

**GLEN
INNES**
SEVERN COUNCIL



**BRIDGES ASSET
MANAGEMENT PLAN
2025-2029**

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EXECUTIVE SUMMARY

In recent years Council has completed a significant volume of work on the bridge network. Bridges had been identified through an independent technical inspection conducted in 2015 as having defects ranging from minor to significant. A great deal of work has been undertaken on the network using \$4M of loan funding from the LIRS scheme and, predominantly, in-house resources. At that time other funding was scarce, and the risk of imminent failure drove the decision to rehabilitate a large number of timber bridges using a laminated timber superstructure on existing concrete foundations where that option was available.

Council moved from conventional hardwood timber to laminated timber as part of its continuous improvement philosophy. The benefit of laminated components being that a fully engineered product, consistent in dimension and treated for insect and fire protection, far outweigh their additional cost compared to natural hardwood timbers, which are becoming more and more difficult to source.

The move toward concrete structures in the most recent delivery program has arisen primarily from the availability of funding under the Fixing Country Bridges funding program, and the need to rehabilitate bridges where full replacement of the substructure was the only available option.

With the bulk of urgent safety issues across the network now rectified, Council has reverted to the conventional approach of installing concrete structures as the standard treatment. This approach is also now supported by the availability of precast bridge components manufactured in Glen Innes.

Council will continue to maintain an internal bridge construction and maintenance capacity, and utilise additional contracted services as required.

2. INTRODUCTION

2.1 BACKGROUND

This asset management plan covers the following infrastructure assets:

ASSET TYPE	QUANTITY	REPLACEMENT VALUE \$	ACCUMULATED DEPRECIATION -\$
Concrete and Steel	81	68,201,420.24	23,656,194.84
Timber	8	1,825,738.47	1,688,680.60
Causeway	134	9,070,101.73	5,703,287.46
Culvert	33	13,233,885.30	5,414,750.92
TOTAL	256	\$ 92,331,145.74	-\$ 36,462,913.82

Table 2.1 Assets covered by this Plan

2.2 GOALS AND OBJECTIVES OF ASSET MANAGEMENT

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

GOAL	OBJECTIVE	HOW GOALS AND OBJECTIVES ARE ADDRESSED IN AN AMP
IM 3.1 Construct, renew, and maintain Council's infrastructure assets to adopted standards, time and budget. Build resilience and maintain capability to repair assets following extreme weather damage	Implement and complete Capital Bridges Infrastructure works for the current financial year	This plan defines Capital Bridge Infrastructure works according to adopted service levels.

Table 2.2 Council Goals and how these are addressed in this Plan

2.3 CORE AND ADVANCED ASSET MANAGEMENT

Refer to Core Asset Management Plan

3. LEVELS OF SERVICE

3.1 CUSTOMER RESEARCH AND EXPECTATIONS

The recent external customer service satisfaction survey indicated that community satisfaction with bridges has reduced from previous surveys. The reason for this is not known, however, one possibility is that closure due to full renewal activities being undertaken are impacting the result.

3.2 LEGISLATIVE REQUIREMENTS

Refer to Core Asset Management Plan.

3.3 CURRENT LEVELS OF SERVICE

Refer to Core Asset Management Plan.

In recent years, Council has commenced a volume of work on the bridge network that has been unseen for decades. Bridges have been identified through technical inspection as having a range of defects from minor to significant. A great deal of work has already been undertaken on the network using funding from LIRS scheme and predominantly using in-house resources.

3.4 DESIRED LEVELS OF SERVICE

Refer to Core Asset Management Plan.

ASSET MANAGEMENT PLAN - BRIDGES

KEY PERFORMANCE INDICATOR	COMMUNITY LEVEL OF SERVICE	PERFORMANCE MEASUREMENT PROCESS	TARGET PERFORMANCE	CURRENT PERFORMANCE
Sustainability	Facilities are managed for future generations	Long Term financial plan	Key TCORP Financial ratios are maintained	The infrastructure backlog ratio for bridges is 1.8%
Cost effectiveness	Planned scheduled maintenance	Percent of maintenance done by planned repairs versus reactive	90% of planned maintenance activities	95% of work in the current financial year is planned activity.

