

Gwydir Shire Council

# Heavy Plant Asset Management Plan

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27/6/24	1.0	Initial Document	Town Utilities and Plant Manager	June 2028

# Executive Summary

## Introduction

This Asset Management Plan (AMP) has been developed to guide and provide a foundation for the responsible management of Gwydir Shire Council's heavy plant and vehicle assets and services, aligned with contemporary best practice and standards and the requirements of the NSW Integrated Planning and Reporting framework.

The AMP has been developed with reference to Council's Asset Management Policy and Asset Management Strategy and should be read in conjunction with those documents. It also provides alignment between Council's Long-Term Financial Plan, Community Engagement Strategy, Community Strategic Plan, Operational and Delivery Plans.

## Asset Portfolio

This AMP covers the heavy plant and vehicle infrastructure assets owned or controlled by Council that underpin the delivery of critical services to the community. These assets include trucks, loaders, trailers, rollers, tippers, jetpatchers, excavators, tractors, graders, compactors, woodchippers, rock crushers, spreaders, prime movers and reclaimers. The scope and value of the portfolio is summarised below.

*Table 1 Heavy plant asset portfolio scope and value*

Heavy Vehicle	Number	Value <sup>1</sup>
Truck	8	\$1,105,446
Loader	8	\$1,161,008
Trailer	7	\$311,232
Roller	7	\$1,034,690
Tipper	14	\$1,719,039
Jetpatcher	2	\$775,664
Excavator	5	\$993,336
Tractor	10	\$999,723
Grader	7	\$2,933,126
Compactor	1	\$54,519
Woodchipper	1	\$70,512
Rock Crusher	3	\$186,972
Spreader	1	\$19,887
Prime Mover	4	\$567,119
Reclaimer	1	\$644,091
<b>Total</b>	<b>79</b>	<b>\$12,576,365</b>

<sup>1</sup> Based on at-cost value from GSC Asset Register 30/6/23

The heavy plant fleet is generally maintained and replaced in line with industry standards and is in good overall condition, although events such as COVID, and flood-related construction works, have necessitated the retention of much of the fleet beyond its optimal economic life. Council attempts to actively manage and mitigate any impacts on service delivery or lifecycle costs of this situation.

## Asset Demand

Population growth and demographic-related changes to demand are forecast to be low to minimal for this asset class. However, climate-related events such as flooding, and the reconstruction and repair works to respond to the damage caused by these events, has been and is likely to continue to be a key driver of demand for heavy plant. It is anticipated that Council's heavy plant fleet, which has been built up to accommodate high volumes of grant funded and disaster reconstruction work in recent years, will need to be retained going forward, with any surplus capacity directed towards preventative maintenance.

## Levels of Service

Council maintains close and regular engagement with the community on levels of service for its other asset classes (such as roads), which in turn informs service and capacity requirements for the major plant fleet. Direct community engagement on levels of service is not applicable in the case of major plant.

## Risk Management

Council's risk assessment processes are set out in the Gwydir Shire Council Risk Management Action Plan and asset-related risks are identified, treated and managed in accordance with both that plan and the Infrastructure Risk Management Plan. Critical risks are those assessed as either 'Very High' or 'High' under this framework and are regularly reported to Council. Climate change and associated asset resilience is an increasing source of risk for asset classes such as roads and bridges, and consequently an increasing area of focus in relation to major plant requirements.

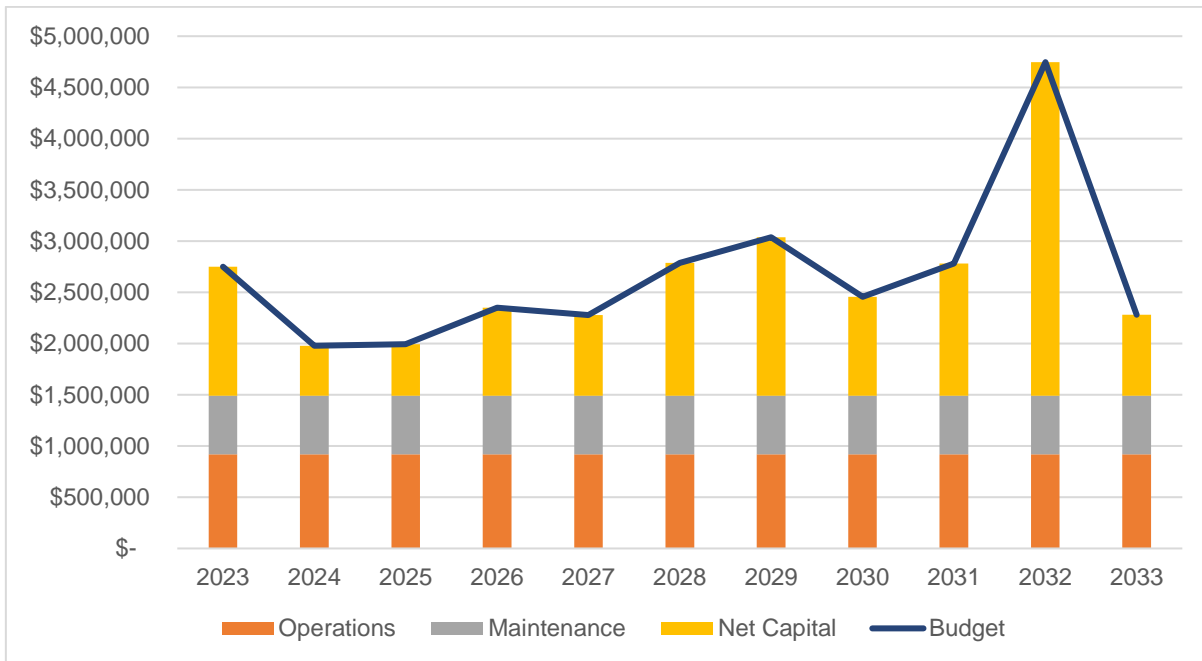
As part of its Asset Management Improvement Plan, Council intends to develop and adopt an Asset Criticality framework and process to inform risk-based decision making, and this will be progressively extended to cover major plant assets.

## Financial Projections

Capital and operating expenditures for the major plant asset class have been based on historical costs and industry replacement standards (subject to the qualifications noted above) to forecast operations, maintenance and replacement expenditures. The combined forecast across these categories, and the breakdown across the ten-year planning horizon, are shown in Figure 1.

The total projected expenditure over the ten years 2024 to 2033 is expected to total \$26.7 million with an annual average of \$2.68 million. Anticipated capital renewal peaks in 2032 and will be reviewed regularly with a view to smoothing the overall expenditure profile.

In summary, the AMP is anticipated to be fully funded, with total funding across the ten-year period expected to meet combined expenditure requirements.



**Figure 1 Life cycle expenditure forecast – heavy plant assets**

## Plan Improvement and Monitoring

This AMP has identified improvement opportunities which are consolidated with those of other asset classes in Council’s Asset Management Improvement Plan, which is part of its Asset Management Strategy document. Key among these is:

- Reviewing technical Levels of Service and performance measures for the asset class.

