of unplanned asset failures.

Managing risks involves identifying, assessing and determining risk management option.

Risk options vary depending on several factors, including but not limited to:

- Available resources and funding,
- Risk assessment level and
- Network demand.

In this way, it may be reasonable to mitigate a lower risk when it is not practical to mitigate a high risk.

For each identified risk Council can elect to adopt one of the following positions:

- *Take the risk*
- *Transfer the risk*
- *Treat the risk*
- *Terminate the risk*

Risk Assessment Method

Risks vary in both likelihood and consequence. Analysing risks in a risk matrix can help to quantify the risk to then identify necessary treatment actions. The risk matrix used to assess Council's risks is shown below.

LIKELIHOOD	CONSEQUENCES				
	1	2	3	4	5
	Negligible	Minor	Moderate	Major	Catastrophic
A. Rare	Low	Low	Low	Moderate	High
B. Unlikely	Low	Low	Moderate	High	High
C. Possible	Low	Moderate	Moderate	High	Extreme
D. Likely	Moderate	Moderate	High	Extreme	Extreme
E. Almost Certain	Moderate	High	High	Extreme	Extreme

The options to 'treat' risks are broadly outlined below.

Risk Assessment	Treatment Options
Low (L)	Acceptable Risk • Unlikely to require specific application of resources • Manage by routine procedures • Monitor, review and react.
Moderate (M)	Acceptable Risk • Unlikely to cause much damage and/or threaten the efficiency and effectiveness of the activity • Treatment plans to be developed and implemented by operational managers • Manage by specific monitoring or response procedures.
High Risk (H)	Generally unacceptable • Likely to cause some damage, disruption, or breach of controls • Senior management attention needed, and management responsibility specified • Treatment plans to be developed and reported to executives.
Extreme (E)	Not acceptable • Likely to threaten the survival or continued effective function of the organisation, either financially or politically • Must be managed by senior management with detailed treatment plan in place • Immediate action required.

Risk Analysis - Asset Failure

The asset risk has been calculated using the criticality of the asset as a measure of the consequence of failure and the condition rating as the likelihood of the asset failing. A risk rating was assigned to every Drainage and Flood Mitigation Asset.

Table 20 and **Error! Reference source not found.** quantify the number of assets at each level of risk, Council's risk exposure to asset failure in the Drainage and Flood Mitigation network, and the assets assessed as having an extreme risk of failure.

Table 20 Risk Rating Matrix

	Consequence				
Likelihood	1	2	3	4	5
1		*685*	*9*	*11*	*11*
2		*982*	*1*	*11*	
3		*2353*			
4		*1132*			
5		*368*			

No assets have an extreme risk rating as included in Table 20 Risk Rating Matrix.

Risk Analysis - Operational Activities

Table 21: Drainage and Flood MitigationOperational Risk Assessment

Asset at Risk	*Risk ID*	*Critical Incident*	*Cause*	*Likelihood*	*Consequences*	*Rating*
Flood Mitigation and Drainage	S1	Failure to detect conduit failure causing leak	Reduced Asset inspection programs	Unlikely	Major	High
Flood Mitigation and Drainage	S2	Poor Quality Assets provided or constructed	Failure to comply with Council's guidelines	Rare	Major	Moderate

Operational Risk Report

The risk report resulting from the assessment is included as Table 22 below.

Table 22: Risk Report

ID	*Risk Description*	*Risk Assessment*	*Action*	*Proposed Treatment Options*	*Estimated Cost*	*Target Risk Result*
S1	Assets are being acquired or created and recorded in the asset register. The information recorded is not appropriate. (e.g. Asset Name: "Capital works")	High	Treat	Improve processes and procedure documentation Train staff Improve data recording of Ops & Maint. Exp Improve asset data recording, capitalisation and management	$TBA	Moderate
S2	Annual works programs are not being delivered. (plan, design and construct within a single year)	High	Treat	Amend budgets to include Forward Planning and Forward Design allocations.	Nil	Moderate

TBA (To Be Assessed) are reactive in nature and will be addressed when the issue arises

Available Funding

The available funding was estimated based on the financial model provided by Council. The Capital expenditure has been extracted from Council's Financial Model, however the operations and maintenance expenditure funding forecasts are imbedded in the model data and not clearly identified by asset class. Therefore, these operational expenditure funding forecasts are based on current levels of expenditure. The assumption being that this level of funding is enough to deliver the current service levels.

The forecasts estimated in this AMP should be used as an indication of expenditure levels and distribution required for the Long-Term Financial Plan.

Long Term Financial Plan Summary

The LTFP funding available for operations, maintenance and infrastructure renewals is shown in Table 23. The total allocation over the term of the LTFP is $6.7M or when considered without the $2,000,000 allocation for the North Deniliquin Levee equivalent to an annual allocation of $477K.

