Litchfield Council

Roads

Asset Management Plan

Version 1

October 2019

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0	August 2019	Draft AMP	NS	ND	NN
1	October 2019	Adoption	NS	NN	Council

Responsibility Table

S.N.	Description of Job	Responsibility Officer	Due Date
1	Implementation of Plan	Manager Infrastructure & Assets	After adopted by Council
2	Update of Roads Asset Management Plan	Asset Management Officer	May 2023
3	Enhanced awareness of Asset Management	Asset Management Officer	Throughout year
4.	Revaluation of Infrastructure Assets	Finance Manager	June 2021

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1 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

This asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The road assets have an estimated value of $328,700,000 and comprises 2.7 km of asphalt roads, 616.6 km of bitumen roads, 70.4 km of gravel (unsealed) roads and 32.1 km of Kerbs.

Private roads have been excluded from the above figures and asset management plan.

1.2 Levels of Service

The asset management plan has been prepared prior to development of levels of service. The future revisions of this asset management plan will incorporate community consultation on service levels, costs of providing the service and available resources.

1.3 Future Demand

The future demand will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand.

1.4 Lifecycle Management Plan

The projected outlays necessary to provide the services covered by this Asset Management Plan (AMP) include operations, maintenance, renewal, upgrade and new assets over the 10-year planning period at a value of$122,976,000 or $12,298,000 on average per year.

1.5 Financial Summary

Estimated available funding for this period is $76,369,000 or $7,637,000 on average per year as per the long-term financial plan or budget forecast. This is 62% of the cost to sustain the current level of service at the lowest lifecycle cost.

The allocated funding leaves a shortfall of $-4,661,000 on average per year of the projected expenditure required to provide services under the AMP compared with budgeted expenditure currently included in the Long-Term Financial Plan.

1.6 Managing the Risks

Our present funding levels are insufficient to continue to manage risks in the medium term. The identified risks will be managed within available funding by:

- Improving inspection cycles and records of inspections
- Improving condition data of existing infrastructure to develop renewal and upgrade programs
- Transfer corporate knowledge
- Identify efficiencies in using available funding
- Progressively increasing funding of renewal programs

Council has been maintaining road assets at a consistent service level and funding. The gap is not considered to be at a critical point that would result in significant road failures. The current Long-Term Financial Plan includes a small annual increase for renewals that gradually reduces the gap, however this does not account for the growth of new assts. This will need to be considered in future revisions.

1.7 Monitoring and Improvement Program

Council is committed to improving asset management practices on sustainable paths into the future. These practices will be reviewed in line with the improvement plan.

2. INTRODUCTION

2.1 Background

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

The asset management plan is to be read with the Council planning documents. This should include the Asset Management Policy (INF01), along with other key planning documents:

- Municipal Plan 2018-19
- Strategic Plan 2018-2022
  Long Term Financial Plan 2018/19 to 2027/28

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide road access services within Municipality.

Table 2.1: Assets covered by this Plan

Asset Category	Dimension	Replacement Value
Asphalt Roads	23,224 sqm	$1,600,000
Bitumen Roads	4,569,773 sqm	$292,700,000
Gravel Roads	524,570 sqm	$32,600,000
Kerbs	32102 m	$1,800,000
TOTAL		**$328,700,000**

2.2 Goals and Objectives of Asset Ownership

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

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

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

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

[1] Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2| 13
[2] ISO 55000 Overview, principles and terminology

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

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

The Litchfield Council 2018 Community Survey measured residents' level of satisfaction with various Council services. The community survey reported satisfaction levels for road assets as follow:

Table 3.1: Community Satisfaction Survey Levels (2018)

Performance Measure	Importance Level
	% Very Important and Somewhat Important
How important are the maintenance of local roads services in your area?	98.38%

Performance Measure	Satisfaction Level	
	% Very Good & Good	% Not Good & Poor
How do you rate Council's performance in maintenance of local roads services in your area?	71.61%	28.39%

Compared to the results of the Community survey undertaken in 2017 the importance for residents has slightly decreased by 0.87% (99.25 % in 2017) and the satisfaction of the service has reduced with 19.17% increase of residents judging the service as Not Good or Poor (9.22% in 2017), noting that the 2017 included a rating option of average that was not included in 2018.

This is an indication for a perceived reduction in service level by residents, which could be influenced by the condition of roads infrastructure.

Community satisfaction information is used in developing the strategic plan and in the allocation of resources in the budget. The community survey is available on Council's website.

3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of the Litchfield Council's vision and major roles as outlined in the Strategic Plan 20118-2022.

Litchfield Councils vision consists of four (4) unique attributes including:

1. Family-friendly and Connected: We are a community where it is easy to get to know people and be around them, where it is ideal for family living with plenty of activities, and where it is safe.

2. Natural and Scenic: We have large blocks, with attractive scenic outlooks, lots of native wildlife, and we take pride in our places being beautiful and clean.
3. Spacious, but close to everything: While we have plenty of space to grow, you can get around easily and everything you need is close by.
4. Opportunity and prosperity: We are one of the most productive parts of Australia, with almost full employment, strong industries and business, and it is never too far to travel to work.

Council's six (6) major roles and how these are addressed in this asset management plan are:

Table 3.2: Major roles and how these are addressed in this Plan

Major Roles	How Council's major roles are addressed in AMP
Service Delivery	Meet the social and community interest
Advocate	Survey of major services
Fund	Planning of budget as per necessity
Regulate	Develop and review of Council policies
Work with Community	Welcoming and providing safe environment
Partner	Work with other agencies

3.3 Legislative Requirements

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

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act NT	Sets out role, purpose, responsibilities and power of local government including the preparation of long-term financial plans supported by asset management plans for sustainable service delivery.
Planning Act NT	Adequate management, development and conservation of natural resources.
Australian Standards	To ensure infrastructure provides service for all.
Control of Roads Act NT	Establishes the procedures for the opening and closing of a public road, and to provide the classification of roads. Regulates the carrying out of various activities on public roads.
Traffic Act NT	Sets out the requirements for traffic management.
Environment Protection and Biodiversity Conservation Act (Commonwealth)	Responsibility not to cause environmental harm (e.g. noise pollution, contamination of water).
Work Health and Safety Act 2011	Sets out the requirements for protection of staff and the public when undertaking works.
Disability Discrimination Act	Sets out the requirements for compliant infrastructure to

Legislation	Requirement
1992	facilitate equal access to transport services.

