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CITY COUNCIL

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OUR PLACE. OUR FUTURE.

BRIDGE AND MAJOR CULVERT

ASSET MANAGEMENT PLAN

CESSNOCK CITY COUNCIL

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1.0 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

This Asset Management Plan (AM Plan) details information about infrastructure assets with actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide over the 10-year planning period. The AM Plan will link to a Long-Term Financial Plan (LTFP) which typically considers a 10-year planning period.

1.2 Asset Description

This plan covers the infrastructure assets that provide transport services by way of bridges and major culverts.

The Bridge and Major Culverts network comprises:

- Timber Bridges,
- Concrete Bridges and Culverts, and
- Steel or composite Bridges and Culverts.

1.3 Cessnock City Council Bridge Definition

Council has developed an assessment of determination to define an asset as a bridge or major culvert. Bridges and major culverts are in contrast to those considered as other stormwater infrastructure, which require less regulated asset management practices. Each state and territory throughout Australia apply varying principles to define bridge and major culvert structures. Transport for NSW define such assets as; *"bridges and culverts which carry State Roads over depressions and obstructions such as waterways, roadways, or railways. They must have an opening of six metres or more when measured along the road centre line, or spring lines of arches, or extreme ends of openings for multiple cells".* Cessnock City Council have utilised this definition as a baseline, with further refinement to capture those assets that have other high-risk factors, of which such examples include; high traffic volumes, no alternate detour, historic significance, material type.

In the instance of distinguishing between major and minor culverts utilising the 6m opening guide, Council utilise the following method; based on the widest end/structure/headwall it is the distance between the inner face of the outside wall of box or pipe + 100mm allowance for wall thickness either side + another 200mm each side to account for imported material. Utilising the above formula to determine the 6m rule incorporates the risk of a potential "wash-out" area in the event of an asset failure. In addition, if the placement of two individual culvert assets side-by-side result in what Council considers as a risk closer associated with a major culvert, and combined would meet the 6m opening rule, the two assets will be rated and considered as the one asset.

Further guidance can be found in Councils' condition assessment manual.

The above infrastructure assets have replacement value estimated at **$148,232,754** as at 30 June 2025.

1.4 Levels of Service

The allocation in the planned budget is sufficient to continue providing existing services at current levels for the planning period.

1.5 Future Demand

The factors influencing future demand and the impacts they have on service delivery are created by:

- Population changes,
- Changes in demographics,
- Climate change,
- Vehicle ownership rates,
- Consumer expectations,
- Technological changes,
- Economic factors, and
- Environmental awareness.

These demands will be approached using a combination of managing existing assets, upgrading existing assets and providing new assets to meet demand. Demand management practices may also include a combination of non-asset solutions, insuring against risks and managing failures.

1.6 Lifecycle Management Plan

1.6.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AM Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AM Plan is the forecast of 10-year total outlays, which for the Bridge and Major Culverts assets is estimated as $39,658,400 or $3,965,840 on average per year.

1.7 Financial Summary

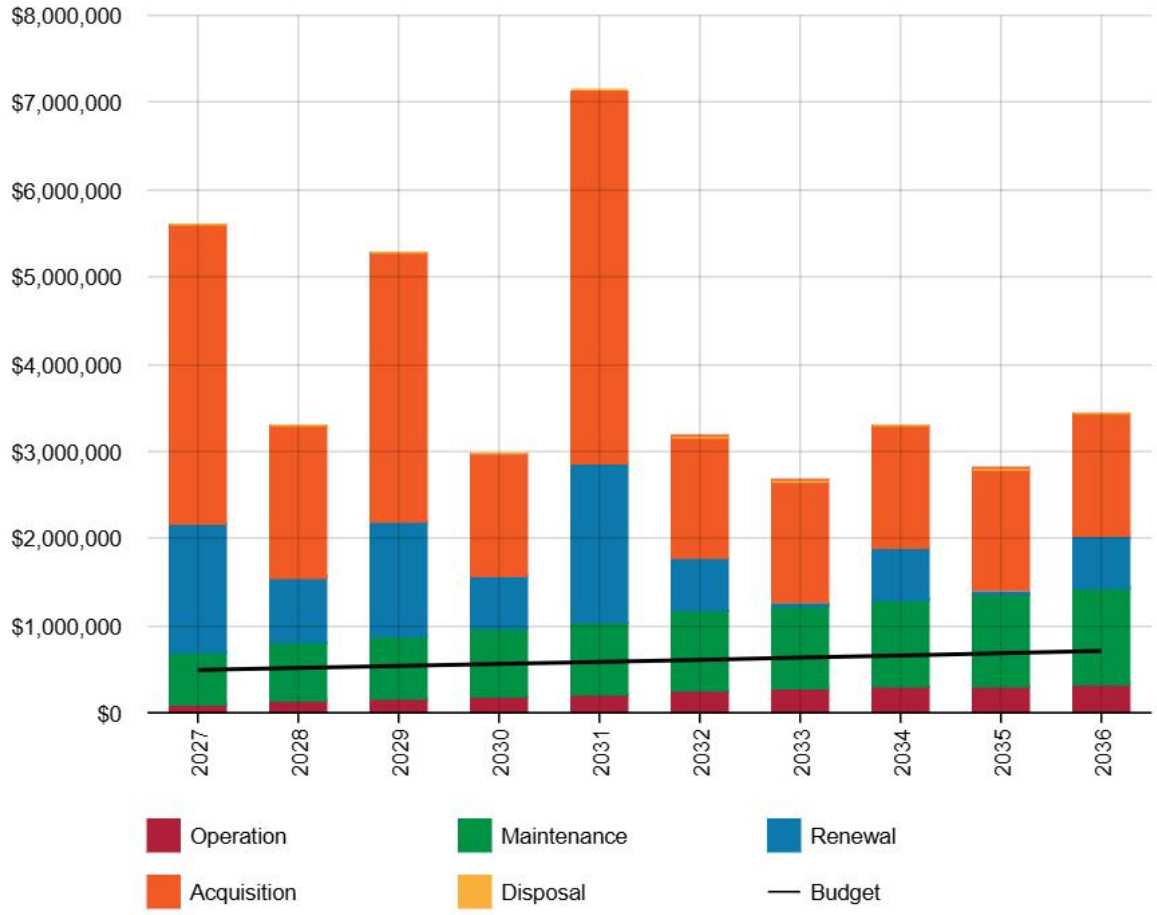
1.7.1 What we will do

Estimated available funding for the 10-year period is $5,978,735 or $597,873 on average per year as per the Long-Term Financial plan or Planned Budget. This is 15.08% of the cost to sustain the current level of service at the lowest lifecycle cost.

The infrastructure reality is that only what is funded in the Long-Term Financial plan can be provided. The informed decision making depends on the AM Plan emphasising the consequences of Planned Budgets on the service level and risks provided.

The anticipated LTFP Planned Budget for bridges covers all required forecast lifecycle costs to provide services in the 10-year period of this AM Plan. This is shown in the figure below:

Forecast Lifecycle Costs and Planned Budgets:



We plan to provide Bridge and Major Culvert services for the following:

- Operation, maintenance, renewal and upgrade of Bridge and Major Culvert assets to meet service levels set by Cessnock City Council in annual budgets.

1.7.2 What we cannot do

We currently do **not** allocate enough budget to improve the current level of service or to provide ongoing lifecycle costs for possible future dedications currently not identified.

1.7.3 Managing the Risks

Our current budget levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Load limits applied
- Assets out of service, and
- Endeavouring to manage these risks within available funding by:
  - Ongoing inspections and maintenance regime.

1.8 Asset Management Planning Practices

Key assumptions made in this AM Plan are:

- Asset data is accurate within the register as at 30 June 2025 – current under revaluation
- Relying on revaluation data from 2024/2025 (currently under review), and
- No changes are made to the adopted operation and capital works program during the life of the plan.

Assets requiring renewal are identified from either the asset register or an alternative method.

- The timing of capital renewals based on the asset register is applied by adding the useful life to the year of acquisition or year of last renewal, and
- Alternatively, an estimate of renewal lifecycle costs is projected from external condition modelling systems and may be supplemented with, or based on, expert knowledge.

The Alternate Method was used to forecast the renewal lifecycle costs for this AM Plan.

This AM Plan is based on a reliable/medium level of confidence information.

1.9 Monitoring and Improvement Program

The next steps resulting from this AM Plan to improve asset management practices include:

- Reviewing and further develop the critical asset management plan within this AMP and further define critical assets,
- Undertake further community consultation to allow a full review of service levels,
- Finalise desired levels of service by establishing current performance and setting performance targets. Service levels are adopted by Council,
- Improve response to climate change impacts, and
- Develop asset Hierarchies.

2.0 INTRODUCTION

2.1 Background

This AM Plan communicates the requirements for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service over the planning period.

The AM Plan is to be read with the Cessnock City Council planning documents. This should include the Asset Management Policy and Asset Management Strategy, where developed, along with other key planning documents:

- Cessnock 2036 – Cessnock Community Strategic Plan,
- Cessnock City Council Operational and Delivery Plan,
- Cessnock City Council LTFP,
- Cessnock City Council Annual Reports,
- 2024-2025 Infrastructure Asset Revaluation Manual,
- NSW OLG Integrated Planning Guidelines and manual,
- Cessnock City Council 2023 Resident Satisfaction Survey Results,
- Cessnock City Council 2021 Resident Satisfaction Survey Results,
- Cessnock City Council 2016 Resident Satisfaction Survey Results, and
- Cessnock City Council 2015 Asset Management Research Satisfaction Survey Results.

Cessnock City Council Asset Management maturity is considered to be ‘core’.

The Infrastructure assets covered by this AM Plan include bridges and major culverts. For a detailed summary of the assets covered in this AM Plan refer to the Table in Section 5.

These assets are used to provide safe and efficient transportation across waterways and significant topography changes throughout the Local Government Area.