Table 23: Long Term Financial Plan

Financial Year Ending	*New/Upgrade*	*Operations & Maintenance*	*Renewals*	*Total*
2020	*$240,000*	*$114,605*	*$0*	*$354,605*
2021	*$2,250,000*	*$117,487*	*$0*	*$2,367,487*
2022	*$450,000*	*$120,407*	*$0*	*$570,407*
2023	*$450,000*	*$123,399*	*$0*	*$573,399*
2024	*$450,000*	*$126,466*	*$0*	*$576,466*
2025	*$450,000*	*$129,610*	*$0*	*$579,610*
2026	*$450,000*	*$132,831*	*$0*	*$582,831*
2027	*$250,000*	*$136,130*	*$0*	*$386,130*
2028	*$250,000*	*$139,510*	*$0*	*$389,510*
2029	*$250,000*	*$142,975*	*$0*	*$392,975*
Total	**$5,490,000**	**$1,283,421**	**$0**	**$6,773,421**

Operations & Maintenance

Operations and Maintenance activities relate to the day-to-day running and upkeep of assets, the costs of which are particularly significant for dynamic/short-lived assets.

Operations expenditure is recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant, on-costs and overheads but excludes maintenance and depreciation.

Maintenance activities are those necessary for retaining an asset as near as practicable to its original condition, including regular ongoing day-to-day work necessary to keep assets functioning and in good repair. It is operating expenditure required to ensure that the asset reaches its expected useful life.

Maintenance Specifications

The links below contain the maintenance specification details (A summary of maintenance activities is attached in *Appendix B – Maintenance Activity Specification*.

Table 24 Operations and Maintenance Documents

Maintenance Specification Details			
Document	*Status*		*Document Reference*
Drainage and Flood Mitigation SDP	Up to Date		Draft
Activity Specification	Up to Date		Draft
Maintenance Manual	To be Drafted		

Operations & Maintenance Program

Currently maintenance is managed based on historical information and trends. The maintenance service objectives are to:

- Maintain Council's infrastructure in a safe, serviceable and aesthetic condition to the satisfaction of Council and the community;
- Maintain and preserve the functionality and value of the existing assets;
- To provide and maintain a safe environment for the community within the constraints of Council's financial capacity and resource capability, while displaying a reasonable "duty of care"; and
- Ensure the provision of a high standard of customer service and that customer requests are responded to quickly efficiently.

Council's future operations and maintenance expenditure is based on last financial year's financial statements. This data only provided very limited granularity and insight into the operations and maintenance work it represents. The operations and maintenance expenditure is not broken down into specific tasks. From this data it is not possible to assess whether the level of operations and maintenance being conducted is appropriate or how it will change over the planning period.

The associated increase in required operations and maintenance expenditure has been included Council's adopted growth rate (2.5%).

The projected operations and maintenance expenditure can be seen in *Table* 25 and Figure 13 below.

Table 25 Forecast Operations and Maintenance expenditure

Financial Year Ending	*Operations*	*Maintenance*	*Total*
2020	*$1,005*	*$113,600*	*$114,605*
2021	*$1,047*	*$116,440*	*$117,487*
2022	*$1,056*	*$119,351*	*$120,407*
2023	*$1,065*	*$122,335*	*$123,399*
2024	*$1,073*	*$125,393*	*$126,466*
2025	*$1,082*	*$128,528*	*$129,610*
2026	*$1,090*	*$131,741*	*$132,831*
2027	*$1,095*	*$135,035*	*$136,130*
2028	*$1,100*	*$138,411*	*$139,510*
2029	*$1,104*	*$141,871*	*$142,975*
Totals	**$10,717**	**$1,272,704**	**$1,283,421**

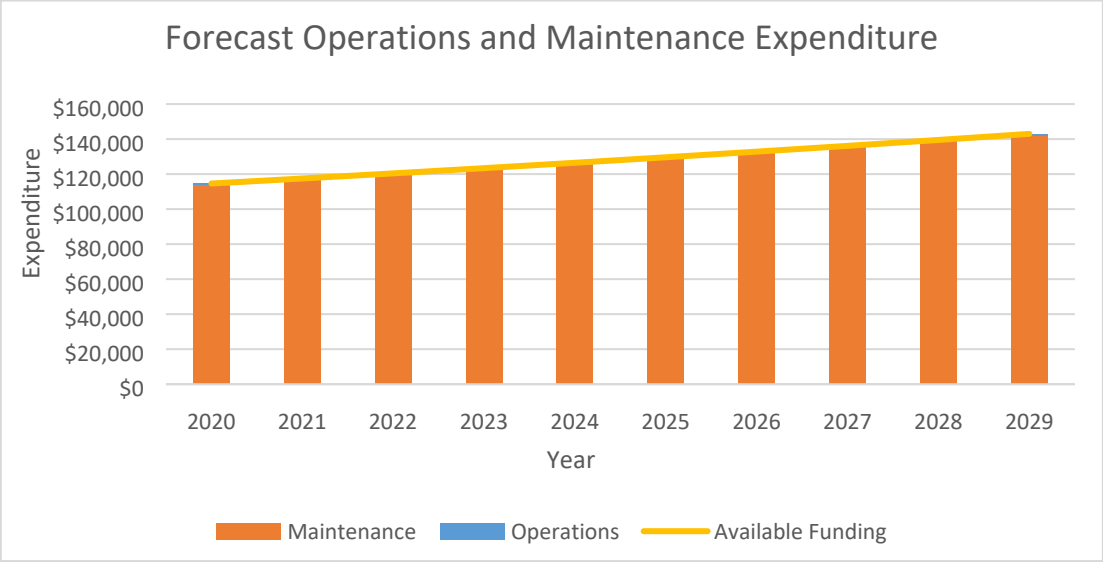


Figure 13: Operations and Maintenance Expenditure Forecasts

The annualised expenditure on operations and maintenance activities for the next 10 years is $128K per annum

Maintenance Expenditure Ratio

A following ratio is calculated based on the current Drainage and Flood Mitigation maintenance expenditure ($114,600) as a percentage of the current replacement value of the Drainage and Flood Mitigation Assets.

