Mid Murray Council

Bridges

Asset Management Plan 2023

Adopted 23 January 2024

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Introduction

Mid Murray Council (MMC) controls a bridge and major road structures network that includes Pedestrian Bridges, Major Culverts, Floodway's and Road Bridges. These significant assets are a vital service enabling all weather access for numerous roads and other crossings across the Council area.

This Bridges Asset Management Plan (AMP) covers the capital and operational management of all Bridges and other major road structures within the Council's road transport network. This AMP is to be read in conjunction with Council's Road Transport Asset Management Plan (2022) that details the overarching transport strategy and road hierarchy.

Asset Summary

Council's bridge portfolio consists of the following assets.

Table 1: Bridge Asset Summary

Type	Descriptor	Gross Replacement Cost*
Bridge	Single or Multi-span, precast and composite types	$4,793,248
Major Culverts	Single or Multi-cell Precast Box Culverts	$1,167,035
Floodway's	Mass concrete with low flow culvert	$1,214,069
Pedestrian Bridges	Timber Fabricated and Steel/Timber Suspension	$181,287
Total		**$7,355,639**

*Note: Modern Equivalent Asset (MEA) cost used on some assets

Considerations

The key considerations of this AMP are:

- Current Service levels and usage of the Bridges
- Anticipated Future usage
- Current Condition of the Bridges
- Available budget, resourcing and funding opportunities
- Structural and non-structural components of the Bridges and differences in construction
- Risks
- Maintenance, renewal and upgrade/enhancement requirements
- Replacement with Modern Equivalent Asset (MEA) or fit for purpose based on road hierarchy

Objectives

The key objectives of this AMP are:

- to enable the assets to be available for use without increase in risk exposure
- describe how the Council plans to maintain, manage and operate the Bridge assets while be considerate of budget, funding and other resources
- Meet the needs of Bridge users including freight, seasonal use, passenger vehicle demands and paddock access
- Cost effective structures to align with the increased transport configurations for high productivity freight movements
- Target and prioritise infrastructure investment for renewal and enhancement.
- Take a whole of life approach to asset investment.
- Provide forward financial estimates for budgeting purposes

IMPORTANT NOTE: All figures quoted are 1 July 2022 dollar values. Any future Maintenance, Renewal and Enhancement forecasts will need to be indexed appropriately.

Service Levels

This AMP uses the Locality, Utilisation and Road Hierarchy Classifications from the Road Asset Management Plan (2022) in order to guide service levels.

Locality

- Service Centres: These areas have been identified in line with Council's Development Plan and Service Centre definition. Including townships and service centres, these areas have a higher concentration of residential dwellings and a number of community services, including but not limited to schools, commercial businesses, libraries, medical and service stations. The identification of these areas is important to this plan as the access and utilisation of the road network to these services is directly linked to the priority and investment required.
- Shack Areas: Shack settlement areas are a concentration of residential dwellings (nominally holiday homes) where access demands are similar to service centre demands but seasonal in nature. The MRLGA identifies and differentiates these areas as regionally important where properties exceed 50 constructed dwellings.
- Rural: All areas outside service centres and shack areas, primarily servicing low concentration rural residential living and primary production properties. Although road utilisation is generally lower than the previously listed areas, there are certain roads that are regionally significant freight roads and those that experience high levels of seasonal commodity demand.

Utilisation

- Heavy Freight - Roads that support inter/intra state freight access and with vehicle types exceeding standard axle weight loadings.
- Commodity - Commodity Freight is defined as a homogeneous bulk freight load (primary products) that is transported on an adhoc or seasonal basis from the place of production to the place of processing.
- Commercial & Community Precincts – These roads supports access to key community and commercial areas within or connecting service centres.
- Service Centre – local roads within service centres generally servicing residential properties.
- Shack Areas – holiday home settlement areas, which experience high levels of seasonal variability with the roadways often utilised by shared use between vehicles, cyclists and pedestrians.
- Rural Roads – All other made and maintained roads not listed in the above criteria. Often sparsely populated and utilised.
- Mannum Waters – A unique development on the outskirts of the Mannum Service Centre. Road and other infrastructure within the development is unique to this area as it is based around a river marina amenity.
- Private – roads and access located within private land. A number of shack roads are privately owned.
- Nil – No established use or benefit.