3.4 Customer Levels of Service

Service levels are defined in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures. The customer levels of service are presented in the table below:

Table 3.4: Customer Level of Service

	Expectation	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the current budget.
Service Objective: Council ensures that roads infrastructure is constructed in compliance with standards and is fit for purpose, safe and well maintained to meet the local business and community service needs of all ages and abilities.				
Quality	Satisfaction on maintenance of local roads	Community survey	71.61% respondents rated the service as very good or good in the 2018 community survey	Remain similar, with consistent maintenance funding
	Confidence levels		High	High
Function	Roads are considered to perform well as their intended interest by Council	Community Survey	98.38% of respondents rated the service as very important and somewhat important in the 2018 survey.	Remain high due to the importance for road access for local business and community
	Confidence levels		High	High
Capacity and Use	Most of the roads are in a rural environment	GIS Mapping	Data is captured as per current GIS system	Better GIS resolution system is required for future modelling
	Confidence levels		High	High

3.5 Technical Levels of Service

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

The technical levels of service to be provided under this AMP will meet legislative, regulatory and contract specifications. These requirements are provided within resources available in the long-term financial plan.

Service and asset management plans implement and control technical service levels to influence the customer service levels.[3]

Technical levels of service have not been set at this stage and will be developed as part of the next revision of this asset management plan.

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

Figure 1 - Newly sealed rural road

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

4. FUTURE DEMAND

4.1 Demand Drivers

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

4.2 Demand Forecasts and Impacts on Asset

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.2.

Table 4.2: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population growth	25,598 (2018 ABS ERP)	1.4% (NT Department of Treasury and Finance)	Demand to increase additional assets
Community road safety concerns	70.4 km of gravel roads	To seal all length of gravel roads	Increase demand for upgrade cost
Demographics	Change in age structure	Increase aged population	Increase demand for new assets to facilitate accessible roads
Change in technology	Existing road seal binder technology	Road seal binder development	Provide options for road reseal treatments to prolong road seal life and increase resealing cost

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

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

Table 4.3: Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Population growth	Demand to increase additional assets	Continue to place upgrade program within available resources
Community road safety concerns	Increase demand for upgrade cost	Ongoing sealing/resealing program within available resources
Demographic	Increase demand for new assets to facilitate accessible roads infrastructure	Ongoing upgrade program within available resources
Demand Driver	**Impact on Services**	**Demand Management Plan**

Change in technology	Provide options for road reseal treatments to prolong road seal life and increase resealing cost	Life cycle cost will be considered to acquire innovative technology

Figure 2 - Typical unsealed (gravel) road

5. LIFECYCLE MANAGEMENT PLAN

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

5.1 Background Data

5.1.1 Physical parameter, asset capacity and performance

The assets covered by this asset management plan are shown in Table 2.1. Private roads are excluded from this asset management plan.

The current asset data does not provide a reasonable description of the age profile of the road assets as such there is no Asset Age Profile graph available for inclusion.

An age profile will be developed in future revisions of the asset management plan.

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 5.1.1.

Table 5.1.1: Known Service Performance Deficiencies

Location	Service Deficiency
Bitumen Roads	Lack of other associated infrastructures such as footpaths, underground drainage
Gravel Roads	Not accessible in all seasons due to weather conditions Unsealed road condition is highly variable
Sealed Road Base/Pavement	Detailed condition data of sealed road base/pavement is poor

The above service deficiencies were identified from available asset data and local knowledge.

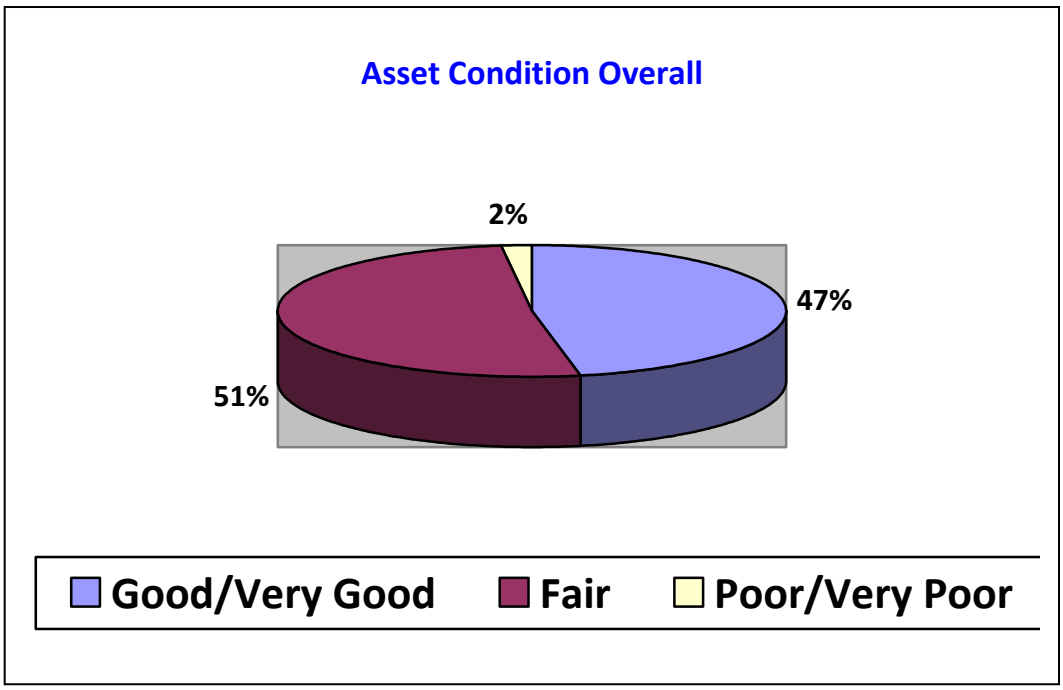
5.1.2 Asset condition

Litchfield Council is maintaining all Council roads. It is required to improve the inspection regime to ensure safety of road users and general condition of road assets. This improvement will include the need for better recording data collected during inspections.