# Contents

## Gwydir Shire Council

<b>Executive Summary</b>	<b>i</b>
Asset Portfolio	i
Asset Demand	ii
Levels of Service	ii
Risk Management	ii
Financial Projections	ii
Plan Improvement and Monitoring	iii
<b>1. Introduction</b>	<b>1</b>
1.1 Background	1
1.2 Context	1
1.3 Scope	1
1.4 Strategic Framework	2
1.5 Governance, roles and responsibilities	3
<b>2. Asset Portfolio</b>	<b>4</b>
2.1 Asset Types and Value	4
2.2 Asset Condition and Performance	5
<b>3. Asset Demand</b>	<b>6</b>
3.1 Demand Drivers	6
3.2 Demand Management	8
<b>4. Levels of Service</b>	<b>8</b>
4.1 Levels of Service and Measures	9
4.2 Legislative Requirements	10
<b>5. Risk Management</b>	<b>11</b>
5.1 Risk Assessment Process	11
5.2 Climate Risk and Resilience	11
<b>6. Asset Lifecycle Management</b>	<b>11</b>
6.1 Lifecycle Management Overview	11
6.2 Operations and Maintenance	12
6.3 Renewals and Replacement	13
6.4 Acquisitions	13
6.5 Disposals	14
<b>7. Financial Plan</b>	<b>14</b>
7.1 Operations Expenditure	14
7.2 Maintenance Expenditure	15
7.3 Capital Acquisitions and Disposals	15
7.4 Combined Asset Lifecycle Cost Summary	16
<b>8. Plan Improvements and Monitoring</b>	<b>18</b>
8.1 Responsibility for Plan Reviews	18

8.2	Asset Management Plan Updates	18
8.3	Asset Management Plan Improvements	18

## Table index

Table 1	Heavy plant asset portfolio scope and value	i
Table 2	Key Council asset management documents	2
Table 3	Asset management roles	3
Table 4	Asset numbers and value	4
Table 5	Climate change snapshot summary	7
Table 6	Impact of climate change on assets	8
Table 7	Levels of service examples	9
Table 8	Legislative requirements	10
Table 9	Risk and management for heavy plant assets	11
Table 10	Historical operations expenses	13
Table 11	Historical maintenance expenses	13
Table 12	Historical new capital expenditure / acquisitions	14
Table 13	Historical asset disposals	14
Table 14	Life cycle expenditure forecast	16
Table 15	AMP update schedule	18
Table 16	AMP improvement actions	18

## Figure index

Figure 1	Life cycle expenditure forecast – heavy plant assets	iii
Figure 2	Gwydir LGA population	6
Figure 3	Lifecycle management phases	12
Figure 4	Forecast operations expenditure	14
Figure 5	Forecast maintenance expenditure	15
Figure 6	Forecast renewals expenditure	15
Figure 7	10-year life cycle expenditure forecast	17

## Appendices

Appendix A	References
Appendix B	Glossary

# 1. Introduction

## 1.1 Background

Gwydir Shire Council (Council) is required under the *Local Government Act 1993* (the Act) and the associated Integrated Planning and Reporting framework to develop and implement a series of plans, including Asset Management Plans (AMPs) for all critical assets owned or managed by Council.

Council views this framework as a foundation for the improvement of its asset management practices, and this AMP as a means to guide the responsible management of Council's heavy vehicle assets and services, aligned with contemporary best practice and standards.

## 1.2 Context

The goal for local governments in managing infrastructure assets is to meet customer-defined Levels of Service (LoS) in the most cost-effective manner for present and future stakeholders. The key elements of infrastructure asset management are:

- Providing defined LoS and monitoring performance in accordance with stakeholder expectations
- Undertaking works to maintain compliance with LoS
- 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 LoS
- Identifying, assessing, and appropriately controlling risks
- Linking to and informing the Long-Term Financial Plan (LTFP) which identifies required forecast expenditures and how they will be allocated.

This AMP supports achievement of that goal by documenting how Council will manage its heavy plant assets to sustainably deliver required services, identify and manage associated risks, and responsibly plan and deploy Council funds and resources. It reflects and incorporates the latest available information and asset data as of June 2023.

The AMP has been developed with reference to Council's Asset Management Policy and Asset Management Strategy and should be read in conjunction with those documents. It also provides alignment between the Long-Term Financial Plan, Community Engagement Strategy, Community Strategic Plan, Operational and Delivery Plans.

The AMP is aligned to guidance provided in the ISO 55000 suite of Asset Management standards, the Institute of Public Works Engineering Australasia (IPWEA) NAMS+ toolkit and International Infrastructure Management Manual (IIMM), while meeting the requirements of the NSW Government's Integrated Planning and Reporting framework.

## 1.3 Scope

This AMP covers the key heavy plant and vehicle infrastructure assets owned or managed by Council that underpin the delivery of critical services to the community. These assets include trucks, loaders, trailers, rollers, tippers, jetpatchers, excavators, tractors, graders, compactors, woodchippers, rock crushers, spreaders, prime movers and reclaimers. A more detailed summary of the heavy plant asset portfolio is provided in Section 0.



This AMP covers a 10-year timeframe to 2033 and will be reviewed annually in line with Integrated Planning and Reporting Framework requirements.

## 1.4 Strategic Framework

### 1.4.1 Integrated Planning & Reporting

The NSW Government’s Integrated Planning and Reporting framework (IP&R) mandates that all NSW Councils develop and implement an integrated hierarchy of planning documents, summarised briefly below<sup>2</sup>.

- **Community Strategic Plan**, which outlines the goals and objectives of the community as defined through the Community Engagement Strategy.
- **Community Engagement Strategy**, which demonstrates how Council plans and undertakes community engagement activities.
- **Resourcing Strategy**, which details how the delivery of programs resulting from the Community Strategic Plan are managed and resourced. It includes:
  - Long Term Financial Plan
  - Workforce Management Plan
  - Asset Management Planning.

### 1.4.2 Asset Management Planning

The IP&R’s Asset Management Planning requirements are met by, and documented in, Council’s Asset Management Policy, Asset Management Strategy and asset class-specific AMPs. These are, in turn, supported by Council’s asset management processes, people, information and systems. The documents that together make up Council’s asset management framework are summarised in Table 2.

*Table 2 Key Council asset management documents*

Document Name	Key Document Contents
Asset Management Policy	Documents and confirms Council’s commitment to asset management, and the principles and approach to be adopted in its planning and implementation.
Asset Management Strategy	The Asset Management Strategy outlines: <ul style="list-style-type: none"> <li>• The Asset Management Objectives (AMOs).</li> <li>• Strategies to meet the AMOs.</li> <li>• How the AMP is implemented.</li> <li>• How Council will develop, implement, and continually improve its asset management capability.</li> <li>• Relevant background information on matters including governance, roles and responsibilities, supporting information systems and process that are applicable to all AMPs.</li> </ul>
Asset Management Plan (this document)	The AMP outlines the approach to delivering asset management objectives for the relevant asset class. The document details the asset class-specific risks and strategies to support and align with Council-wide asset management policies and strategies, demand factors, levels of service, risk management practices,

<sup>2</sup> Further details of the IP&R are contained in Council’s separate Asset Management Strategy document

	financial resources required, and improvement initiatives.
Long-Term Financial Plan	Provides a 10-year budget forecast to demonstrate financial sustainability and how the Operational Plan and Delivery Programs are resourced.
Delivery Plan	Describes Council's commitment to deliver over a 4-year period to meet the strategic goals and objectives. Describes what can be delivered with the available resources.
Operational Plan	Identifies annual projects and activities to deliver against the Delivery Plan.

## 1.5 Governance, roles and responsibilities

The successful delivery of asset management relies on a defined governance model and the relationships between executive management, corporate services, operational services and delivery services.

Council's organisational and governance structure, and the key asset management responsibilities, are described in Council's Asset Management Strategy.