Table 3.4a: Community Levels of Service

KEY PERFORMANCE INDICATOR	TECHNICAL LEVEL OF SERVICE	PERFORMANCE MEASUREMENT PROCESS	TARGET PERFORMANCE	CURRENT PERFORMANCE
Cost Effectiveness	Unit Rate	Price per square meter of renewal and additions measured on a yearly basis reported by bridge type	Unit rate from June 2020 revaluation: \$2048 (engineered timber) and \$4020 (All concrete)	Not determined due to current demand in supply chain.
Accessibility	Flood free access	Design level of flood exceeding bridge height	New or replaced structures designed to minimum 5% ARI (1 in 20 year event)	New or replaced structures designed to minimum 5% ARI (1 in 20 year event).

Table 3.4b Technical levels of Service

ASSET MANAGEMENT PLAN - BRIDGES

KEY PERFORMANCE MEASURE	LEVEL OF SERVICE / OUTCOME	PERFORMANCE MEASURE PROCESS	PERFORMANCE TARGET	CURRENT PERFORMANCE
Quality	Provide reliable and safe access and connectivity	Customer Service Requests Community feedback forums	<20 complaints per annum	Complaints FY: 0
Function	Meets user requirements for: <ul style="list-style-type: none"> • Geometry • Accessibility 	Customer Service Requests Australian Standard AS5100	Compliance with current standard	100% Compliance with AS5100 for new structures.
Safety	Increase public safety	Accident reports	Zero reported crashes attributed to bridge condition	Zero reported crashes attributed to bridge condition.
Reliability	Bridges and major culverts available at all times and free from mass limits	Periodic bridge and major culvert audit	Audit undertaken every 3 to 5 years.	Bridges are closed at Furracabad Road and Mt Mitchell Road over Mann River due to constructions works with no side track in place.

Table 3.4c: Community Levels of Service

4. FUTURE DEMAND

4.1 DEMAND FORECAST

Refer to Core Asset Management Plan.

4.1.2 Demand Factors - Trends And Impacts

Developers will contribute to bridge upgrades that are required to facilitate freight or access to significant developments.

Flood free access is the primary driver of increase in level of service. This appears in the design as increased deck height when low level bridges are renewed.

FACTOR	IMPACT
Population changes in township or rural areas	Expectations in level of service independent of number of properties serviced, particularly on very low-traffic roads.
Rural freight task increasing	Last mile issues associated with higher mass limit vehicles place an increased expectation for bridge load capacity.

Table 4.1.2: Demand factors, projections and impact on services.

4.2 CHANGES IN TECHNOLOGY

Technological changes (as distinct from changes to installations brought about by external, e.g. environmental, forces) will impact on the asset classes in this AMP over the 20-year timeframe.

Emerging local construction ability will see more pre-cast components to minimise community disruption. Major culverts will likely be replaced 'like-for-like', with improved end walls and erosion projection.

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

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

SERVICE ACTIVITY	DEMAND MANAGEMENT PLAN
Safety Improvement Plan	Upgrades to improve user are applied when structures are renewed to current engineering standard.
Road Hierarchy Review Plan	Consideration of freight routes and last mile implications are relevant. Local bridge capacities can be the limiting factor for heavy freight vehicles.

Table 4.3: Demand Management Plan Summary

4.4 NEW ASSETS FROM GROWTH

No new bridge assets from growth are anticipated within the current term of this plan.

5. LIFECYCLE MANAGEMENT PLAN

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

5.1 BACKGROUND DATA

5.1.1 Physical Parameters

The age profile of Council's assets is shown below. The bulk of assets constructed from 1960 to 1970 is apparent. These assets typically comprise a low-level timber superstructure on concrete piers, often constructed above a previous concrete causeway. The nature of these assets tends to make timber superstructure renewal the most cost-effective option, as the foundations are rarely of sufficient capacity to carry a concrete superstructure.

