ATTACHMENT
OPEN

Risk Management & Audit Committee Meeting

23 March 2018

Item xx
Outstanding Audit Issue 145 – Asset Management Plans

ATTACHMENT A

Transport

Roads, Kerb & Gutter, Carparks

Asset Management Plan

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Review Period

Once every 3 years, or as required following a revaluation and/or change requiring review.

Asset Management Plan Responsibilities

Key Stakeholder	Role in Asset Management Plan
Elected Members	Allocate resources to meet the organisation's objectives in providing services while managing risks, Ensure organisation is financial sustainable.
Executive Leadership Team	Executive management endorsement
Asset Management Team/Manager	Review of Asset Management Plan Development and updating of replacement programs
Asset Management Steering Group	Endorsement of Asset Management Plan
Financial Services	Financial data input
City Operations	Strategic and operational unit input Undertaking asset maintenance and replacement programs
Asset custodian	Asset data, service level, asset lifecycle inputs

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1. EXECUTIVE SUMMARY

Context

Council provides a road network to enable safe and efficient vehicle transport throughout the municipality. The assets within the Road Transport asset class (used in this Plan) include;

- Roads - 452km
  - Earthworks
  - Pavement
  - Surface
- Kerb and Gutter – 884km
- Driveways – 20,570
- Traffic Control
  - Roundabouts - 52
  - Traffic Signals - 19
- Carparks – 7500 square metres

These infrastructure assets have a replacement value of **$**491.9M (current as of June 2014).

What does it Cost?

This asset management plan has been developed using 2 analysis scenarios with Scenario 1 being presented within this Asset Management Plan. Scenario 1 (S1) uses asset valuation data to predict renewals based on end of life projections. Scenario 3 (S3) is based on councils current programmed asset renewals. Note that Scenario 2 is not utilised as it is not relevant for this asset class. Using the scenarios, an overview of the cost of providing the assets can be determined, of which Scenario 1 is used. The 10 year asset management financial indicator is 65% for transport assets.

Project outlays required to provide the services covered by this Asset Management Plan (AMP) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period are summarised below.

Transport – Summary	**($000)**
10 year total cost	205,598
10 year total budget	133,819
10 year average cost	20,560
10 year average budget	13,382
10 year average shortfall	-7,178

What we will do

Council plans to operate and maintain the transport network so that it meets the needs of the community.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Major weather events
- Unknown non-visual asset conditions
- Level of Service expectations

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

- Optimising condition surveys
- Developing levels of service

Confidence Levels

This AMP is based on medium level of confidence information.

The Next Steps

The actions resulting from this asset management plan are:

- Develop Levels of Service
- Identify asset hierarchy and critical assets

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the City of Darwin community's road needs. These assets include roads and associated infrastructure, throughout the community area that enable people to use road transport to access services.

What is an Asset Management Plan?

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

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Most of the Council's road network was constructed by developers and the government, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are now approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

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

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,
5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that roads services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For roads, the service level reduction may include lower quality surfaces, increased pavement defects and longer rectification timeframes.

What can we do?

We can develop options, costs and priorities for future roads services, consult with the community to plan future services to match the community service needs with ability to pay for services and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

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

The asset management plan follows the format for AMPs recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The asset management plan is to be read with the organisation's Asset Management Policy, and Asset Management Strategy.

This infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide access to services in the community.

Table 2.1: Assets covered by this Plan

Asset category	Measure	Replacement Value ($000's)
Sealed Roads	442km	$360,252
Kerbs	884km	$71,983
Carparks	746,070 sq.m	$24,186
Driveways	88km	$29,970
Traffic signals	19	$4,759
Roundabouts	52	$730
TOTAL	**n/a**	**$491,880**

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Table 2.1.1: Key Stakeholders in the AMP

Key Stakeholder	Role in Asset Management Plan
Elected Members	Represent needs of community/shareholders Allocate resources to meet the organisation's objectives in providing services while managing risks Ensure organisation is financial sustainable
Risk Management and Audit Committee	Independent assurance and assistance to Council on Council's risk, control and compliane frameworks, and external accountability.
Executive Leadership Team	Executive management endorsement
Asset Management Steering Group	Endorsement of Asset Management Plan and associated procedures Development of long-term asset management strategies and related policies in accordance with legislation and good management practices Coordination of financial, operational and strategic inputs

Our organisational structure for service delivery of infrastructure assets is available on our website at www.darwin.nt.gov.au

[1] IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

2.2 Goals and Objectives of Asset Management

City of Darwin as an organisation provides services to its community, and many services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others.

Our goal in managing infrastructure assets is to meet the community's desired level of service (in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

2.3 Plan Framework

Key elements of the plan are

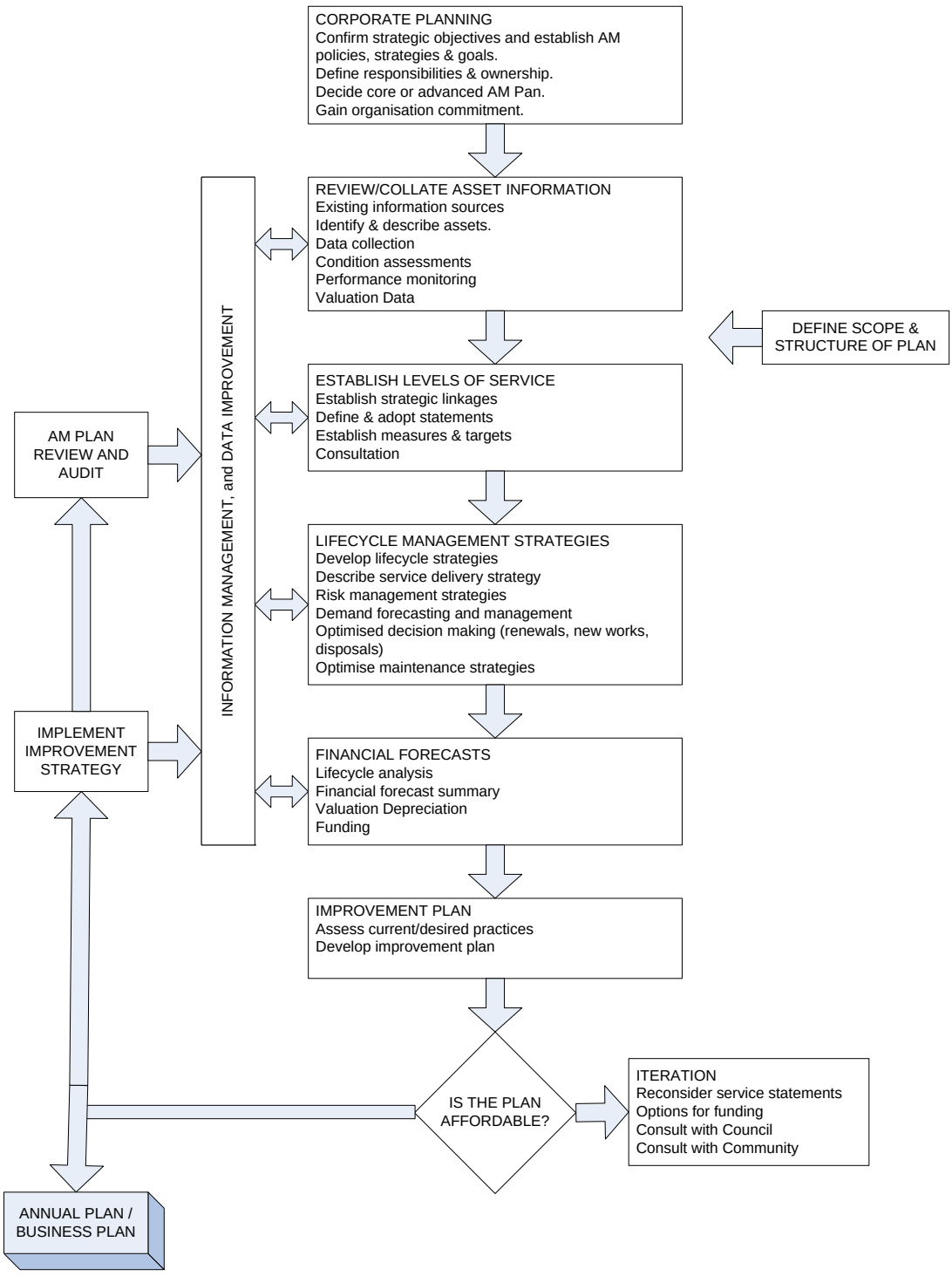
- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives,
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

[2] Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

2.5 Community Consultation

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

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council undertakes an annual Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent community satisfaction survey (2015) reported satisfaction levels for the following services relating to transport infrastructure.

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level	Target
Road Maintenance	TBC	>4

A scale of 1-5 is used, from 1 being not satisfied and 5 being very satisfied.

3.2 Strategic and Corporate Goals

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

Our vision is:

"A tropical, liveable city that creates opportunity and choice for our community"

Our mission is:

"Council will work with the community to maintain and promote the City of Darwin as the tropical capital of the Northern Territory, offering opportunities and a vibrant lifestyle for our residents and visitors"

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

Table 3.2: Organisational Goals relevant to this Plan

Goal	Outcome	Strategy Relevant to this Plan
Strategic Goal 2:	2.1 Improved access and	2.1.3 Manage the road network to meet community

[3] IPWEA, 2011, IIMM.

Vibrant, flexible and tropical lifestyle	connectivity	needs
	2.4 Economic growth supported	2.4.1 Deliver, advocate for, and partner in infrastructure and services that support Darwin's economic growth
Strategic Goal 2: Effective and responsible governance	5.5 Responsible financial and asset management	5.5.1 Manage Council's business based on a sustainable financial and asset management strategy

The organisation will exercise its duty of care to ensure public safety is accordance with the infrastructure risk management plan prepared in conjunction with this AMP. Management of infrastructure risks is covered in Section 5.2

3.3 Legislative Requirements

The organisation has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act (NT) 2008	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health and Safety (National uniform legislation) Act	Sets out the rules and responsibilities to secure the health, safety and welfare of persons at work
All relevant Australian Standards and Codes of Practice	National and international guidance and legislation relating to design, installation, maintenance, approvals, testing to be applied to assets as required.
Environmental Assessment Act	Outlines legislative requirements in relation to the assessment of the environmental effects of development proposals and for the protection of the environment
Environmental Offences and Penalties Act 1996	Outlines offences local governments local governments (and other parties) may be liable for where their acts and omissions maybe detrimental to the protection of the environment.
Land Title Act & Regulations	Outlines legislative issues local governments need to consider in relation to land ownership, easements and other purposes that may impact on various assets, such as roads, stormwater and buildings that the local government has under it care and control.
Lands Acquisition Act & Regulations	Outlines legislative issues local governments need to consider in relation to land they own that could be compulsorily acquired by the Northern Territory for the purpose of the provision of essential services and facilities being power (including gas), water, sewerage, road or communication services or facilities to or across the prescribed land, or access to any of them.
National Trust (Northern Territory) Act	Outlines legislative issues local governments need to consider in relation to the impacts that the National Trust (Northern Territory) activities could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Northern Territory Aboriginal Sacred Sites Act	Outlines legislative issues local governments need to consider in relation to the impacts that the Aboriginal Sacred Sites could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.

Planning Act & Regulations	Outlines legislative issues local governments need to consider in relation to providing for appropriate and orderly planning and control of the use and development of land within the municipality

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AMP. Management of risks is discussed in Section 5.2.

3.4 Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in asset management planning are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

Technical Levels of Service support the community service levels as operational and technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures can be linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

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

Community and technical levels of service will be developed for future asset management plans.

4. FUTURE DEMAND

4.1 Demand Drivers

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

[4] IPWEA, 2011, IIMM, p 2.22

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population	83,465 Estimated residential population (2016)	1.5% annual growth per annum (over 10 years)	Little or no impact
Development	Slowing economy	Moderate growth over medium term	Little or no impact
Technological	N/A	No major technology advances anticipated	Little or no impact
Legislative change	Inclusion of Area Plans in Planning Scheme	Change of use and increasing density	Likely impact on functional use of existing assets and increasing demand as density increases
Climate change	No impact	Unlikely to affect transport assets in medium term	Little or no impact
Community expectations	N/A	Ongoing increase in levels of service expectations	Potential requirement for higher quality, improved access and capacity.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[5].

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

Table 4.4: Demand Management Plan Summary

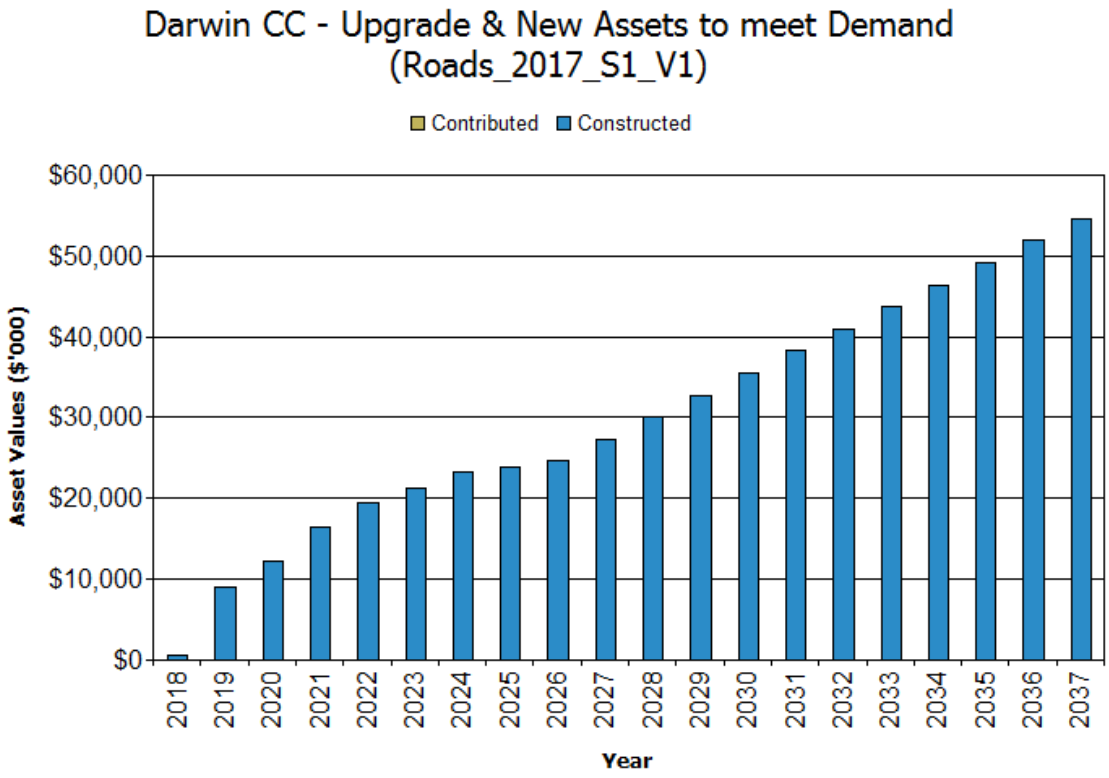
Demand Driver	Impact on Services	Demand Management Plan
Customer expectations	Potential requirement for higher quality, improved access and capacity.	Whole of life cost assessment of potential new assets and impacts on operational and maintenance and consultation with community to ensure informed decision making.
Area Plans (NT Planning Scheme)	Changing and increasing demand on services.	Provide input into area plan developments, forecast potential needs

[5] IPWEA, 2011, IIMM, Table 3.4.1, p 3|58.

4.5 Asset Programs to meet Demand

The new assets required to meet growth will be acquired free of cost from land developments or constructed by the organisation. New assets constructed/acquired by the organisation are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarised in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand



Acquiring these new assets will commit the organisation to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the organisation 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

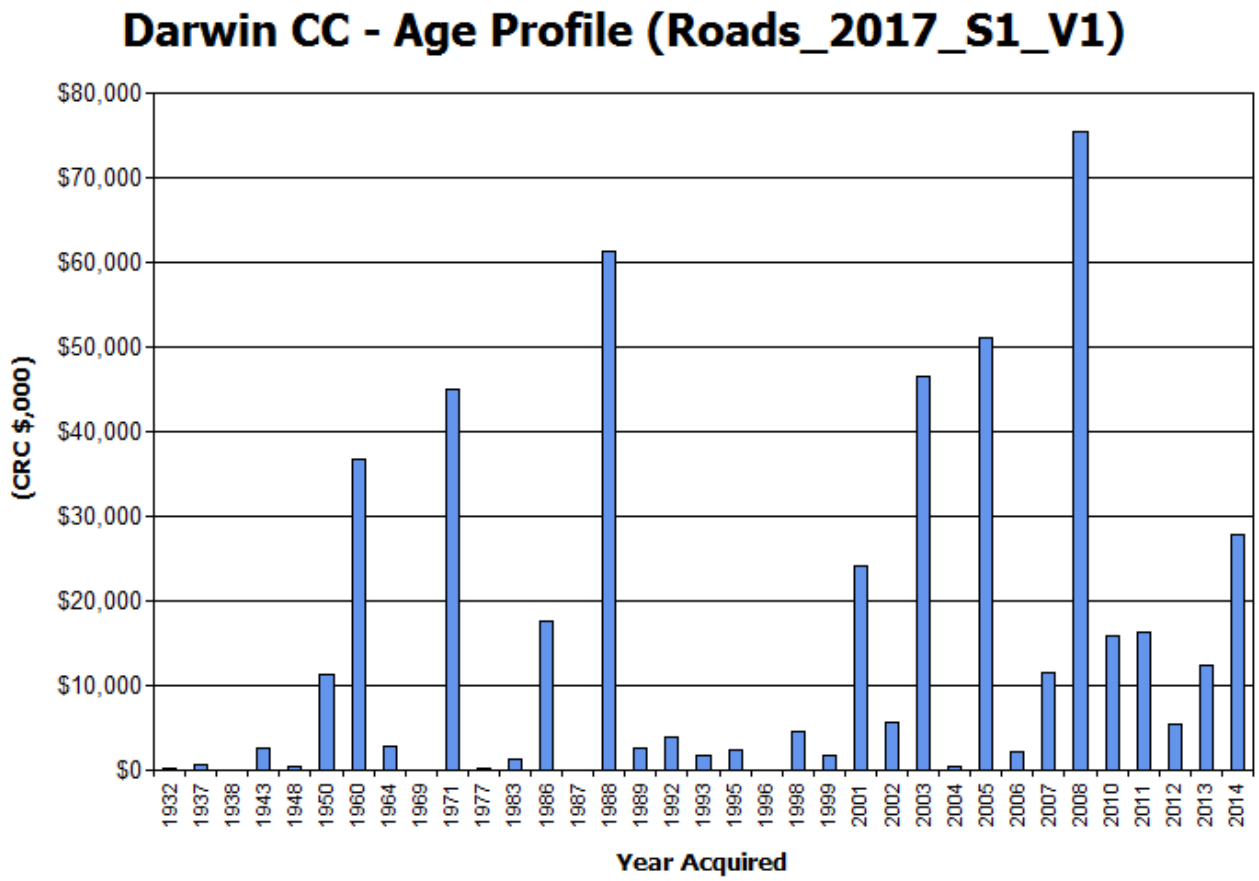
5.1.1 Physical parameters

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

The roads asset class includes sealed roads, kerbs, driveways, carparks, roundabouts and traffic signals.

The age profile of the assets include in this AMP is shown in Figure 2.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

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

5.1.3 Asset condition

Condition is monitored through a regular inspection program. Transport asset condition is recorded every four years, with additional inspections occurring as needed.

The condition profile of our assets is not available for this Asset Management Plan. Condition is measured using a 1 – 5 grading system[6] as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

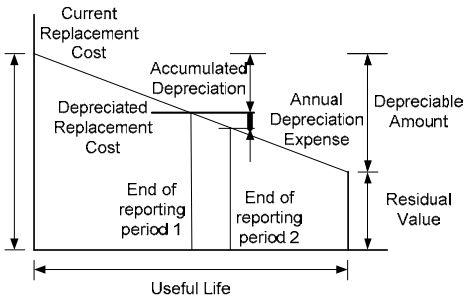
Condition Grading	Description of Condition
1	**Very Good**: only planned maintenance required
2	**Good**: minor maintenance required plus planned maintenance
3	**Fair**: significant maintenance required
4	**Poor**: significant renewal/rehabilitation required
5	**Very Poor**: physically unsound and/or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

5.1.4 Asset valuations

[6] IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.

Assets were last revalued at 2014 using a fair value methodology. The valuations have been adjusted using the following escalation rates to estimate the 2017 values:

2014/15 – 4.4%
2015/16 – 1.9%
2016/17 – 0.5%



The adjusted revaluation are as follows (000's):

Current Replacement Cost	$491,880
Depreciable Amount	$491,880
Depreciated Replacement Cost[7]	$346,730
Annual Depreciation Expense	$18,757

Useful lives were reviewed in June 2014 as part of the revaluation of assets.

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	3.8%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	0.7%

In 2018 the organisation plans to renew assets at 18.4% of the rate they are being consumed and will be increasing its asset stock by 0.1% in the year.

5.1.5 Historical Data

To be included in future revisions of this Asset Management Plan.

5.2 Infrastructure Risk Management Plan

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' to the organisation. 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.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management, the Risk Management and Audit Committee, and Council.

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *
Roads Asset Management	**Failure to develop, implement and maintain a corporate asset register**	VH	Asset Management Steering Group in place and continues to	H

[7] Also reported as Written Down Current Replacement Cost (WDCRC).
[8] Infrastructure Department Operational Risk Assessment (Rev 5) June 2016

	- Inconsistent and fragmented approach to the collection and storage of asset information - Lack of data available to monitor the condition of assets - Inability to plan long and short term asset management programs - Inability to adequately budget for asset management - Inability to monitor and assess ratepayer and public demands for levels of service - Inability to monitor and assess actual levels of service delivery		meet quarterly Implementation of the corporate asset register is underway and will provide a central location for data storage	
Roads Asset Management	**Failure to develop and promote asset management policies, standards and procedures** - Failure to ensure a consistent approach to asset management is applied across Council - Loss of corporate asset knowledge - Failure to ensure asset management is undertaken in accordance with Australian and International Standards	VH	Asset Management Steering Group in place and continues to meet quarterly Development of procedures undertaken for data collection and asset management Cyclic reviews undertaken of policies, standards and procedures Asset management roles and responsibilities allocated to specific individuals across the organisation Implementation of asset sustainability review recommendations will ensure policies, standards and procedures are developed and monitored	H
Roads Design	**Failure to process annual submission for LATM and Black Spot funding** - Funding not secured for critical projects - Essential improvements to infrastructure not able to be undertaken in a timely manner - may lead to poor outcomes and hence result in a negative perception of Council by the general public	VH	dedicated officer responsible for applications for funding annual funding timetable developed notification of funding availability from Federal Government control self-assessment in place	H
Roads Planning	**Failure to ensure a coordinated approach to development processes and long term planning** - NTG can make long term decisions re development planning without consultation - Projects imposed or inherited without being able to address budget implications - Additional costs incurred by City of Darwin - City of Darwin unable to effectively	H	City of Darwin has a dedicated resource through it Strategic Town Planner City of Darwin is represented on COAG and supports planning initiatives through that forum City of Darwin has embraced NTG Territory 2030 initiatives in its strategic plans	H

	plan for long term infrastructure development - DCA has overall approval powers for development – Council has advisory role only			
Roads Planning	**Failure to effectively administer development contribution plans** - Inadequate funding contribution by private developers to undertake ultimate upgrading works required - greater financial impost on the general public to undertake these works - higher future rate rises than would otherwise be required - negative media reporting	VH	Currently undertaking a process to capture all development applications that have not been subject to CBD stormwater contribution plans Control self-assessment in place	H

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

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, eg cleansing, street sweeping, grass mowing and street lighting.

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.

5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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, eg road patching but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

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

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. A hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery. An asset hierarchy will be developed for future Asset Management Plans.

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

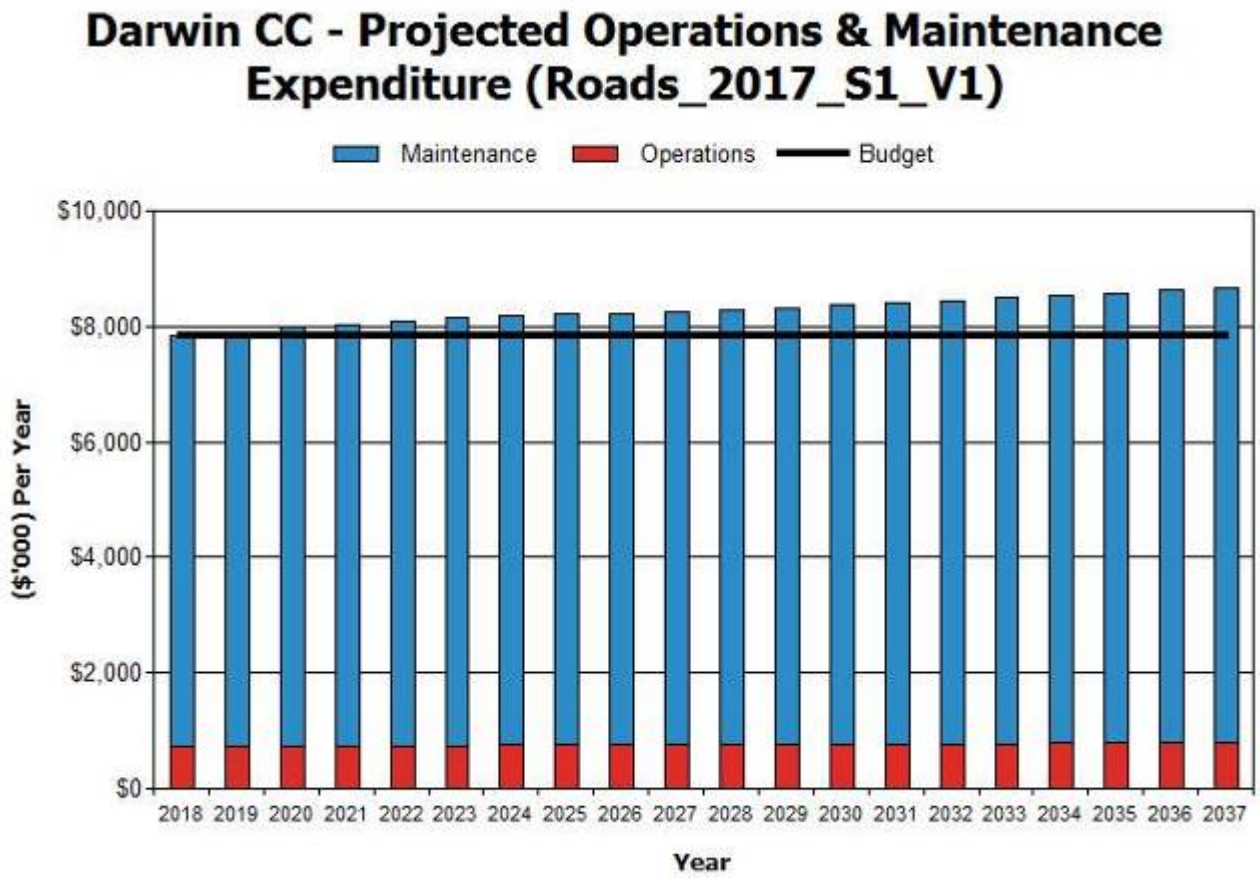
Standards and specifications

Maintenance work is carried out in accordance with relevant Australian Standards, Austroads Guidelines and Northern Territory specifications.

5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (ie real values).

Figure 4: Projected Operations and Maintenance Expenditure



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

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

5.4 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 or lesser required 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

Assets requiring renewal/replacement are identified from Council's Asset Register data (used for 2014 valuations) to project the renewal costs using acquisition year and useful life to determine the renewal year.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1.

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful life (years)
Formation (Roads, carparks)	120
Pavement (Roads, carparks)	86
Surface (Roads, carparks)	Asphalt (25), brick (18), chipseal (18), fibredec (20), gravel (15), liquid road (18)
Road kerbs	80

Driveway kerbs	Asphalt (30), chipseal (30), concrete (50), pavers (20), stone (30), tiles (15), XAG (50)
Traffic Signals	35
Roundabouts	50

5.4.2 Renewal and Replacement Strategies

The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, and
    - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

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, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).[9]

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 a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- 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
- Where replacement with modern equivalent assets would yield material savings.[10]

Standards and specifications

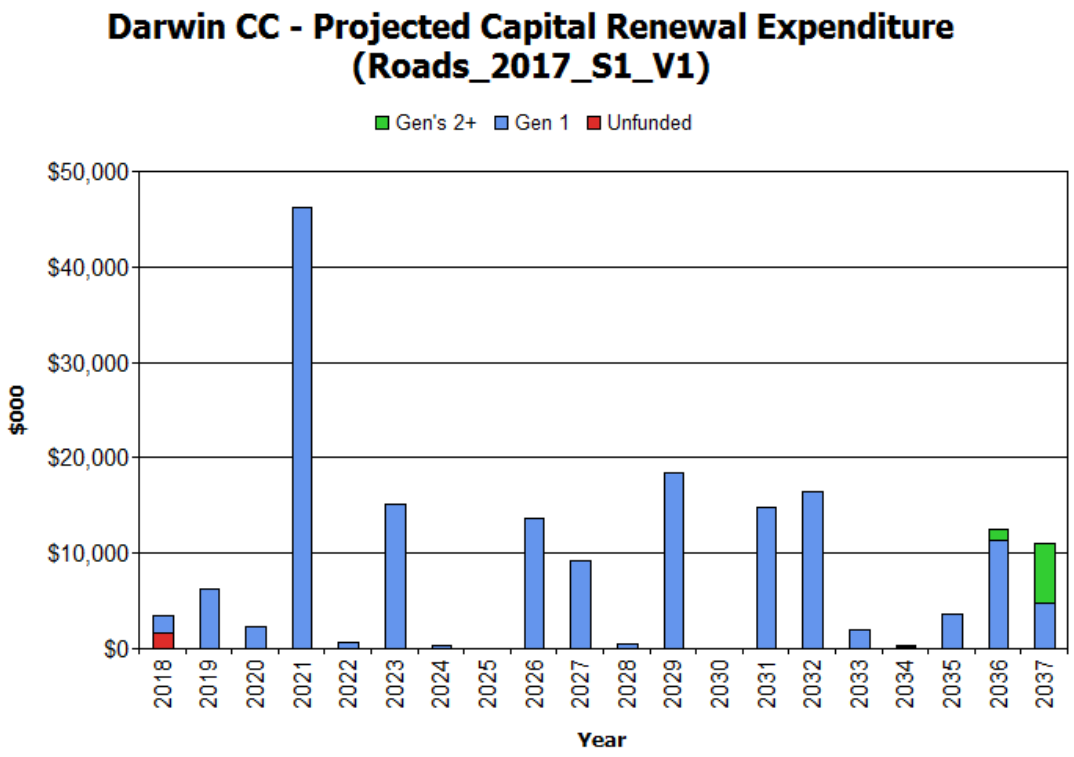
Renewal and replacement work is carried out in accordance with relevant Australian Standards, Austroads Guidelines and Northern Territory specifications.

5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.
[10] Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.

Fig 5: Projected Capital Renewal and Replacement Expenditure



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

Renewals and replacement expenditure in the organisation's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

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 organisation from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as Council and community requests, proposals identified by strategic plans or partnerships with other organisations, and are incorporated into Council's long term financial plans.

5.5.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,
    - the project objectives to rectify the deficiency including value management for major projects,

- o the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
- o management of risks associated with alternative options,
- o and evaluate the options against evaluation criteria adopted by Council, and
- o select the best option to be included in capital upgrade/new programs,

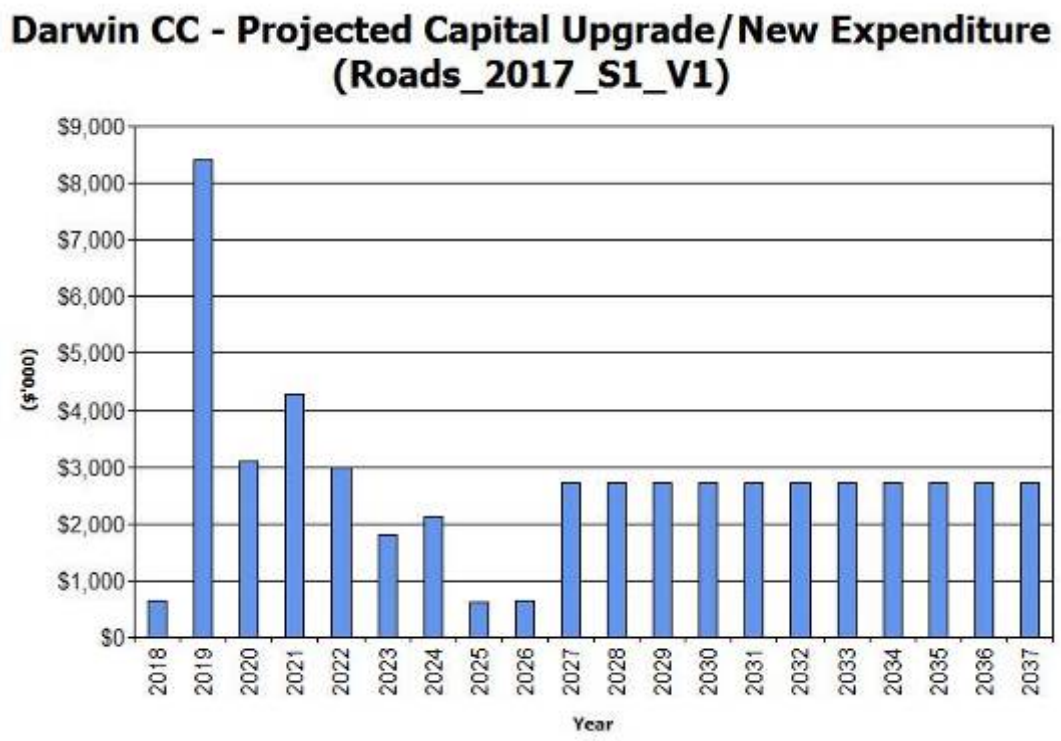
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Fig 6. The projected upgrade/new capital works program is shown in Appendix C and is based on the 2017 long term capital works plan. All amounts are shown in real values.