In the context of heavy plant assets, the key asset management roles are performed by the Council position holders and/or business units shown in Table 3.

**Table 3 Asset management roles**

Broad Asset Management Role	Responsible Council Party
Asset Custodian	Town Utilities and Plant Manager
Asset Manager	Town Utilities and Plant Manager
Asset Maintainer	Town Utilities and Plant Manager

## 2. Asset Portfolio

This section provides an overview of the assets covered by this AMP.

### 2.1 Asset Types and Value

The composition of the heavy plant asset base is summarised in Table 4 below. In total, the asset portfolio has a current value of \$12,576,365.

*Table 4 Asset numbers and value*

Heavy Plant Vehicle	Number	Value <sup>3</sup>
Truck	8	\$1,105,446
Loader	8	\$1,161,008
Trailer	7	\$311,232
Roller	7	\$1,034,690
Tipper	14	\$1,719,039
Jetpatcher	2	\$775,664
Excavator	5	\$993,336
Tractor	10	\$999,723
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<sup>3</sup> Based on at-cost value from GSC Asset Register 30/6/23

## 2.2 Asset Condition and Performance

As with other classes of Council-owned assets, physical condition of assets provides an important indicator of their ability to perform their required function, their likelihood of failure, and their expected operations and maintenance costs, and is consequently a key input to asset management planning.

Unlike other asset classes, however, plant and vehicle assets have characteristics that require a different approach to assessing condition and making lifecycle decisions. These characteristics include a much shorter economic life and hence more aggressive depreciation schedule, a market that enables the relatively easy disposal (i.e. sale) of assets with a reasonable salvage value, and a more dynamic operating environment which requires more intensive preventative and corrective maintenance.

As a result, 'condition' of major plant tends to be based primarily on age, and comparison of actual age to best practice economic life.

The heavy plant fleet is generally maintained and replaced in line with industry standards<sup>4</sup> and is in good overall condition. Circumstances in recent years have, however, led to much of the fleet being retained in service beyond recommended replacement dates.

The COVID pandemic had a significant impact on the ability to source and dispose of heavy plant. When coupled with the increase in volume of flood recovery works at around the same period, this has necessitated the retention, and extension of the in-service lives of, approximately half of the fleet.

Ongoing capital constraints also often limit the ability of Council to replace plant assets at the 'optimal' time from a lifecycle perspective. Council endeavours to minimise any service impacts of the use of older equipment by, for example, deploying it for use where lower Levels of Service are demanded, such as refuse tips.

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<sup>4</sup> For example, as recommended in the Institute of Public Works Engineering Australasia's International Infrastructure Management Manual

## 3. Asset Demand

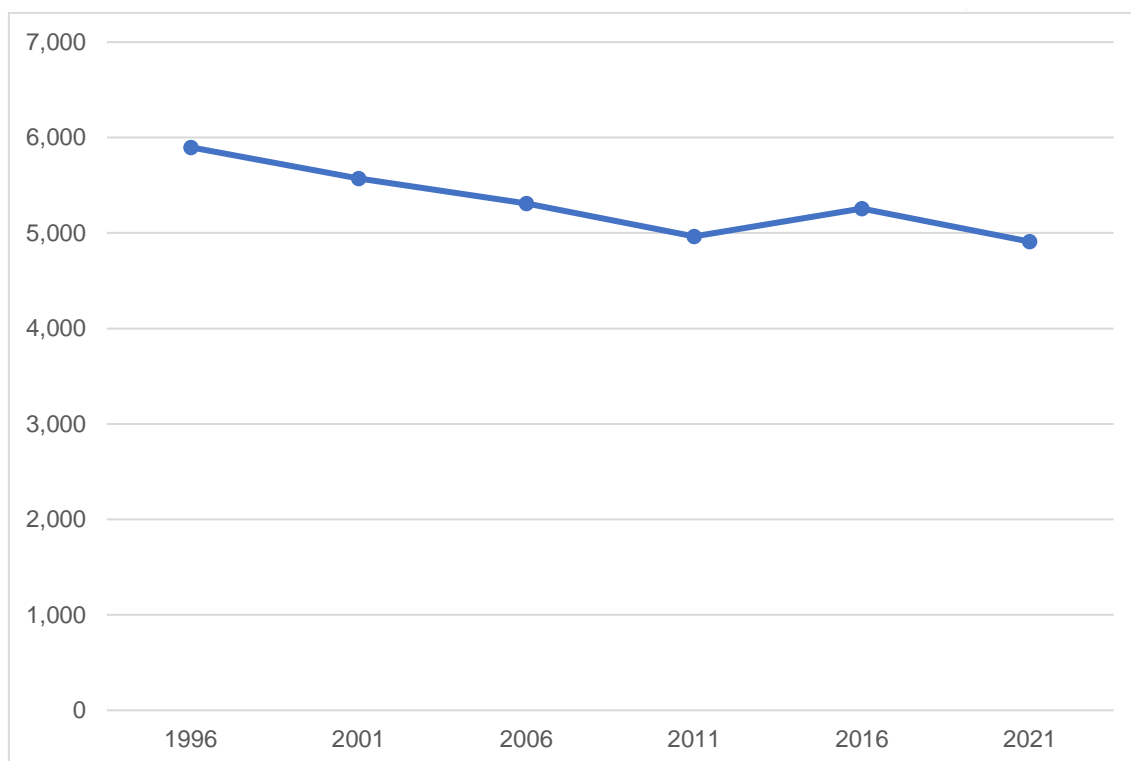
Unlike other asset classes, demand for heavy plant is less directly influenced by the typical drivers of population growth and demographic change. Rather, it is driven more by the volume of works required in the various asset classes to accommodate the effects of these drivers after other demand management actions have been taken.

Factors affecting demand for heavy plant are discussed below.

### 3.1 Demand Drivers

#### 3.1.1 Population Growth

Population growth is typically one of the most direct drivers of construction works and heavy plant asset demand. Data from the latest Australian Bureau of Statistics Census of Population and Housing for the Gwydir Shire LGA shows a gradual long-term decline in population between 1996 and 2021 of approximately 17%. Changes in the population of Gwydir Shire since 1996 is shown below.



**Figure 2 Gwydir LGA population**

Looking forward, the online NSW Population Projections Explorer indicates the population of Gwydir Shire will gradually rise to 5,576 by 2041. This relatively low population growth rate suggests minimal levels of growth-related demand are likely to occur across the 10-year AMP planning period.

#### 3.1.2 Climate Change

The results of climate change can have a significant impact on the assets being managed and the services that they provide, and this has been demonstrated by successive flood and fire events in recent years. In the context of the asset management planning process, climate change can therefore be considered both a future demand driver and a risk.

How climate change will impact on assets can vary significantly depending on the location and the type of services provided, as will the way in which Council responds to and manages those impacts. As an increasingly important input to its asset management planning, Council needs to consider both how to manage existing assets given potential climate change impacts, and then also how to create resilience to climate change in any new works or acquisitions.

A NSW government climate report<sup>5</sup> projects anticipated changes to temperature, frequency of hot days and cold nights, rainfall and fire conditions for the medium and long terms for the New England Northwest region, which includes, but is not specific to, Gwydir Shire. The projections nonetheless provide a good starting point for undertaking a hazard risk assessment and identifying potential management options.