This is the first Asset Management Plan for roads infrastructure. Previously, the roads infrastructure has been maintained with a maintenance methodology. The focus of this plan is on better defining operational, maintenance and renewal strategies and to improve asset data knowledge, particularly in relation to asset condition. The condition rating of all assets has been undertaken by a qualified external valuer in 2018.

It has been identified that dedicated (expert) asset condition inspections are required to assess and document the condition of road assets. The condition profile of our assets is shown in graph 1.

Graph 1: Asset Condition Overall



Condition is measured using a 1 – 5 grading system[4] as detailed in Table 5.1.3.

Table 5.1.2: Simple Condition Grading Model

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

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public safety and amenity.

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

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.

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

Maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Maintenance & Operational Expenditure Trends

Year	Maintenance & Operational Budget $
2018/2019	$1,487,769

The asset condition in graph 1, maintenance and operational expenditure are adequate to meet current service levels. Where maintenance expenditure levels are such that they will result in a lesser level of service than the service consequences have been identified and service consequences highlighted in this AMP.

Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure are forecasted to trend in line with the value of the asset stock as shown in graph 2. Note that all costs are shown in current 2018 dollar values.

Graph 2: Projected Operations and Maintenance Expenditure

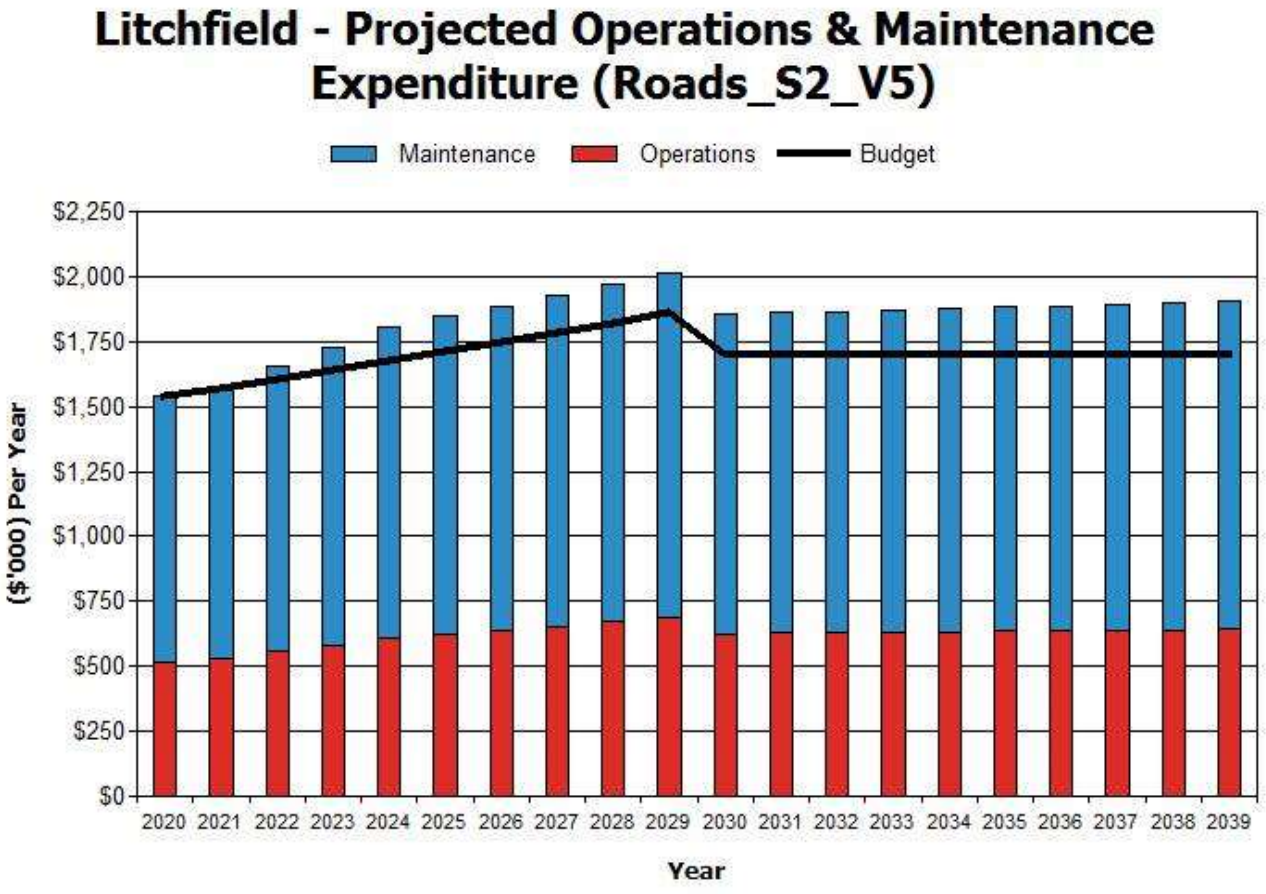


Figure Values are in 2018 dollars.

There is a shortfall of budget in the above graph which is further discussed in section 5.4.3. Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded, theseare to be included in the risk assessment and analysis in the infrastructure risk management plan.

Maintenance is funded from the operating budget where available.