Table 26: Operations & Maintenance Funding Ratio

Maintenance Expenditure Ratio	0.22%

The benchmark for maintenance expenditure levels is based on the depreciation of assets with a condition greater than or equal to 3.. These estimated expenditure levels are shown in *Table 27 Depreciation Expense levels*.

Table 27 Depreciation Expense levels

Condition	*Annual Depreciation*
3	*$180,683*
4	*$52,429*
5	*$16,448*
Total	***$249,560***

The annual depreciation total represents 0.48% of the current replacement cost of the asset base.

Therefore, current maintenance levels are less than half of the benchmark guidelines.

Renewals Planning

Renewal expenditure does not increase the asset's design capacity but restores, rehabilitates, replaces, or renews an existing asset to its original or lesser required service potential. Work over and above restoring an asset to original service potential is classed as upgrade or new works expenditure.

The renewals are based on the asset valuation data. Additionally, the assets that had been programmed in Council's capital works program have been included for comparison.

The renewals forecasting includes 3 different approaches as follows:

Depreciation Renewals

This is a 'top down' approach that uses the depreciation or 'consumption' rate as a guide to how much Council should be investing in renewals to effectively maintain the assets. This is calculated from the financial register using valuation data. This does not necessarily reflect the technical condition of the assets or the potential impact on the life of the asset due to changes in maintenance and operational practices.

Planned Renewals

There is no separate allocation or program for DFM renewals. The drainage network was initially constructed to the "standards of the day" however these standards have since been revised to include increased flood capacity. Therefore, all future renewals have been included in the upgrade expenditure forecast.

Condition Renewals

This is a more rigorous 'bottom up' approach that uses the condition of each asset and develops a renewal program on timely investment of expenditure to renew the asset at the end of its life. The forecast renewal expenditure is then more representative of when the expenditure is required. The condition of the assets is age based and does not align with the current remaining life estimates, therefore until the condition of culverts and pits is confirmed a summary estimate of funding requirements has been included in the upgrade expenditure forecasts.

Renewals Program

The annualised depreciation model indicates that $508,000 needs to be spent on DFM asset renewals.

New and Upgrade

New and Upgrade expenditure is for the provision of, or improvement to, an asset where the outlay can reasonably be expected to provide benefits beyond the year of outlay, including a value management approach that aims to produce the most economic and creative solutions.

New/Upgrade Prioritisation Approach

The considerations taken into account when prioritising new/upgrade Projects. The discussion may include some example criteria as documented below:

- New/upgrade projects that involved legislative drivers were prioritised over others that did not, to ensure compliance with statutory requirements.
- Once the legislation assessment was completed, projects were assessed against alignment with approved Council plans, policies, and strategies. This was essential to ensure projects were not being developed outside the scope of strategic Council documents.
- A risk assessment was undertaken, to identify projects with higher risk. This was necessary to identify the consequences and impacts if projects were not undertaken. Projects identified as higher risk were prioritised over those with a lower risk.
- An assessment of community growth and demand based on technical levels of service on services within the Council area was undertaken. This highlighted that projects associated with growth areas such as the northern growth corridor warranted being prioritised over those not located in such an area.
- For projects concerning the upgrade of existing assets, these were given priority over new assets in order to maximise / enhance existing infrastructure before investing in new, additional assets
- Include evidence of a value management approach taking into consideration the Whole of Life costs of each project

New / Upgrade Program

It is an objective of the Community Strategy to undertake projects that generate new infrastructure or upgrade existing infrastructure, The 10-year DFM CAPEX program is summarised in *Table 28 10-Year CAPEX Program*.

Table 28 10-Year CAPEX Program

Asset Class	Facility Name	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Urban Drainage	Packenham Street Drainage Extension	$80,000										$80,000
	Deni Industrial Area - Stage 1	$100,000										$100,000
	Stormwater Drainage System Investigations	$60,000										$60,000
	Deni Industrial Area - Stage 2		$100,000									$100,000
	West Deni Drainage		$100,000									$100,000
	Future Projects		$50,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000	$2,050,000
Levee Bank	North Deniliquin Levee		$2,000,000									$2,000,000
	Floodplain Risk Management Plan Implementation			$200,000	$200,000	$200,000	$200,000	$200,000				$1,000,000

Disposal / Rationalisation

Council has undertaken a review of the configuration, type and location of Drainage and Flood Mitigation Assets and the service delivery process relevant to the activity, when an asset becomes uneconomical to maintain or rehabilitate, or is no longer required.

There is currently no information regarding any assets that may have been disposed of. It has been assumed that all assets on the register are in use.

Disposals

There have been no assets identified for disposal however some asset recorded in the asset register no longer exist, therefore a disposal plan will need to be developed once the asset data issues have been addressed.