**Table 5 Climate change snapshot summary**

Effect	Trend	Near Future (2020-2039) Projection	Far Future (2060-2079) Projection
Temperature	Increase	Maximum temperatures to increase by 0.7 °C. Minimum temperatures to increase by 0.7 °C.	Maximum temperatures to increase by 2.2 °C. Minimum temperatures to increase by 2.3 °C
Number of hot days (maximum temperature above 35 °C)	Increase	7 additional hot days per annum	24 additional hot days per annum
Number of cold nights (minimum temperature below 2 °C)	Decrease	9 fewer cold nights per annum	26 fewer cold nights per annum
Rainfall	Variable	Changes in annual rainfall ranging from -9 % to +13 %	Changes in annual rainfall ranging from -8 % to +24 %
Forest Fire Danger Index (FFDI)	Increase	Increase in number of days with a FFDI above 50 (Severe). Increase in average FFDI.	Further increase in number of days with a FFDI above 50 (Severe). Additional increase in average FFDI.

These projections indicate multiple potential impacts on both demand for and management of Council's heavy plant assets, particularly in relation to the impacts of heavy rainfall and flooding. Some examples of these impacts and potential responses are shown in Table 6. These impacts and responses indicate potential increasing demand for existing and new types of major plant in future.

<sup>5</sup> NSW Government Office of Environment & Heritage, New England Northwest Climate change snapshot, November 2014.

Table 6 Impact of climate change on assets

Climate Change Description	Projected Change	Potential Impact on Assets and Services	Example Management Actions
Storm intensity	More extreme and frequent rainfall events	Localised flooding damage to bridges, guardrails, and roads.  Damage to, and closure of, unsealed roads.	Replacement with more resilient designs (eg. Raising of bridges).  Sealing of roads.
Drought / Temperature	Increased drought conditions (hotter and drier) for extended periods	Damage to sealed road surfaces and generally increased degradation rates.  Restriction of unsealed road grading due to low soil moisture.	Use of more resilient sealing products.  Carting of water.
Fire	Longer, more severe fire seasons	Destruction of infrastructure.	Manage potential fuel sources through vegetation management, mowing, firebreaks.  Increased use of fire-resistant building materials.  Appropriate site selection for assets and infrastructure.

## 3.2 Demand Management

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

One important aspect of managing demand for major plant lies with reducing the need for construction and repair works for roads and other infrastructure in the first place, such as through appropriate design and location of assets, and generally increasing asset resilience. These opportunities are addressed further by the AMPs for the respective other asset classes.

Another important means of demand management for major plant is the selective use of third-party plant hire services. This approach is currently used, where financially justified, to avoid unnecessary ownership of assets and to accommodate demand peaks.

## 4. Levels of Service

Levels of Service (LoS) are used to link the business outcomes of the asset owner with the assets used to provide the services. LoS are required to:

- Describe the service outputs the organisation intends to deliver to customers via the asset portfolio

- Relate to service attributes such as quality, reliability, timeliness, accessibility, and cost
- Be measurable and recordable
- Providing a basis for the setting of ‘trigger points’ for reviews of maintenance strategies, renewals and asset replacements, upgrades and provision on new assets.

## 4.1 Levels of Service and Measures

LoS are clear statements of the outcomes expected to ensure the relevant goals and outcomes for the asset portfolio are being met. They should align with Council’s asset management objectives and strategies, and thereby provide a clear line of sight between Council’s goals and its delivery of service outcomes.

### 4.1.1 Customer Levels of Service

Customer (or Community) LoS are statements or measures that describe the service outcomes as they are perceived by, and in terms relevant to and valued by, the customer receiving the services. They are often expressed in terms of quality, function, safety, capacity, etc. In the case of major plant, the ‘customer’ is often an internal customer within Council, such as the road works delivery teams.

### 4.1.2 Technical Levels of Service

Technical LoS state how a particular activity or service area is measured in a practical sense. Each technical performance measure is linked to a customer performance measure, in many cases providing a more detailed version or measure where the future target is a planned improvement from the current.


Table 7 provides some examples of potential LoS and their outcomes from an asset management perspective.

*Table 7 Levels of service examples*

Performance Measure	Definition
<b>Customer Levels of Service</b>	
Quality	The asset is in a reasonable operating condition and meets its intended purpose.
Function	The asset meets operational / user requirements, fulfils its purpose and is compliant to all legislative/regulatory criteria/requirements.
Safety	The asset is safe to operate / use and maintain.
<b>Technical Levels of Service</b>	
Operations	The asset is managed in a manner that ensures that it meets the operational requirements and, delivers its intended purpose at the highest standard as practical.
Utilisation	The proportion of available time that the item is actually used, as an indicator of the need for Council’s ownership of the asset.
Uptime / Availability	The proportion of time that the asset is available in a fully functional state for its intended purpose. This may indicate the reliability and condition of the assets, the appropriateness of maintenance regimes, or the need for replacement.
Maintenance / Renewal / Upgrade	The asset is managed throughout its lifecycle at a standard to ensure the asset reliably meets its design performance requirements.
Cost Effectiveness (Budget)	The asset is managed to meet service levels in a cost-effective effective manner throughout its lifecycle.



Council does not currently have defined LoS for major plant, and these will be considered when reviewing the LoS of other asset classes, as part of Council’s Asset Management Improvement Plan.

	<p><b>Improvement Action 1:</b></p> <p>Review existing and potential performance measures, Level of Service metrics, and targets with stakeholders, and publish and adopt these as the basis for future asset management planning decision making. Update this section of future versions of this AMP accordingly.</p>
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## 4.2 Legislative Requirements

There are many legislative requirements applicable to the management of heavy plant assets, examples of which are shown in Table 8.

**Table 8 Legislative requirements**

Legislation	Requirement
Local Government Act 1993	Sets out the 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.
Local Government (General) Regulation 2021	Specifies boundaries and local laws around Council structure and operations.
Local Government Code of Accounting Practice	Provides guidelines and requirements regarding cost of service, asset valuations and depreciation
Workplace Health and Safety Act (2011)	Sets out roles, 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. Organisations are to provide a safe working environment and supply equipment to ensure safety
Australian Standards	Australian Standards are published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable, and consistently perform the way they were intended to. Where an Australian Standard is referenced in legislation (Acts or Regulations), they are a statutory requirement and should be referenced in asset activities.
Transport Operations Road Use Management Act 1995 (TORUM), including all subordination legislation/regulatory/advisory standards or guidelines	Legal and safe operation of vehicles in a public place

There are also often requirements under Australian Standards regarding the design, construction/installation, operation, maintenance, and disposal of assets that are not legislative (referenced in an Act or Regulation) but should be considered as part of “best practice” asset management. Council will continue to monitor applicable standards and reflect any changes in future versions of the AMP.

These lists are not exhaustive. Additional Standards (such as the ISO 55000 suite), guidelines such as the International Infrastructure Management Manual (IIMM) should also be considered, and other regulation and legislative requirements may exist (or existing documents may change) which are related to heavy plant. This section will be reviewed and updated as required in future versions of the AMP.

# 5. Risk Management

## 5.1 Risk Assessment Process

Risk Management is defined in ISO 31000:2018 Risk Management – Principles and Guidelines as: “coordinated activities to direct and control with regard to risk”.

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.

Under Councils’ risk management process, risks are rated as Very High, High, Medium and Low. Examples of critical risks, being those assessed as ‘Very High’ (requiring immediate corrective action) and ‘High’ (requiring prioritised corrective action identified in the Infrastructure Risk Management Plan together with the estimated residual risk after the selected treatment plan is implemented), are summarised in Table 9. These risks, when apparent, are reported to management and Council.