Classification

- Classes 1 and 2 are solely state managed roads.
- Class 3 – State and regional significance (potentially a Department of Infrastructure and Transport (DIT) managed road). The only road that fits this classification is Murraylands Road, between Morgan and Blanchetown. This section of road currently receives over 40% of all Council's National Heavy Vehicle Permit requests and strongly supports the States regional freight network. A significant portion is presently unsealed and although an unsealed standard is included, this is not accepted as a long term and sustainable standard.

- Class 4A – Regionally significant community and tourism access and local freight roads. The majority of Council's community and tourism access roads are owned and controlled by the State. The identified local freight routes meet the MRLGA standard established being roads that are to be gazetted GML/HML standard and are locally important. These are not identified as known commodity routes.
- Class 4B – Local tourism, commodity route (freight), collector roads. These roads are identified and recognised as significant commodity routes, with unsealed standards being acceptable due to the otherwise low daily vehicle count. Localised tourism routes and significant through traffic roads are also part of this classification. Typically these roads will experience in excess of 100 vehicles per day and connect locally important community and tourism destinations.
- Class 5A – Residential access within service centres, shack areas and rural; (subject to vehicle type and frequency (i.e. between 10 vehicles per day (VPD) and 100 VPD). Split into three (3) categories, these roads are located within service centres, rural areas and shack roads servicing 50 properties and more. The longer term aim would be to ensure all Class 5A roads within service centres and the aforementioned shack roads are sealed, as is suitable to these urban type environments. Any current unsealed roads meeting this standard will only be considered for upgrade subject to budget implications in Council's Long Term Financial Plan. Rural roads in this class that are utilised by less than 100 vehicles per day are to remain unsealed. In line with the recommendations made by the Australian Road Research Board's publication *Best Practice Guide for Unsealed Roads (2020),* if traffic volumes are less than 100 vehicles per day, there is little economic justification to seal the road. Other factors, such as the steepness of the road and the cost to re-sheet and maintain will also be considered.
- Class 5B & 5C – 5B - Residential access within service centres, shack areas and rural; (subject to vehicle type and frequency (i.e. < 10VPD), 5C - Primary production/paddock access). The purpose and use of these two (2) classes of roads means the vehicle use is considerably low, with some potential higher seasonal use. For Class 5B, rural residential access is identified and surface roughness or drivability will be a factor, different than Class 5C, which provides paddock access only. Both classes should be able to be maintained without future capital investment and under operational funding only.
- Class 5D – Unmade/unmaintained road corridors. There are a significant number of unmade road reserves, almost the equivalent to made roads by length. The activating and upgrading of these roads will only be considered under matters relating to development and upon consideration and impact to Council's Long Term Financial Plan. Tracks or unmaintained roads that are historic and are located within Council's road reserves may be identified by name but will not be considered for any upgrade investment and the current service level in-situ will remain.
- Private roads are not considered or part of this draft classification and any potential, future investment will be in line with other related policies and on Council approval only.

Council Locality, Class and Utilisation data

Table 2 below lists the Council's vehicle bridges and their Locality, Class and Utilisation. This will help direct current and short term maintenance and investment.

- 1 bridge is Class 4A
- 6 bridges are Class 4B
- 7 bridges are Class 5A
- 2 bridges are Class 5B
- 2 bridges are Class 5C