Forecast Expenditure

Financial Summary

The forecast expenditure to deliver the planned New/upgrade program, the condition renewal plan and sustain the current level of operations and maintenance is outlined in Table 29 below. This gives a 10-year total of $28.6M.

Table 29: 10-Year Forecast Expenditure

Financial Year Ending	Risk Treatment	New or Upgrade	Operations	Maintenance	Renewals	Total
2020	$0	$240,000	$1,005	$113,600	$0	$354,605
2021	$0	$2,250,000	$1,047	$116,440	$0	$2,367,487
2022	$0	$450,000	$1,056	$119,351	$0	$570,407
2023	$0	$450,000	$1,065	$122,335	$0	$573,399
2024	$0	$450,000	$1,073	$125,393	$0	$576,466
2025	$0	$450,000	$1,082	$128,528	$0	$579,610
2026	$0	$450,000	$1,090	$131,741	$0	$582,831
2027	$0	$250,000	$1,095	$135,035	$0	$386,130
2028	$0	$250,000	$1,100	$138,411	$0	$389,510
2029	$0	$250,000	$1,104	$141,871	$0	$392,975
Total	**$0**	**$5,490,000**	**$10,717**	**$1,272,704**	**$0**	**$6,773,421**

The estimated available funding forecast is outlined in Table 23: Long Term Financial Plan above.

The comparison of the projected 10-year expenditure and the funding included in the LTFP can be seen in Figure 14 below.

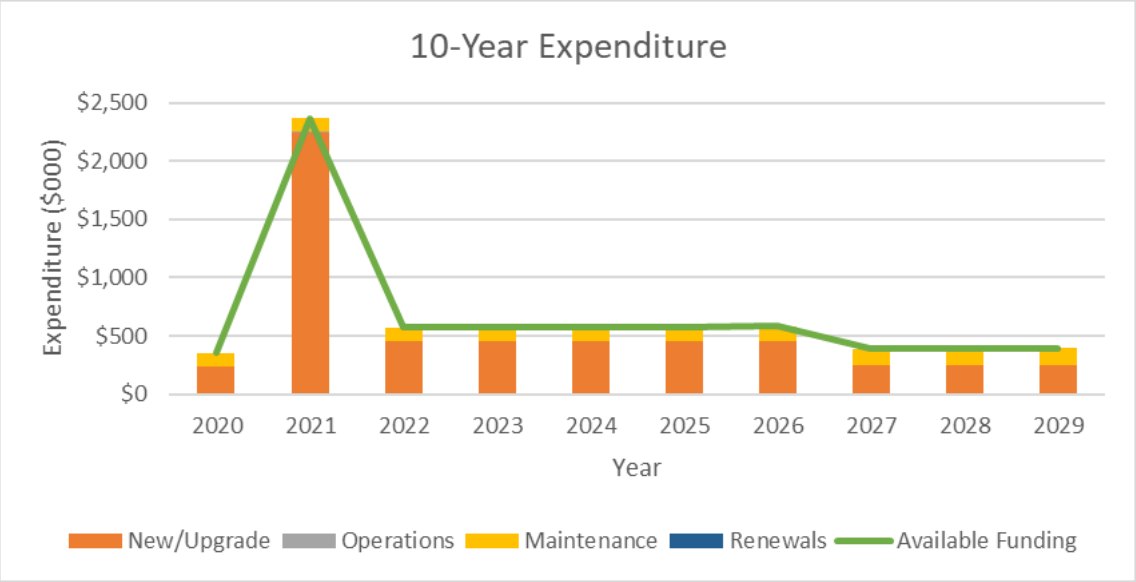


Figure 14: Expenditure Forecast

The DFM expenditure forecasts are fully funded in the LTFP.

Asset Values

The valuation is based on:

- A review of the asset register;
- Unit rates based on Council's construction costs and published rates; and
- Condition assessments to determine remaining useful life.

Table 30: Asset Valuations

Asset Class	Replacement Cost	Accumulated Depreciation	Fair Value	Annual Depreciation
Drainage and Flood Mitigation Assets	*$52,538,426*	*$12,620,096*	*$39,918,330*	*$526,908*

Asset values are forecast to remain the same no new/upgrade capital works are planned at this stage.

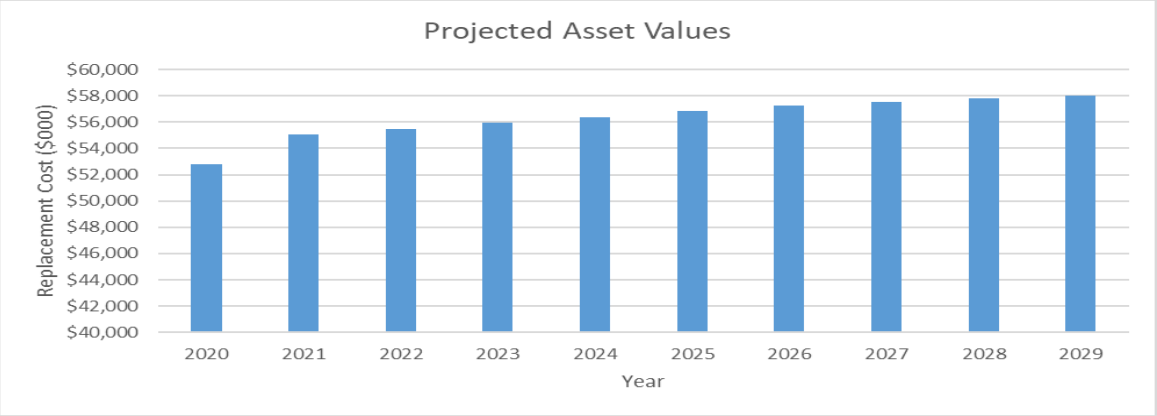


Figure 15: Asset Valuation Forecast

shows the projected asset values over the planning period. The depreciation expense can be seen in Figure 16 below.