5.3 Renewal/Replacement Plan

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to its original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

5.3.1 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a bridge that has a 5t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. roughness of a road).[5]

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

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AMP as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.[6]

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

Table 5.3.1: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Year of Construction/Acquired	50%
Condition Rating	50%
Total	100%

5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases.

[5] IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.
[6] Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

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

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

5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost.

5.4.1 Selection criteria

New assets and the upgrade/expansion of existing assets are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Verified proposals are ranked by priority index according to Council Policy, available funds and scheduled in future works programmes. The priority ranking criteria are detailed below:

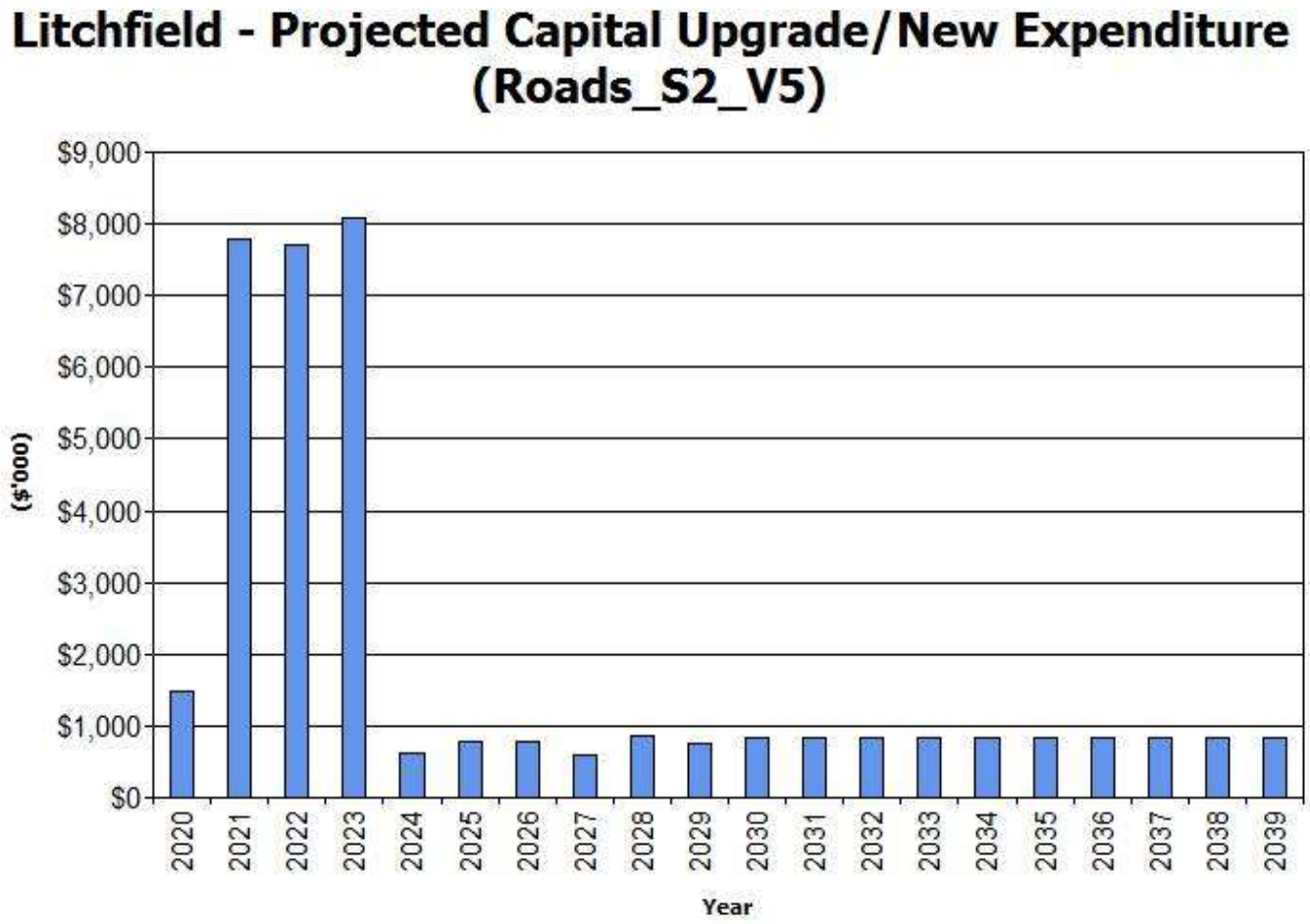
Table 5.4.1: New Assets Priority Ranking Criteria

Criteria	Weighting
Number of Properties Directly Serviced by the Road	12.5%
Connectivity Provided by the Road to Other Roads within the Municipality	12.5%
Safety of the Current State of the Road	12.5%
Access to External Funding for Sealing	12.5%
Economic Stimulus Benefits to the Municipality	12.5%
Accessibility in an Unsealed State	12.5%
Effects of Sealing on Council's Current Maintenance System	12.5%
Important to Locality	12.5%
Total	100%

5.4.2 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in graph 3. The projected upgrade/new capital works program is shown in Appendix B. All amounts are shown in 2018 values.

Graph 3: Projected Capital Upgrade/New Asset Expenditure



The value of upgrade of gravel roads is higher in 2nd, 3rd and 4th year because of the Strategic Mango Roads Projects. This outlier was removed in establishing the average cost over the 10 years, 2029 – 2039. The average network cost of gravel roads estimation is used to calculate for the capital upgrade program in the above graph. An expenditure on new assets and services in the capital works program will be accommodated in the long-term financial plan but only to the extent of the available funds.

5.4.3 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in graph 4 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

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

Graph 4: Projected Operating and Capital Expenditure

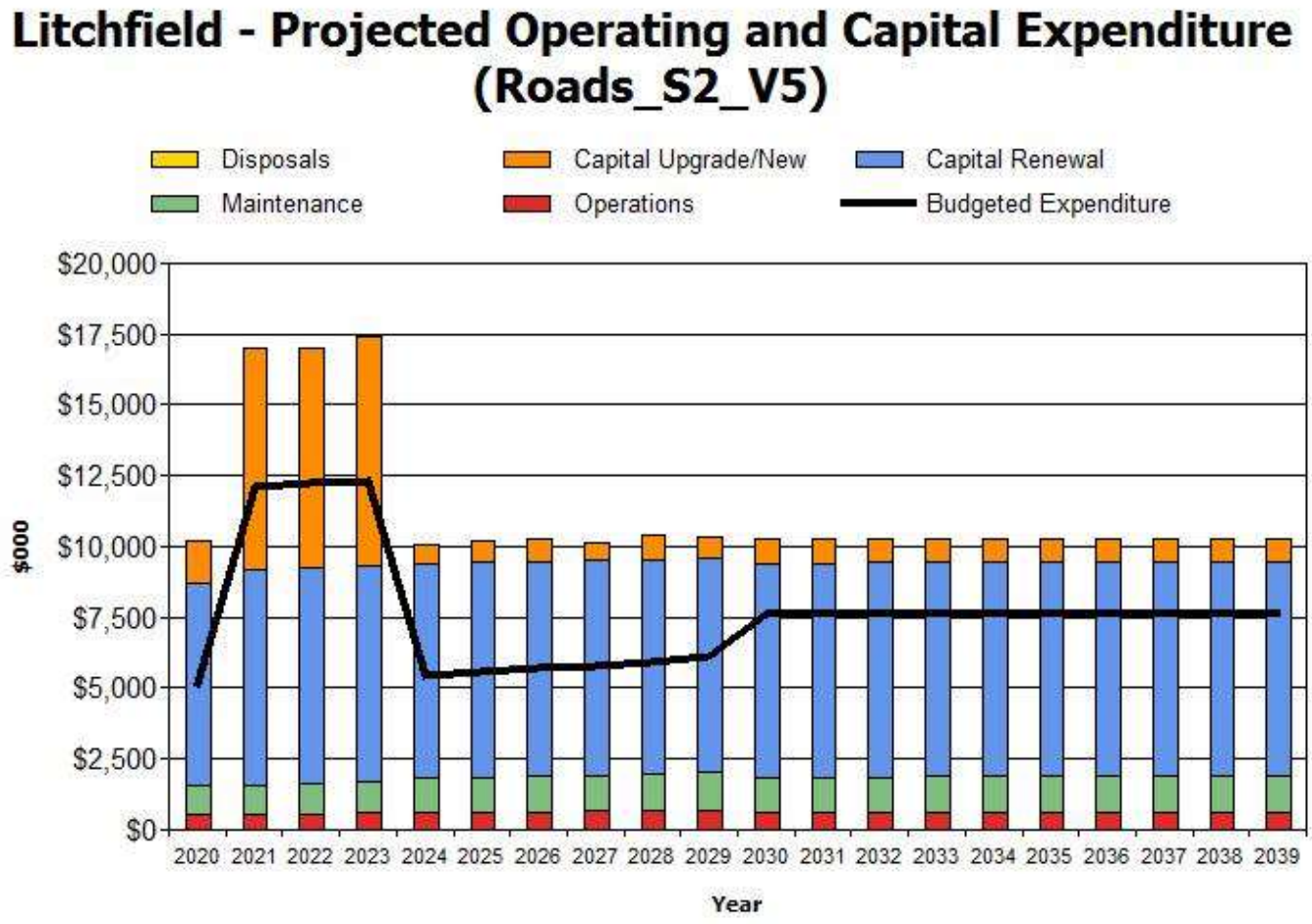


Figure Values are in 2018 dollars.

The funding shortfall identified in the above figure comes from the projected expenditure based on current Long-Term Financial Plan to maintain assets at the same level of service. It indicates that further work is required on reviewing service levels, revising the LTFP to eliminate funding gaps, where possible, and continue to focus on alternate funding models.

We will manage the gap by further developing and improving this asset management plan and supporting data to provide guidance on future service levels and resources required to provide these services, and review future services, service levels and costs with the community.

5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. No assets have been identified for possible decommissioning and disposal.

Figure 3 - Sealed road requiring renewal

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk Management – Principles and guidelines.

Risk management is defined in ISO 31000:2009 as: 'coordinated activities to direct and control with regard to risk'[7].

An assessment of risks[8] associated with service delivery from infrastructure assets has identified critical risks that will result in loss or reduction in service from infrastructure assets or a 'financial shock'. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

6.1 Critical Assets

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

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

Table 6.1 Critical Assets

Critical Asset(s)	Failure Mode	Impact
Gravel Roads	Wash out from rain	Increase maintenance cost
Sealed Roads Surface	Surface failure e.g. formation of pothole, rutting, crack etc.	Inspection frequency and maintenance cost
Sealed Roads pavement	Deep potholing	Maintenance cost
Line marking	Line marking faded, not visible at night	Increase night time inspection and line marking renewal program cost

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

[7] ISO 31000:2009, p 2

[8]

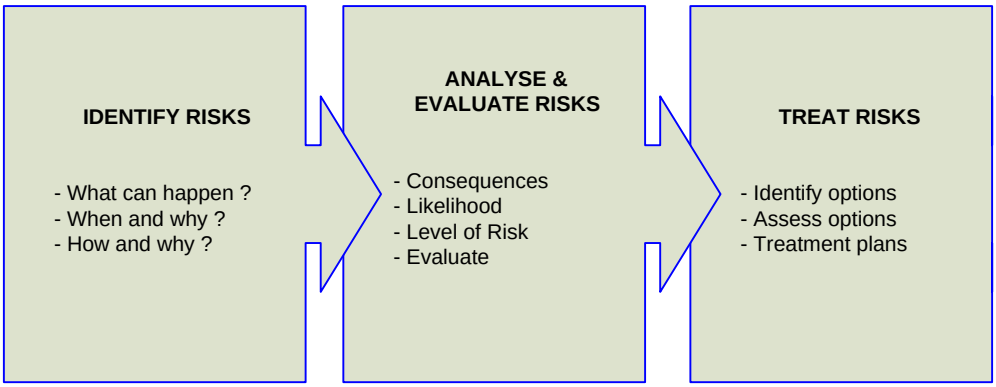
6.2 Risk Assessment

The risk management process used in this project is shown in Figure 4 below.

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

The process is based on the fundamentals of the ISO risk assessment standard ISO 31000:2009.

Figure 4: Risk Management Process – Abridged



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

An assessment of risks[9] associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

Critical risks are those assessed with 'Very High' (requiring immediate corrective action) and 'High' (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. The residual risk and treatment cost after the selected treatment plan is implemented is shown in Table 6.2. These risks and costs are reported to management and Council.

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Table 6.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Gravel Roads	Can wash out from rain and cyclone	H	Allocate budget for reactive maintenance	L	Maintenance cost
Sealed Roads	Surface failure e.g. formation of pothole, rutting, crack etc.	VH	Develop renewal and inspection plans	M	Maintenance cost
Sealed Roads	Pavement failure	H	Allocate budget for replacement	L	Replacement cost
Roads (Gravel and Sealed Roads)	Road closure due to catastrophic road pavement failure or impassability	H	Undertake site assessments to determine high risks sites.	M	Initiative cost

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

6.3 Service and Risk Trade-Offs

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

6.3.1 What we cannot do

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

- Sealing of all gravel roads in short/medium term
- Undertaking projects that do not have broad community benefit

6.3.2 Service trade-off

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

- Dissatisfaction from community with level of service
- Reduce asset use
- Decrease quality (using the asset beyond desired service level)
- Reduction in regular maintenance (grading, resealing), which will result in lower use and capacity

6.3.3 Risk trade-off

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

- Increase exposure to injury and liability
- Reactive and inefficient service delivery
- Higher reactive maintenance costs after extended period of use below service level
- Difficulty for delivery of services

These actions and expenditures are considered in the projected expenditures.

Figure 5 - Typical sealed rural road

7. FINANCIAL SUMMARY

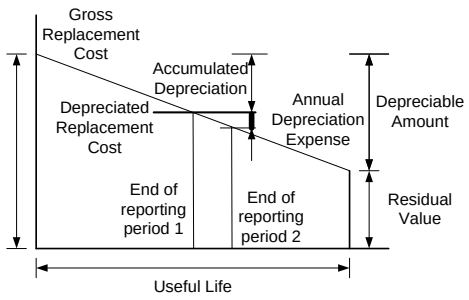
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset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

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets were last revalued in 2018. Assets are valued at fair value.

Gross Replacement Cost	$328,700,000
Depreciable Amount	$328,700,000
Depreciated Replacement Cost[10]	$199,431,000
Annual Average Asset Consumption	$14,141,000



Sustainability of service delivery

There are few key indicators for sustainability service delivery that have been considered in the analysis of the services provided by this asset category.

- Asset sustainability ratio >60%
    - Litchfield Council 30 June 2017 asset sustainability ratio 29%
- Achieve 65% community satisfaction rating

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 39%

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 10 years of the forecasting that we expect to have 39% of the funds required for the optimal renewal and replacement of assets.

Medium term – 10 year financial planning period

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

[10] Also reported as Written Down Value, Carrying or Net Book Value.
[11] AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

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

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is $9,354,000 on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is $4,670,000 on average per year giving a 10 year funding shortfall of $-4,684,000 per year. This indicates 50% of the projected expenditures needed to provide the services documented in the asset management plan. This excludes upgrade/new assets.

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

7.1.2 Projected expenditures for long term financial plan

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

Expenditure projections are in2018 real values.

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

Year	Operations ($000)	Maintenance ($000)	Projected Capital Renewal ($000)	Capital Upgrade/ New ($000)	Disposals ($000)
2020	$514	$1,030	$7,146	$1,483	$0
2021	$529	$1,051	$7,635	$7,785	$0
2022	$556	$1,099	$7,627	$7,695	$0
2023	$582	$1,148	$7,619	$8,075	$0
2024	$610	$1,197	$7,611	$620	$0
2025	$624	$1,222	$7,603	$785	$0
2026	$640	$1,248	$7,595	$790	$0
2027	$655	$1,274	$7,587	$605	$0
2028	$671	$1,301	$7,579	$850	$0
2029	$688	$1,328	$7,571	$750	$0

7.2 Funding Strategy

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

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

At this point in time the financial asset reserve holds funding for renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with this plan. It is expected that this will only generate small amounts of funding for the renewal of assets and not address the overall shortfall of funding.

Council can respond to this shortfall with two main actions:

- allocation of more budget to reduce shortfall, and
- utilisation of grant opportunities for asset expenditures.

7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are likely to be acquired to the asset stock from subdivision and acquisition of new assets. Upgrading assets increases asset values, which will occur through the sealing of unsealed roads.

Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts.

7.4 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this asset management plan are in below:

- Data was used from Council asset register, updated following the 2018 revaluation
- No significant changes are considered in future demand
- No significant or unexpected asset failure is considered
- Renewal cost is calculated based on revaluation replacement cost
- No significant change to proposed service provision
- No significant change is expected to usage patterns

7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AMP are based on best available data from Council asset register. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is considered to be reliable due to following reasons below:

- All data is captured from Council asset register,
- The long-term financial budget is used to project future expenditures,
- The replacement cost of assets is used from external consultant report.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices[12]

8.1.1 Accounting and financial data sources

Council has been using Civica Authority and Exponare Enquiry systems for accounting, financial and asset management data.