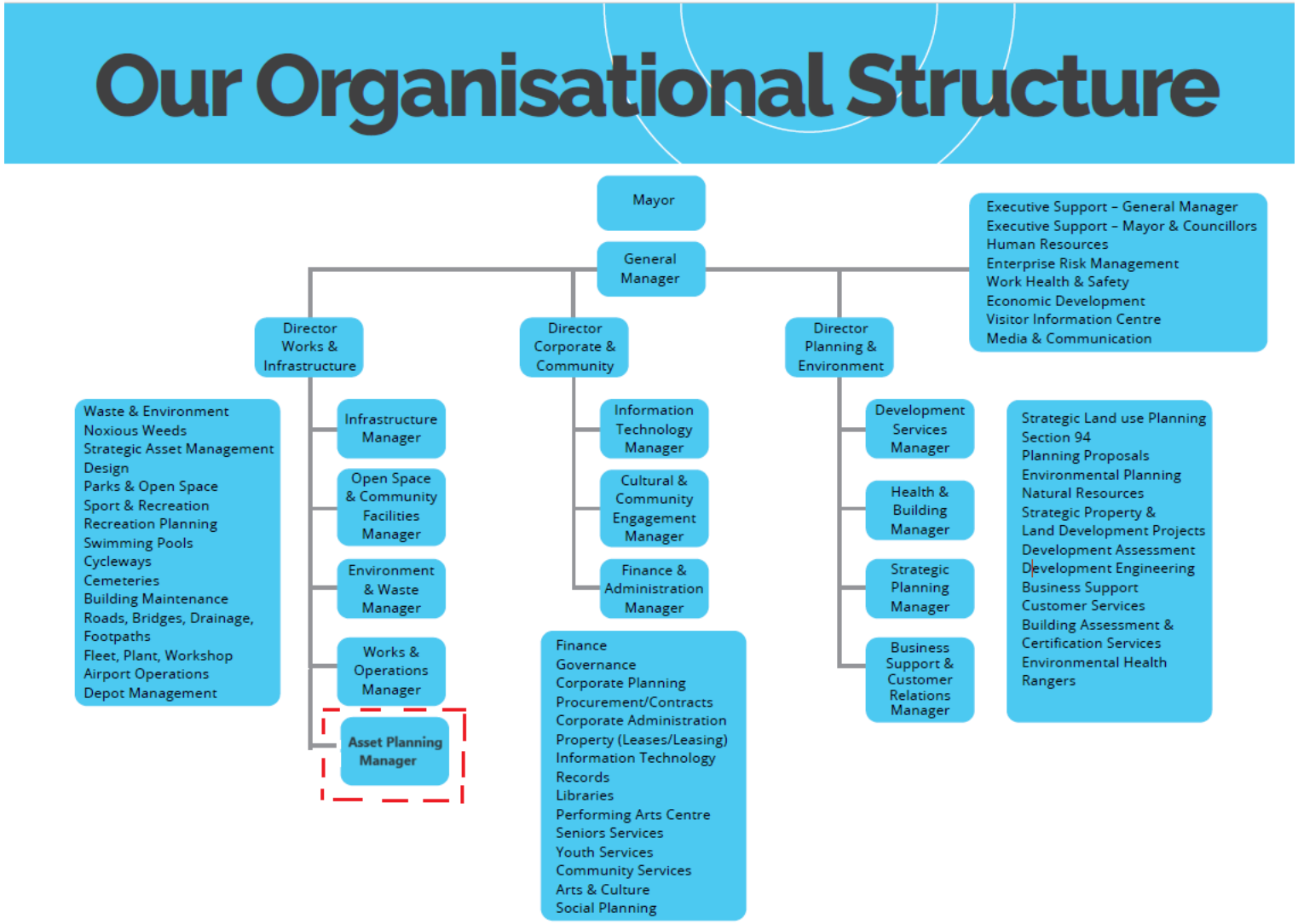
The Infrastructure assets included in this plan have a total replacement value of $148,232,754.

Key stakeholders in the preparation and implementation of this AM Plan are shown in Table 2.1.

Table 2.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Councillors	• Represent needs of the community, • Allocate resources to meet the organisation's objectives in providing services whilst managing risks, • Ensuring the organisation is financially sustainable, and • To provide stewardship by ensuring the protection of assets for current and future generations.
General Manager	• Ensure the development and implementation of Council's Asset Management Policy, Plans and Processes and for their integration with Council's Integrated Planning and Reporting Framework under the Local Government Act, and • Reporting on the status and effectiveness of Asset Management within Council.
Council Staff	• Development and implementation of Council's Asset Management Plans and Processes and for their integration with Council's Integrated Planning and Reporting Framework under the Local Government Act, • Ensure integration and compliance of the Asset Management Policy and Strategy with other policies and business processes of Council, • Ensure compliance with legal obligations, • Ensure sound business principles are reflected in the Asset Management strategies and plans that are developed, • Implementation of activities in the Plans, • Engage up to date technologies, methodologies and continuous improvement processes, and • Facilitate "Best Appropriate Practice in Asset Management".
Community	• By providing input into the services required and the cost the community is prepared to pay, and • Set expectation levels.

Our Organisational Structure for service delivery from infrastructure assets is detailed below:



2.2 Goals and Objectives of Asset Ownership

Our goal for managing infrastructure assets is to meet the defined level of service in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Linking to a Long-Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated.

Key elements of the planning framework are:

- Levels of Service – specifies the services and levels of service to be provided,
- Risk Management,
- Future Demand – how this will impact on future service delivery and how this is to be met,
- Lifecycle Management – how to manage its existing and future assets to provide defined levels of service,
- Financial Summary – what funds are required to provide the defined services,
- Asset Management Practices – how we manage provision of the services,
- Monitoring – how the plan will be monitored to ensure objectives are met,
- Asset Management Improvement Plan – how we increase asset management maturity.

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2020, and
- ISO 55000[1]

[1] ISO 55000 Overview, principles and terminology

A road map for preparing an AM Plan is shown below:

Road Map for preparing an Asset Management Plan
Source: IPWEA, 2020, IIMM, Fig 3.6.2.1

3.0 LEVELS OF SERVICE

3.1 Customer Research and Expectations

Cessnock Council engaged Micromex Research in 2023[2] to undertake community research. In the survey conducted residents were contacted to discuss their expectations in the delivery of existing infrastructure assets. Table 3.1 summarises the results from our Customer Satisfaction Survey. Specifics around satisfaction in bridge and culvert assets is somewhat difficult to ascertain and is therefore assumed to be interpreted by the community as included in roads and drainage measures.

Table 3.1: Customer Satisfaction Survey Levels 2023

Service/Facility	Importance (mean ratings)		Satisfaction (mean ratings)	
	Phone	Online	Phone	Onlin
Maintaining sealed roads	4.84	4.30	1.68	1.40
Maintaining unsealed roads	4.45	4.02	2.00	1.59
Converting unsealed roads to sealed roads	4.07	3.76	1.96	1.52
Regulating traffic flow	4.42	4.04	2.52	1.84
Stormwater drainage	4.29	4.09	2.72	2.11
Roadside drainage	4.34	4.04	2.61	2.02

Table 3.1.1: Historical Customer Satisfaction Survey Results

Performance Measure	Importance	Satisfaction	Performance Gap 2021	Performance Gap 2019
Maintaining sealed roads	4.80	1.84	2.95	2.71
Maintaining unsealed roads	4.39	2.02	2.37	2.21
Stormwater drainage	4.24	4.40	1.15	1.56
Roadside drainage	4.25	4.07	1.46	1.71
Regulating traffic flow	4.38	2.67	1.71	1.29

In addition, the 2036 Community Strategic Plan indicated the community satisfaction for roads has varied over the past 10 years, see table 3.1.1:

Table 3.1.1: Customer Satisfaction 10 Year

Measure	2012	2014	2016	2021	Target
The road network is effective and in good repair	1.45	1.91	1.87	1.84	Improve

Council also engaged Micromex Research in March of 2015 to undertake further Community Consultation. This was to determine what the community finds as an acceptable condition state of the assets. The concluding evidence from this survey found: *"The majority of residents indicated that 'Condition 3 or better' was the acceptable condition for all assets*". The online

[2] where 1 is not satisfied and 5 is very satisfied.

component of the 2023 survey suggested the community would prefer (66%) that the Council concentrate on maintaining existing assets in condition 4 & 5.

The 2021 community survey indicated that **90%** of respondents would like to see **more** investment in roads, bridges and transport, with a strong focus on spending funds **to maintain existing assets** (44%) rather than providing new.

3.2 Strategic and Corporate Goals

This AM Plan is prepared under the direction of Cessnock City Councils' vision, mission, goals and objectives.

Our vision is:

"Cessnock - Creating a Resilient, Sustainable and Diverse Community".

The 2026-29 Delivery Program has five desired outcomes as identified in the Community Strategic Plan. They are:

1. **Live**
2. **Thrive**
3. **Protect**
4. **Move; and**
5. **Lead.**

Relevant community desired outcomes and strategic directions, and how these are addressed in this asset management plan are:

Table 3.2: Goals and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in the AM Plan
Improve our Road Network	Objective 4.1.2 Ensure our existing road network remains contemporary and meets the community's needs	• Conversion of single lane bridges
	Objective 4.2 Improve our road network	• Advocate for state funding to better manage traffic impacts on the bridge and culvert network. • Upgrade timber bridges with load limits

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the bridges and major culverts are outlined in Table 3.3.

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act 1993	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a Long-term Financial plan supported by asset management plans for sustainable service delivery. The purposes of this Act are as follows: a) to provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales, b) to regulate the relationships between the people and bodies comprising the system of local government in New South Wales, c) to encourage and assist the effective participation of local communities in the affairs of local government, To give councils: • the ability to provide goods, services and facilities, and to carry out activities, appropriate to the current and future needs of local communities and of the wider public; • the responsibility for administering some regulatory systems under this Act; and • a role in the management, improvement and development of the resources of their areas. d) to require councils, councillors and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities.
Local Government Act Annual Report Section 428(2)(d)	e) A report of the condition of the public works (including public buildings, public road and water sewerage and drainage works) under the control of council as at the end of that year; together with: (i) An estimate (at current values) of the amount of money required to bring the works up to a satisfactory standard, (ii) An estimate (at current values) of the annual expense of maintain the works at that standard, and (iii) The Council's programme for maintenance for that year in respect of the works.
Civil Liabilities Act	*Part 5 - liability of public and other authorities*; covers Councils' obligation to provide a duty of care to its residents within their available funding and/or resources.
Public Works Act	Sets out the role of Council in the planning and construction of new assets.
Environmental Planning and Assessment Act	An Act to institute a system of environmental planning and assessment for the State of New South Wales. Among other requirements the Act outlines the requirement for the preparation of Local Environmental Plans (LEP), Development Control Plans (DCP), Environmental Impact Assessments (EIA) and Environmental Impact Statements.