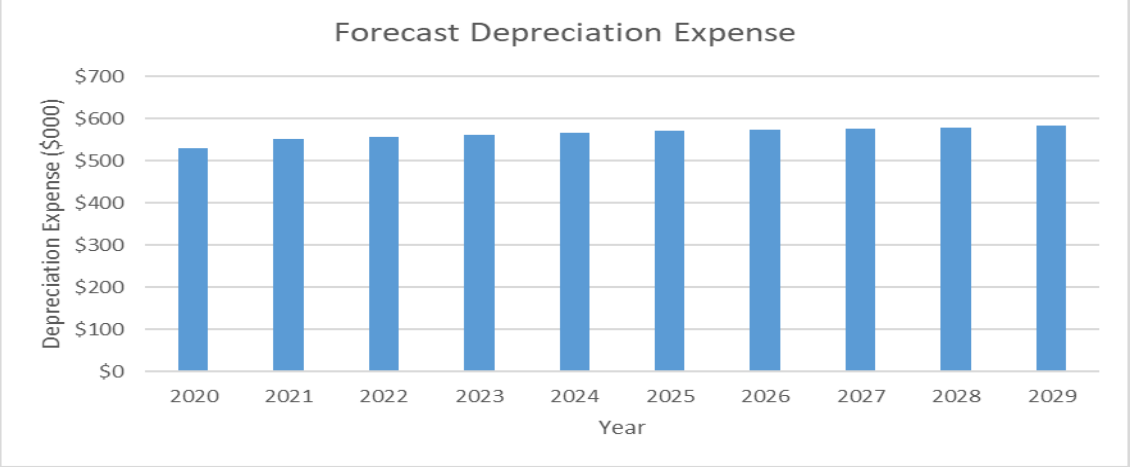


Figure 16: Projected Depreciation Expense

The value of the depreciated assets will vary over the planning period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. The projected value of the depreciated assets is expected to increase as the expenditure on renewals is more than the depreciation rate, this can be seen in Figure 17.

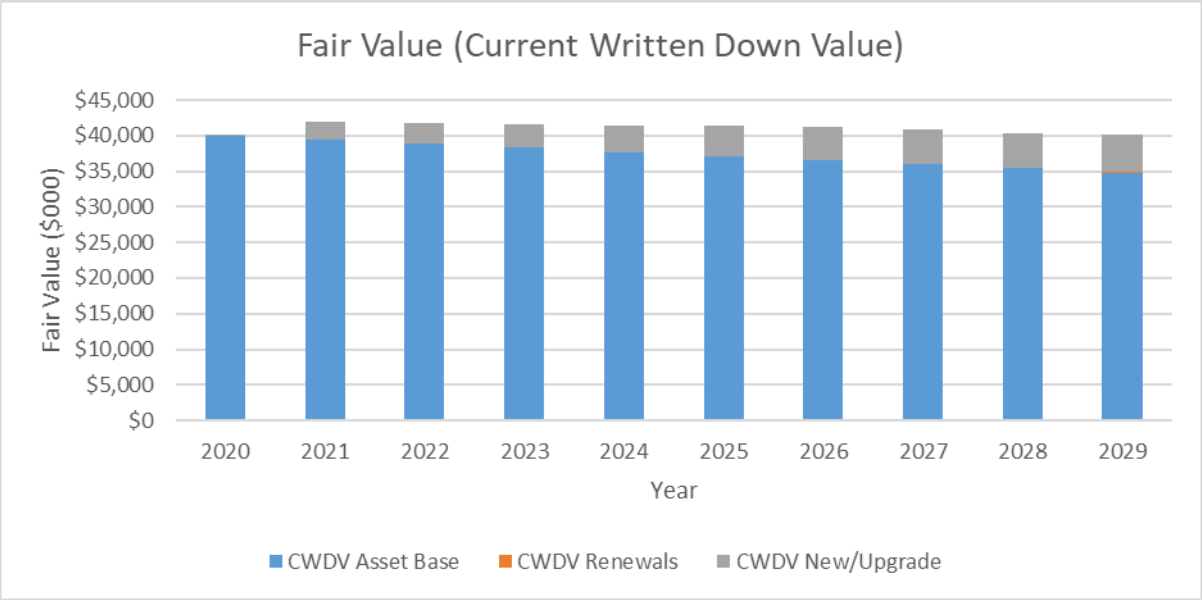


Figure 17: Projected Value of Depreciated Assets

Performance Ratios and Sustainability

Annual Ratios

The sustainability outputs are provided to demonstrate the trends that the currently anticipated expenditure will have on key measures. Capital Expenditure for 2017-2018 is shown in Table 31.