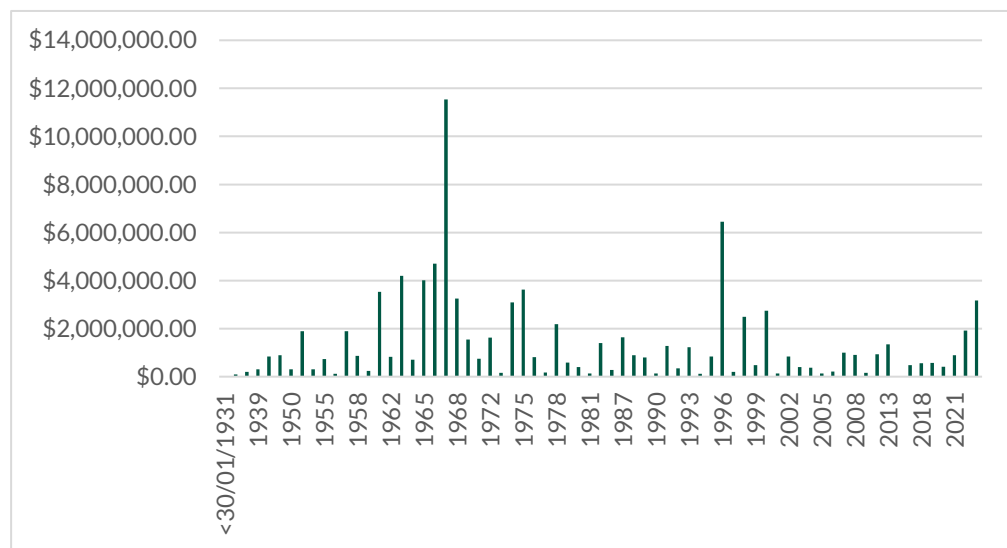


Figure 5.1.1 Asset Age Profile

5.1.2 Asser Capacity and Performance

Council's services are generally provided to meet design standards where these are available.

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

LOCATION	SERVICE DEFICIENCY
Timber Bridges	Historic lack of proper maintenance of timber bridges has compromised the integrity of some components earlier than should have been the case.
Concrete Bridges	Lack of modern design and poor construction quality of some older concrete bridges has compromised the integrity of some components earlier than should have been the case.

Table 5.1.2: Known Service Performance Deficiencies

5.1.3 Asset Condition

The condition profile of Council’s assets is shown below.

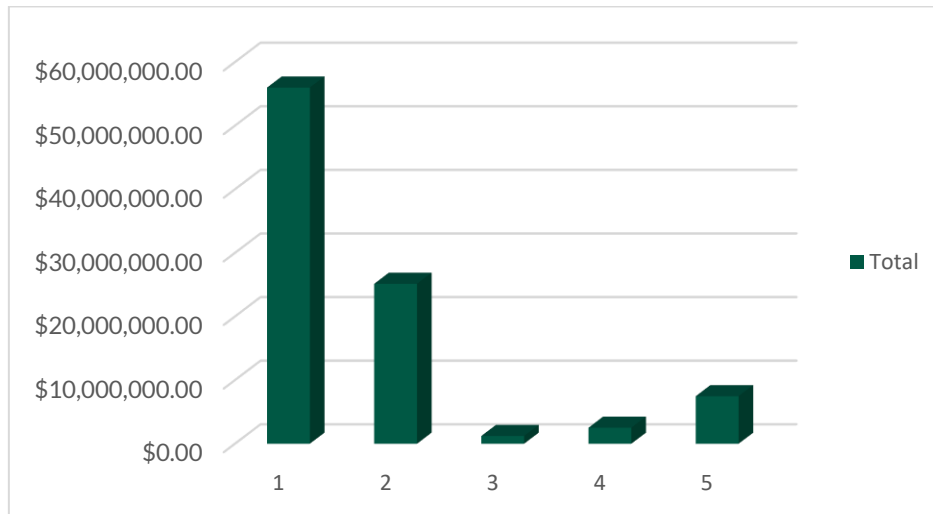


Figure 5.1.3: Asset Condition Profile

Condition is measured using a 1 – 5 rating system.

Rating	Description of Condition
1	Excellent condition: Only planned maintenance required.
2	Very good: Minor maintenance required plus planned maintenance.
3	Good: Significant maintenance required.
4	Average: Significant renewal/upgrade required.
5	Poor: Unserviceable.

5.1.4 Asset Valuations

The values of assets are shown below for bridge infrastructure assets as at 30 June 2021. Note: a full independent revaluation was completed in October 2020. Assets are valued at greenfield rates.

ASSET TYPE	QUANTITY	REPLACEMENT VALUE \$	ANNUAL DEPRECIATION -\$
Concrete and Steel	81	68,201,420.24	636,806.73
Timber	8	1,825,738.47	25,532.15
Causeway	134	9,070,101.73	101,974.70
Culvert	33	13,233,885.30	160,962.47
TOTAL	256	\$ 92,331,145.74	-\$ 925,276.05

Table 5.1.4a: Asset Summary

Council's sustainability reporting reports the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion.

FINANCIAL REPORTING CRITERION	BRIDGES INFRASTRUCTURE
Asset Consumption Rate (Annual)	1%
Asset Renewal Rate (Annual)	2%
Asset Upgrade Expansion Rate (Annual)	0%

Table 5.1.4b: Financial Reporting Ratios

5.2 RISK MANAGEMENT

The risk assessment process identified credible risks, the likelihood of the risk event and the consequences should the event occur. Future refinements will use these factors to develop risk ratings, incorporating a risk treatment plan for non-acceptable risks.

There are no critical risks identified in the bridge asset class. Critical risks are those assessed as 'Very High' - requiring immediate corrective action and 'High' - requiring prioritised corrective action .

5.3 ROUTINE MAINTENANCE PLAN

Routine maintenance is the regular ongoing 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.

5.3.1 Maintenance Plan

Maintenance includes reactive, planned and cyclic maintenance work activities. Assessment and prioritisation of reactive maintenance is undertaken by trained (level 1 certified) Council staff using training, experience and judgement.

Routine maintenance activities include timber deck board replacement, painting, termite treatment, signage repairs and vegetation control.

Reactive maintenance typically occurs following floods where debris may be collected on the upstream side and requires removal.

5.3.2 Standards and Specifications

Maintenance work is carried out in accordance with the following Standards and Specifications.

- NSW RMS Timber Bridges manual
- GISC Work Method Statements
- Requirements by manufacturers for the use of proprietary products
- AS5100.1 Bridge design-scope and general principles

5.3.3 Summary of Future Maintenance Expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 5.3.3. Note that all costs are shown in current dollar values.



Figure 5.3.3 Planned Maintenance Expenditure

Maintenance is funded from Council’s operating budget and grants where available. Maintenance allocations have been able to be reduced as major capital work is being undertaken on bridges that would have been inefficiently patched in previous years.

5.4 RENEWAL / REPLACEMENT PLAN

Renewal 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 upgrade/expansion or new works expenditure.

5.4.1 Renewal Plan

Renewal will be undertaken using ‘low-cost’ renewal methods where practical. The aim of ‘low-cost’ renewals is to restore the service potential or future economic benefits of the asset by renewing the assets at a cost less than replacement cost.

In particular, low-level timber bridges on concrete foundations will be renewed using laminated timber carpentry methods which have shown to be more cost effective than full concrete replacement. Timber components are either reused for maintenance (if in as new condition), sold into the recycled timber market or discarded (<20% of components).

5.4.2 Renewal Standards

Renewal work is carried out in accordance with the Standards and Specifications noted in **Section 5.3.1**.

5.4.3 Summary of Optimal Renewal Expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock ages. The costs are summarised in **Figure 5.4.3a**. Note, that all costs are shown in current dollar values.

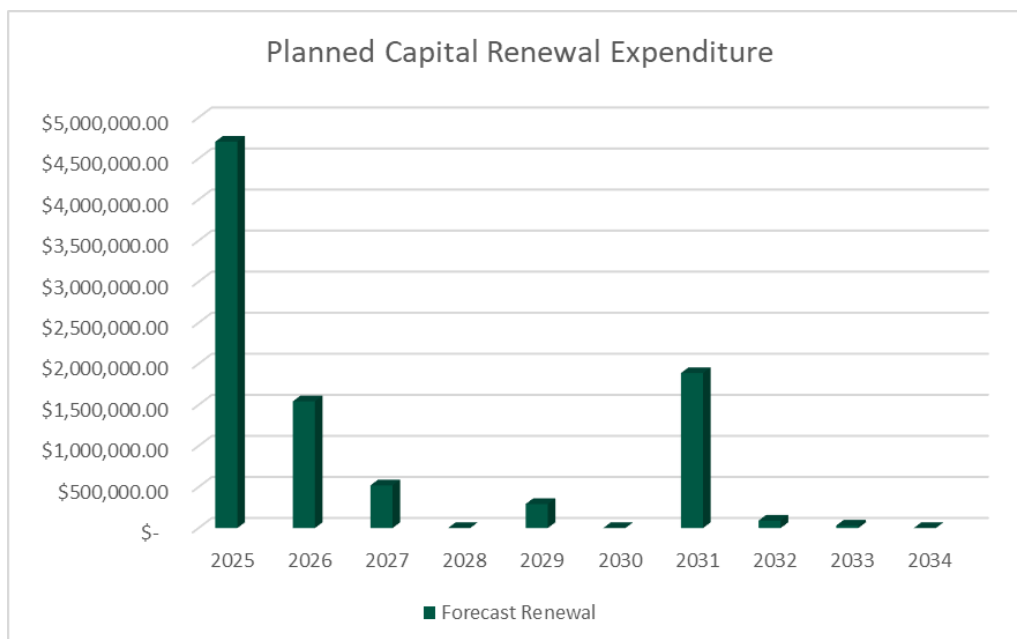


Figure 5.4.3a: Planned Capital Renewal Expenditure

5.5 CREATION / ACQUISITION / UPGRADE PLAN

New works are those works that create a new asset that did not previously exist or works which 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 to the Council from land development. These assets from growth are considered in Section 4.4.

5.6 DISPOSAL PLAN

Bridge timbers are a valuable commodity even when no longer fit for service as a bridge component. A ready market exists for old timber that is sound and surplus timber is disposed of routinely through online auction sales. Typically, 50% of new value is received through these sales for timber that is sound.

The cost of relocation can be prohibitive however, and at times it is more economical to dispose of the entire structure in situ by way of public expression of interest, with the purchaser to remove materials from site. This is especially the case for low value timber such as where decks have been overlaid with concrete.

6. FINANCIAL SUMMARY

6.1 FINANCIAL STATEMENTS AND PROJECTIONS

6.1.1 Sustainability of Service Delivery

There are two key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium-term costs over the 10-year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this asset management plan is \$906,554.

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The average life cycle expenditure over the 10-year timeframe of the plan is \$906,554.

A gap between life cycle costs and life cycle expenditure gives an indication as to whether present consumers are paying their share of the assets which they are consuming each year. The purpose of this asset management plan is to identify levels of service that the community needs and can afford and develop the necessary long-term financial plans to provide the service in a sustainable manner.

There is no forecast expenditure gap in this asset class.

6.2 FUNDING SUMMARY

Projected costs are to be funded from Council's operating and capital budgets. The funding strategy will be detailed in the Council's LTFP.

Achieving the financial strategy will require an ongoing commitment to fund the increasing demand for asset renewals. Renewal costs may outpace increased revenue from development growth.

6.3 VALUATION FORECASTS

Asset values are forecast to increase as construction costs increase.

Depreciation expense values are forecast in line with asset values as shown in Fig 6.3b.

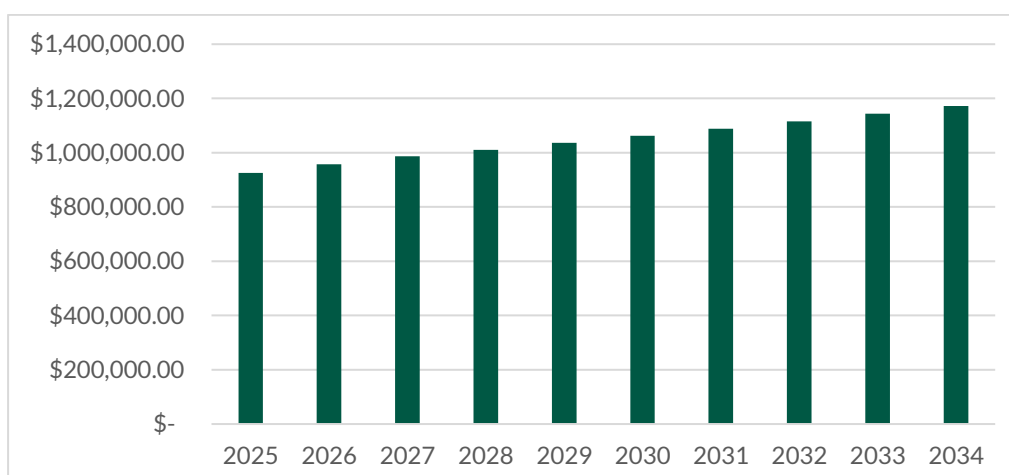


Figure 6.3b: Projected Depreciation Values

The depreciated replacement cost (current replacement cost less accumulated depreciation) will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets.

6.4 KEY ASSUMPTIONS MADE IN FINANCIAL FORECASTS

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions:

- Assumptions on the relationship between growth and increases in the asset stock.
- Assumptions on changes to useful life estimated to reflect improved maintenance and renewal practices.
- Present service levels will remain constant until revised service levels are produced in accordance with Section 3.3.
- Assumption of a normal weather conditions.

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

- Undertaking regular defect surveys on bridges.
- Improved information on maintenance and operating expenditures.
- Assumptions have been made as to the average useful lives and remaining lives of the asset groups based on current local knowledge and experience and historical trends. These need to be reviewed and the accuracy improved based on real time assessment of asset deterioration.
- Changes in the desired level of service and service standards from those identified in this plan.

7. ASSET MANAGEMENT PRACTICES

7.1 ACCOUNTING AND FINANCIAL SYSTEMS

Refer to Core Asset Management Plan

8. PLAN IMPROVEMENT AND MONITORING

8.1 PERFORMANCE MEASURES

The effectiveness of the asset management plan can be measured in the following ways: The degree to which the required cash flows identified in this asset management plan are incorporated into council’s Long-Term Financial Plan and Community Strategic Plan; The degree to which 1 to 5-year detailed works programs, budgets, business plans and organisational structures take into account the ‘global’ works program trends provided by the asset management plan.

8.2 IMPROVEMENT PLAN

Refer to Core Asset Management Plan.

The asset management improvement plan generated from this asset management plan is shown in **Table 8.2**.

TASK NO	TASK	RESPONSIBILITY	RESOURCES REQUIRED	TARGET COMPLETION DATE
1	Maintenance Activities - document levels of service and Maintenance Management Plan	Manager of Infrastructure Delivery	Staff	Ongoing
2	Undertake a review of this Asset Management Plan.	Manager Asset Services	Staff	After revaluation or during review of the Resourcing Strategy.
3	Review costs in asset register and revalue assets	Manager Asset Services	Staff	Full revaluation of this class is to be undertaken in 2025/2026.
4	Review of risk management plan detailed in Section 5.2.	Manager Asset Services	Staff	Ongoing

Table 8.2 Improvement Plan

8.3 MONITORING AND REVIEW PROCEDURES

This asset management plan will be reviewed after any evaluation of the asset class or during review of the Resourcing Strategy.

REFERENCES

Refer to the Core Asset Management Plan.