Legislation	Requirement
Work Health and Safety Act	The main object of this Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces.
Work Health and Safety Regulations	Sets out roles and responsibilities to secure the health, safety and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work. Council is to provide a safe working environment and supply equipment to ensure safety.
AS5100	Bridge design, Part 1: Scope and general principles. Bridges in Australia and New Zealand are designed in accordance with AS 5100 (Bridge Design), and the NZ Transport Agency Bridge Manual. The Guide provides supporting information to the Standards, enabling users to apply and interpret them to achieve the best design, assessment, management and maintenance outcomes.
Threatened Species Conservation Act	An Act to conserve threatened species, populations and ecological communities of animals and plants.
Protection of the Environment Operations Act	Council is required to exercise due diligence to avoid environmental impact and among others are required to develop operations emergency plans and due diligence plans to ensure that procedures are in place to prevent or minimise pollution.
Road Transport (Safety and Traffic Management) Act	Facilitates the adoption of nationally consistent road rules in NSW, the Australian Road Rules. It also makes provision for safety and traffic management on roads and road related areas including alcohol and other drug use, speeding and other dangerous driving, traffic control devices and vehicle safety accidents.
Road Transport (General) Act	Provides for the administration and enforcement of road transport legislation. It provides for the review of decisions made under road transport legislation. It makes provision for the use of vehicles on roads and road related areas and also with respect to written off and wrecked vehicles.
Roads Act	Sets out rights of members of the public to pass along public roads, establishes procedures for opening and closing a public road, and provides for the classification of roads. It also provides for declaration of the RMS and other public authorities as roads authorities for both classified and unclassified roads, and confers certain functions (in particular, the function of carrying out roadwork) on the RMS and other roads authorities. Finally, it provides for distribution of functions conferred by this Act between the RMS and other roads authorities, and regulates the carrying out of various activities on public roads.
Disability Discrimination Act	The Federal Disability Discrimination Act 1992 (D.D.A.) provides protection for everyone in Australia against discrimination based on disability. It encourages everyone to be involved in implementing the Act and to share in the overall benefits to the community and the economy that flow from participation by the widest range of people.
Native Vegetation Act	This Act regulates the clearing of native vegetation on all land in NSW, except for excluded land listed in Schedule 1 of the

Legislation	Requirement
	Act. The Act outlines what landowners can and cannot do in clearing native vegetation.
AS 1742	Australian Standard 1742 which refers to a variety of road and traffic issues.
NSW Road Rules	A provision of road rules that are based on the Australian Road Rules so as to ensure that the road rules applicable in this State are substantially uniform with road rules applicable elsewhere in Australia.
NSW Government Flood Prone Land Policy – Floodplain Development Manual	Council's obligations in relation to the management of flood liable land in accordance with Section 733 of the Local Government Act, 1993.
TNSW Bridge Inventory, Inspection and Condition rating Policy 158	This policy describes the bridge inventory collection, inspection and condition assessment regime: https://roads-waterways.transport.nsw.gov.au/about/access-to-information/policy-documents.html#Traffic,Roads,BridgesandFerries
VICroads Part 3 Condition	Condition assessment guide.

3.4 Service Levels

- Service levels are defined in three ways, customer values, customer levels of service and technical levels of service. These include:

3.4.1 Customer Values

- What aspects of the service is important to the customer,
- Whether they see value in what is currently provided and
- The likely trend over time based on the current budget provision

Table 3.4: Customer Values

Service Objective: Quality			
Customer Values	**Customer Satisfaction Measure**	**Current Feedback**	**Expected Trend Based on Planned Budget**
Well maintained road network that are fit for purpose	Community Satisfaction Survey	1.54	Improve
Well maintained unsealed roads	Community Satisfaction Survey	1.8	Maintain

3.5 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

Condition How good is the service …what is the condition or quality of the service?

Function Is it suitable for its intended purpose …. Is it the right service?

Capacity/Use Is the service over or under used … do we need more or less of these assets?

In Table 3.5 under each of the service measures types (Condition, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.

These are measures of fact related to the service delivery outcome (e.g. number of occasions when service is not available or proportion of replacement value by condition %'s) to provide a balance in comparison to the customer perception that may be more subjective.

Table 3.5: Customer Level of Service Measures

Type of Measure	Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Condition	Well maintained bridge structures that are fit for purpose	Bridge Condition Number BCN[3] (Overall Condition Index OCI)	55.74[4]	Improve
	Confidence levels		Medium	Medium
Function	Assets all in service	No detours in place	All bridges and culverts currently in service	Maintain
	Confidence levels		High	Medium
Capacity[5]	Single lane bridges and those with load limits	Quantity of single lane bridges, and quantity of bridges with load limits	16 single lane bridges 16 bridges with Load Limits	Improve
	Confidence levels		High	Medium

*** High - (Professional Judgement supported by extensive data), Medium (Professional judgement supported by data sampling, Low (Professional Judgement with no data evidence)**

3.6 Technical Levels of Service

To deliver the customers values, and impact the achieved Customer Levels of Service, are operational or technical measures of performance. These technical measures relate to the activities and allocation of resources to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

[3] Where 1 is failed and 100 is new
[4] Varying age of data depending on most recent level 2 assessment
[5] Excluding pedestrian/footbridges

- **Acquisition** – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).
- **Operation** – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc.
- **Maintenance** – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (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 provided (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.[6]

Table 3.6 shows the activities expected to be provided under the current 10 year Planned Budget allocation, and the Forecast activity requirements being recommended in this AM Plan.

Table 3.6: Technical Levels of Service

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
TECHNICAL LEVELS OF SERVICE				
Acquisition	Bridge and Culvert infrastructure is meeting traffic capacity, and load requirements	Customer service requests Load Limits	Of the 45 customer requests in 2024, all were complete within the 90-day timeframe. 16 Bridges with load limits	Maintain
		Budget	$0	$1,750,000
Operation	To undertake routine inspections to record condition changes and meet legislative requirements.	All timber bridges have a level 2 assessment undertaken annually. All other bridges have an inspection undertaken biennial.	All timber bridges inspections and concrete bridges being met within timeframes.	To maintain current performance, but also improve performance including major culverts and footbridges in inspection regime.
		Budget	$100,000	$136,000
Maintenance	Bridge and culverts remain in service	Customer service requests	CRM responded to within agreed timeframe, current	Maintain current performance

[6] IPWEA, 2020, IIMM, p 2|28.

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
		Asset out of service Findings from level 1 & 2 inspections	performance 100%. Remediating maintenance issues from level 1 ad 2 where resourcing permits in a timely manner.	
		Budget	$392,763	$668,055
Renewal	Bridge and culverts remain in service	Customer service requests Asset out of service Findings from level 2/3 inspections	Renewal request or assets that require a renewal to be reinstated in service are programmed in 10 year works program. Renewal tasks identified from level 2 inspections schedule in 10 year works program.	Maintain current performance – achieved.
		Budget	$0	$1,470,000
Disposal	NA	NA	NA	NA

Note: * Current activities related to Planned Budget.
** Expected performance related to forecast lifecycle costs.

It is important to monitor the service levels regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as technology and customer priorities will change over time.

4.0 FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

4.3 Demand Impact and Demand Management Plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

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

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this AM Plan.

Table 4.3: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Population	70,765 as at 30/06/2023[7]	The projected population for 2041 is 107,375.	Population growth will increase traffic volumes, and increase demand on transport infrastructure, such as bus & transport facilities, footpaths & Cycleways, improved road network, etc.	Engage with the community to identify justifiable community needs from other expectations and consider only community needs consistent with Council's charter. Study road condition rating from this plan and prioritise a list of roads to be included in the annual reseal / rehabilitation program. Investigate alternative treatments to lower life cycle costs i.e. seal types, rejuvenation.
Demographics	Approximately 3% of the residents are from non-English speaking backgrounds	An increase of migrants settling in Cessnock LGA from non-English speaking backgrounds, are expected to increase.	Better Traffic Management Devices are Required, and Clearer Signage	New projects will need to be assessed with a balance between competing demands for compliance and regulation, renewing existing infrastructure, as well as providing expenditure for new infrastructure assets to meet growing service delivery demand

[7] Source: Home | Cessnock City Council | Community profile based on most current Census data

Table 4.3: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Demographics	Over 39% of the population have a long term health condition, of which over 7.8% would need assistance in their day-to-day lives.	Expect to see an increase in demand for services due to the ageing population	Increase in demand for DDA compliant Infrastructure, Services and Equitable Access	Engage with the community to identify justifiable community needs from other expectations and consider only community needs consistent with Council's charter. New projects will need to be assessed with a balance between competing demands for compliance and regulation, renewing existing infrastructure, as well as providing expenditure for new infrastructure assets to meet growing service delivery demand
Climate Change	Scientific evidence supporting the notion of climate change.	Increase severity of weather events temperature rise in sea level.	Cessnock Road Infrastructure Assets will need to adapt to new climate risks to ensure appropriate infrastructure investment decisions are made to reduce long-term costs.	Investigate alternative treatments to lower life cycle costs, and combat climate impacts i.e. seal types, rejuvenation.

Table4.3: Demand Management Plan

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Residential Development	Increase in demand for residential land and infrastructure.	Increase in population (see above)	Increase in demand for maintenance of bridges and major culverts.	Implement enhanced quality control measures for donated assets, including longer defects liability periods. Bridges or culverts required to be upgraded to meet growth will need to be assessed with a balance between competing demands for compliance and regulation.
Changes in Land use	Changes in land use will result from rezoning and higher density developments.	As part of State Government policy higher density developments will be encouraged in the Hunter Valley Area. The current levels of growth are anticipated to continue.	Increased loading on existing infrastructure from development works (construction works can cause significant damage to existing infrastructure)	Revise planning controls to increase population density and decrease the extent of new road network. Encourage industry to be near State controlled roads.

4.4 Asset Programs to meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Additional assets are discussed in Section 5.4.

Acquiring new assets will commit Cessnock City Council to ongoing 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 for inclusion in the long-term financial plan (Refer to Section 5).

4.5 Climate Change Adaptation

The impacts of climate change may have a significant impact on the assets we manage and the services they provide. In the context of the Asset Management Planning process climate change can be considered as both a future demand and a risk.

How climate change impacts on assets will vary depending on the location and the type of services provided, as will the way in which we respond and manage those impacts.[8]

Council currently has an adopted Climate Change Resilience Plan, which can be found on their website. This document sets out the climate change impacts on Council and the Councils' response to climate change.