Table 2: Vehicle Bridges: Locality, Class and Utilisation

BRIDGE_ID	Road	LOCALITY	PURPOSE	CLASS	ROAD TYPE	SURFACE	UTILISATION
VB01	ST KITTS RD BRIDGE	RURAL	PRIMARY PRODUCTION	CLASS 5C		UN	PRIMARY PRODUCTION
VB02	EUDUNDA RD BRIDGE	RURAL	HEAVY FREIGHT	CLASS 4A	COLLECTOR	SS	HEAVY FREIGHT
VB03	DUTTON MAIL RD	RURAL	RESIDENTIAL	CLASS 5A	LOCAL - THROUGH	PM2/40	25 - 10
VB04	TRURO ROAD	RURAL	COMMUNITY	CLASS 5A		SS	100 - 50
VB05	EAST TERRACE	SERVICE CENTRE	RESIDENTIAL	CLASS 5A	LOCAL - THROUGH	SS	SERVICE CENTRE
VB06	KEYNETON ROAD	RURAL	COMMUNITY	CLASS 4B	COLLECTOR	SS	> 100
VB07	BLACK HILL ROAD	RURAL	COMMODITY & RESIDENTIAL	CLASS 4B	COLLECTOR	SS	COMMODITY & RESIDENTIAL
VB09	MILENDELLA ROAD	RURAL	COMMODITY & RESIDENTIAL	CLASS 4B	COLLECTOR	SS	COMMODITY & RESIDENTIAL
VB10	NUSKE ROAD	RURAL	RESIDENTIAL	CLASS 5B	LOCAL - THROUGH	UN	< 10
VB12	BRINKWORTH ROAD	RURAL	RESIDENTIAL	CLASS 5A	COLLECTOR	PM2/40	50 - 25
VB13	BRINKWORTH ROAD	RURAL	RESIDENTIAL	CLASS 5A	COLLECTOR	PM2/40	50 - 25
VB14	RIVER RESERVE ROAD	SHACK	SHACK	CLASS 5A		SS	> 50 PROPERTIES
VB16	OLD SANDERSTON ROAD	RURAL	RESIDENTIAL	CLASS 5B	LOCAL - THROUGH	UN	< 10
VB17	MURRAYLANDS ROAD	RURAL	TOURISM	CLASS 4B	COLLECTOR	SS	100 - 50
VB18	COLLINS ROAD	RURAL	RESIDENTIAL	CLASS 5A	LOCAL - THROUGH	PM2/40	25 - 10
VB19	WESTERN BOUNDARY ROAD	RURAL	COMMODITY LOW	CLASS 4B		RAW	COMMODITY LOW
VB20	QUARRY ROAD	RURAL	COMMODITY MED	CLASS 4B	LOCAL - THROUGH	RAW	COMMODITY MED
VB21	HENTSCHKE ROAD	RURAL	PRIMARY PRODUCTION	CLASS 5C	LOCAL - THROUGH	UN	PRIMARY PRODUCTION

Future Demand

Future demand is subject to future road use. Periodic monitoring of road use and community liaison is needed to ensure accuracy and relevance of classifications and to estimate future usage.

In relation to engineering, predicting future requirements of bridge structures requires an understanding of the primary design features subject to change over time, in particular axle loadings and width for bridges form the primary elements subject to change over time.

In general, across Australia, historic trends have shown that axle loadings will increase. The progressive relaxation of regulations governing general vehicle mass and dimension limits over the past 40 years and recent reforms to allow longer, wider and heaver vehicles to utilise the road network, will likely put greater demand on bridge assets.

Asset valuation, condition and components

Valuation and Condition Assessment

MMC has recently undertaken independent asset revaluations of its bridge assets, including condition assessments, to accurately measure the value of the portfolio under AASB13 Fair Value accounting standard as at the 1 July 2022.

During this process updated replacement costs, refined asset componentisations, revised useful lives and remaining useful lives were assessed and have been utilised as the primary financial data for this plan.

Bridge Componentisation

To enable accurate lifecycle models to be developed bridges are componentised to identify elements of varying consumption rate, below are the adopted components and descriptors. Bridge Components:

- *Substructure:*
    - For bridges, piling, pile caps, abutments, headstocks, columns.
    - For Floodway's, Culverts, includes the main structure, culvert, headwalls, mass concrete.

- *Superstructure:* Includes girders, precast deck beams, trusses.
- *Deck:* includes cast insitu slabs, timber wear decking.
- *Waterway*: waterway protection works, approach works, bulk earthworks, relieving slabs.
- *Miscellaneous*: includes signage, fittings, guard rail, bridge barriers.

Component values are based on individual structure characteristics such as.