Table 31: Capital Expenditure 2017-2018

Year	*Capital Renewal Expenditure*	*Capital New/Upgrade Expenditure*	*Total Capital Expenditure*
2017-2018	*$1,143,600*	*$0*	*$1,143,600*

Consumption Ratio

The consumption ratio provides a measure of the percentage of the asset base consumed to date and an indication of how fast the assets are being consumed each year and whether investment may require adjustment.

FORMULA
Written down value of assets/ Gross current renewal costs

IN OTHER WORDS
The current value of the assets divided by What it would cost to renew them

TARGET
improvement over time (40% - 80%)

Council = 75.98

Table 32: Annual Asset Consumption

Annual Asset Consumption (Depreciation/Depreciable Amount)	*1.00%*

The Annual Asset Renewal Ratio provides a measure of the rate of investment in renewals.

Table 33: Annual Asset Renewal

Annual Asset Renewal (Capital Renewal Expenditure/Depreciable Amount)	*2.18%*

The Annual New & Upgrade ratio provides an indication of the rate of growth of the asset base.

Table 34: Annual New & Upgrade Ratio

Annual New/Upgrade *(Capital New & Upgrade / Depreciable Amount)*	0%

Sustainability Ratio (Levels of Service)

Knowing the extent and timing of any required increase in funding will assist Council in providing services to their communities in a financially sustainable manner.

There are three key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset class. These indicators are:

- Medium term ratios 5 and 10 year.
  This ratio compares the projected operations, maintenance and capital renewal expenditures to the available funding. The Capital renewal estimate is based on the condition of the asset base. This also includes the operations and maintenance expenditure incurred because of planned new and upgraded assets.
  It is an indication of the expenditure required to deliver current levels of service to existing customers and cater for growth.
- Whole of life ratio
  This ratio compares the projected operations, maintenance and capital renewal expenditures to the available funding. The Capital renewal estimate is based on the average annual renewal costs modelled over 100 years.
  It is an indication of the expenditure required to deliver current levels of service to the current customer base over the life of the current asset base.

These forecast expenditures have been compared to funding allocations for the same expenditure types in the 10-year period to identify any funding discrepancies.

FORMULA
Life Cycle Costs (Ops, Maint, Renewal)
Funding Allocation

IN OTHER WORDS
Average annual ops, maint, and renewal costs
Average allocated funding

TARGET
A percentage greater than 90%

Council
5-year = 100%
10-year = 100%
Whole of Life = 20%

Table 35: Service Sustainability

	5 Year Financial Planning Period	*10 Year Financial Planning Period*	*Whole of Life Costs*
Forecast Expenditure	*$602,364*	*$1,283,421*	*$655,250*
Forecast Budget	*$602,364*	*$1,283,421*	*$128,342*
Funding Surplus	*$0*	*$0*	*-$526,908*
Funding Ratio	*1.00*	*1.00*	*0.20*

The depreciation ratios for 5-year and 10-year forecasts are 0.19 and 0.2 respectively. This is reflective of the whole of life ratio.

The condition-based ratios of 1.00 result from not having a condition-based renewal program due to the condition rating not being confirmed and from the renewals funding being in the Upgrade program. Future iterations of this plan based on improved data will provide a more accurate estimate of expenditure requirements

Plan Improvement

Performance Measures

The effectiveness of the asset management plan can be measured in various ways including:

- The degree to which the required cash flows identified in the development of the final plan are incorporated into Council's long-term financial plan and Community/Strategic Planning processes and documents,
- The degree to which 1-5-year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan;
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Council's Strategic Plan associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

Monitoring and Review Procedures

This plan will be reviewed during annual budget preparation and amended to recognise any material changes in service levels and/or resources available to provide those services as a result of the budget decision process.

This plan has a life of three years and is due for major review in 2019.

Improvement Plan

An asset management improvement plan generated from this asset management plan is shown in

.

Task No.	Task	Responsibility	Resources Required	Timeline
1	Develop a condition assessment program, supported by a data management procedure and Condition assessment manuals			
2	Develop an asset criticality model for this asset class			
3	Confirm current levels of service for the assets and identify future demand impacts on levels of service.			
4	Review asset naming descriptions. Update where necessary.			
5	Conduct asset inspections, condition assessments and valuation based on new data set.			
6	Develop priority ranking system for renewal/maintenance program.			
7	Review Asset Management processes and procedures and establish new or update as necessary.			
8	Prepare assets financial inputs for financial reporting.			
9	Develop distinction between operations, maintenance and capital works. Consider in this assessment the distinction between maintenance and renewal works.			
10	Develop an asset data confidence model to prioritise data improvement activities			
11	Develop a corporate demand management plan and associated models.			
12	Apply the demand management plan to all asset groups, at each level to ensure that Council understands the funding needs to deliver the works.			
13	Undertake an annual review and update of this asset management plan.			
14	Consideration be given to transferring the Kerb & Gutter assets to the Transport Asset Class.			

Evaluation of findings

The majority (89%) of the DFM assets are in good condition and do not require any attention other than routine maintenance. However, Council's asset data indicates that 2.6% ($1.3M) are in very poor condition and are failing or have failed and an additional 8% ($4.2M) are in poor condition and showing significant deterioration.