Risk and opportunities identified to date are shown in Table 4.5.1

Table 4.5.1 Managing the Impact of Climate Change on Assets and Services

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Management
Increase flood events	More frequent severe weather events	Assets damaged and temporarily out of service. May require community detours, or create temporary isolation.	Predominately managed through insurance. Communities likely to become isolated (Wollombi/Laguna) have had emergency generators and solar power installed at Councils' community halls.
Increase fire events	Long periods of draught, increasing bush fire risk	Assets damaged and temporarily out of service. May require community detours, or create temporary isolation.	Predominately managed through insurance. Construction material and its fire resistance to be considered.

Additionally, the way in which we construct new assets should recognise that there is opportunity to build in resilience to climate change impacts. Building resilience can have the following benefits:

[8] IPWEA Practice Note 12.1 Climate Change Impacts on the Useful Life of Infrastructure

- Assets will withstand the impacts of climate change,
- Services can be sustained, and
- Assets that can endure may potentially lower the lifecycle cost and reduce their carbon footprint.

Table 4.5.2 summarises some asset climate change resilience opportunities.

Table 4.5.2 Building Asset Resilience to Climate Change

New Asset Description	Climate Change impact These assets?	Build Resilience in New Works
Upgrade/new bridges	Increase bushfire and flooding threat raises the risk of damaging assets.	Replace timber structures with concrete. Consider fire resistance in design/location.
New culverts	Increase flooding threat raises the risk of damaging assets.	Detailed flood report and hydraulic engineering for new assets created in flood-prone areas.

The impact of climate change on assets is a complex discussion and further opportunities will be developed in future revisions of this AM Plan.

5.0 LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Cessnock City Council plans to manage and operate the assets at the agreed levels of service (Refer back to Section 3) while managing life cycle costs.

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this AM Plan are shown in Table 5.1.1.

Table 5.1.1: Assets covered by this Plan[9]

Asset Category	Quantity
Concrete Bridges	53
Culverts	68
Timber Bridges	44
Steel Bridges	17
Composite Bridges	6
TOTAL:	**188**

5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available. However, there is insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2: Known Service Performance Deficiencies

Asset ID	Asset Name	Segment/Group Name	Route Use	Service Deficiency
113	Mulbring	Vermont	No Detour	44T
13	Cedar Creek	Cedar Creek	No Detour	25T
19	Laguna	Watagan Creek 4	No Detour	44T
20	Laguna	Dairy Arm	No Detour	44T
23	Laguna	Murrays Run 2	No Detour	44T
31	Cessnock	Ferguson Street	Detour	15T
32	Cessnock	Henderson Avenue	Detour	14T
33	Cessnock	Doyle Street	Detour	10t
5	*Wollombi*	*Cunneens*	*Detour*	*Asset is isolated from any use/access – alternate access route has been provided.*
50	Abermain	Bathurst Street	Detour	3.5, 5.5, 6T
53	Greta	Hunter Street	Detour	6t
8	Laguna	Thompsons Bridge[10]	Detour	*Asset is isolated from any use/access – alternate access route has been provided.*

[9] Under review
[10] Historic Structure – no access to pedestrian or vehicle.

Asset ID	Asset Name	Segment/Group Name	Route Use	Service Deficiency
121	Cessnock	Quarrybylong Street	Detour	2.5 T
126	Kurri Kurri	Culvert Boundary St	Detour	3t
136	Quorrobolong	Culvert #4 Sandy Creek Rd	Detour	15T
140	Aberdare	Culvert Duffie Drive	Detour	25t

The above service deficiencies were identified from level 3 assessments.

5.1.3 Asset condition

Council has rated their bridge assets in-line with the VICroads Condition Rating of Structure Components, part 3 of the Road Structures Inspection Manual. This system utilises a 1 – 4 grading system.

Cessnock City Council undertakes proactive inspections to determine the bridge asset conditions in-line with TNSW Bridge Inspection Procedure Manual:

- Level 1 Inspections: are carried out by qualified Council staff to identify obvious safety issues and defects on all bridges and major culverts. The information collected through these inspections forms the basis of the bridge maintenance program, which is carried out by Council's Bridge Maintenance Crew on an ongoing basis. Level 1 inspections occur approximately every 6-8 weeks for Timber Bridges.
- Level 2 inspections: are also carried out by qualified Council staff and are condition rating inspections carried out with reference to the RTA Bridge Inspection Procedure. Level 2 inspections occur every 12 months for timber bridges and every 24 months for Concrete, Steel and Composite Bridges. The information gained from the level 2 inspections is used in Council's asset management system to calculate a Bridge Condition Number (BCN). The BCN is a weighted calculation which includes an average condition score for all components (sub structure (weighted by 8.75), super structure (weighted by 8.75), rails (weighted by 3.75), and surface (weighted by 3.75) of the bridge to give an overall condition number. The lower the number the worse condition of the bridge. In cases where the Level 2 inspection indicates that there are a number of defects and/or more serious issues with the bridge structure a Level 3 inspection is requested.
- Level 3 inspections: are provided by external specialist bridge consulting engineers engaged, as required, to provide a more detailed assessment of the structural components of the bridge and to identify the need or otherwise for load limits to be imposed. The Level 3 assessments inform the bridge maintenance program (heavy maintenance) and the identification and prioritisation process for Council's Bridge Construction Program.

CCC assesses bridge condition as a numerical value formed by a mathematical combination of a number of element condition states on a scale from 0 to 75. This scale is the Bridge Condition Number (BCN), and is used to develop the prioritisation of the renewal works program, and show trends over time of the health of the bridge network. The BCN is calculated using a formula derived from an average element condition of each component and weighted according to the critical nature of each component.

BCN = 100 – ((Sub-Structure x 8.75) + (Super-Structure x 8.75) + (Rails x 3.75) + (Surface x 3.75)).

With a systematic inspection regime in place, monitoring condition over time is a means of tracking the performance of an element and ultimately of the bridge. A worsening change in condition is a clear indicator of element deterioration. In addition, change in condition may be used to test and demonstrate the effectiveness of adopted maintenance repair strategies. Bridge element condition is a most useful input for identifying maintenance repair needs, particularly at the local level.

The four condition states used to determine elemental condition is defined in general terms in the table below. The condition of an element is not necessarily confined to one condition state. Bridge element condition is recorded as the quantity, or the percentage of the elements total quantity, in each of the four condition states, at the time of inspection.

Table 5.1.3: Condition Grading Model using Bridge Condition Number (BCN) Interpretation

Condition	BCN Range	Description
0	100-99	Newly Constructed, less than 12 months old.
1	62.51 - 98	The element is in good condition with little or no deterioration. Superficial cracks and discoloration may be present, but without effect on strength and/or serviceability
2	37.51 - 62.50	Minor decay, insect infestation, scouring, splitting, cracking, checking or crushing may exist but none is sufficiently advanced to affect serviceability.
3	12.51 - 37.50	Medium decay, insect infestation, scouring, splitting, cracking, or crushing has produced loss of strength of the element but not of a sufficient magnitude to affect the serviceability of the bridge. Advancing deterioration and loss of protection to the support material.
4	0.1 - 12.50	Advanced deterioration. Heavy decay, insect infestation, scouring, splits, cracks or crushing has produced loss of strength that affects the serviceability of the bridge.
EOL		End of Life (EOL) asset has failed/no longer in use

The condition profile of our assets is shown in Figure 5.1.3.

Figure 5.1.3a: Asset Condition Profile – BCN[11]

[11] Level 2 inspections occur on an individual cycle and may range from 2019-2024. Culverts and footbridges are just being added to the schedule and may not be current data

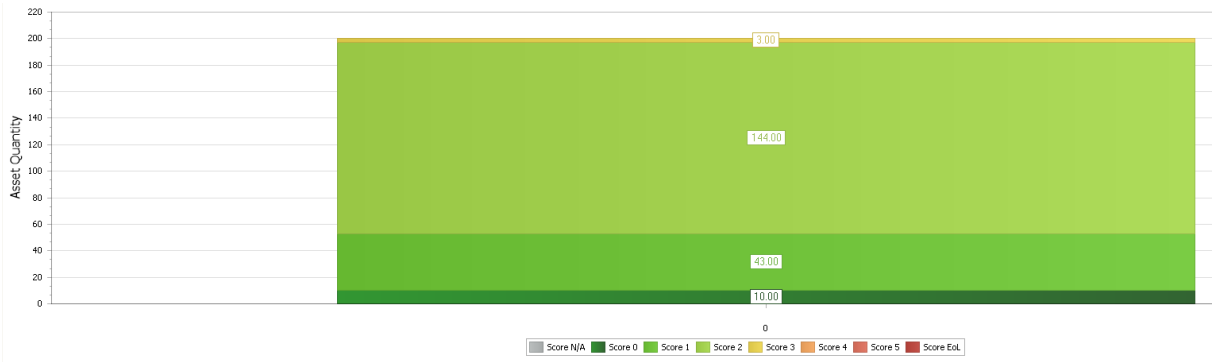


Figure 5.1.3b: Asset Condition Profile – Bridge Rails

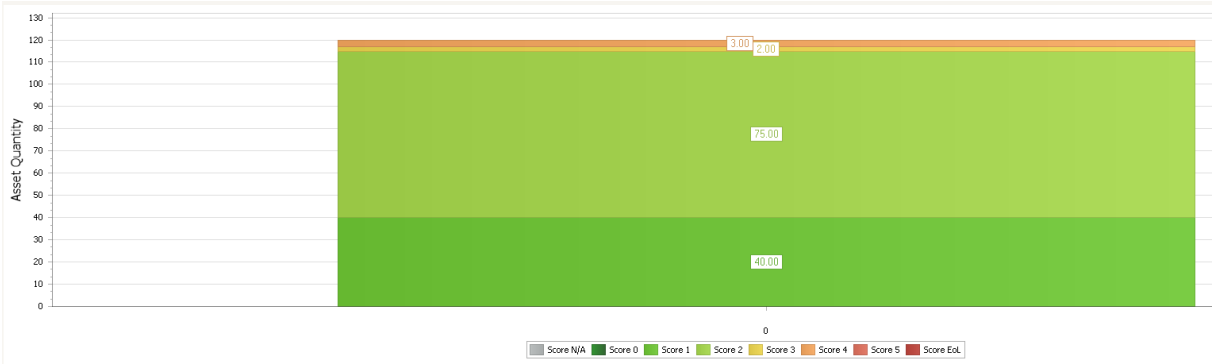


Figure 5.1.3c: Asset Condition Profile – Bridge Substructure

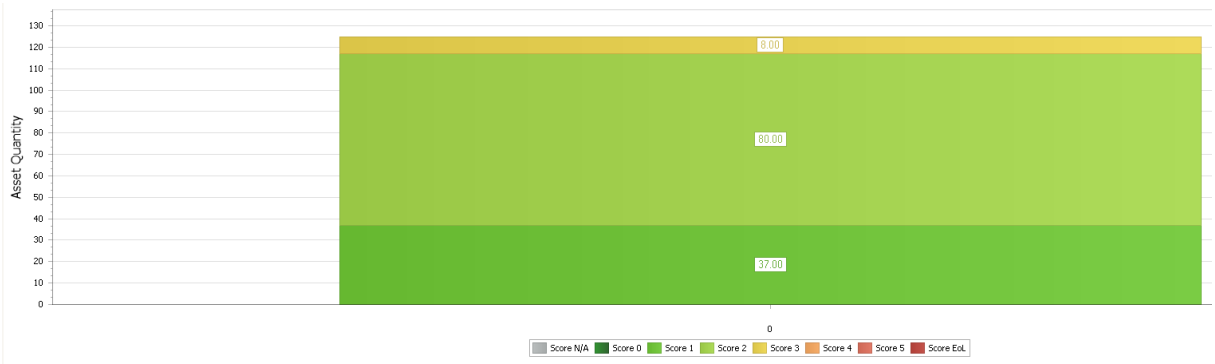
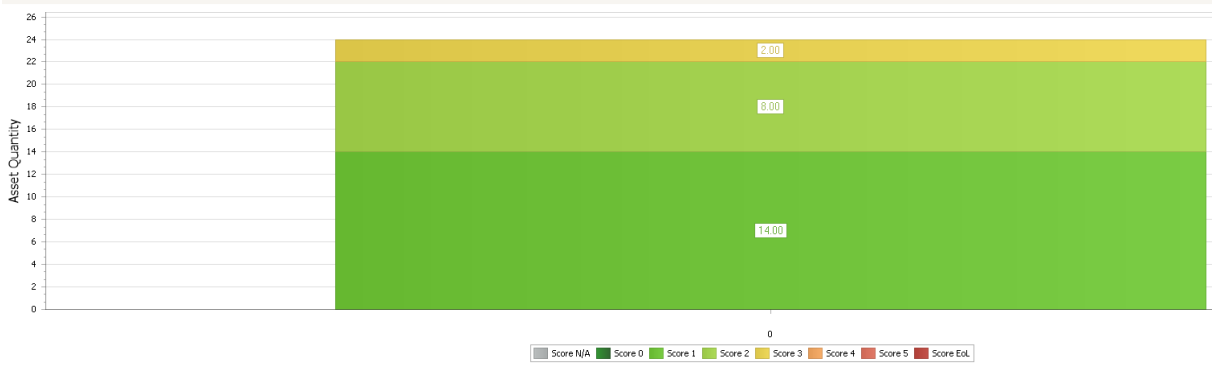


Figure 5.1.3d: Asset Condition Profile – Bridge Surface



5.2 Operations and Maintenance Plan

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, street sweeping, asset inspection, and utility costs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical maintenance activities include pipe repairs, asphalt patching, and equipment repairs.

The trend in maintenance budgets are shown in Table 5.2.1.

Table 5.2.1: Maintenance Budget Trends

Year	Maintenance Budget in Dollar Amount
2022	$157,000
2023	$359,131
2024	$300,282
2025	$258,000

Maintenance budget levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance budget allocations are such that they will result in a lesser level of service, the service consequences and service risks have been identified and are highlighted in this AM Plan and service risks considered in the Infrastructure Risk Management Plan.

Reactive maintenance is carried out in accordance with response levels of service detailed in Appendix G.

Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. The hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery.

The service hierarchy is shown is Table 5.2.2.

Table 5.2.2: Asset Service Hierarchy

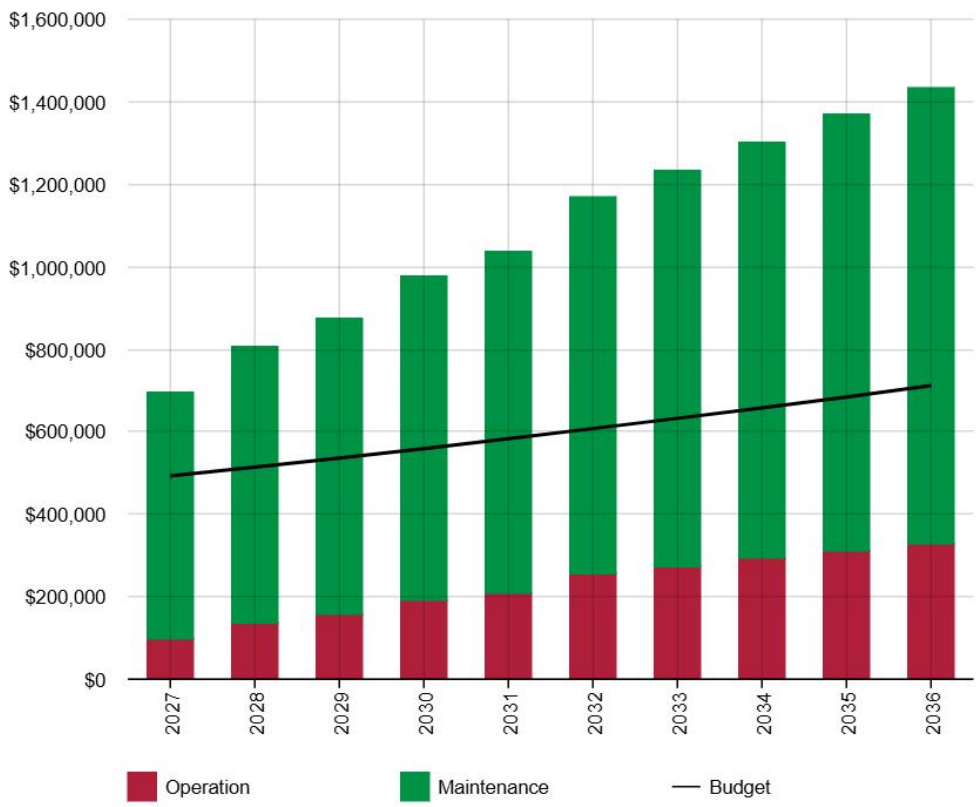
Service Hierarchy	Service Level Objective
Bridge on Regional Roads (Urban & Rural)	High level of management required due to the high importance of the structure. Regional Roads are a category of Council controlled road, agreed with Roads and Maritime Services (RMS) for road administration purposes. Regional Roads perform an intermediate function between the main arterial network of RMS controlled State Roads and the network of local access and circulation roads controlled by Council.

Bridge on Local Urban Road	Reasonable level of management required due to the medium importance of the structure. For movement of cars and trucks in urban areas, from higher hierarchies for access to residences or businesses within the LGA.
Bridge on Local Rural Road	Standard level of management required due to the lower importance of the structure. For movement of cars and trucks in rural areas, from higher hierarchies for access to residences or businesses within the LGA.

Summary of forecast operations and maintenance costs

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. Figure 5.2 shows the forecast operations and maintenance costs relative to the proposed operations and maintenance Planned Budget.

Figure 5.2: Operations and Maintenance Summary



5.3 Renewal Plan

Renewal is major capital work which does not significantly alter the original service provided by the asset, but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an acquisition resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from one of two approaches in the Lifecycle Model.

- The first method uses Asset Register data to project the renewal costs (current replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year), or
- The second method uses an alternative approach to estimate the timing and cost of forecast renewal work (i.e. condition modelling system, staff judgement, average network renewals, or other).

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3. Asset useful lives were last reviewed on 30th June 2025.

Table 5.3: Useful Lives of Assets

Asset (Sub)Category	Useful Life (Yrs)
Concrete Bridge or Major Culvert Structure	100
Steel Bridge Structure	80
Timber Bridge Structure	80
Culvert	100
Bridge Rail	38
Bridge Surface	25

The estimates for renewals in this AM Plan were based on the alternate Method.

5.3.1 Renewal ranking criteria

Asset renewal is typically undertaken to either:

Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a bridge that has a 5 t load limit), or

To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. load capacity of the bridge).[12]

It is possible to prioritise renewals by identifying assets or asset groups that:

Have a high consequence of failure,

Have high use and subsequent impact on users would be significant,

Have higher than expected operational or maintenance costs, and

Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.[13]

The ranking criteria used to determine priority of identified renewal proposals is detailed in Table 5.3.1.

Table 5.3.1: Renewal Priority Ranking Criteria

Criteria	Weighting
Importance to road network, industry and community for structure to provide continued service	30%

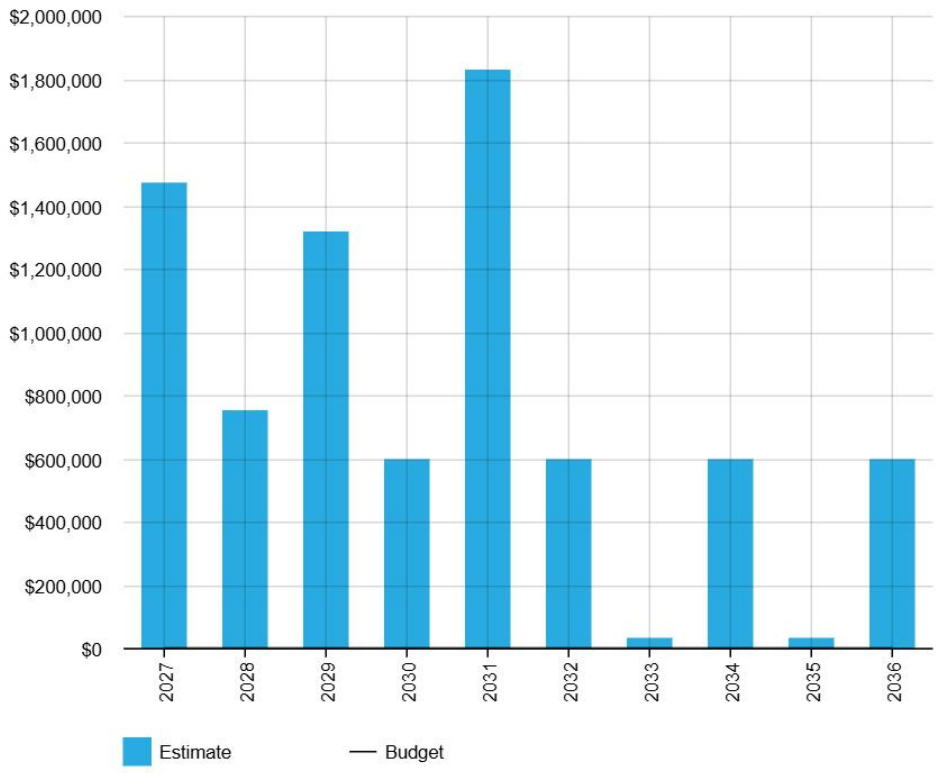
[12] IPWEA, 2020, IIMM, Sec 3.4.2
[13] IPWEA, 2020, IIMM, Sec 3.5.3

Current Super Structure Condition (Girders, deck)	25%
Current Sub Structure Condition (Capwale, headwalls, piles, abutments, brace)	15%
Grant Funding Approved	15%
Load limit currently imposed	10%
Financial Impact	5%
Total	**100%**

5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.4.1. A detailed summary of the forecast renewal costs is shown in Appendix D.

Figure 5.4.1: Forecast Renewal Costs



The is currently no available planned renewal budget for bridges within existing programs.

5.5 Acquisition Plan

Acquisition reflects new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, demand, social or environmental needs. Assets may also be donated to Cessnock City Council.

5.5.1 Selection criteria

Proposed acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. The adopted Asset Management Policy states that new work should only be considered if external funding is available. Additionally, ppotential upgrade and new works should be reviewed to verify that they are essential to the Entities needs.

Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term. Verified proposals can then be ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria for upgrade assets is detailed in Table 5.5.1. New/dedicated assets should be provided through 100% external funding.

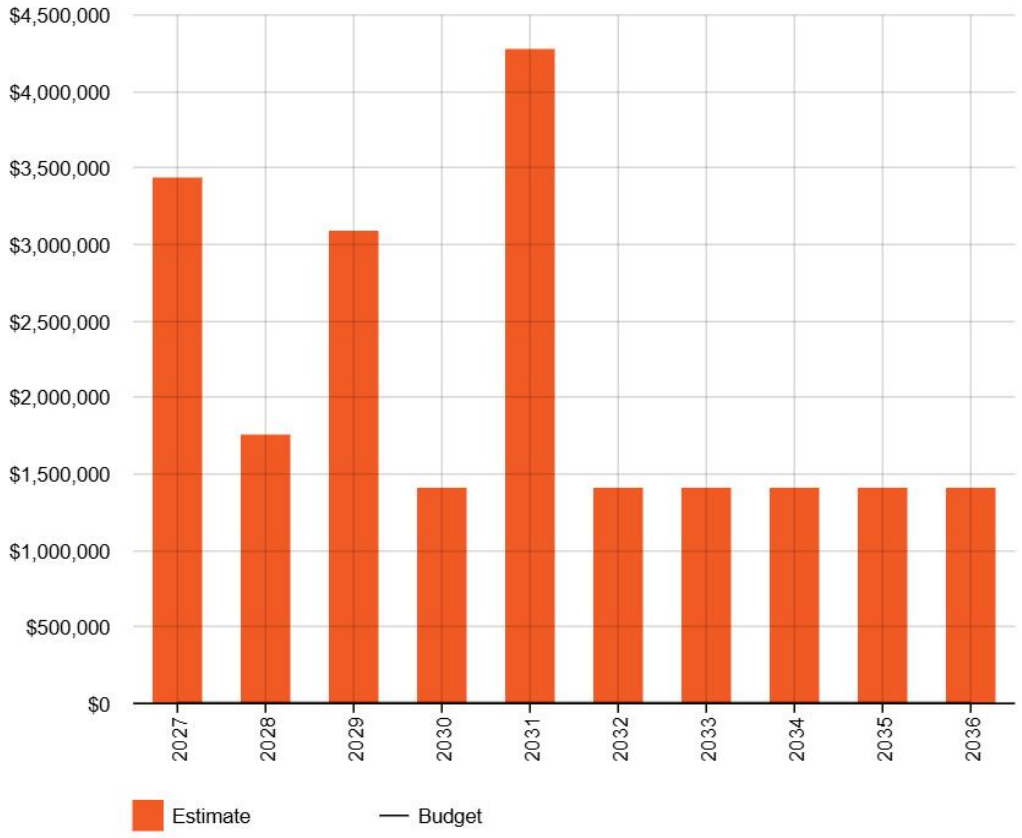
Table 5.5.1: Acquired (Upgrade) Assets Priority Ranking Criteria

Criteria	Weighting
Importance to road network, industry and community for structure to provide continued service	30%
Current Super Structure Condition (Girders, deck)	25%
Current Sub Structure Condition (Capwale, headwalls, piles, abutments, brace)	15%
Grant Funding Approved	15%
Load limit currently imposed	10%
Financial Impact	5%
Total	**100%**

Summary of future asset acquisition costs

Forecast acquisition asset costs are summarised / summarized in Figure 5.5.1 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix A.

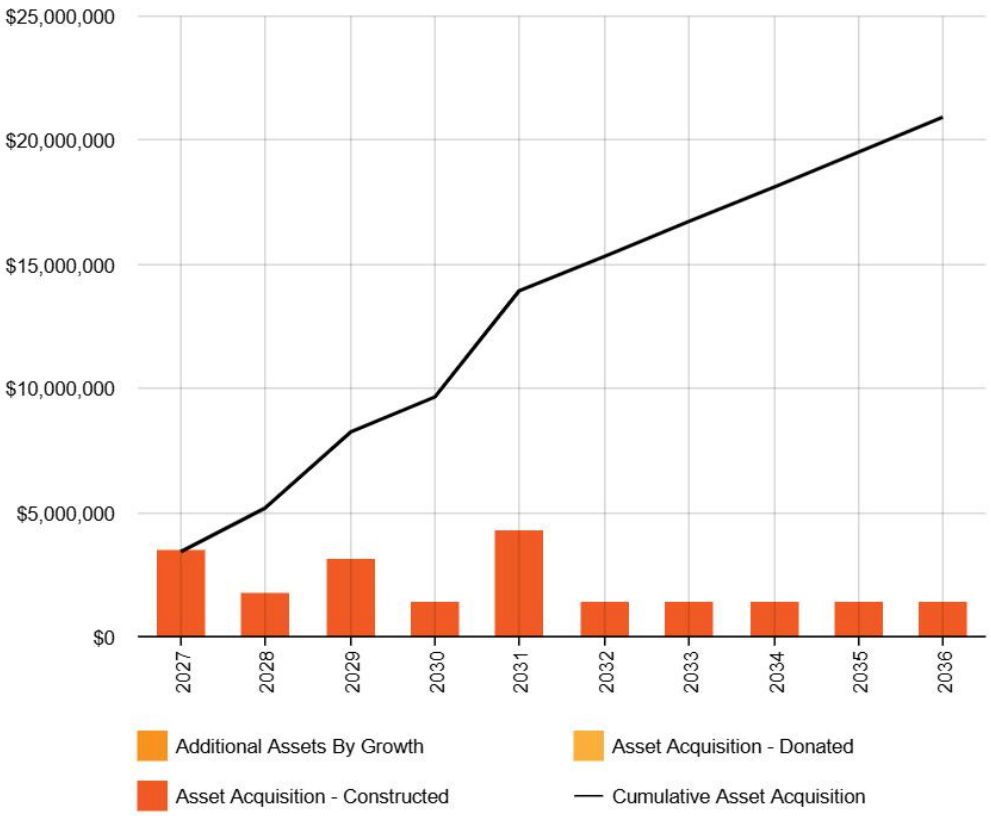
Figure 5.5.1: Acquisition (Constructed) Summary



There is currently no planned new/upgrade budgets in current works programs.

When an Entity commits to new assets, they must be prepared to fund future operations, maintenance and renewal costs. They must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity. The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.5.2.

Figure 5.5.2: Acquisition Summary



Expenditure on new assets and services in the capital works program will be accommodated in the long-term financial plan, but only to the extent that there is available funding.

There are no known new bridge or major culvert assets to be constructed or dedicated in the short to medium term.

5.6 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 5.6. Note the following does not include instances where the asset is to be replaced by another. Any costs or revenue gained from asset disposals is included in the long-term financial plan.

Table 5.6: Assets Identified for Disposal

Asset	Reason for Disposal	Timing	Disposal Costs	Operations & Maintenance Annual Savings
Asset disposals will occur where program replaces and asset				NIL – as a replacement of an existing asset

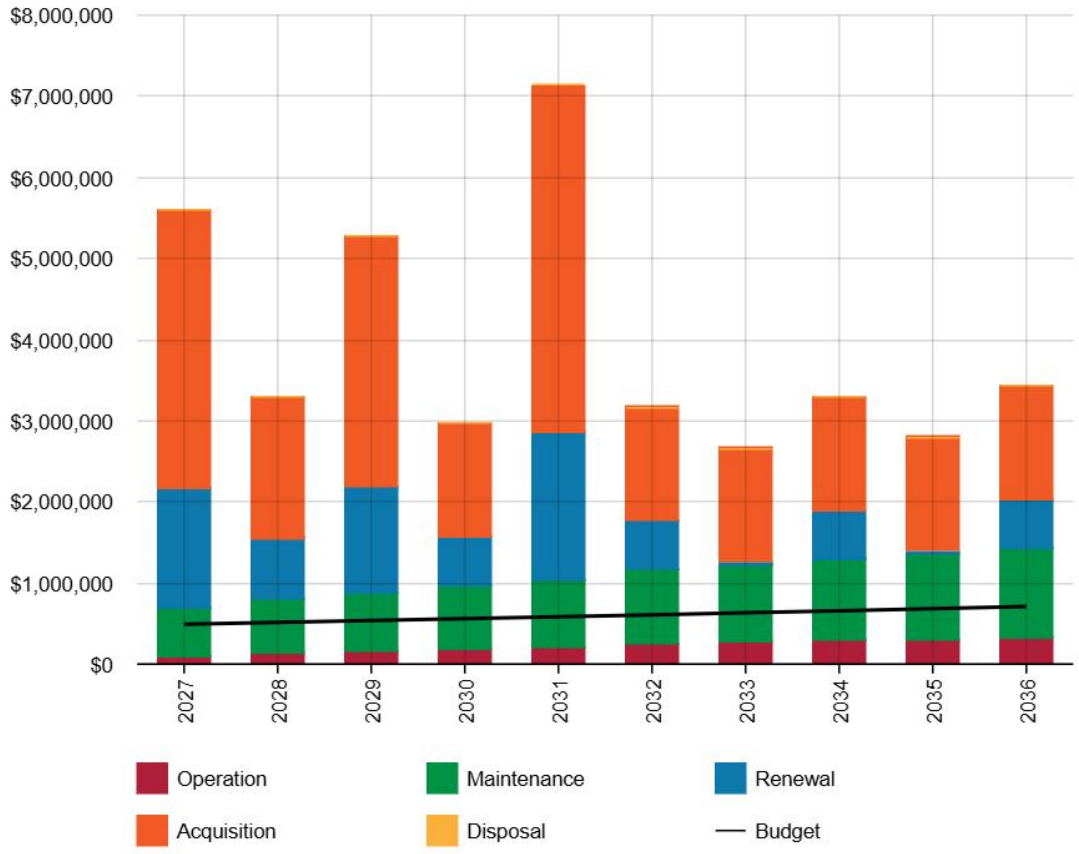
The progress of the disposal plan within this AMP is to be reported to the Asset Management Steering Group, and where deadlines for commitments cannot be met; reported on and updated accordingly.

5.7 Summary of asset forecast costs

The financial projections from this asset plan are shown in Figure 5.7.1. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimise the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the forecast work and the proposed budget is the basis of the discussion on achieving balance between costs, levels of service and risk to achieve the best value outcome.

Figure 5.7.1: Lifecycle Summary



6.0 RISK MANAGEMENT PLANNING

The purpose of infrastructure risk management is to document the findings and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2018 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2018 as: 'coordinated activities to direct and control with regard to risk'[14].

An assessment of risks[15] associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarised in Table 6.1. Failure modes may include physical failure, collapse or essential service interruption.

Table 6.1 Critical Assets

Asset Id	Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
		No other Alternate Route	
185	Culvert DeBeyers Road	Structural failure or deteriorated condition of asset affecting the use/ availability/capacity/function of the asset	Regular inspections and early intervention/identification of major renewal items.
13	Cedar Creek		
14	Stockyard Creek		
15	Yango Creek**		
16	Milsons Arm		
17	Watagan Creek 1		
90	Watagan Creek 2		
18	Watagan Creek 3		
19	Watagan Creek 4		
228	Watagan Creek Culvert		
20	Dairy Arm		
194	Hunter Lodge		
23	Murrays Run 2		

[14] ISO 31000:2009, p 2
[15] Infrastructure Risk Management Plan DOC2015/012452

Asset Id	Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
189	Culvert Murrays Run 1		
43	Thursby's Bridge Congewai		
45	Burgesses Bridge		
64	Dog Hole Rd Bridge		
124	Dill Street Culvert		
113	Vermont - Mulbring		
143	Culvert Tunnel Road		
149	Culvert Congewai Road		
192	Crawfords Bridge		
190	Culvert Lowes Bridge		
172	Culvert Kent Street		
173	Culvert York Street		
		Major Transport Link HV	
95	Mitchell Avenue	Structural failure or deteriorated condition of asset affecting the use/ availability/capacity/function of the asset	Regular inspections and early intervention/identification of major renewal items.
82	Homestead Bridge		

** Although Yango Creek Road does have two points of access, a risk/likihood of potential flooding or fire event stopping residents between the event and a point of escape should a bridge be down, is seen as still fitting “no other alternate route”.

By identifying critical assets and failure modes an organisation can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

6.2 Risk Assessment

The risk management process used is shown in Figure 6.2 below.

It is an analysis and problem-solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of International Standard ISO 31000:2018.

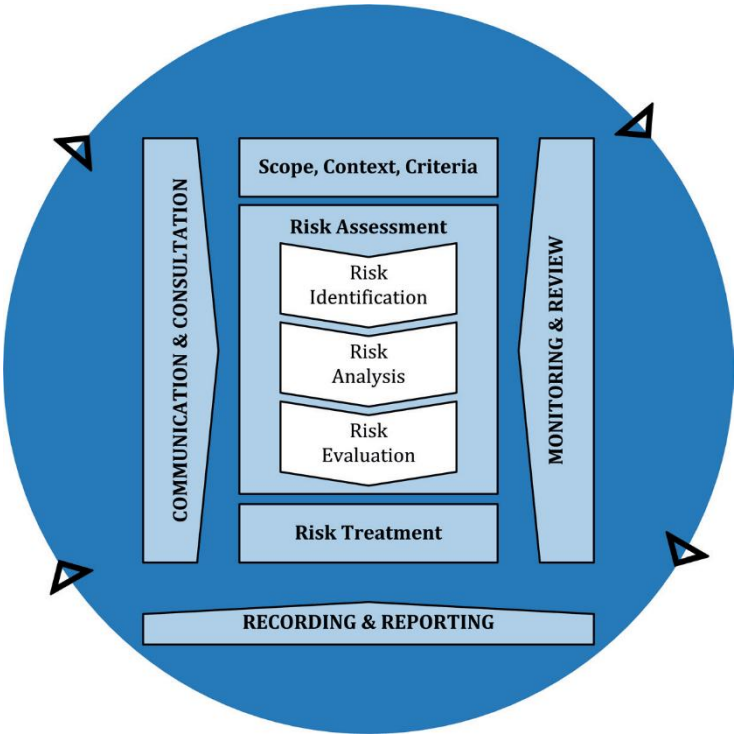


Fig 6.2 Risk Management Process – Abridged
Source: ISO 31000:2018, Figure 1, p9

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, development of a risk rating, evaluation of the risk and development of a risk treatment plan for non-acceptable risks.

An assessment of risks[16] associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a 'financial shock', reputational impacts, or other consequences.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment costs of implementing the selected treatment plan is shown in Table 6.2. It is essential that these critical risks and costs are reported to management and the Council.

[16] REPLACE with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

Table 6.2: Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH & H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Bridge/Culvert	Deterioration of a structural member from poor quality, age or inadequate maintenance could result in bridge being non-trafficable, closed or collapsing and a disruption to the traffic flow	H	Regular inspections & maintenance as identified from level 2 & 3 inspections. Level 3 inspection, including load capacity rating, implementation of load ratings where required. New construction is assessed by competent engineer. Upgrade of bridges consistent with community demand and available funding.	H	TBA
Bridge/Culvert	Vandalism resulting in the use of unbudgeted maintenance money to be spent to rectify the issue	L	Regular Maintenance	L	TBA
Bridge/Culvert	Structural damage from oversize/overmass vehicles due to non-compliance of existing controls	H	Regular inspections, installation of dimension restriction structure	H	TBA
Bridge/Culvert	Subsidence on approaches resulting in sharp bump on approach to bridge	L	Regular inspections, and customer requests	L	TBA
Bridge/Culvert	Narrow traffic lanes or inadequate safety rails on bridge could cause collision with cars or pedestrians	M	Regular inspections, and maintenance	M	TBA

Service or Asset at Risk	What can Happen	Risk Rating (VH & H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Bridge/Culvert	Blocked drainage on surface can result in ponding of water on the bridge	M	Regular inspections, and maintenance	M	TBA
Bridge/Culvert	Flood damage from trees blocking the waterway	L	Regular inspections, and maintenance	L	TBA
Bridge/Culvert	Guardrail missing or damaged resulting in a safety hazard due to no clear path of travel	M	Regular inspections, and maintenance	M	TBA
Bridge/Culvert	Inadequate design could result in an accident on the bridge	M	Regular inspections, new construction is assessed by a competent engineer.	M	TBA

Note - The residual risk is the risk remaining after the selected risk treatment plan is implemented.

6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to the ongoing provision of services to customers. To adapt to changing conditions we need to understand our capacity to 'withstand a given level of stress or demand', and to respond to possible disruptions to ensure continuity of service.

Resilience recovery planning, financial capacity, climate change risk assessment and crisis leadership.

Our current measure of resilience is shown in Table 6.3 which includes the type of threats and hazards and the current measures that the organisation takes to ensure service delivery resilience.

Table 6.3: Resilience Assessment

Threat / Hazard	Assessment Method	Current Resilience Approach
Assets out of service	Ongoing level 2 assessments	High
Load limited bridges or load limits increased	Level 2 & 3 assessments	High

6.4 Service and Risk Trade-Offs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

6.4.1 What we cannot do

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years. These include:

- Increase level of service.

6.4.2 Service trade-off

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for users. These service consequences include:

- Assets out of service (are no longer safe or do not meet their intended function, or capacity)
- Decrease in LOS – i.e., possible load limits

6.4.3 Risk trade-off

The operations and maintenance activities and capital projects that cannot be undertaken may sustain or create risk consequences. These risk consequences include:

- Bridges that remain with load limits and/or required detours for heavy vehicles,
- Bridges that remain single lane

These actions and expenditures are considered and included in the forecast costs, and where developed, the Risk Management Plan.

7.0 FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this AM Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

7.1 Financial Sustainability and Projections

7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the AM Plan for this service area. The two indicators are the:

- asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years), and
- medium term forecast costs/proposed budget (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[17] 0%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 0% of the funds required to sustain the current level of service, based on asset renewal. It should be noted that a lot of Councils' bridge replacements are considered "acquisitions/construction" as they are typically an upgrade to capacity, whether through material, lanes/width/length and the like.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix D.

Medium term – 10 year financial planning period

This AM Plan identifies the forecast operations, maintenance and renewal costs required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

This forecast work can be compared to the proposed budget over the first 10 years of the planning period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is $1,872,840 average per year.

The proposed (budget) operations, maintenance and renewal funding is $597,874 on average per year giving a 10 year funding shortfall of $1,274,966 per year. This indicates that 31.92% of the forecast costs needed to provide the services documented in this AM Plan are accommodated in the proposed budget. Note, these calculations exclude acquired assets.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays and financing to achieve a financial indicator of approximately 31.92% for the first years of the AM Plan.

7.1.2 Forecast Costs (outlays) for the long-term financial plan

Table 7.1.3 shows the forecast costs (outlays) required for consideration in the 10 year long-term financial plan.

[17] AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the long-term financial plan.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the AM Plan (including possibly revising the long-term financial plan).

Forecast costs are shown in current dollar values.

Table 7.1.2: Forecast Costs (Outlays) for the Long-Term Financial Plan

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2027	3,430,000	100,000	599,400	1,470,000	0
2028	1,750,000	136,885	668,055	750,000	0
2029	3,080,000	157,995	716,810	1,320,000	0
2030	1,400,000	191,933	783,350	600,000	0
2031	4,270,000	210,112	829,410	1,830,000	0
2032	1,400,000	255,647	911,845	600,000	0
2033	1,400,000	274,003	958,855	30,000	0
2034	1,400,000	292,437	1,007,045	600,000	0
2035	1,400,000	311,077	1,056,455	30,000	0
2036	1,400,000	329,931	1,107,155	600,000	0

7.2 Funding Strategy

The proposed funding for assets is outlined in the Entity's budget and Long-Term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the AM Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

7.3 Valuation Forecasts

7.3.1 Asset valuations

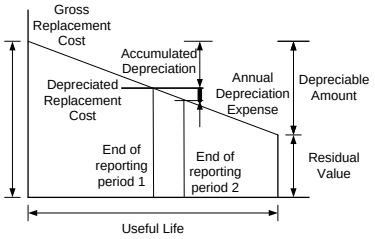
The best available estimate of the value of assets included in this AM Plan are shown below. The assets are valued at fair value at cost to replace service capacity:

Replacement Cost (Current/Gross) $148,232,754

Accumulated Depreciation $11,396,049

Depreciated Replacement Cost[18] $136,836,704

Depreciation $1,053,668



7.3.2 Valuation forecast

Asset values are forecast to increase as assets are upgraded.

[18] Also reported as Written Down Value, Carrying or Net Book Value.

Where future assets are dedicated, these will add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

7.4 Key Assumptions Made in Financial Forecasts

In compiling this AM Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AM plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this AM Plan are:

Key Assumptions	Risks of Change to Assumptions
Use of existing inventory and condition data as at 30 June 2025.	Condition data was last compiled during the revaluation exercise undertaken in 2024/25.
Use of 2024/25 Asset Revaluation Manual – revaluation currently in progress for June 2025.	This Asset Management Plan is based on asset revaluation undertaken in 2024/25 that is subject to change by the end of June 2025 revaluation.
Planned expenditure values obtained from current budgets and Council's four year delivery program, and Council's updated LTFP.	The four year Delivery Program and LTFP may change in the future. Any changes in funding, planned capital and maintenance will be reflected in future asset management plans.

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale[19] in accordance with Table 7.5.1.

Table 7.5.1: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B. High	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C. Medium	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially

[19] IPWEA, 2020, Sec 4.2.7

Confidence Grade	Description
	complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D. Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%
E. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 7.5.2.

Table 7.5.2: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	B	Based on demographic analysis undertaken in 2023 and State Government projections.
Growth projections	A	Based on demographic analysis undertaken in 2023 and State Government projections.
Acquisition forecast	B	Based on known capital allocations from State Government Grand funding.
Operation forecast	B	Council financial records.
Maintenance forecast	B	Council financial records.
Renewal forecast - Asset values	B	Assets revalued in 2024/25 – currently under review
- Asset useful lives	A	Useful lives based on industry standards, reviewed 23/24.
- Condition modelling	B	Condition assessment currently underway
Disposal forecast	B	Nil assets identified for disposal.

The estimated confidence level for and reliability of data used in this AM Plan is considered to be medium.

8.0 PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices[20]

8.1.1 Accounting and financial data sources

This AM Plan utilises accounting and financial data. The source of the data is through Council's accounting database Civica Authority and Asset Register Brightly MyData.

8.1.2 Asset management data sources

This AM Plan also utilises asset management data. The source of the data is Council's asset register Brightly MyData.

8.2 Improvement Plan

It is important that an entity recognise areas of their AM Plan and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this AM Plan is shown in Table 8.2.

Table 8.2: Improvement Plan

Task	Task	Responsibility	Resources Required	Timeline
1	Undertake further community consultation to allow a full review of service levels.	Assets, Infrastructure and Open Space and Community Facilities	In-house, external	When resourcing permits
2	Finalise desired levels of service by establishing current performance and setting performance targets. Have these Levels of Service adopted by Council	Works & Infrastructure/Assets /Finance & Admin Services Manager / Service Delivery Managers	In-house	When resourcing permits
3	Stakeholder review of critical assets	Assets	In-house	Next adoption
4	Stakeholder review of asset resilience	Assets	In-house	Next adoption

8.3 Monitoring and Review Procedures

This AM Plan will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The AM Plan will be reviewed and updated annually at desktop level to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

[20] ISO 55000 Refers to this as the Asset Management System

The AM Plan has a maximum adoption life of 4 years and is due for complete revision and update 12 months from a Council Election and/or as part of a new Operational Plan cycle.

8.4 Performance Measures

The effectiveness of this AM Plan can be measured in the following ways:

The degree to which the required forecast costs identified in this AM Plan are incorporated into the long-term financial plan,

The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures consider the 'global' works program trends provided by the AM Plan,

The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans,

The Asset Renewal Funding Ratio achieving the Organisational target (this target is often 90 – 100%).

9.0 REFERENCES

- IPWEA, 2020, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2024, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2020 'International Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2018, Practice Note 12.1, 'Climate Change Impacts on the Useful Life of Assets', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2012, Practice Note 6 Long-Term Financial Planning, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn6
- IPWEA, 2014, Practice Note 8 – Levels of Service & Community Engagement, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn8
- ISO, 2014, ISO 55000 Overview, principles and terminology
- ISO, 2018, ISO 31000 Risk management – Guidelines
- Cessnock 2036 – Cessnock Community Strategic Plan
- Cessnock City Council Delivery and Operational Plan
- Cessnock City Council Annual Reports
- 2024-2025 Infrastructure Asset Revaluation Manual – under review
- NSW OLG Integrated Planning Guidelines and manual
- Cessnock City Council 2023 Resident Satisfaction Survey Results
- Cessnock City Council 2021 Resident Satisfaction Survey Results
- Cessnock City Council 2016 Resident Satisfaction Survey Results
- Cessnock City Council 2015 Asset Management Research Satisfaction Survey Results

10.0 APPENDICES

Appendix A Acquisition Forecast

A.1 – Acquisition Project Summary

It is expected that in the next ten years no bridges or major culverts will be dedicated, and Council do not intend to build any new such assets.

Table A3 - Acquisition Forecast Summary

Year	Constructed	Donated	Growth
2027	3430000	0	0
2028	1750000	0	0
2029	3080000	0	0
2030	1400000	0	0
2031	4270000	0	0
2032	1400000	0	0
2033	1400000	0	0
2034	1400000	0	0
2035	1400000	0	0
2036	1400000	0	0

Appendix B Operation Forecast

B.1 – Operation Forecast Summary

Operational budget in LTFP is expected to meet the current service level requirements in the 10 year planning period.

Table B2 - Operation Forecast Summary

Year	Operation Forecast	Additional Operation Forecast	Total Operation Forecast
2027	100000	32585	100000
2028	104300	16625	136885
2029	108785	29260	157995
2030	113463	13300	191933
2031	118342	40565	210112
2032	123312	13300	255647
2033	128368	13300	274003
2034	133502	13300	292437
2035	138842	13300	311077
2036	144396	13300	329931

Appendix C Maintenance Forecast

C.1 – Maintenance Forecast Summary

Maintenance budget in LTFP is expected to meet the current service level requirements in the 10 year planning period.

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Table C2 - Maintenance Forecast Summary

Year	Maintenance Forecast	Additional Maintenance Forecast	Total Maintenance Forecast
2027	392763	42875	599400
2028	409651	21875	668055
2029	427266	38500	716810
2030	445639	17500	783350
2031	464801	53375	829410
2032	484323	17500	911845
2033	504180	17500	958855
2034	524347	17500	1007045
2035	545321	17500	1056455
2036	567134	17500	1107155

Appendix D Renewal Forecast Summary

D.1 – Renewal Forecast Summary

Renewal budget in LTFP is expected to meet the current service level requirements in the 10 year planning period.

Table D3 - Renewal Forecast Summary

Year	Renewal Forecast	Renewal Budget
2027	1470000	
2028	750000	
2029	1320000	
2030	600000	
2031	1830000	
2032	600000	
2033	30000	
2034	600000	
2035	30000	
2036	600000	

Appendix E Disposal Summary

E.1 – Disposal Forecast Summary

Bridge asset no.5 Cunneens Bridge, Wollombi is considered for demolition as an alternate bridge was built in 2010. There will be negligible savings made from its demolition.

Table E3 – Disposal Activity Summary

Year	Disposal Forecast	Disposal Budget
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2031	0	0
2032	0	0
2033	0	0
2034	0	0
2035	0	0
2036	0	0

Appendix F Budget Summary by Lifecycle Activity

Budgets in LTFP are expected to meet the current service level requirements in the 10 year planning period.

Table F1 – Budget Summary by Lifecycle Activity

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Total
2027	0	100000	392763	0	0	492763
2028	0	104300	409651	0	0	513951
2029	0	108785	427266	0	0	536051
2030	0	113463	445639	0	0	559101
2031	0	118342	464801	0	0	583143
2032	0	123312	484323	0	0	607635
2033	0	128368	504180	0	0	632548
2034	0	133502	524347	0	0	657850
2035	0	138842	545321	0	0	684164
2036	0	144396	567134	0	0	711530

Appendix G – Maintenance Response Levels of Service

CRM Category Service Standards

Major Cat	Minor Cat	Level 3 Cat	CRM Description	Default Workflow	Resp Officer	Days
COMMUNSERV	MAINTENANC		Works & Infrast Enquiry	CSEQ	Mr J P Latter	90
PLANT	WORKSHOP		Plant Fleet Workshop Enquir	PLNT	Mr J P Latter	10
AIRPORT	AIRENQUIRY		Airport Enquiries	AIRP	Mr J P Latter	10
MAINTENANC	MAINBRIDGE		Maintenance - Bridges	MBRI	Mr J P Latter	90
MAINTENANC	MAINCOFOOT		Maintenance - Footpaths	MCON	Mr J P Latter	45
MAINTENANC	MAINKERBGT		Maintenance - Kerb & Gutter	MKER	Mr J P Latter	90
MAINTENANC	MAINMOWING		Maintenance - Mowing	MMOW	Mr J P Latter	45
MAINTENANC	MAINSIGNS		Maintenance - Signs	MSIG	Mr J P Latter	45
MAINTENANC	MAINSTORM		Maintenance - Stormwater Dr	MSTO	Mr J P Latter	90
MAINTENANC	MAINTREES		Maintenance - Trees	MTRE	Mr J P Latter	45
MAINTENANC	REMOVEDEAD		Removal of Dead Animal	MVDA	Mr J P Latter	5
BUILDING	GRAFFITI		Building Maintenance Graffiti	GFTI	Ms K M McNally	17
ASSETMGT			Drainage Infrastructure Enq	DINF	Mr C L Martin	25
ASSETMGT	ASSETFLDM		Drainage Infrastructure Enq	DINF	Mr C L Martin	25

CESSNOCK
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