- Bridge Configuration (Single Span, Multi Span)
- Materials (Concrete, Timber, Steel, composite)
- Construction Type (Dry, seasonal, tidal)
- Subsoil (Sand, Clay, Rock)
- Load Rating

Condition

Table 3: Condition Grading Descriptors

Condition Grading	Descriptor
1	Very Good: free of defects, only planned and/or routine maintenance required
2	Good: minor defects, increasing maintenance required plus planned maintenance
3	Fair: defects requiring regular and/or significant maintenance to reinstate service
4	Poor: significant defects, higher order cost intervention likely
5	Very Poor: physically unsound and/or beyond rehabilitation, immediate action required

Table 4: Bridge Assets and condition

BRIDGE_ID	Type	Name	Condition	Gross Replacement Cost*
PB15	Pedestrian Bridge	Len White Reserve	Good	$76,122
PB22	Pedestrian Bridge	Near Quarry Road	Fair	$105,165
VB01	Bridge	St Kitts	Fair	$268,596
VB02	Bridge	Eudunda Rd 1	Very Good	$1,091,880
VB03	Bridge	Dutton Mail	Poor	$219,780
VB04	Bridge	Truro	Good	$506,628
VB05	Floodway	East Tce	Fair	$479,520
VB06	Major Culvert	Keyneton	Good	$197,100
VB07	Bridge	Black Hill	Poor	$418,068
VB09	Major Culvert	Milendella 1	Very Good	$396,185
VB10	Major Culvert	Nuske	Fair	$351,000
VB12	Bridge	Brinkworth 1	Fair	$401,558
VB13	Bridge	Brinkworth 2	Very Good	$905,310
VB14	Bridge	River reserve Rd	Good	$231,579
VB16	Bridge	Saunders Creek	Poor	$296,730
VB17	Causeway	Murraylands rd	Fair	$532,373
VB18	Major Culvert	Collins	Good	$222,750
VB19	Bridge	Western Boundary	Fair	$453,114
VB20	Floodway	Eudunda Rd 2	Good	$156,492
VB21	Floodway	Milendella 2	Very Good	$45,684
			TOTAL	**$7,355,639**

*Note: Modern Equivalent Asset (MEA) cost used on some assets. All figures are as at 01/07/2022.

Modern Equivalent Asset (MEA)

For the purposes of this Bridges AMP, assets have been assessed utilising the Modern Equivalent Asset (MEA) approach, with regard to the most suitable future replacement asset when compared against road hierarchy usage and type. In particular the following factors are utilised when determining MEA.

- Does the bridge meet the utilisation needs?
- Is the road all weather?
- Does the bridge or structure load limit match the road hierarchy or design?
- Does the asset meet safety or modern design requirements?
- Dual carriageway widths for relevant hierarchy
- Are barriers and approaches adequate?
- Flow design meets service level requirements.
- Cross-section flow paths
- Above or below flood level flow design
- Future design criteria – including safety, economic, and service level
- Cost effective and fit for purpose replacement considerations
- Reduce lifecycle costs through value design

Findings

Due to changing usage patterns and service requirements a number of current assets are not fit for purpose and in the future would likely be replaced with less capital-intensive designs that better fit the associated road use and hierarchy. In addition, some of the current asset pool is unable to provide existing levels of service due to age, design or condition, there are a number of consequences to this imbalance, including:

- Decrease in long term condition of the portfolio and higher lifecycle costs.
- Increased likelihood of failures
- Loss of road access due to bridge closures

Table 5: Recommended MEA Replacements

BRIDGE ID	Current Bridge Type	Existing Asset RC	MEA Type	MEA Replacement Cost
VB01	Single Span Composite	$272,000	2 Cell RCBC	$268,596
VB03	Single Span Composite	$462,000	Low Level Floodway 4xRCBC	$219,780
VB16	Multi-Span Cast Insitu	$1,079,000	Low Level Floodway 3xRCBC	$296,730

All figures are as at 01/07/2022.

In the above cases these structures do not fit the service level requirements for the traffic flow, contain materials that have low durability including Timber/steel and, or are nearing end of life and may no longer fit the hydraulic design considerations for the waterway.

However, as a long-term strategy most low volume roads are able to be serviced with lower cost floodway's and culverts vs high span precast or insitu bridges. Therefore, in the future there are likely to be additional situations where these low-cost options should be used to best implement strategic outcomes for council and the public. Current precast structure standards meet main roads heavy vehicle load standards and present an optimal solution in many cases.

VB14 Swan Reach (Marks Landing) – has been identified to be monitored. Development in the area is likely to cause an increase in required Service level.