The majority (97%) of the poor and very poor assets are the underground conduits and pits. The condition of these assets is based on the assets age, therefore further investigation and condition assessments are required to confirm these ratings and the need for action.

There is a mis-alignment between the remaining life data and the condition rating that needs to be addressed before any condition-based renewal programs (bottom up) can be confidently generated. Until such time a nominated funding require has been included in the LTFP.

There is no separate allocation or program for infrastructure renewals. The drainage network was initially constructed to the "standards of the day" however these standards have since been revised to include increased flood capacity. Therefore, all future renewals have been included in the upgrade expenditure forecast.

There is a $2,000,000 budget allocation in both the LTFP and DFM CAPEX program for the planned North Deniliquin Levee project.

The 10-year expenditure forecast for the delivery of Drainage and Flood Mitigation services is $6.8M or $680K per annum. This figure is fully funded in the LTFP.

Next Steps

4. Council adopts the LTFP, this AMP and the associated works programs
5. Council confirm the condition, standard asset lives, and remaining life estimates of its DFM assets.
6. The initiatives identified in the AMP improvement plan be implemented.

Appendix A - Asset Management Practices

Council is currently using TechOne financial system for asset accounting processes and related reporting functions. Asset data included in the system is directly integrated with the financial system.

The intention is to record, further develop and consolidate the processes used for asset and services management, and then review the systems available which will complement those processes. The timeframe for that review will be established in the Asset and Services Management Practices Improvement Strategy.

The finance module is the responsibility of the finance department. The engineering and finance departments are jointly responsible for ensuring the integrity of the system and asset financial information overall.

TechOne has an asset database module that Council uses to monitor their assets. In this way the asset and financial data bases can be aligned. The key information flows into this asset management plan are:

- *Council corporate and operational plans;*
- *Service requests from the community;*
- *Network assets information;*
- *The unit rates for categories of work/materials,*
- *Current levels of service and expenditures;*
- *Projections of various factors affecting future demand for services and new assets acquired by Council;*
- *Future capital works programs; and*
- *Financial asset values.*

The key information flows from this asset management plan are:

- *The projected works program and trends;*
- *The resulting budget and long-term financial plan expenditure projections; and*
- *Financial sustainability indicators.*

These will impact the Long-Term Financial Plan, Strategic Longer-Term Plan, annual budget and departmental business plans and budgets.

Standards, guidelines and policy documents referenced in this asset management plan are:

- *Council Corporate Plan (2013-2018).*
- *Council Operational Plan (2015/2016)*
- *Council Asset Management Policy*
- *Council Asset Management Strategy*
- *National Construction Code of Australia*
- *Disability and Discrimination Act*
- *Applicable Australian Standards associated with asset maintenance, renewal and upgrade works.*

Appendix B – Maintenance Activity Specification

Activity No	Activity	Description	Hierarchy	Inspection Frequency	Intervention Level	Maintenance Frequency	Response time	Target Duration	Complaints Target	Asset Custodian	Service Provider	GL Code	Comment
1	Inspections	Defect inspections on all road, footpath, kerb and channel and drainages	Urban Drainage	Three Monthly or after heavy rain evert	Inspection cycle and after rain event	per inspection cycle	1 month of when due	Two weeks	50 annually for drainage and levees		Supervisor Roads		OP 1525 1527 & 1529 are for Drainage Inspections and no numbers for Levee & Weir Inspections
			Levees and Weirs	12 monthly (Prior to flood season)	Inspection cycle and after rain event	per inspection cycle	1 month of when due	Two weeks			Supervisor Roads		
2	Unsealed road grading	Grading Road Surface & Drainage Profile Maintenance	Gravel Roads	Three monthly	Clear Obstructions to culverts and maintain profile	As required as per inspection and storm damage	2 week response time	6-8km per day for light grading 3km per day for heavy grading	25 complaints per year		Supervisor Roads	OPs for individual roads	Fire Heavy grading will drop considerably as a number of factors are considered.ie clearing of back cut and cleaning of culverts etc.
			Earth roads	Three monthly	As per above	Annually	When graders in area	5-6 for heavy grade, 6-8km per day for light grade	10 per year		Supervisor Roads		
8	Drainage works	Drainage on rural and urban roads	Urban pipes and drains	As per inspection cycle	The depth of scour exceeds 300mm. Water ponding or restricting flow due to defective or blocked drain-or causing hazard on road or to property. Headwall cracked, needing repair or placement. Pipe or culvert collapsed or misaligned, needing repair or replacement. Defective or blocked subsurface drain including faulty or blocked outlets and flush points. Obstructions in table drains onto road. Obstructions in table drains>300mm	As per inspection cycle	On request Immediately After rain event As per inspection cycle	1 day	50 per year		Supervisor Roads	OP 1526 1528 1530	RMCC are OP1013 & 1014 Rural Roads are booked out to individual road Op numbers
			Open Drains	Annual	When growth impedes flow spraying and excavation works as required	As per inspection cycle of customer request	Within 2 weeks of request or after rain event As per inspection cycle	Up to a week depending on scope of work	10 per year		Supervisor Roads		
23	Drainage work	Installation and repairs to Pits Pipes and Culverts	Drainage pits and Pipes	Three monthly	Pit Lids – Broken or Damaged	Per inspection cycle & customer request	As soon as possible	1-2 hours	5 Per year		Supervisor Roads	OP 1526	
			Drainage pits and Pipes	Three monthly	Replace -	Per inspection cycle & customer request	1 to 2 weeks depending on supplies	1 day depending on scope	5 Per year		Supervisor Roads	OP 1527	
			Drainage pits and Pipes	Three monthly	Culvert Maintenance – Cracked or damaged pipes and headwalls	Per inspection cycle & customer request	As soon as possible depending on severity and location	1 day depending on scope	5 Per year		Supervisor Roads	OP 1528	