*Table 9 Risk and management for heavy plant assets*

Service or Asset at Risk	What can Happen	Risk Rating	Risk Treatment Plan
Major Plant (eg. Grader)	Mechanical failure renders unserviceable for essential works	H	<ul style="list-style-type: none"><li>• Appropriate maintenance and replacement regimes</li><li>• Back-up units for critical plant types</li><li>• Critical spares held in inventory</li><li>• Utilisation of plant hire services</li></ul>

## 5.2 Climate Risk and Resilience

As noted in Section 3.1, climate change is a significant potential factor influencing future demand for heavy plant and presents multiple risks and challenges in relation to the management of Council’s plant assets.

As previously noted, climate change impacts and risk assessment will continue to be monitored to determine any required changes to measures and management strategies for this asset class.

# 6. Asset Lifecycle Management

Reliably and cost-effectively delivering value from assets across their full lifecycle is a fundamental principle of asset management. This section outlines the core lifecycle activities employed by Council in managing its assets.

## 6.1 Lifecycle Management Overview

Lifecycle management brings together and ‘joins up’ the decision making associated with each stage of an asset’s life, including acquisition, maintenance and operation, and eventual refurbishment, renewal or disposal, as shown in Figure 3.

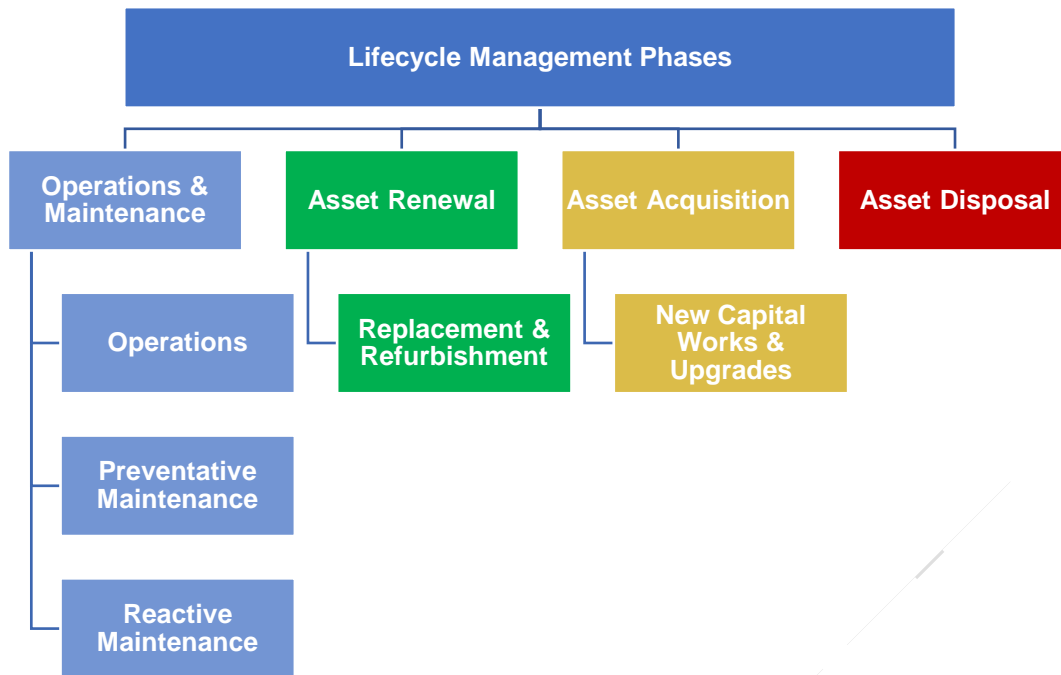


Figure 3 Lifecycle management phases

## 6.2 Operations and Maintenance

Operations and maintenance strategies determine and guide how the asset will be operated and maintained both on a day-to-day and longer-term basis.

Operations includes regular activities to provide services, including the transporting and operation of the various vehicles and plant.

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. Council's maintenance tasks typically fall under three categories:

- Reactive maintenance: correction of malfunctions and failures on an as-required basis.
- Preventative maintenance: regular and predictable maintenance activities which can be scheduled, such as inspections, application of protective coatings, lubrication, replacement of defective or worn components, etc.
- Mandatory maintenance: activities that are required to ensure legislative compliance, such as might relate to cranes and lifting equipment.

Historical costs associated with operations and maintenance are discussed below.

### 6.2.1 Operations

Council captures and reports operational costs at a detailed level. Historical costs from the past five years have been compiled, adjusted for inflation and used to forecast expenditure for the next 10 years for this AMP. Council's historical operations costs are shown in Table 10, overpage.

**Table 10 Historical operations expenses**

Operations Cost Description	2019	2020	2021	2022	2023	Total
Operations	\$ 605,907	\$ 775,447	\$ 744,042	\$ 1,083,895	\$ 1,334,347	\$ 4,543,638
Plant Operating Expenditure	\$ 6,323	\$ 542	\$ 19,644	\$ 7,691	\$ 12,938	\$ 47,138
Total	\$ 612,230	\$ 775,990	\$ 763,686	\$ 1,091,586	\$ 1,347,285	\$ 4,590,776

The calculated average annual operations cost assumed in the lifecycle cost modelling for this AMP is \$918,155 in current (2023) dollars.

## 6.2.2 Maintenance

Council also captures and reports maintenance costs at a detailed level. Historical costs from the past five years, adjusted for inflation, have been used to forecast expenditure over the next 10 years. Council’s historical maintenance costs are show in Table 11.

**Table 11 Historical maintenance expenses**

Maintenance Cost Description	2019	2020	2021	2022	2023	Total
General Maintenance		\$ 122	\$ 985	\$ 528	\$ 43	\$ 1,678
Repairs	\$ 376,013	\$ 502,863	\$ 440,312	\$ 556,686	\$ 627,118	\$ 2,502,992
Service	\$ 49,986	\$ 62,696	\$ 74,572	\$ 81,795	\$ 93,651	\$ 362,701
Total	\$ 425,999	\$ 565,681	\$ 515,870	\$ 639,010	\$ 720,811	\$ 2,867,370

The average annual maintenance cost used for lifecycle cost modelling is \$573,474 in 2023 dollars.

## 6.3 Renewals and Replacement

Renewal, Replacement and Refurbishment (often collectively termed ‘renewals’) are usually considered as capital investments aimed at restoring the service potential of an existing asset to – but not beyond - its original level of performance or capacity. Consequently, they are usually distinguished from ‘new capital’ or ‘acquisition’, which increase an asset’s functionality or capacity.

Because plant assets differ from other asset classes (such as in that replacement is the primary action taken at the end of an item’s useful life), Council does not differentiate renewals from other forms of asset acquisition and disposal for its Heavy Plant assets.

As a result, renewals and replacements are incorporated under ‘acquisitions’ and ‘disposals’ in the financial projections shown in this AMP.

## 6.4 Acquisitions

As described above, for the Heavy Plant asset class, ‘acquisitions’ can included new assets that did not previously exist, works which will upgrade, augment or improve an existing asset beyond its existing capacity, or like-for-like replacement of assets when they reach the limit of their useful lives.

Council’s evaluation and approval of acquisitions generally includes consideration of the associated future life cycle costs (operations, maintenance, depreciation and replacement) to ensure long-term sustainability of funding.

Council’s historical capital acquisition expenditure over the past 5 years is shown in Table 12.

*Table 12 Historical new capital expenditure / acquisitions*

Expenditure	2019	2020	2021	2022	2023	Average
Acquisitions	\$ 1,969,396	\$ 1,431,529-	\$ 571,988	\$ 2,999,078	\$ 1,977,507	\$ 1,789,900

## 6.5 Disposals

Disposal is the retirement or sale of assets that have become surplus to requirements, superseded by new or improved systems, or have reached the end of their useful or economic lives. The proceeds derived from the disposal of assets is used to offset the funding required for new acquisitions.

*Table 13 Historical asset disposals*

Expenditure	2019	2020	2021	2022	2023	Average
Disposals	\$ 159,183	\$ 168,296	\$ 136,324	\$ 321,907	\$ 228,545	\$ 202,851

## 7. Financial Plan

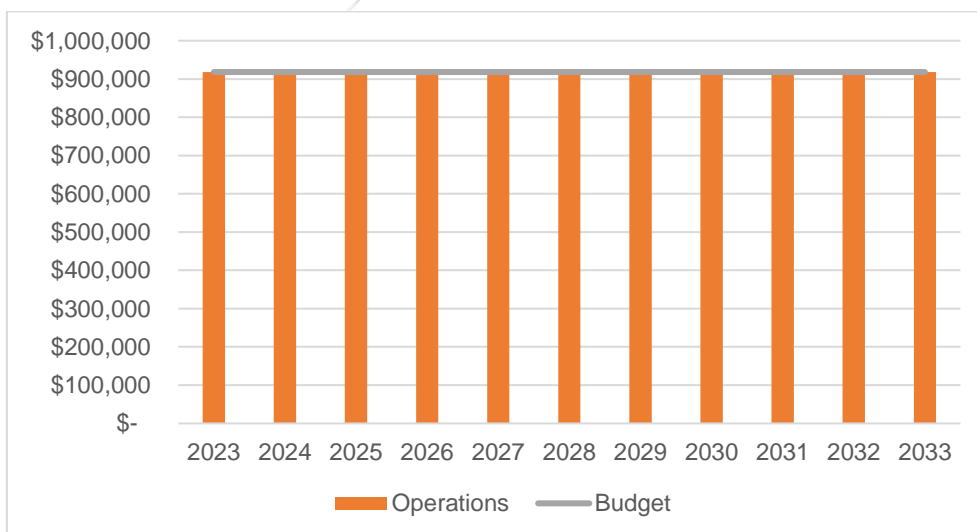
This section summarises the whole-of-life asset expenditure forecasts for management of this asset class in accordance with established asset management strategies, the desired levels of service, and planned budgets. Capital projections have been developed using an age-based plant and equipment replacement model developed by Council.

Unless otherwise stated, all values are in current (2023) dollars.

### 7.1 Operations Expenditure

The forecast operations expenditure shown in Figure 4 is reflective of an assumed continuation of the expenditure levels of the past 5 years. This represents an annual expenditure of \$918,155 in real terms.

The forecast operations expenditure is expected to be in line with available budget across the 10-year planning period.



*Figure 4 Forecast operations expenditure*

## 7.2 Maintenance Expenditure

The forecast maintenance expenditure shown Figure 5 is reflective of an assumed continuation of the maintenance expenditure levels of the past 5 years. This represents an annual expenditure of \$573,474 in real terms. This is considered reasonable given the expected continuation of existing maintenance strategies and practices. It is expected that as Council's asset data quality and asset management practices improve over time, savings in unplanned maintenance should reduce. Such efficiency dividends have not been incorporated into the projections, however.

As with operations expenses, maintenance expenditure is expected to be within or in line with budgeted funds.

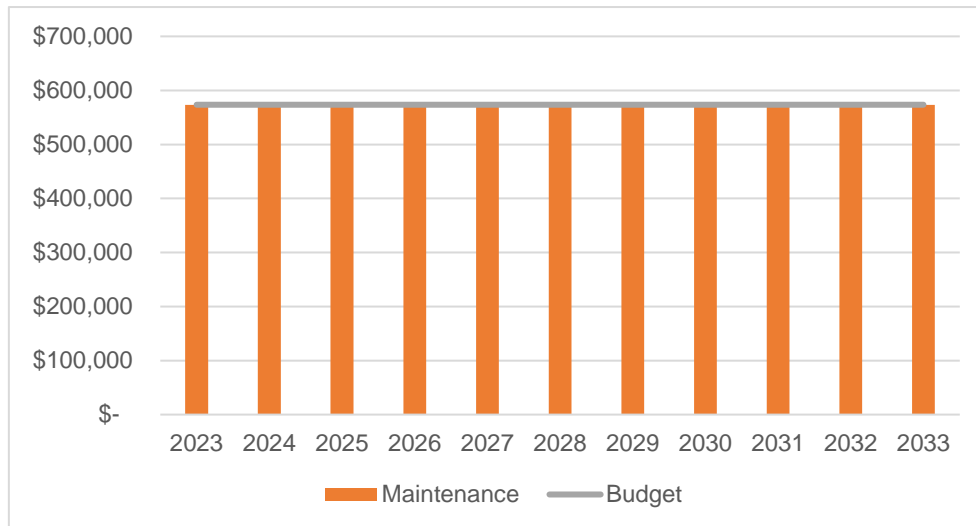


Figure 5 Forecast maintenance expenditure

## 7.3 Capital Acquisitions and Disposals

For this asset class, most capital acquisitions and disposals are associated with the periodic replacement of life-expired assets. The 10-year capital replacement program is shown in Figure 6. This shows the forecast acquisition expenditure (i.e. purchase cost of new assets) and the offsetting proceeds from asset disposals. The resulting 'Net Capital Investment' is the capital expenditure to be funded by Council. The forecast replacement of a \$3 million backhoe is responsible for the peak in 2032.

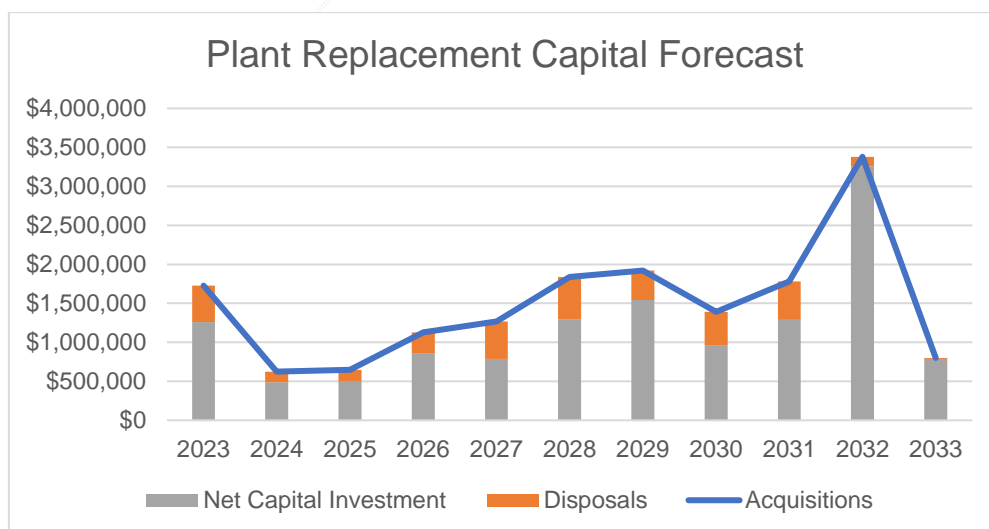


Figure 6 Forecast renewals expenditure

## 7.4 Combined Asset Lifecycle Cost Summary

The combined asset lifecycle forecast summary is presented in Table 14 below, and graphically in Figure 7 overpage.

The projected total expenditure over the ten years 2024 to 2033 is \$26.7 million with an annual average of \$2.67 million. As discussed in Section 7.3, an expected capital investment peak in 2032 will be reviewed with a view to smoothing the overall expenditure profile.

*Table 14 Life cycle expenditure forecast*

Year	Operations	Maintenance	Acquisitions	Disposals	Net Capital Investment	Total (Totex)
2023	\$ 918,155	\$ 573,474	\$ 1,728,000	\$ 469,000	\$ 1,259,000	\$ 2,750,629
2024	\$ 918,155	\$ 573,474	\$ 625,000	\$ 138,000	\$ 487,000	\$ 1,978,629
2025	\$ 918,155	\$ 573,474	\$ 650,000	\$ 147,000	\$ 503,000	\$ 1,994,629
2026	\$ 918,155	\$ 573,474	\$ 1,129,800	\$ 270,000	\$ 859,800	\$ 2,351,429
2027	\$ 918,155	\$ 573,474	\$ 1,268,500	\$ 482,000	\$ 786,500	\$ 2,278,129
2028	\$ 918,155	\$ 573,474	\$ 1,840,000	\$ 545,000	\$ 1,295,000	\$ 2,786,629
2029	\$ 918,155	\$ 573,474	\$ 1,920,000	\$ 375,000	\$ 1,545,000	\$ 3,036,629
2030	\$ 918,155	\$ 573,474	\$ 1,390,000	\$ 425,000	\$ 965,000	\$ 2,456,629
2031	\$ 918,155	\$ 573,474	\$ 1,780,000	\$ 491,000	\$ 1,289,000	\$ 2,780,629
2032	\$ 918,155	\$ 573,474	\$ 3,380,000	\$ 125,000	\$ 3,255,000	\$ 4,746,629
2033	\$ 918,155	\$ 573,474	\$ 799,367	\$ 11,000	\$ 788,367	\$ 2,279,996

In summary, this heavy plant AMP is anticipated to be fully funded.

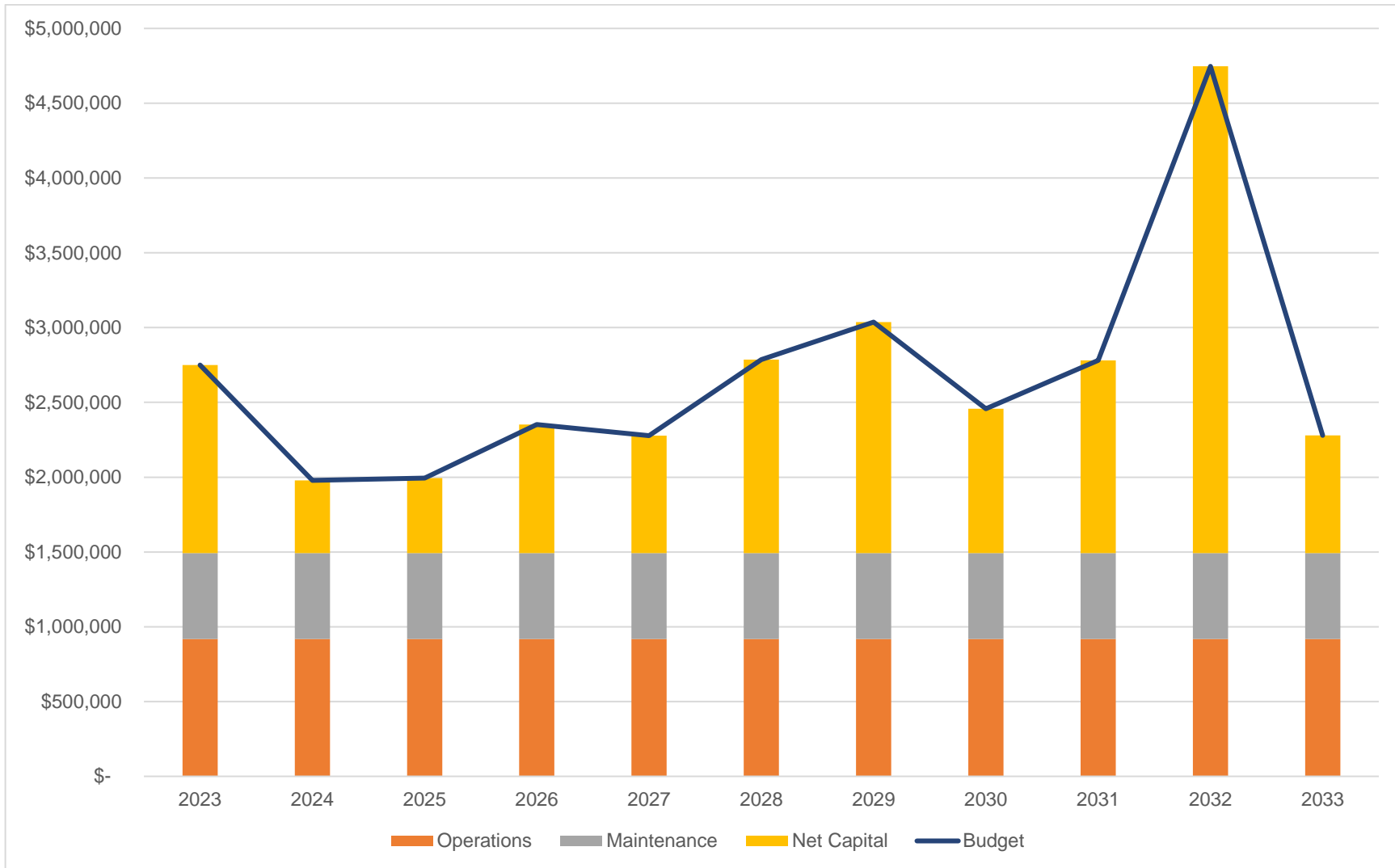


Figure 7 10-year life cycle expenditure forecast



## 8. Plan Improvements and Monitoring

### 8.1 Responsibility for Plan Reviews

This plan reflects the desire of Council to effectively manage their assets and ensure alignment with their strategic documents and ISO 55000 best practice standards.

The Asset and Services Team will provide the overarching management of the Asset Management planning process. The AMP will be reviewed and updated regularly to ensure it remains current and reflects the required levels of service and forecasted financials across operations, maintenance, renewals and capital expenditures.

### 8.2 Asset Management Plan Updates

The AMP includes three elements that need to be reviewed and updated on the following recurrent cycle by the Manager Asset Strategy and Services, shown below.

*Table 15 AMP update schedule*

Element	Update Plan	Minimum Recurrent Cycle
Asset Management Plan	Up-to-date data from condition assessments and valuations will be recorded in the asset register.	Annual
	Update the asset summary sections based on condition and asset data.	Annual
	Review the document and update as changes occur with governance structures, new asset management systems, procedures or practices are implemented.	Four Yearly (coinciding with change of Council)
Lifecycle Cost Model	Update when condition data changes, new assets have been created or existing disposed. Update rates used to calculate refurbishment and replacement costs and update upgrades and new works lists.	Annual
Support Documents	Review and update sections on levels of service, risk, criticality, and improvement plan.	Annual

### 8.3 Asset Management Plan Improvements

In developing this AMP document areas of improvements were identified, and actions developed. The list of improvement actions for this asset class is summarised in Table 16 below. Due dates are given to provide an indicative priority only. Reference should also be made to Council's Asset Management Strategy where a consolidated list of initiatives is provided in the Asset Management Improvement Plan, across all asset classes.

*Table 16 AMP improvement actions*

Item	AMP Section	Improvement Initiative	Responsibility	Due Date
1	4.1	Review potential heavy plant performance measures and Level of Service metrics with stakeholders to identify measures of customer and technical objectives.	TBA	30/6/25

# Appendix A

References

## References

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Gwydir Shire Council, Operational Plan 2022/2023.

Gwydir Shire Council, Asset Management Strategy 2023.

ISO 31000:2018 Risk Management – Guidelines

# Appendix B

Glossary

Term	Description
<b>Asset</b>	An item, thing or entity that has potential or actual value to an organisation (such as plant, machinery, buildings, etc).
<b>Asset Management (AM)</b>	The coordinated management of activities of an organisation to deliver on its objectives.
<b>Asset Management Framework (AMF)</b>	The overarching AM hierarchy including the AM Policy, Objectives, Strategy and Asset Management Plans.
<b>Asset Management Objectives</b>	Results to be achieved with respect to asset management.
<b>Asset Management Plan (AMP)</b>	<p>Long-term plans (usually 10-20 years or more for infrastructure assets) that outline the asset activities and programmes for each service area and resources applied to provide a defined level of service in the most cost-effective way.</p> <p>OR</p> <p>Documented information that specifies the activities, resources and timescales required for an individual asset or a grouping of assets, to achieve the organisation's asset management objectives.</p>
<b>Asset Management Policy</b>	A high-level statement or an organisation's principles and approach to asset management.
<b>Asset Management Strategy</b>	<p>A high-level action plan that gives effect to an organisation's Asset Management Policy. Documents and specifies how the organisational objectives are to be converted into AM objectives, the approach for developing AM Plans and the role of the AM system in supporting the achievement of AM Objectives.</p> <p>OR</p> <p>ISO55000 definition: Documented information that specifies how the organisational objectives are to be converted into asset management objectives, the approach for developing Asset Management Plans. And the role of the AM system in supporting achievement of the AM objectives.</p>
<b>Asset Management System</b>	A set of interrelated or interacting elements of an organisation, including the AM Policy, AM Objectives, AM Strategy, AM Plans, and the processes to achieve these objectives.
<b>Capital Expenditure (CAPEX)/Capital Investment</b>	Expenditure used to create new assets, renew assets, expand or upgrade assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of asset stock.
<b>Condition</b>	The physical state of the asset.
<b>Condition Assessment (Condition Monitoring)</b>	The inspection, assessment, measurement and interpretation of the resultant data, to indicate the condition of a specific component so as to determine the need for some preventive or remedial action.
<b>Condition Grade</b>	A measure of the physical integrity of an asset or component.
<b>Customer</b>	Any person who uses the asset or service or is affected by it or has an interest in it either now or in the future. This definition does not necessarily require that payment is made for use of the assets.
<b>Decommission</b>	Actions required to take an asset out of service.
<b>Demand Management</b>	Actions taken to influence demand for services and assets, often undertaken as part of sustainability initiatives and/or to avoid or defer required asset investment.
<b>Disposal</b>	Actions necessary to decommission and dispose of assets that are no longer required.

<b>Facility</b>	A complex comprising many assets which represents a single management unit for financial, operational, maintenance or other purposes.
<b>Infrastructure</b>	Stationary systems forming a network or a portfolio of assets serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components. The network may include normally recognised ordinary assets as components.
<b>ISO 55000: International Standard for Asset Management</b>	<p>The globally recognized standard for asset management. Consists of three separate documents:</p> <ol style="list-style-type: none"> <li>1. ISO 55000 – the concepts and definitions which underpin the standards,</li> <li>2. ISO 55001– the requirements that make up the standard for effective and efficient AMS, and</li> <li>3. ISO 50002 – guidance on implementing, maintaining and controlling the AMS.</li> </ol> <p>The standard was released in early 2014 and replaced the long-standing British Standard commonly known as PAS 55.1</p>
<b>Leadership</b>	A process of guiding and maximising the efforts of a team towards the achievement of a shared vision.
<b>Level of Risk</b>	The level of risk is its magnitude. It is estimated by considering and coming consequences and likelihoods. A level of risk can be assigned to a single risk or to a combination of risks. A consequence is the outcome of an event and has an effect of objectives. Likelihood is the chance that something might happen.
<b>Level of Service</b>	The parameters or combination of parameters that reflect social, political, economic and environmental outcomes that the organisation delivers. Levels of service statement describe the outputs or objectives an organisation or activity intends to deliver to customers.
<b>Life</b>	A measure of the anticipated life of an asset or component, such as time, number of cycles, distance intervals, etc.
<b>Lifecycle</b>	The time interval that commences with the identification of the need for an asset and terminates with the decommission of the asset or any liabilities thereafter.
<b>Lifecycle Cost</b>	Encompasses all AM strategies and practices associated with an asset or group of assets that results in the lowest lifecycle cost.
<b>Long Term Financial Plan (LTFP)</b>	Provides a framework for delivering cost effective services, maximising value and financial sustainability.
<b>Maintenance</b>	Details the specific planned and unplanned maintenance actions for an asset or facility.
<b>Maintenance Plan</b>	Details the specific planned and unplanned maintenance actions for an asset or facility.
<b>Operation</b>	The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.
<b>Performance Measure</b>	Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.
<b>Planned Maintenance</b>	<p>Planned maintenance activities fall into three categories:</p> <ul style="list-style-type: none"> <li>• Periodic – necessary to ensure the reliability or to sustain the design life of an assets.</li> </ul>

	<ul style="list-style-type: none"> <li>• Predicative – condition monitoring activities used to predict failure.</li> <li>• Preventive – maintenance that can be initiated without routine or continuous checking (e.g. Using information contained in maintenance manuals or manufacturer’s recommendations) and is <u>not</u> condition-based.</li> </ul>
<b>Refurbishment</b>	Major (capital) works to restore the capacity or performance capability of a life-expired asset to its as-new level.
<b>Renewal</b>	Works to replace existing assets or facilities with assets or facilities of equivalent capacity or performance capability, or the refurbishment of such assets to achieve similar performance and service outcomes. (see also Refurbishment, Replacement)
<b>Remaining Useful Life</b>	The time remaining until an asset ceases to provide the required service level or economic usefulness.
<b>Replacement</b>	The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
<b>Risk</b>	The effect of uncertainty on objectives. Risk events are events which may compromise the delivery of the organisation’s strategic objectives.
<b>Stakeholder</b>	A person or entity that can affect, be affected by, or perceived themselves to be affected by a decision or activity.
<b>Strategic Plan</b>	A plan containing the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long-term survival, value and growth of the organisation.
<b>Sustainability</b>	Sustainability is the capacity to endure. In the context of AM, it is about meeting the needs of the future by balancing social, economic, cultural and environmental outcomes or needs when making decisions today.
<b>Unplanned Maintenance</b>	Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.
<b>Useful Life</b>	The period over which an asset or component is expected to be available for use by an entity.
<b>Valuation</b>	The process of determining the worth of an asset or liability. Assessed asset value which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for lifecycle costing.
<b>Whole life cycle</b>	Refer Lifecycle.