Risk Management

An assessment of the risks, associated with the service delivery and management of the Bridge infrastructure, has been undertaken by Council. The risk assessment process is in line with Council's Risk Management Policy and Framework. It identifies credible risks, the likelihood of the risk even occurring, the impact should the event occur, develops a risk rating and evaluates the risk and develops an appropriate treatment plan for non-acceptable risks.

Figure 1. Risk Management Framework – Risk Matrix

Likelihood \ Consequence	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	Extreme	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Low	Medium	High	Extreme
Rare	Low	Low	Low	Medium	High

Table 6: Risks and Treatments

Risk	Consequence	Likelihood	Risk Rating	Treatment/s	Responsibility	Due Date
Extreme weather event results in significant replacement or upgrade of capital works	Moderate	Likely	High	Emergency management policy and procedures, road capacity and demand reports and preventative works, asset maintenance program and asset insurance	WHS & Risk Management Coordinator and Asset Management Coordinator	Ongoing
Poor quality data in asset management systems	Moderate	Unlikely	Low	Independent asset valuation sampling, asset management and financial management dataset integration (Synergy), regular condition assessment, regular review of AMP	Asset Management Coordinator	Completed 2023
Insufficient resources available to deliver asset management plan requirements	Major	Almost Certain	Extreme	Review of LTFP and other asset management plan requirements, adjust service level provisions. to meet LTFP requirements, explore cost effective solutions for identified deficiencies. Seek external	Director Infrastructure and Director Corporate & Financial Services	Ongoing
Failure to deliver and maintain infrastructure that meets service level demands	Moderate	Possible	Moderate	Reactive and proactive routine maintenance program, staff training, asset management planning, community engagement, referencing Australian Standards.	Director Infrastructure	Ongoing
Service level standards and strategic targets not aligning with community expectations	Minor	Likely	Moderate	Community engagement (public consultation), community surveys, linking service levels directly to budget, constant review of asset and strategic plans.	Assets, Infrastructure & Elected Members	Ongoing

Asset Lifecycle Management

Lifecycle Management

Lifecycle Management provides a description of the key elements for managing the assets over a 15-year planning horizon – being:

- Maintenance;
- Renewal;
- Enhancement; and
- Monitoring, Evaluating and Improving – including planning.

Maintenance Plan

Planned/Preventative maintenance

This is repair work that is identified and managed through a routine maintenance management program. In particular for bridges and major structures the following preventative maintenance activities should be prioritised based on the aging asset pool and heightened maintenance requirements.

- Higher frequency level 1 inspections (Level 1 inspections are an operational check to see if there are obvious issues, that need further investigation, generally done after a flood or at predefined intervals, can be done by council staff).
- Clearing scuppers on sealed bridges
- Ensuring joints are sealed and clear of debris.
- Clearing vegetation from abutments and embankments close to structures
- Monitoring watercourse erosion
- Correct adequate signage for bridges with particular importance on derated load limits.

Reactive maintenance

This is unplanned repair work carried out in response and assessed from service requests and management/supervisory directions. The aim of both the bridge asset management plan and transport strategic asset management plan is to minimise reactive maintenance through the maintenance strategies outlined in the maintenance plan. Reactive maintenance still arises and is often work carried out in response to service requests or supervisory direction, based on a specific occurrence or reason. An example being a bridge barrier damage due to vehicle impact or flood debris.

Specific maintenance

This is replacement of higher criticality components/sub-components of assets that is undertaken on a regular cycle. Such as replacement of joints, bearings barriers and other short life components that can be managed operationally. This work generally falls below the capital/maintenance threshold (Refer to Council's Asset Accounting Policy (AAP) but may require a specific budget allocation.

Targeted Maintenance and Monitoring

Some structures have increased maintenance requirements due to age and defects. These also require elevated surveillance and are more likely to need unplanned maintenance. These include.

- VB03 – is an older single span composite bridge with a steel and timber deck, being timber regular checks and maintenance are required however this bridge is nearing end of life and has elevated maintenance requirements and will be subject to renewal in the near future.

- VB07 – is an older single span composite bridge with a steel and concrete deck, due to the age of the bridge and significant defects in the concrete deck this bridge is nearing end of life and has elevated monitoring requirements.
- VB16- is a multi-span cast insitu concrete bridge, near end of life, being one of the oldest structures still in use it has significant defects that require monitoring and, is likely to require replacement in the near future. In addition it has a derated imposed load limit.