Activity No	Activity	Description	Hierarchy	Inspection Frequency	Intervention Level	Maintenance Frequency	Response time	Target Duration	Complaints Target	Asset Custodian	Service Provider	GL Code	Comment
			Drainage pits and Pipes	(WATER & SEWER CREW)	Litter Trap Maintenance						Supervisor Roads	OP 1529	
			Drainage pits and Pipes	(WATER & SEWER CREW)	Blockages						Supervisor Roads	OP 1530	
25	Levee Inspections & Maintenance		Levee & Weir Inspection	Annual and prior to a flood event	As determined by inspection	After Annual Inspection	Immediately leading up to a flood event and within six months after annual inspection	1 - 2 weeks			Supervisor Roads	OP 1544	
			Levee Vegetation Control	Seasonal	As determined by inspection	After Annual Inspection	As above	1 – 2 weeks for mowing and or spraying	1-2 per year		Supervisor Roads	OP 1546	
			Levee Bank Fence & Gates Maintenance	Annual	As determined by inspection	After Annual Inspection	As above	Dependant on type of structure and defect	2-3 per year		Supervisor Roads		
			Levee Pump Maintenance	Annual	As determined by inspection	After Annual Inspection	As above	1 day per pump			Supervisor Roads	OP 1545	
			Weir Maintenance	Annual	As determined by inspection	After Annual Inspection	As above	Dependant on type of structure and defect			Supervisor Roads		

Appendix C – Renewals Plan

No renewals plan available for this iteration of the AMP

Appendix D - Abbreviations

AAAC	Average annual asset consumption
AMP	Asset Management Plan
ARI	Average Recurrence Interval
CRC	Current Replacement Cost
CWMS	Community Wastewater Management Systems
DA	Depreciable Amount
EF	Earthworks/Formation
IRMP	Infrastructure Risk Management Plan
LCC	Life Cycle Cost
LCE	Life Cycle Expenditure
LGIS	Local Government Infrastructure Services
MMS	Maintenance Management System
PCI	Pavement Condition Index
RV	Residual Value
Vph	Vehicles per hour

Appendix E – Glossary

Annual Service Cost (ASC)

1. *Reporting actual cost. The annual (accrual Cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.*
2. *For investment analysis and budgeting. An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/opportunity and disposal costs, less revenue.*

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

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

Asset management (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.

Average annual asset consumption (AAAC)*

The amount of an Council's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided.

Capital expenditure

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

Capital expenditure - expansion

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

Capital expenditure - new

Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal

Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of

a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade

Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the Council's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding

Funding to pay for capital expenditure.

Capital grants

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

Capital investment expenditure

See capital expenditure definition

Capitalisation threshold

The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount

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

Component

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.

Cost of an asset

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

Current replacement cost (CRC)

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

Depreciable amount

The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)

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

Depreciation / amortisation

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

Economic life

See useful life definition.

Expenditure

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

Fair value

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

Funding gap

A funding gap exists whenever an entity has insufficient capacity to fund asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current funding gap means service levels have already or are currently falling. A projected funding gap if not addressed will result in a future diminution of existing service levels.

Heritage asset

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

Impairment Loss

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

Investment Property

Property held to earn rentals or for capital appreciation or both, rather than for:

a) Use in the production or supply of goods or services or for administrative purposes; or
b) Sale in the ordinary course of business.

Key performance indicator

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.

Level of service

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

Life Cycle Cost

1. Total LCC. The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. Average LCC. The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual operations, maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure

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

Maintenance

All actions necessary for retaining an asset as near as practicable to its original condition, including regular ongoing day-to-day work necessary to keep assets operating, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

Planned maintenance

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

Reactive maintenance

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

Significant maintenance

Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.

Unplanned maintenance

Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance and renewal gap

Difference between estimated budgets and projected required expenditures for maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Maintenance and renewal sustainability index

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

Maintenance expenditure

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

Materiality

The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset

Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)

The value to the Council of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations expenditure

Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense

The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Pavement management system

A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score

A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption

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

Rate of annual asset renewal

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

Rate of annual asset upgrade

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

Recoverable amount

The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure

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

Recurrent funding

Funding to pay for recurrent expenditure.

Remaining useful life

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

Residual value

The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments

Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate

some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

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.

Section or segment

A self-contained part or piece of an infrastructure asset.

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. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining

A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Strategic Longer-Term Plan

A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in Council's longer-term plans such as the service management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Specific Maintenance

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

Sub-component

Smaller individual parts that make up a component part.

Useful life

Either:

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

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

Value in Use

The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary