Nambucca Valley Council

Water Supply

Asset Management Plan (Concise)

Version 5 April 2022

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Rev No	Date	Revision Details	Author	Reviewer	Approver
1	Jun. 2017	First attempt at Asset Management Plan	RS	CF	
2	Sep. 2017	Updated using the Current Asset Register	SM	CF	
3	June 2021	Updated using the current asset register	CN	CF	
4	December 2021	Revised at November 2021	Asset Engineer	Manager Assets	
5	April 2022	Revised for 2023 - 2042	Asset Engineer	Manager Assets	
6	August 2022	Revised with comprehensive revaluation	Asset Engineer	Manager Assets	

NAMS.PLUS Asset Management Plan Templates

NAMS.Plus offers two Asset Management Plan templates – 'Concise' and 'Comprehensive'.

The Concise template is appropriate for those entities who wish to present their data and information clearly and in as few words as possible whilst complying with the ISO 55000 Standards approach and guidance contained in the International Infrastructure Management Manual.

The Comprehensive template is appropriate for those entities who wish to present their asset management plan and information in a more detailed manner.

The entity can choose either template to write/update their plan regardless of their level of asset management maturity and in some cases may even choose to use only the Executive Summary.

The illustrated content is suggested only and users should feel free to omit content as preferred (e.g. where info not currently available).

The concise Asset Management Plan may be used as a supporting document to inform an overarching Strategic Asset Management Plan.

This is the **Concise** Asset Management Plan template.

TABLE OF CONTENTS

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1 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset management planning is a comprehensive process to ensure delivery of services from infrastructure is provided in a financially sustainable manner.

This asset management plan details information about infrastructure assets including 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 the services over a 20-year planning period.

This plan covers the infrastructure assets that provide the water supply for the Nambucca Valley.

This asset class was subject to a comprehensive revaluation, completed in the 2021/22 financial year.

1.2 Asset Description

These assets include:

The water supply network comprises:

- Bores and collection pipework
- Collection tanks, valve cluster and chemical dosing equipment
- Pump stations and pressure transfer mains
- Dam
- Gravity trunk mains,
- Reservoirs,
- Reticulation mains
- Water meters

These infrastructure assets have significant value estimated at a current replacement cost of $136,652,574.

1.3 Levels of Service

Our present funding levels are sufficient to continue to provide existing services at current levels in the medium term.

The main services consequences are:

- Supply interruptions
- Water quality

1.4 Future Demand

The main demands for new services are created by:

- Growth in new residential development areas
- Development of Industrial land
- New service facilities

These 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.

- Dam operation
- Integrated Water Cycle Management Strategy (IWCM)
- Pricing and education

1.5 Lifecycle Management Plan

What does it Cost?

Nambucca SC - Report 1 - Executive Summary AM Plan (Water_S1_V1)	
What does it cost?	($000s)
10 year total cost [10 yr Ops, Maint, Renewal & Upgrade Proj Exp]	**$22,012**
10 Year Average Cost	**$2,201**
10 year total LTFP budget [10 yr Ops, Maint, Renewal & Upgrade LTFP Budget]	**$21,638**
10 year average LTFP budget	**$2,163**
10 year AM financial indicator	**98.3%**
10 year average funding shortfall	**-$37**

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) includes operations, maintenance, renewal and upgrade of existing assets over the 10-year planning period is $2,201,290 on average per year.

1.6 Financial Summary

What we will do

Estimated available funding for this period is $2,163,804 on average per year as per the long term financial plan or budget forecast. This is 98.3% 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 emphasis of the Asset Management Plan is to communicate the consequences that this will have on

the service provided and risks, so that decision making is "informed".

The allocated funding provides a shortfall of $37,487 on average per year of the projected expenditure required to provide services in the AM Plan compared with planned expenditure currently included in the Long Term Financial Plan. This is shown in the figure below.

Projected Operating and Capital Expenditure

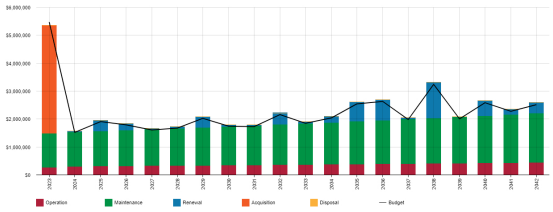


Figure Values are in current (real) dollars.

Council can overcome this shortfall by increasing water usage charges to ensure that budget increases for operation and maintenance can be accommodated.

Similarly capital renewal, upgrade and new works can be financed through the appropriate levying of Section 64 charges, calculated by financial modelling as part of the development of ICWM and Strategic Business Plan documentation

The asset management plan has allowed for the provision of water supply to cater for new development in the Valla growth Area and South Scotts Head. Loans will be required to cover the capital expenditure with repayments covered by the developer charges.

Council may be eligible for grant funding for these projects and they will be included in the IWCM and associated financial model.

We plan to provide water supply services for the following:

- Operation, maintenance, renewal and upgrade of water supply assets as required to meet service levels set in annual budgets, and
- The main renewal and upgrades currently predicted within the 10-year planning period are related to reservoir roofs and water reticulation mains.

What we cannot do

We currently do **not** allocate enough funding to sustain these services at the desired standard or to provide all new services being sought. Works and services that cannot be provided under present funding levels are:

- Council will have to borrow money to meet projected asset renewal and replacement costs and will need to ensure that financial modelling is undertaken in accordance with Best Practice Guidelines to ensure that appropriate charges are levied to cover the require repayment

- Programming of renewals is based on age only. If there is no history of breakage or problems, the renewal may be deferred. The resultant effect would be a reduction in capital expenditure.

Managing the Risks

Our present funding levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- A major break on the pressure trunk main or gravity main resulting in loss of water supply for an extended period of time.

We will endeavour to manage these risks within available funding by:

- Developing a management plan to determine the actions required to be taken to address a major break in a trunk main, and
- Investigate options to interconnect the dual gravity trunk mains to provide some redundancy for the supply of water to the urban areas.

1.7 Asset Management Practices

Our systems to manage assets include:

- Council's Authority financial package
- The Long Term Financial Plan
- The water supply asset register
- Geographical Information Systems (GIS)
- Records of Maintenance incidents
- Routine inspections

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling

systems (such as Water Distribution Network Models), or
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 1 was used for this asset management plan.

1.8 Monitoring and Improvement Program

The next steps resulting from this asset management plan to improve asset management practices are:

- Make an assessment of existing assets that are still in use but with a useful life based on age that has expired and re-evaluate their expected future life. These assets will then be Included in the future renewals program,
- Put procedures in place to improve the capture of new asset data and its recording in both the GIS and financial systems. This will ensure that the asset register and financial are always current and the information is being continually improved,
- Complete condition assessments on trunk main infrastructure,
- Continually review useful life data and condition assessment to improve asset register, and
- Ground truth existing assets using Survey or GPS data and update the GIS records to continually improve accuracy.

2. INTRODUCTION

2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

The asset management plan is to be read with the Nambucca Valley Council planning documents. This should include the Asset Management Policy and Asset Management Strategy where these have been developed along with other key planning documents:

- Integrated Water Cycle Management Strategy
- Water Supply Strategic Business Plan
- Long Term Financial Plan

The infrastructure assets covered by this asset management plan are shown in Table 2.1 (data as at Aug 2022). These assets are used to provide water supply services to residents in the towns of Bowraville, Macksville, Nambucca Heads, Valla Beach, Scotts Head, and some rural and rural residential properties in close proximity to trunk main routes.

Table 2.1: Assets covered by this Plan

Asset Category	Dimension / Qty	Replacement Value
Water Reticulation Mains	174,285m	$36,026,736
Water Trunk Mains	63,646	$36,937,570
Water Meters	20mm -100mm	$258,014
Reservoirs	0.5 ML –8 ML, 12 No.	$13,720,085
Water Treatment Plant	1 No.	$2,023,486
Water Bore	10 Nos	$2,715,575
Dam	5000 ML	$42,286,539
Water Pump Stations	4 Nos	$2,684,569
TOTAL		$136,652,574

2.2 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) 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 expenditure and how it will be allocated.

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

- International Infrastructure Management Manual 2015[1]
- ISO 55000[2]

2.3 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

This 'core' asset management plan is prepared to facilitate consultation prior to adoption by the Council. Future revisions of the asset management plan will incorporate community consultation on service levels and costs of providing the service. This will assist the Council and stakeholders in matching the level of service required, service risks and consequences with the community's ability and willingness to pay for the service.

Council engaged Jetty Research to complete a random telephone survey of Valley ratepayers in order to gauge the level of satisfaction with facilities and services managed by Nambucca Valley Council. The results were documented in a report dated December 2021. The table below represents the most recent community satisfaction surveys reported for importance and satisfaction levels for the water supply service:

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Result
Satisfaction with Council's overall performance	43% satisfied
Comparison of importance mean scores on Water supply services (1-5, with 5 being higher satisfaction	4.19 in 2021 and 3.97 in 2019, a 6% change
Comparison of satisfaction scores on Water supply services (1-5, with 5 being higher satisfaction	4.11 in 2021 and 4.07 in 2019, 1% change

Community satisfaction information is used in developing the Strategic Plan and in the allocation of resources in the budget.

3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of the Nambucca Valley Council's vision, mission, goals and objectives.

Our vision is:

> Living at its Best

Our mission is:

> The Nambucca Valley will value and protect its natural environment, maintain its assets and infrastructure and develop opportunities for its people.

Relevant goals and objectives and how these are addressed in this asset management plan are:

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

[1] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13

[2] ISO 55000 Overview, principles and terminology

[3] IPWEA, 2015, IIMM.

Goal	Objective	How Goal and Objectives are addressed in AM Plan
Provide water infrastructure for future development and current urban community Promote prosperity	Provide a sustainable water supply	Determining required funding for maintenance , operational, renewal and capital expenditure for water infrastructure

The Nambucca Valley Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 6.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
The Local Government Act 1993	Defines the powers that local water utilities have to operate and maintain water supply systems under their control
Water Management Act 2000	Regulates requirements for sustainable use of water resources
Dam Safety Act 1978	Regulates how responsible local water utilities operate and maintain dams under their control
Environment Planning and Assessment Act 1979	Regulates land use requirements

3.4 Customer Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

Quality 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?*

The current and expected customer service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the expected levels of service based on resource levels in the current long-term financial plan.

Organisational measures are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition %'s of Very Poor, Poor/Average/Good, Very good.

These Organisational/Organizational measures provide a balance in comparison to the customer perception that may be more subjective.

Table 3.4: Customer Level of Service

	Expectation	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the current budget.
Service Objective: Provide a high quality, reliable water supply to consumers				
Quality	Water quality complies the Australian Drinking Water Guidelines (ADWG)	Number of complaints regarding dirty water	17 complaints per year	Number of complaints not increasing.
	Organisational measure	Compliance with NSW Health microbiological testing requirements	100 % compliance	100 % compliance
	Confidence levels		High	High
Function	Water supply is available on demand with minimal disruption to service	Number of complaints regarding service or disruption to supply.	10 service complaints per year.	Number of complaints not increasing.
	Organisational measure	No. of mains breaks causing disruption to supply	5 breaks per 100 km of main	Number of unplanned disruptions to service not increasing
	Confidence levels		High	High
Capacity and Use	Water supply system can cater for future growth. Water supply is secure			
	Organisational measure	Secure yield analysis and system hydraulic modelling	Water security and system performance is satisfactory	Water security and system performance will be maintained at a satisfactory level.
	Confidence levels		High	High

3.5 Technical Levels of Service

Technical Levels of Service - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

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

- Operations – the regular activities to provide services (e.g. chemical dosing, water quality monitoring, infrastructure inspections / condition assessments, energy, monitoring pumping times 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. pump maintenance and water main flushing),

- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. pump renewal, pipeline replacement and test equipment renewal),
- Upgrade/New – the activities to provide a higher level of service (e.g. telemetry, new pressure reduction valves) or a new service that did not exist previously (e.g. new subdivision water mains or upgrading the size of existing mains).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.[4]

Table 3.5 shows the technical levels of service expected to be provided under this AM Plan. The 'Desired' position in the table documents the position being recommended in this AM Plan.

Table 3.5: Technical Levels of Service

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **
TECHNICAL LEVELS OF SERVICE				
Operations				
	Good water quality supplied on demand	Chemical dosing and monitoring of critical control points in water supply system	Water quality requirements being met at headworks and in reservoirs	Nil
		Flushing program for water mains	One mains flushing program per year	Option for 2 mains flushing programs per year
		Budget	$270,000	2nd mains flushing program - $12,000
Maintenance				
	Maintain water supply system and respond promptly to service requests.	Complete planned maintenance program and respond to service requests within agreed time frame	Response to service request is good. Planned maintenance involving clearing of pipe routes could be improved	No major maintenance issues. Regular clearing program for trunk main routes.
		Budget	$1,266,300	Clearing - $8,000
Renewal				
	Replace existing AC mains where practical and reduce level of pipe breaks	A percentage of water supply pipes renewed each year	Targeted renewal program for identified problem areas.	Replacing 1% of reticulation mains annually.
		Average Budget	$456,595	1% renewal (reticulation only) $300,000
Upgrade/New				
	To cater for future development growth		All necessary Infrastructure is in place to adequately serviced all current development areas	The existing system has the capacity for future proposed growth areas however new infrastructure

[4] IPWEA, 2015, IIMM, p 2|28.

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **
				will be required in the form of trunk mains and reservoirs
		Average Budget	$3,865,300	Future capital budget for upgrades and new works is shown in Table 7.1.2.

Note: * Current activities and costs (currently funded)
** Desired activities and costs to sustain current service levels and achieve minimum life cycle costs (not currently funded)

It is important to monitor the service levels provided regularly as these will change. The current performance is influences by work efficiencies and technology, and customer priorities will change over time. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential.

In the case of water supply consumers expect a high level of service with good quality water provided on demand, with minimal disruption to service. It is expected that Council will continue to maintain the current level of service into the foreseeable future. This can be achieved by increasing water access and usage charges as well as Section 64 (developer charges) to ensure that increased budget requirements can be met.

4. 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 were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population Growth	19,598 in 2020	Estimated annual average population growth from 2015- 20 is 1.63%	No impact on service – existing system can meet expected future demand with the addition of new infrastructure at the development sites.
Water usage	Annual water consumption has remained relatively stable over the last few years	Current pricing signals should ensure that per capita water demand remains relatively constant.	No impact on service
Age over 60 years population	6,979 (2016 census)	Estimated annual average Age over 60 years population growth from 2015-20 is 11.4%	Shifts in water consumption, demand and utilisation of specific facility types such as more demand on passive recreation facilities and less demand on active recreation facility.

Tourism – Total Visitors	297000 [5] (September 2014 - Four year annual average total visitors (overnight and domestic day trips) for Nambucca Shire Council)	Four year annual average total visitors (overnight and domestic day trips) for Nambucca Shire Council has increased by 3.1% [6] annually from 2014 to 2019	Increased tourism activities within the Valley impose a greater demand on the water supply.

4.4 Demand Management Plan

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 can include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this asset management plan.

Table 4.4: Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
New Growth Areas	New infrastructure required.	Recent construction of off river storage to secure the water supply Planning Controls – LEP and DCP IWCM including capital woks program and financial modelling
Increased Water Consumption	Possible upgrade of existing infrastructure.	Pricing and education to ensure water is used wisely and per capita consumption does not increase.
Ager over 60 years population	Shifts in water consumption, demand and utilisation of specific facility types such as more demand on passive recreation facilities and less demand on active recreation facility.	Identify water needs for elderly people and develop those assets by allocating resources as necessary.
Tourism activities	Increased tourism activates within the Valley imposes greater demand on water.	Identify infrastructure affected by tourist loading and ensure that it is sized appropriately to cater for that demand.

4.5 Asset Programs to meet Demand

The new assets required to meet demand can be acquired, donated or constructed. Additional assets are discussed in Section 5.5. The summary of the cumulative value of additional asset is shown in Figure 1.

[5] Destination NSW, September 2019 "LGA Profile – Nambucca"

Figure 1: Upgrade and New Assets to meet Demand – (Cumulative)

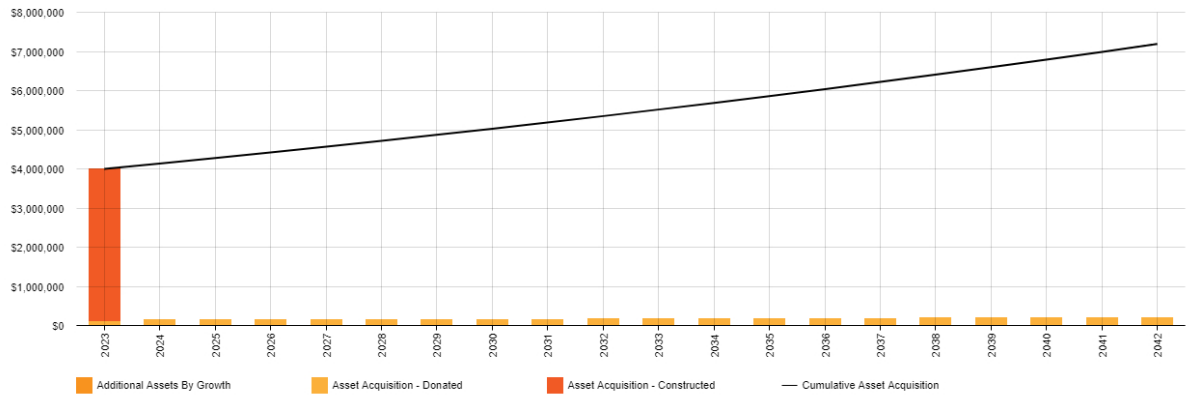


Figure Values are in current (real) dollars.

Acquiring these new assets will commit 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 further in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the Nambucca Valley Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while managing life cycle costs.

5.1 Background Data

5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 2.1.

The water supply system comprises a collection and water conditioning system including 10 bores, collection pipework, raw and treated water collection tanks, pump stations, dosing and control systems located adjacent to the Nambucca River approximately 1km upstream of Bowraville as well as an dam facility, pressure and gravity trunk mains and reservoirs and reticulation systems located in the main urban areas of Bowraville, Macksville, Nambucca Heads, Valla Beach and Scotts Head.

The age profile of the assets included in this AM Plan are shown in Figure 2.

Figure2: Asset Age Profile

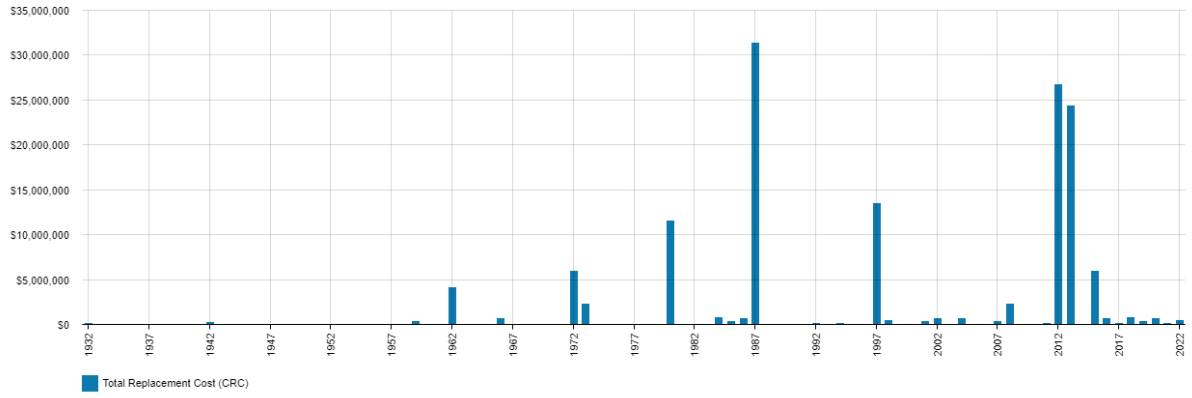


Figure Values are in current (real) dollars.

The figure indicates that the majority of the assets were constructed during the late 60's and early 70's and then the mid to late 80's when reticulated water supply infrastructure was first provided to the urban areas of Bowraville and Macksville and then extended to Nambucca Heads, Valla Beach and Scotts Head. The major asset valuation spike in 2014 relates to the construction of the dam and related infrastructure required to secure the water supply for the Nambucca Valley.

These assets have a significant effect on Council's depreciation liability and the requirement to renew them when they reach the end of their useful life will result in similar spikes in the budget requirements in future years. This issue may be overcome by staging the programming of the renewals over a number of years.

5.1.2 Asset capacity and performance

Assets are generally provided to meet accepted water supply design standards where these are available. Nambucca Valley Council commits to providing a water supply system that will provide a minimum flow of 0.1 litres/ sec at 12m head as well as meeting standard urban fire fighting flow requirement.

Hydraulic modelling has confirmed that the existing system generally meets these requirements and also has the capacity to meet these requirements for the service of new development areas in the medium term

Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

Table 5.1.2: Known Service Performance Deficiencies

Location	Service Deficiency
Kingsworth Estate	Poor water pressure in some areas

The above service deficiencies were identified from hydraulic modelling, pressure testing and consumer complaints.

5.1.3 Asset condition

Condition is monitored in the following way.

Bores- Annual inspection and pump testing. Lifting and inspecting pumps and motors and performing a flow test on individual bores

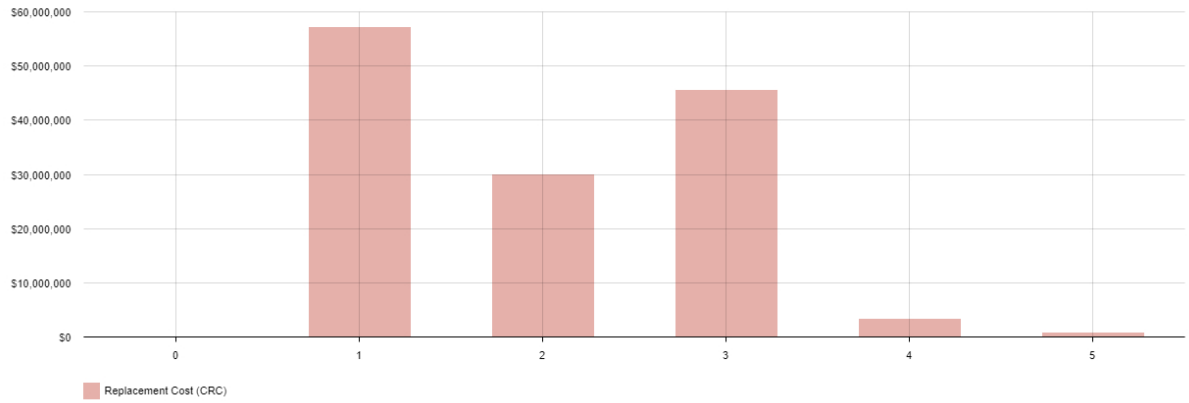
Reservoirs – Quarterly visual inspections.

Pump Stations – Regular visual inspection and monitoring of pump flow rates and hours run using SCADA data.

Pipelines - Not currently monitored in any formal way due to difficulties in accessing buried assets. Records of main breaks are kept. A condition assessment of sections of gravity trunk main using sound wave technology has recently been completed.

The condition profile of our assets is shown in Figure 3.

Fig 3: Asset Condition Profile



The majority of Council's assets are rated as condition 2 or 3, meaning that they require regular maintenance to provide the level of service required. The assets with a condition rating of 1 are new assets and predominantly relate to the construction of the off river storage infrastructure in 2014. This is a high value asset and has the greatest monetary value of any asset that Council currently owns.

Assets rated as condition 4 need to be further inspected and assessed to determine whether or not they are in need of renewal or can be maintained at an acceptable condition with ongoing maintenance.

Condition is measured using a 1 – 5 grading system[6] as detailed in Table 5.1.3.

[6] IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

Table 5.1.3: Simple Condition Grading Model

Condition Grading	Description of Condition
1	**Very Good**: only planned maintenance required
2	**Good**: minor maintenance required plus planned maintenance
3	**Fair**: significant maintenance required
4	**Poor**: significant renewal/rehabilitation required
5	**Very Poor**: physically unsound and/or beyond rehabilitation

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety, chemical dosing etc.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. water main breaks.

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.

Maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Maintenance Expenditure Trends

Year	Maintenance Budget ($'000)
2020/21	$1,100
2021/22	$1,143
2022/23	$1,266

Figure Values are in current (real) dollars.

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

Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current dollar values (i.e. real values).

Figure 4: Projected Operations and Maintenance Expenditure

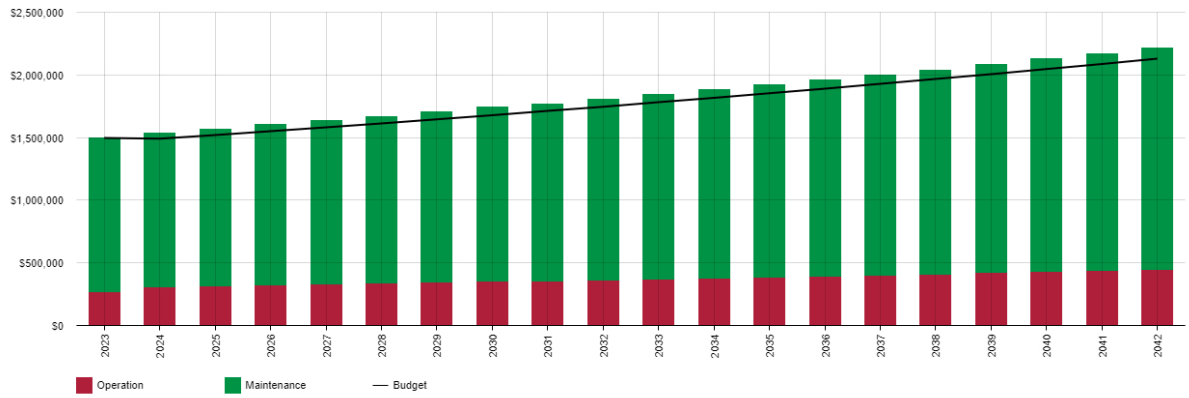


Figure Values are in current (real) dollars.

The figure indicates that operation and maintenance costs will rise slightly over time due to the new assets that are acquired as a result of new development. In order to maintain the same level of service Council will have to increase the operations and maintenance budget accordingly. It is expected that increasing operations and maintenance cost will be covered by increase revenue from new water usage.

Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded are to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available. This is further discussed in Section 7.

5.3 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity 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 upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template'.

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Water Distribution Network Models), or
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 1 is used for this asset management plan.

5.3.1 Renewal ranking criteria

Asset renewal and replacement 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 water main that has a history of frequent breaks), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. continuous water supply to the consumers).[7]

[7] IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.[8]

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

Table 5.3.1: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Condition Rating	30%
Risk	25%
Number of properties served	25%
Pipe material type	20%
Total	100%

5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure is required is shown in Figure 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Appendix B.

[8] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

Figure 5: Projected Capital Renewal and Replacement Expenditure

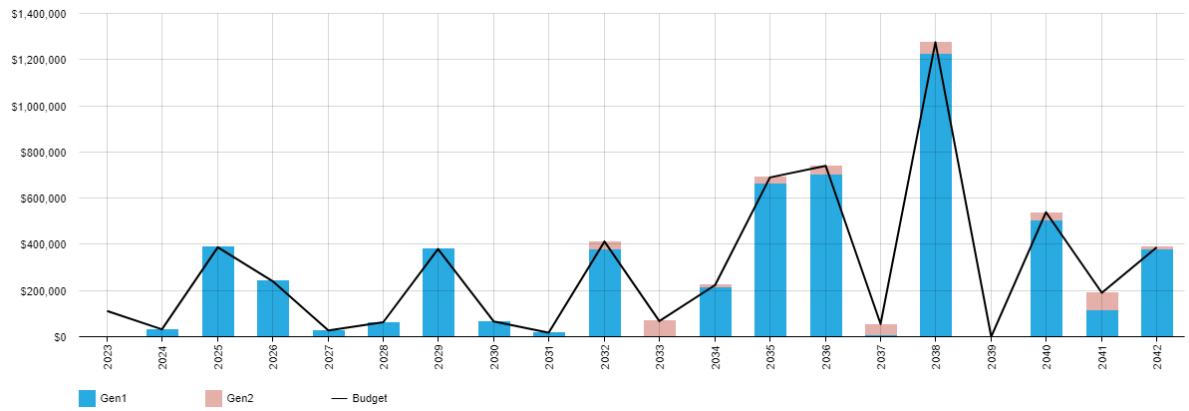


Figure Values are in current (real) dollars.

The graph indicates that expenditure on renewals is expected to increase significantly from 2025 onward. This relates to many of the pipe assets reaching the end of their estimated useful lives at this time and beyond. The asset condition of these pipes has not been critically assessed but is rather based on age only.

The requirement to replace these pipes needs to be better assessed prior to the timing of their proposed renewal. If there is no history of breakages or problems the renewal of these assets may be deferred.

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the risk management plan.

Renewals and replacement expenditure in the capital works program will be accommodated in the long term financial plan. This is further discussed in Section 7.

5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost as a result of new subdivision infrastructure being paid for by the developer. These additional assets are considered in Section 4.4.

5.4.1 Selection criteria

The need for new assets and upgrade/expansion of existing assets is identified in the Integrated Water Cycle Management Strategy using performance data from existing assets, strategic plans and other planning documents. All viable options for the provision of new assets or upgrades to cater for community requirements have been developed and assessed in terms of their economic, social and environmental benefit. This triple bottom line assessment produces the optimum solution for the new infrastructure. The priority ranking criteria is detailed below.

Table 5.4.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Cost	40%
Social Impact	30%
Environmental Impact	30%
Total	100%

5.4.2 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Figure 6. The projected upgrade/new capital works program is shown in Appendix C. All amounts are shown in real values.

Figure 6: Projected Capital Upgrade/New Asset Expenditure

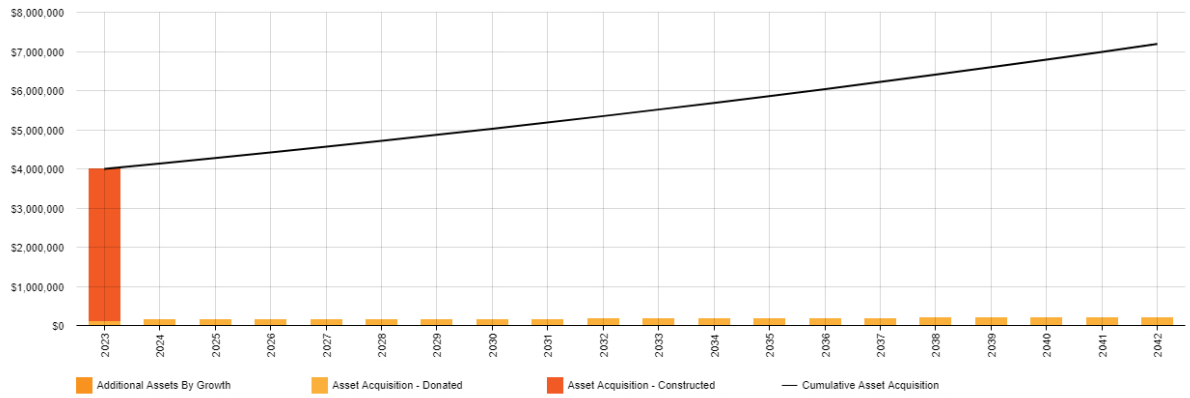


Figure Values are in current (real) dollars.

Predicted expenditure on upgrades and new assets relates directly to growth and the provision of new services to identified growth areas. Council needs to continually update planning and asset management documents to ensure that the timing of infrastructure construction and expenditure is as accurate as possible.

Financial modelling as part of the documentation of the IWCM Plan and Strategic Business Plan can then calculate the appropriate Section 64 charges to be levied on developers in order for Council to generate the income it requires to finance the construction of these assets. Council is likely to have to borrow money to pay for the infrastructure up front and collect the relevant Section 64 charges to pay off the loans.

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 of the available funds

5.4.3 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in Figure 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve lowest lifecycle costs, the budget line indicates what is currently available. The gap between these informs the discussion on achieving the balance between services, costs and risk to achieve the best value outcome.

Figure 7: Projected Operating and Capital Expenditure

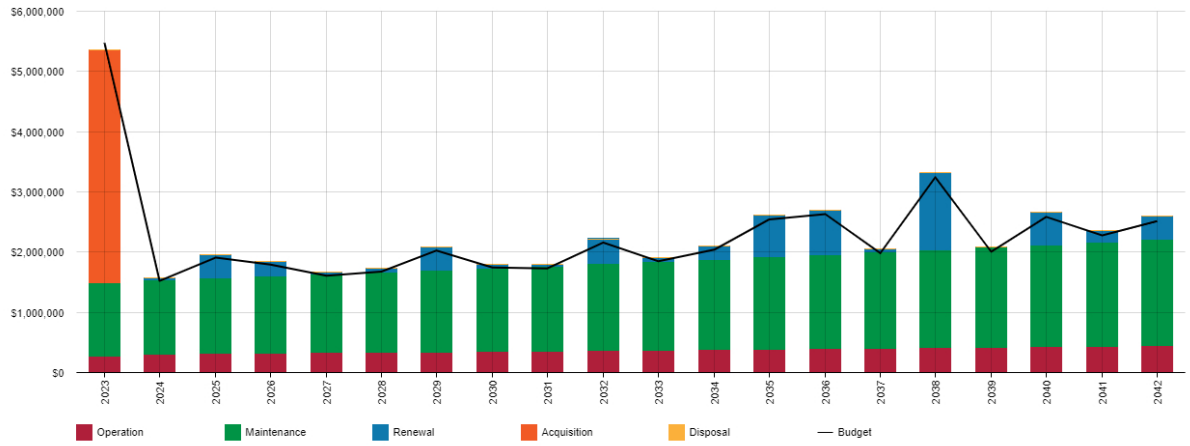


Figure Values are in current (real) dollars.

Current budget expenditure is not sufficient to allow for the predicted renewal, upgrade and new works. Council may need to consider borrowing money, conduct regular financial modelling, and collect appropriate Section 64 charges to ensure that these works can be funded when required.

The requirement to replace underground pipes will require further assessment prior to their proposed renewal. If there is no history of breakages, problems, or a condition assessment indicates that they are still in good condition; then the renewal of the pipe assets may be deferred. The deferral of assets will have the effect of reducing the capital renewal requirements, but may increase the incidences of failures.

5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. No assets have been identified for disposal without renewal/replacement.

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results 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 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: 'coordinated activities to direct and control with regard to risk'[9].

An assessment of risks[10] associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock'. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Similarly, critical failure modes are those which have the highest consequences.

Critical assets have been identified and their typical failure mode and the impact on service delivery are as follows:

9 ISO 31000:2009, p 2

10 Replace with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Off river storage	Dam failure	Catastrophic – potential loss of life. Water supply could still be operated
Trunk Mains	Break	Major -Potential loss of water supply for days to weeks
Reservoir	Major leak	Major - Depending on location could result in loss of supply for days to weeks
Reticulation main	Major break	Minor – should be rectified within a day

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

6.2 Risk Assessment

The risk management process used in this project is shown in Figure 8 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.

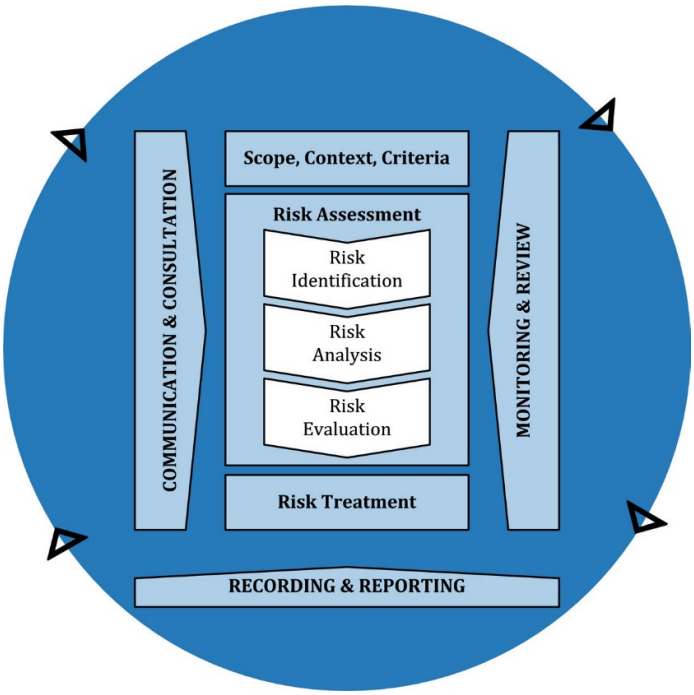


Fig 6.2 Risk Management Process – Abridged
Source: ISO 31000:2018, Figure 1, p9

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

An assessment of risks[11] associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

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 cost after the selected treatment plan is implemented is shown in Table 6.2. These risks and costs are reported to management and Council.

Table 6.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
No assets are considered to be a critical risk at this time.					

Note * The residual risk is the risk remaining after the selected risk treatment plan is operational.

Council is not considered to have any Very High or High Risk assets at this time.

Council is not considered to have any Very High or High Risk water supply assets that need immediate corrective action. The majority of Council's risk is considered to sit the with trunk mains that provide water supply from the water source to the town systems. A major break in one of these mains could take some time to repair and could result in the loss of water supply to the affected towns.

The pressure transfer main between the headworks and the balance tanks presents the greatest risk as it is a steel main and repair works cannot be completed with Council resources alone. Skilled tradesman are required to complete the welding work required for major repairs.

This risk will be addressed by the documentation of a management plan with procedures for dealing with the trunk main breaks. Consideration will also be given to providing interconnections between the dual gravity trunk mains that run from the Balance Tanks to Wirrimbi Junction thus providing some redundancy for the supply of water to the town systems.

6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to our customers and the services we provide. To adapt to changing conditions and grow over time we need to understand our capacity to respond to possible disruptions and be positioned to absorb disturbance and act effectively in a crisis to ensure continuity of service.

Resilience is built on aspects such as response and recovery planning, financial capacity and crisis leadership.

Our current measure of resilience is shown in Table 6.4 which includes the type of threats and hazards, resilience assessment and identified improvements and/or interventions.

[11] Replace with Reference to the Corporate or Infrastructure Risk Management Plan as the footnote

Table 6.3: Resilience

Threat / Hazard	Resilience LMH	Improvements / Interventions
Contamination of water supply	High	Have dam to act as secondary source of water should an event occur in the catchment that contaminates the water source
Break in trunk pressure main	Medium	Develop a management plan to deal with breaks

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:

- Nil on the proviso that Council is prepared to borrow money as required to complete renewal and upgrade works and impose appropriate charges to ensure that revenue can meet the required loan payments

6.4.2 Service trade-off

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. These include:

- Nil

6.4.3 Risk trade-off

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

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

7. FINANCIAL SUMMARY

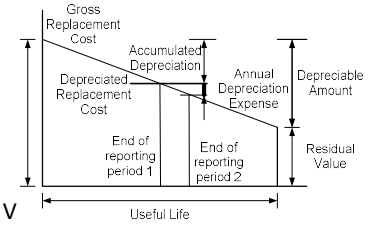
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued at current replacement cost for an as new equivalent modern asset type.

Gross Replacement Cost	$136,652,574
Depreciable Amount	$136,652,574
Depreciated Replacement Cost[12]	$93,664,204



[12] Also reported as Written Down Value, Carrying or Net Book V

Asset Consumption $42,988,370

7.1.1 Sustainability of service delivery

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

- asset renewal funding ratio, and
- medium term budgeted expenditures/projected expenditure (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[13] 107%

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 10 years of the forecasting that we expect to have 107% of the funds required for the optimal renewal and replacement of assets.

Council will need to borrow money to meet renew and replace assets as required or if there is no history of breakages or problems the renewal of pipe assets may be deferred and will be reduced the capital renewal.

Medium term – 10 year financial planning period

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures 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.

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is $2,201,290 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is $2,163,804 on average per year giving a 10 year funding shortfall of $37,487 per year. This indicates 98.3% of the projected expenditures needed to provide the services documented in the asset management plan. This excludes upgrade/new assets.

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10-year life of the Long Term Financial Plan.

7.1.2 Projected expenditures for long term financial plan

Table 7.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in current dollar values.

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

Table 7.1.2: Projected Expenditures for Long Term Financial Plan ($000)

Year	Acquisition	Operation	Maintenance	Renewal	Disposal
2023	$3,865,300	$270,000	$1,226,300	$0	$0
2024	$0	$311,107	$1,226,772	$32,041	$0
2025	$0	$317,466	$1,251,846	$387,181	$0
2026	$0	$323,953	$1,277,423	$240,362	$0
2027	$0	$330,571	$1,303,513	$27,036	$0
2028	$0	$337,322	$1,330,130	$62,650	$0
2029	$0	$344,208	$1,357,281	$379,886	$0
2030	$0	$351,233	$1,384,978	$65,522	$0
2031	$0	$358,399	$1,413,231	$17,221	$0
2032	$0	$365,710	$1,442,053	$412,205	$0
2033	$0	$373,167	$1,471,454	$67,424	$0
2034	$0	$380,773	$1,501,446	$223,710	$0
2035	$0	$388,534	$1,532,042	$689,766	$0
2036	$0	$396,450	$1,563,252	$739,810	$0
2037	$0	$404,526	$1,595,091	$54,929	$0
2038	$0	$412,763	$1,627,569	$1,275,229	$0
2039	$0	$421,166	$1,660,701	$0	$0
2040	$0	$429,739	$1,694,498	$539,176	$0
2041	$0	$438,484	$1,728,975	$190,133	$0
2042	$0	$447,404	$1,764,146	$386,442	$0

7.2 Funding Strategy

Funding for assets is provided from the budget and long term financial plan.

The financial strategy of the entity determines how funding will be provided, whereas the asset management plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

Council can manage the shortfall by making adjustments to the cost of water in order to increasing revenue that can be used to cover the additional operation and maintenance costs.

Council also needs to continually monitor its renewal requirements to ensure that accurate data is captured for financial modelling in the Integrated Water Cycle Management Plan and Strategic Business Plans on their 4 year rotation. The modelling will set the level of developer charge required to repay the loans that will be required to finance the predicted renewal and upgrade program.

7.3 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key Assumptions made in AM Plan and Risks of Change

- Timing for construction of new assets required for growth
- Adopted useful life of assets based on available industry data
- Council will borrow money and pay back loans by imposing appropriate charges

7.4 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[14] in accordance with Table 7.4.

Table 7.4: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	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 Reliable	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 Uncertain	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 complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	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 Unknown	None or very little data held.

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

[14] IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices[15]

8.1.1 Accounting and financial data sources

- Authority financial system
- 2022/23 Budget
- 10 Year Financial Plan
- IWCM Strategy
- Strategic Business Plan for Water Supply

8.1.2 Asset management data sources

- Asset Register
- GIS
- Work as Executed Plans

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 8.1.

Table 8.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Inspect assets that have been identified with a useful life less than 10 years and reassess their condition and estimated time for renewal	MWS/AO	Internal resources Contractors	Ongoing
2	Put procedures in place to improve the capture of new asset data and its recording in both the GIS and financial systems.	MWS/WSE/AO/ FO	Internal resources	Ongoing
3	Undertake condition assessment on all trunk mains	MWS	$60,000	End 2022
4	Continually review useful life data and condition assessment to improve asset register	MWS/AO	Internal resources	Ongoing
5	Ground truth existing assets using survey or GPS and update GIS data to continually improve accuracy.	MWS/AO/ Outdoor staff	Internal resources	Ongoing

8.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the long term financial plan.

The AM Plan has a life of 4 years and is due for complete revision and updating in line with the IWCM Plan and Strategic Business Plans.

[15] ISO 55000 Refers to this the Asset Management System

8.4 Performance Measures

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate 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 Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
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- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- Integrated Water Cycle Management Strategy WSR - 18064 – December 2018
- Strategic Business Plan for Water – November 2011

10. APPENDICES

Appendix A	Projected 10 year Capital Renewal and Replacement Works Program
Appendix B	Acquisition Forecast
Appendix C	Operational Forecast
Appendix D	Maintenance Forecast
Appendix E	Renewal Forecast
Appendix F	Disposal Forecast
Appendix G	Budget Summary by Lifestyle Activity

Appendix A Projected 10-year Capital Renewal and Replacement Works Program

CVR ID	GIS ID	Asset Name	To	Remaining Life	Forecast Renewal	Renewal Cost	Useful Life
2204640	0	Water Meters 2014/2015	Mixed	1	2024	$32,041	8
0	0					$32,041	
2204700	0	Water Meters 15/16	Mixed	2	2025	$67,424	8
2204086	18302	Macksville to Scotts Head Booste	Macksville	2	2025	$50,207	40
2204087	18299	Town water pump station - Elect	Bowraville	2	2025	$269,550	40
0	0					$387,181	
2204765	0	Water Meters 2016/2017	Mixed	3	2026	$7,255	8
2205206	18325	Water treatment plant - Lime Do	Bowraville	3	2026	$4,930	15
2205265	17942	Water Bore No 3 - Bore pump	Bowraville	3	2026	$15,725	20
2203582	15046	Nambucca Heads Bellenger St Re	Nambucca Heads	3	2026	$47,388	40
2204069	15036	Scotts Head Reservoir - Steel roo	Scotts Head	3	2026	$148,729	40
2205203	18325	Water treatment plant - Lime do	Bowraville	3	2026	$16,335	40
0	0					$240,362	
2205370	18302	Macksville to Scotts Head Booste	Macksville	4	2027	$3,042	25
2205409	0	Water Meters 2017/2018	Mixed	4	2027	$23,994	8
0	0					$27,036	
2205246	17936	Water Bore No 10 - Bore pump	Bowraville	5	2028	$16,000	20
2205423	0	Water Meters 2018/2019	Mixed	5	2028	$34,253	8
2205207	18325	Water treatment plant - Lime Do	Bowraville	5	2028	$5,739	20
2205122	15045	Macksville Reservoir (Large) - Le	Macksville	5	2028	$3,329	20
2205131	15050	South Macksville Reservoir - Lev	Macksville	5	2028	$3,329	20
0	0					$62,650	
2200693	10637	Water Reticulation Mains PVC 1(	Macksville	6	2029	$75,336	70
2200800	11056	Water Trunk Mains PVC Dia 150 -	Macksville	6	2029	$27,393	70
2200801	11057	Water Trunk Mains PVC Dia 150 -	Macksville	6	2029	$11,698	70
2201201	8568	Water Reticulation Mains AC 10(	Macksville	6	2029	$1,741	70
2201202	8569	Water Reticulation Mains AC 10(	Macksville	6	2029	$11,297	70
2201203	8570	Water Reticulation Mains AC 10(	Macksville	6	2029	$21,297	70
2201205	8572	Water Reticulation Mains AC 10(	Macksville	6	2029	$39,069	70
2201830	10659	Water Reticulation Mains PVC 1!	Nambucca Heads	6	2029	$88,364	70
2205450	0	Water Meters 2020/2021	Mixed	6	2029	$44,972	8
2203079	8425	Water Reticulation Mains PVC 1(	Nambucca Heads	6	2029	$1,821	70
2203080	8426	Water Reticulation Mains PVC 1(	Nambucca Heads	6	2029	$12,146	70
2203081	8427	Water Reticulation Mains PVC 1(	Nambucca Heads	6	2029	$11,147	70
2203082	8428	Water Reticulation Mains PVC 1(	Nambucca Heads	6	2029	$11,446	70
2203083	8429	Water Reticulation Mains PVC 1(	Nambucca Heads	6	2029	$22,159	70
0	0					$379,886	

2205355	18299	Town water pump station - Tele	Bowraville	7	2030	$14,119	20
2205143	15039	Nambucca Heads Palmer St Rese	Nambucca Heads	7	2030	$3,329	20
2205488	0	Water Meters 2021/2022	Mixed	7	2030	$48,074	8
0	0					$65,522	
2205185	18343	Water treatment plant - Chlorin	Bowraville	8	2031	$3,567	15
2205186	18343	Water treatment plant - Chlorin	Bowraville	8	2031	$3,567	15
2205195	18346	Water treatment plant - Fluoride	Bowraville	8	2031	$5,737	15
2205197	18346	Water treatment plant - Fluoride	Bowraville	8	2031	$4,350	15
0	0					$17,221	
2204640	0	Water Meters 2014/2015	Mixed		2032	$32,041	8
2200798	11054	Water Trunk Mains MSCL Dia 300	Macksville	9	2032	$121,453	100
10089	18301	South Macksville Reservoir - Bul	Macksville	9	2032	$9,987	25
2205203	18325	Water treatment plant - Lime do	Bowraville	9	2032	$10,890	25
2205180	18342	Water treatment plant - Carbon	Bowraville	9	2032	$10,890	25
2205153	15042	Valla Beach Reservoir - Flowmet	Valla Beach	9	2032	$9,686	25
2205138	15046	Nambucca Heads Bellenger St Re	Nambucca Heads	9	2032	$3,329	20
2205128	15050	South Macksville Reservoir - Flo	Macksville	9	2032	$9,686	25
2205124	15044	Macksville Reservoir (Small) - Fl	Macksville	9	2032	$9,686	25
2205108	15041	Bowraville Service Reservoir - Fl	Bowraville	9	2032	$9,686	25
2205205	18325	Water treatment plant - Lime Do	Bowraville	9	2032	$5,171	25
2204087	18299	Town water pump station - Elect	Bowraville	9	2032	$179,700	25
0	0					$412,205	

Appendix B Acquisition Forecast

Acquisition forecasts are based on current trends in development growth and urban redevelopment and expansion. Growth trends will be monitored and forecasts adjusted accordingly.

Year	Constructed	Donated	Growth
2023	$3,865,300	$134,209	$0
2024	$0	$137,167	$0
2025	$0	$140,190	$0
2026	$0	$143,280	$0
2027	$0	$146,438	$0
2028	$0	$149,665	$0
2029	$0	$152,964	$0
2030	$0	$156,335	$0
2031	$0	$159,781	$0
2032	$0	$163,302	$0
2033	$0	$166,901	$0
2034	$0	$170,580	$0
2035	$0	$174,339	$0
2036	$0	$178,182	$0
2037	$0	$182,109	$0
2038	$0	$186,123	$0
2039	$0	$190,225	$0
2040	$0	$194,417	$0
2041	$0	$198,702	$0
2042	$0	$202,676	$0

Appendix C Operational Forecast

Costs will be apportioned to match available budget and address service expectations. Growth is factored in to allow for acquisition of new assets and will be monitored and adjusted to match growth trends.

Year	Forecast	Additional Costs	Additional Forecast	Total Forecast
2023	$270,000	$9,599	$0	$270,000
2024	$301,508	$329	$0	$311,107
2025	$307,538	$336	$0	$317,466
2026	$313,689	$344	$0	$323,953
2027	$319,963	$351	$0	$330,571
2028	$326,362	$359	$0	$337,322
2029	$332,889	$367	$0	$344,208
2030	$339,547	$375	$0	$351,233
2031	$346,338	$383	$0	$358,399
2032	$353,265	$392	$0	$365,710
2033	$360,330	$401	$0	$373,167
2034	$367,536	$409	$0	$380,773
2035	$374,887	$418	$0	$388,534
2036	$382,385	$428	$0	$396,450
2037	$390,033	$437	$0	$404,526
2038	$397,833	$447	$0	$412,763
2039	$405,790	$457	$0	$421,166
2040	$413,906	$467	$0	$429,739
2041	$422,184	$477	$0	$438,484
2042	$430,628	$477	$0	$447,404

Appendix D Maintenance Forecast

The maintenance forecast includes provision for growth in acquisition, this factor will be monitored and maintenance expenditure adjusted accordingly.

Year	Forecast	Additional Costs	Additional Forecast	Total Forecast
2023	$1,226,300	$37,595	$0	$1,226,300
2024	$1,189,177	$1,289	$0	$1,226,772
2025	$1,212,961	$1,318	$0	$1,251,846
2026	$1,237,220	$1,347	$0	$1,277,423
2027	$1,261,964	$1,377	$0	$1,303,513
2028	$1,287,204	$1,407	$0	$1,330,130
2029	$1,312,948	$1,438	$0	$1,357,281
2030	$1,339,207	$1,470	$0	$1,384,978
2031	$1,365,991	$1,502	$0	$1,413,231
2032	$1,393,311	$1,535	$0	$1,442,053
2033	$1,421,177	$1,569	$0	$1,471,454
2034	$1,449,600	$1,603	$0	$1,501,446
2035	$1,478,592	$1,639	$0	$1,532,042
2036	$1,508,164	$1,675	$0	$1,563,252
2037	$1,538,328	$1,712	$0	$1,595,091
2038	$1,569,094	$1,750	$0	$1,627,569
2039	$1,600,476	$1,788	$0	$1,660,701
2040	$1,632,485	$1,828	$0	$1,694,498
2041	$1,665,135	$1,868	$0	$1,728,975
2042	$1,698,438	$1,868	$0	$1,764,146

Appendix E Renewal Forecast

Renewals identified from asset register.

Year	Renewal Forecast	Renewal Budget
2023	$0	$111,248
2024	$32,041	$32,041
2025	$387,181	$387,181
2026	$240,362	$240,362
2027	$27,036	$27,036
2028	$62,650	$62,650
2029	$379,886	$379,886
2030	$65,522	$65,522
2031	$17,221	$17,221
2032	$412,205	$412,205
2033	$67,424	$67,424
2034	$223,710	$223,710
2035	$689,766	$689,766
2036	$739,810	$739,810
2037	$54,929	$54,929
2038	$1,275,229	$1,275,229
2039	$0	$0
2040	$539,176	$539,176
2041	$190,133	$190,133
2042	$386,442	$386,442

Appendix F Disposal Forecast

At the time of writing this asset management plan, Council has not identified any assets for disposal.

Appendix G Budget Summary by Lifestyle Activity

Year	Acquisition	Operation	Maintenance	Renewal	Disposal	Budget
2023	$3,865,300	$270,000	$1,226,300	$0	$0	$5,472,848
2024	$0	$311,107	$1,226,772	$32,041	$0	$1,522,726
2025	$0	$317,466	$1,251,846	$387,181	$0	$1,907,680
2026	$0	$323,953	$1,277,423	$240,362	$0	$1,791,271
2027	$0	$330,571	$1,303,513	$27,036	$0	$1,608,963
2028	$0	$337,322	$1,330,130	$62,650	$0	$1,676,216
2029	$0	$344,208	$1,357,281	$379,886	$0	$2,025,723
2030	$0	$351,233	$1,384,978	$65,522	$0	$1,744,276
2031	$0	$358,399	$1,413,231	$17,221	$0	$1,729,550
2032	$0	$365,710	$1,442,053	$412,205	$0	$2,158,781
2033	$0	$373,167	$1,471,454	$67,424	$0	$1,848,931
2034	$0	$380,773	$1,501,446	$223,710	$0	$2,040,846
2035	$0	$388,534	$1,532,042	$689,766	$0	$2,543,245
2036	$0	$396,450	$1,563,252	$739,810	$0	$2,630,359
2037	$0	$404,526	$1,595,091	$54,929	$0	$1,983,290
2038	$0	$412,763	$1,627,569	$1,275,229	$0	$3,242,156
2039	$0	$421,166	$1,660,701	$0	$0	$2,006,266
2040	$0	$429,739	$1,694,498	$539,176	$0	$2,585,567
2041	$0	$438,484	$1,728,975	$190,133	$0	$2,277,452
2042	$0	$447,404	$1,764,146	$386,442	$0	$2,515,508