Council have developed a routine maintenance program, as described in the Transport Asset Management Plan, which aims to deliver regular, ongoing work relative to the known demands and predicted consumption estimation to ensure the ongoing operation of infrastructure.

Renewal 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 covered in the enhancement plan for new or upgrade works expenditure.

Council's bridge assets are some of the first assets constructed in the region and historic records for acquisition dates are often unknown. Through condition inspections it is evident, construction practices varied dependent on the time of construction and the local government body that has previous care and control.

Due to the long useful life of bridges and that geographically Council's subgrade is stable and sound, most asset long life components are in relatively good condition, however, there are a number of assets approaching end of life based on condition and load capacity and as such do require MEA renewal modelling.

Barrier, signage and timber components are a much shorter-lived asset and condition is the other factor that can affect functionality. Deterioration and wear have been assessed and future consumption predicted based on known demands. Council's road network experiences relatively low utilisation, compared to urbanised council areas, as such local deterioration rates are somewhat lower than assets subject to higher usage.

There is a significant length of unsealed roads that make up the majority of Council's Road network, the current demand means existing service levels (unsealed roads) are consistent with usage. Roads that service farm paddock gate access and receive less than 10 vehicles per day, are planned to be managed operationally as further capital investment is considered uneconomic. This strategy has been implemented for assets in the mid-life phase in line with the roads management plan, however, there are a number of assets at end of life that will require capital input. The majority are able to be replaced with a lower cost MEA due to the current network road demand.

Below is a table of expected Useful lives for assorted asset types and materials.

Table 7: Expected Useful Lives – asset types and materials

Structure Type	Component	Material	Useful Life (Yrs.)
Vehicle Bridge Composite	Substructure	Concrete	60-100
	Superstructure	Timber	30-50
	Superstructure	Steel	40-60
Vehicle Bridge Concrete		Precast Concrete	80-100
Pedestrian Bridge		Timber	40-60
Floodway			60-80
Major Culvert		Precast concrete	80-100
All Structures	Miscellaneous	Steel/ Signage Fittings, barriers	15-40

A table of predicted capital renewal requirements, per component, over the next 15-year period is included at Attachment 2.

Enhancement 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. A number of recent projects have been undertaken to replace ageing bridges with optimised structures either culverts or low-level floodway's, including:

- VB02 – New headstocks, deck, approaches and barriers, upgrade included improving alignment with the road and increasing width.
- VB04 – Replacement of deck with precast units. Refurbishment of headstocks
- VB09 – Replacement of bridge with Reinforced Box culvert
- VB13 - Replacement of deck with precast units. Refurbishment of headstocks

This optimisation process is expected to continue with structures across the Council area having excess capacity based on traffic flows and service levels.

Overall, the current bridge asset pool services the access requirements of the associated road access adequately however at a higher capital intensity than required and there is limited scope for enhancement. Most additional capital expenditure will go towards renewal and replacement of existing aging assets with MEA of lower capital cost.

Council's Asset & Project Management Team will continue to monitor the network and ensure opportunities to expand or increase service levels for modest capital outlay are taken. This is to include VB14 Swan Reach (Marks Landing) as development in the area is likely to cause an increase in required Service level.

Monitoring, Evaluation and Improvement

It is important for the Council to improve its collection and evaluation of quantitative and qualitative data about the condition of the assets, usage and resourcing. Data on this is limited currently. This is to be used to guide management decisions regarding resourcing, investment and improvement.

Monitoring, Evaluation and Planning

1. The Council will collect and evaluate data on condition, usage, maintenance and resourcing.
1. The ability to meet and fund the requirements of this AMP will be reviewed as part of Council's Long Term Financial Plan (LTFP) review process.
2. The annual budget planning process will consider this AMP to ensure budgeting meets maintenance, renewal and enhancements needs.
3. The AMP is also to be reviewed and amended if there are significant changes needed to the AMP. It is recommended that an Annual Report be made by the Asset Management Coordinator and Director of Infrastructure commenting on activities during the year and future alignment with the AMP. These Reports can be reviewing when the AMP is due for an update.
4. The Council will evaluate its annual maintenance activities and resourcing to ensure it meets the required needs of this AMP.

Budget Forecast – to 2038

This model has used the Renewal/Replacement as the main guide with works spread out across all 15 years. No allocations have been made for enhancement – this is sought to be funded by Developers or Grants.

Table 8: Forecast Renewal/Replacement and Maintenance

Year Count	Year	Forecast (Renewal & Replacement)	Maintenance
0	2022		$24,000
1	2023		$30,000
2	2024		$30,000
3	2025		$30,000
4	2026	$570,930	$24,000
5	2027		$24,000
6	2028		$24,000
7	2029	$15,120	$24,000
8	2030		$24,000
9	2031		$24,000
10	2032	$85,050	$24,000
11	2033		$24,000
12	2034		$24,000
13	2035	$24,334	$24,000
14	2036		$24,000
15	2037	$832,548	$24,000
16	2038	$83,430	$24,000
	TOTAL	**$1,611,412**	**$426,000**

Forecast notes

- Maintenance Budget:
    - We have allocated a nominal planned maintenance budget, based on recent expenditure, to implement some of the recommendations of the AMP, however these activities will need to be further investigated to accurately resource and schedule these works to be completed.

- We have assumed that maintenance is currently generally reactive, with inspections undertaken with road maintenance.
- In the future we recommend additional training for staff and undertaking regular standardised level 1 inspections to better inform planned maintenance. This is why 2023 to 2025 Maintenance budgets are $6k more per year.
- Generally once a planned maintenance schedule is implemented we expect unplanned maintenance costs to decrease over time and overall as some bridges are replaced with lower capital intensive structures such as culverts further decreases to maintenance costs should be seen.

- Renewal Budget:
  - We have been able to model some lower future costs utilising optimised asset replacements using the MEA approach, i.e. composite bridge replaced with precast culverts.
  - A number of structures have been renewed in the last few years, therefore the majority of renewal capital works is for short life components and not full structures.
  - Renewal criticality /priority can change based on a number of factors so renewal years should be reviewed frequently as minor changes can have large impacts to budget.
  - Replacement revaluation costs did not include budgets for road works and demolition – this has been placed as separate rows in Attachment 2.
- Enhancement Budget:
  - There has been no allocation, as there are unlikely to be greenfield road construction undertaken by Council or a Developer.
  - Generally the strategy is for Council to construct low capital intensity structures with a fit for purpose service level, culverts/floodways vs all weather bridges.
  - Should new regional connection roads be upgraded these will generally be funded by grants or owned by the State Government Department.

Definitions

Asset Condition Assessment – The process of a continuous inspection program, assessment and record of condition (against an industry standard - IPWEA) which determines the timeline for current or future remediation.

Asset Management – The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner.

Assets – Resources owned by Council which have a current and future economic value (AAS27.12).

Capital Expenditure – Expenditure which contributes to the resources required to construct and install a physical asset.

Capital Grants – money received from an external party, which is generally tied to the specific projects for which they are granted.

Component – The individual part of an asset which contributes to the composition of the whole and can be separated from an asset or system.

Current Replacement Cost – The cost to acquire the asset on the reporting date. The cost is based on the equivalent cost based on a modern asset with the same economic and performance benefits.

Consumption Rate – Theoretical rate that the asset is consumed based on the estimated useful life

Depreciated amount – The cost of an asset less its residual value (AASB 116.6).

Depreciated Replacement Cost – The current replacement cost of an asset less the accumulated depreciation calculated on the amount of useful life it has consumed.

Depreciated – The systematic allocation of the depreciable amount of an asset over its useful life.

Infrastructure Assets – Physical assets of Council that contribute to meeting the public's needs for access to economic and social facilities and services. The components of these assets may be separately maintained, replaced or upgraded individually so that the service level of the network of assets is sustained.

Level 1 Inspection - An operational inspection of assets to detail impacts from events or potential issues that need further investigation.

Level of Service – The defined service standard for a particular asset class. Service levels relate to quality, quantity, reliability, responsiveness, acceptability and cost.

Modern Equivalent Asset – The theoretical lowest cost replacement for an asset taking into account modern construction techniques.

Maintenance Expenditure – Recurrent expenditure which is required to deliver a schedule of works which ensure the asset achieves the designed and predicted useful life at the required service level.

Nuisance Inundation - Pooling of stormwater run-off in low-lying areas due to poor drainage. This is a frequent hazard but rarely causes major damage.

Optimisation – The process by which the lowest cost asset replacement is estimated that still meets

the service level requirements.

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

Routine Maintenance – Repair work that is managed through a routine maintenance program. Activities include inspections, assessing condition, actioning repair work, collecting maintenance history and seeking way to continuously improve maintenance efficiency.

Remaining life – The time remaining until an asset ceases to provide the required service level or economic usefulness.

Risk Management – The application of a formal process to assessing the key factors associated with the risk in order to determine the resultant range of outcomes and their probability of occurrence.

Useful Life – The period over which an asset is expected to be available for use.

Attachment 1: Photos Bridges to be replaced

VB-03 – Dutton Mail Bridge

VB-07 – Black Hill Road Bridge

VB-16 – Saunders Creek

Attachment 2: Forecast Renewal Budget

Year	Asset ID	NAME	Works to undertaken	Component	Comment	Forecast (Renewal & Replacement)
2026	VB03-MSC	DUTTON MAIL BRIDGE	Renewal	Miscellaneous	This amount is for guard rails and other low value items. It is worth considering undertaking all works in 2026 (refer other VB-03 rows). Later works are for a bridge replacement with a MEA culvert.	$41,310
2026	VB07-MSC	BLACK HILL RD BRIDGE	Renewal	Miscellaneous	Low value items only to be renewed such as signage, fittings and barriers. It is worth considering undertaking all works in 2026 (refer other VB-07 rows). Later works are for a bridge replacement with a MEA culvert.	$63,990
2026	VB12-MSC	BAKER CREEK BRIDGE	Renewal	Miscellaneous	Low value items only to be renewed such as signage, fittings,	$13,500
2026	VB16-SUB	SAUNDERS CREEK CULVERT	Replacement	All	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the multispan bridge currently constructed	$296,730
2026	VB16	SAUNDERS CREEK CULVERT	Replacement	All	Works not included in Revaluation cost including demolition and road works	$150,000
2026	VB19-MSC	WESTERN BOUNDARY RD BRIDGE	Renewal	Miscellaneous	Signage only	$5,400
2029	VB01-MSC	ST KITTS RD BRIDGE	Replacement	Miscellaneous	Signage and guard rail replacements	$15,120
2032	VB04-MSC	TRURO RD BRIDGE	Renewal	Miscellaneous	Signage and guard rail replacements	$49,410
2032	VB14-MSC	RIVER RESERVE RD BRIDGE	Renewal	Miscellaneous	Signage and guard rail replacements	$35,640
2035	PB15-DEC	LEN WHITE RESERVE FOOTBRIDGE	Renewal	Deck	This is for renewal of the deck component of the footbridge	$8,080
2035	PB15-MSC	LEN WHITE RESERVE FOOTBRIDGE	Renewal	Miscellaneous	Low value items only to be renewed such as signage, fittings and hand rails	$16,254

Year	Asset ID	NAME	Works to undertaken	Component	Comment	Forecast (Renewal & Replacement)
2037	VB03-SUB	DUTTON MAIL BRIDGE	Replacement	Composite single span	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$137,160
2037	VB03-DEC	DUTTON MAIL BRIDGE	Replacement	Deck	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$41,310
2037	VB-03	DUTTON MAIL BRIDGE	Replacement		Works not included in Revaluation cost including demolition and road works	$150,000
2037	VB07-SUB	BLACK HILL RD BRIDGE	Renewal	Composite Single Span 20% skew	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$131,868
2037	VB07-SUP	BLACK HILL RD BRIDGE	Renewal	Composite Single Span 20% skew	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$55,080
2037	VB07-DEC	BLACK HILL RD BRIDGE	Renewal	Composite Single Span 20% skew	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$41,310
2037	VB07-WAT	BLACK HILL RD BRIDGE	Renewal	Composite Single Span 20% skew	This is for a bridge replacement with a MEA culvert, which is significantly lower cost than the bridge currently constructed	$125,820
2037	VB-07	DUTTON MAIL BRIDGE	Replacement		Works not included in Revaluation cost including demolition and road works	$150,000
2038	VB13-MSC	DAIRY CREEK BRIDGE	Renewal	Miscellaneous	Low value items only to be renewed such as guard rails	$83,430
					TOTAL	**$1,611,412**

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