8.2 Improvement Plan

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

DIO – Director Infrastructure & Operations

FM – Finance Manager

MIA – Manager Infrastructure & Assets

AMO – Asset Management Officer

Table 8.1: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1.	Analyse funding sources for roads and identify opportunities to ensure sustainability of funding sources	DIO	In-house	Feb 2020
2.	Develop levels of service	DIO	External/ Consultant	Jun 2021
3.	Continue monitoring roads operation and maintenance budget and actual expenditures	FM	In-house	Ongoing
4.	Continue identifying works efficiencies to free up funding for asset renewal and improvement	MIA	In-house	Ongoing
5.	Consider ongoing increment in annual funding to reduce gap in LTFP	FM	In-house	May 2020
6.	Continue development and improvement of data capture	AMO	In-house	Ongoing
7.	Continue enhanced AM awareness through Asset Management Working Group Meeting	AMO	In-house	Ongoing
8.	Review the data of assets acquisition/renewal/upgrade	AMO	In-house	Dec 2020

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

Task No	Task	Responsibility	Resources Required	Timeline
9.	Refine 10-year capital programs including private roads cost	MIA	In-house	Dec 2020
10.	Prioritise funding of renewal programs over upgrading and new projects	MIA	In-house	Ongoing
11.	Improve road maintenance regime	MIA	In-house	Dec 2020
12.	Asset revaluation	FM	External/Consultant	Jun 2021

8.3 Monitoring and Review Procedures

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

The AMP will be updated following asset revaluations, approximately every three years, to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the long term financial plan.

8.4 Performance Measures

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of >60 %.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- Litchfield Council Municipal Plan 2018-2019'
- Litchfield Council 'Strategic Plan 2018-2022'.
- Litchfield Council 'Long Term Financial Plan 2017/18-2026/27'.

10. APPENDICES

Appendix A Projected 10 year Capital Renewal Works Program

Appendix B Projected 10 year Capital Pavement Replacement Program

Appendix C Projected 10 year Capital Upgrade/New Works Program

Appendix D LTFP Budgeted Expenditures Accommodated in AMP

Appendix A Projected 10-year Capital Renewal Works Program

Projected Capital Renewal Program for surface renewal of sealed roads as per priority list is shown below. All programs are subject to change. The details of the first 3 years has been included, with future years summarised.

Year	Description	Estimate ($)
2019/20	Hunter Road Surface 001	$26,843
2019/20	Carambola Road Surface 001	$37,448
2019/20	Barker Road Surface 001	$111,552
2019/20	Beaumont Road Surface 001	$38,059
2019/20	Daniel Circuit Surface 001	$193,471
2019/20	Lauder Road Surface 001	$35,322
2019/20	Lillkirk Road Surface 001	$11,094
2019/20	Macleod Road Surface 001	$102,060
2019/20	Leonino Road Surface 005 & 007	$492,187
2019/20	Linane Road Surface 001	$37,668
2019/20	Freds Pass Road Surface 001	$25,173
2019/20	Girraween Road Surface 004 & 007	$65,949
2019/20	Forest Drive Surface 001	$90,920
2019/20	Lorikeet Court Surface 001	$13,329
2019/20	Mckinlay Road Surface 001	$43,848
2019/20	Meerwah Road Surface 001	$11,062
	Sub-total (2019/2020)	**$1,335,987**
2020/21	Doris Road Surface 001	$50,930
2020/21	Blyth Road Surface 001 & 004	$110,383
2020/21	Glendower Road Surface 001	$17,058
2020/21	Lagoon Road Surface 001 & 002	$141,184
2020/21	Middle Arm Road Surface 003	$217,578
2020/21	Trenow Road Surface 003	$4,873
2020/21	Ganley Court Surface 001	$18,093
2020/21	Sunbird Court Surface 001	$7,037
2020/21	Whistler Court Surface 001	$13,513
2020/21	Ninnis Court Surface 001	$32,022

Year	Description	Estimate ($)
2020/21	Belgrave Road Surface 001	$27,998
2020/21	Edwin Road Surface 001	$52,649
2020/21	Horsnell Road Surface 003	$3,416
2020/21	Shewring Road Surface 001 & 002	$80,537
2020/21	Durian Road Surface 001	$57,627
2020/21	Doxas Road Surface 003, 005 & 006	$87,977
2020/21	Dougall Court Surface 001	$29,863
2020/21	Southport Road Surface 002	$29,033
	Sub-total (2020/2021)	**$981,769**
2021/22	Wheewall Road Surface 002	$72,738
2021/22	Mcminns Drive Surface 001	$113,047
2021/22	Bees Creek Road Surface 001 & 009	$64,747
2021/22	Carabao Road Surface 001	$17,634
2021/22	Dreamtime Drive Surface 001	$58,539
2021/22	Elizabeth Valley Road Surface 001, 002 & 003	$307,796
2021/22	Farrar Road Surface 001	$32,023
2021/22	Lapwing Road Surface 001	$15,860
2021/22	Orion Way Surface 001	$25,566
2021/22	Therese Road Surface 001	$20,688
2021/22	Zill Road Surface 001	$13,984
2021/22	Brewerton Road Surface 001	$33,301
	Sub-total (2021/2022)	**$870,741**
2022/2023	Roads Resealing for 2022/23	**$930,038**
2023/2024	Roads Resealing for 2023/24	**$911,307**
2024/2025	Road Resealing for 2024/25	**$971,173**
2025/2026	Road Resealing for 2025/26	**$909,350**
2026/2027	Road Resealing for 2026/27	**$921,205**
2027/2028	Road Resealing for 2027/2028	**$918,446**
2028/2029	Road Resealing for 2028/2029	**$924,562**
	Total	**$9,674,578**

Appendix B Projected 10-year Capital Pavement Replacement Program

Projected Capital Renewal Program for pavement is shown below. All programs are subject to change. An average budget allocation has been used for years 2 to 10 with the list of roads providing the current order of priority . Detailed pavement analysis and design will improve the final required road section and costing.

Year	Description	Estimate ($)
2019/20	Whitewood Road & Stevens Road	$820,000
2020/21	Virginia Road	$1,317,000
2021/22	Townend Road	$1,317,000
2022/23	Hopewell Road	$1,317,000
2023/24	Hopewell Road	$1,317,000
2024/25	Duddell Road	$1,317,000
2025/26	Elizabeth Valley Road	$1,317,000
2026/27	Pioneer Drive	$1,317,000
2027/28	Pioneer Drive and Spencely Road	$1,317,000
2028/29	Power Road	$1,317,000
	Total (10 Year)	**$12,673,000**

Appendix C Projected Upgrade/Exp/New 10-year Capital Works Program

Projected Capital Upgrade/New Asset Program for all roads is shown below. All programs are subject to change. This includes sealing unsealed roads, the Strategic Mango Roads Project and road safety upgrades, which includes intersection upgrades, shoulder widening and other road safety infrastructure.

Year	Description	Estimate
2019/20	Whitestone Road Surface 002	$400,000
2019/20	Road Safety Upgrades	$1,083,000
2019/2020	**Total**	**$1,483,000**

Year	Description	Estimate
2020/21	Guys Creek Road Surface 002	$485,000
2020/21	Mango Roads Project	$7,000,000
2020/21	Road Safety Upgrades	$300,000
2020/2021	**Total**	**$7,785,000**

Year	Description	Estimate
2021/22	Aldridge Street Surface 001	$170,000
2021/22	Musgrave Street Surface 001, 002, 003, 004	$165,000
2021/22	Ringwood Street Surface 001	$60,000
2021/22	Mango Roads Project	$7,000,000
2021/22	Road Safety Upgrades	$300,000
2021/2022	**Total**	**$7,695,000**

Year	Description	Estimate
2022/23	Letchford Road Surface 001, 005, 006 & 007	$775,000
2022/23	Mango Roads Project	$7,000,000
2022/23	Road Safety Upgrades	$300,000
2022/2023	**Total**	**$8,075,000**

Year	Description	Estimate
2023/24	Middle Arm Road Surface 001	$320,000
2023/24	Road Safety Upgrades	$300,000
2023/2024	**Total**	**$620,000**

Year	Description	Estimate
2024/25	Meade Road Surface 005	$260,000
2024/25	Parkin Road Surface 002, 004	$225,000
2024/25	Road Safety Upgrades	$300,000
2024/2025	**Total**	**$785,000**

Year	Description	Estimate
2025/26	Spencer Road Surface 002, 006, 008	$490,000
2025/26	Road Safety Upgrades	$300,000
2025/2026	**Total**	**$790,000**

Year	Description	Estimate
2026/27	Cherry Street Surface 001	$70,000
2026/27	Barrow Street Surface 001, 002	$130,000
2026/27	Ewart Road Surface 002, 003	$105,000
2026/27	Road Safety Upgrades	$300,000
2026/27	**Total**	**$605,000**

Year	Description	Estimate
2027/28	Lawton Road Surface 001	$220,000
2027/28	Keleson Road Surface 002	$330,000
2027/28	Road Safety Upgrades	$300,000
2027/2028	**Total**	**$850,000**

Year	Description	Estimate
2028/29	Stockwell Road Surface 001	$450,000
2028/29	Road Safety Upgrades	$300,000
2028/2029	**Total**	**$750,000**

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Litchfield**

Roads_S2_V5 **Asset Management Plan**

First year of expenditure projections **2020** (financial yr ending)

Roads

Asset values at start of planning period

			Calc CRC from Asset Register
Current replacement cost	$328,698	(000)	$0 (000)
Depreciable amount	$328,698	(000)	This is a check for you.
Depreciated replacement cost	$199,431	(000)	
Annual depreciation expense	$14,141	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	0.17%
Additional maintenance	0.34%
Additional depreciation	4.30%
Planned renewal budget (information only)	

You may use these values calculated from your data or overwrite the links.

Planned Expenditures from LTFP

20 Year Expenditure Projections Note: Enter all values in current **2020** values

Financial year ending	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)										
Operations										
Operations **budget**	$514	$526	$539	$552	$565	$578	$592	$606	$620	$635
Management **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
AM systems **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total operations	$514	$526	$539	$552	$565	$578	$592	$606	$620	$635
Maintenance										
Reactive maintenance **budget**	$1,030	$1,045	$1,066	$1,088	$1,109	$1,132	$1,154	$1,177	$1,201	$1,225
Planned maintenance **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Specific maintenance items **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total maintenance	$1,030	$1,045	$1,066	$1,088	$1,109	$1,132	$1,154	$1,177	$1,201	$1,225
Capital										
Planned renewal **budget**	$2,120	$2,747	$2,819	$2,894	$2,972	$3,055	$3,142	$3,233	$3,329	$3,430
Planned upgrade/new **budget**	$1,474	$7,800	$7,800	$7,800	$800	$800	$800	$800	$800	$800
Non-growth contributed asset value	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Asset Disposals										
Est Cost to dispose of assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Carrying value (DRC) of disposed assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan)										
Additional Expenditure Outlays required and not included above	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000	2029 $000
Operations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Renewal	to be incorporated into Forms 2 & 2.1 (where Method 1 is used) OR Form 2B Defect Repairs (where Method 2 or 3 is used)									
Capital Upgrade	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
User Comments #2										

Forecasts for Capital Renewal using Methods 2 & 3 (Form 2A & 2B) & Capital Upgrade (Form 2C)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Forecast Capital Renewal from Forms 2A & 2B	$7,146	$7,635	$7,627	$7,619	$7,611	$7,603	$7,595	$7,587	$7,579	$7,571
Forecast Capital Upgrade from Form 2C	$1,483	$7,785	$7,695	$8,075	$620	$785	$790	$605	$850	$750