Fig 6: Projected Capital Upgrade/New Asset Expenditure



5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council's long term financial plan.

No transport assets are identified for disposal.

5.7 Service Consequences and Risks

The organisation has prioritised decisions made in adopting this AMP to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AMPs.

Scenario 1 - What we would like to do based on asset register data

Scenario 2 – What we should do with existing budgets and identifying level of service and risk consequences (ie what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AMP.

Scenario 3 – What we can do and be financially sustainable with AMPs matching long-term financial plans.

The development of scenario 1 and scenario 2 AMPs provides the tools for discussion on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

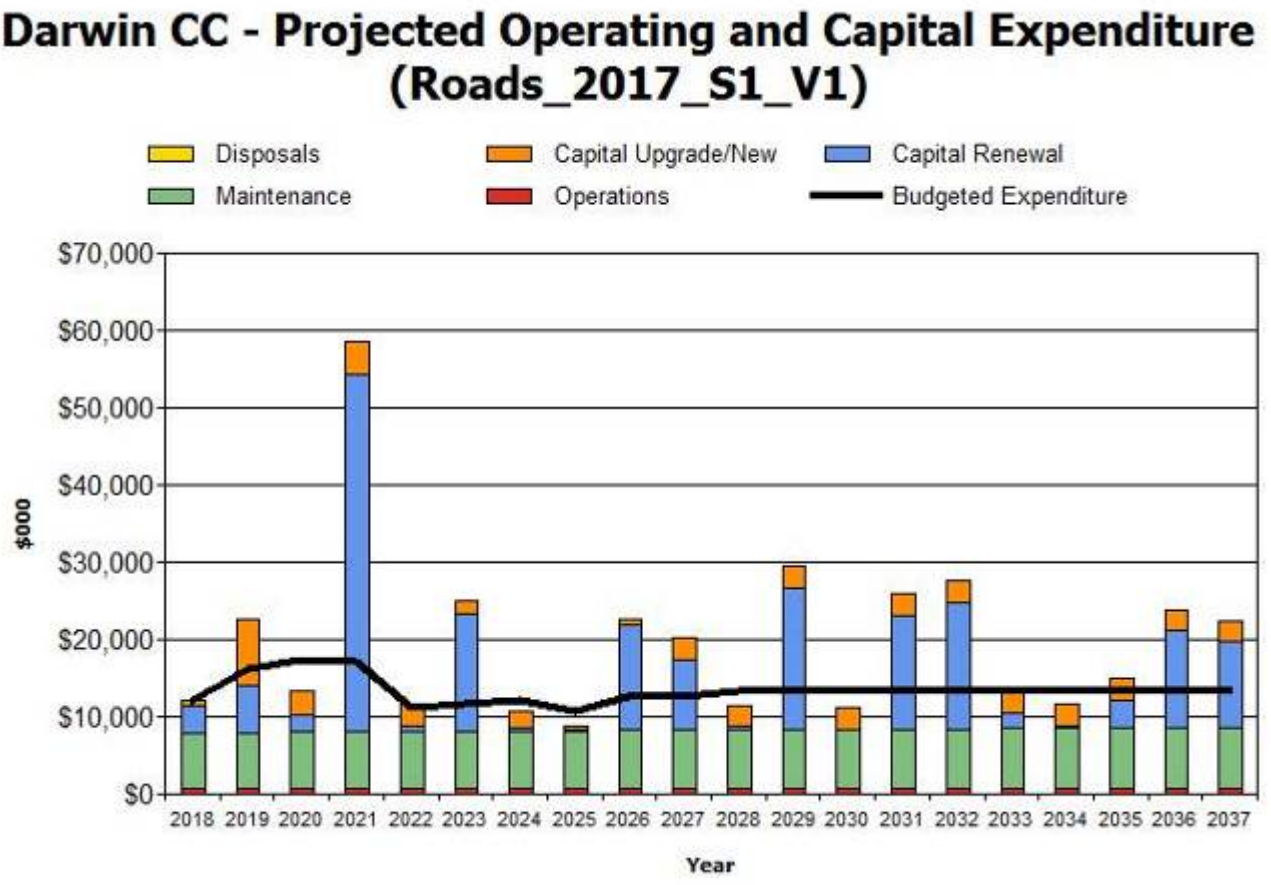
6. FINANCIAL SUMMARY

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.

6.1 Financial Statements and Projections

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

Fig 7: Projected Operating and Capital Expenditure



6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 33%

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 33% of the funds required for the optimal renewal and replacement of its assets.

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 long term, 5 and 10 year periods. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the long term, 5 and 10 year periods to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

These figures are included in figure 7A.

Fig 7A: Projected Sustainability

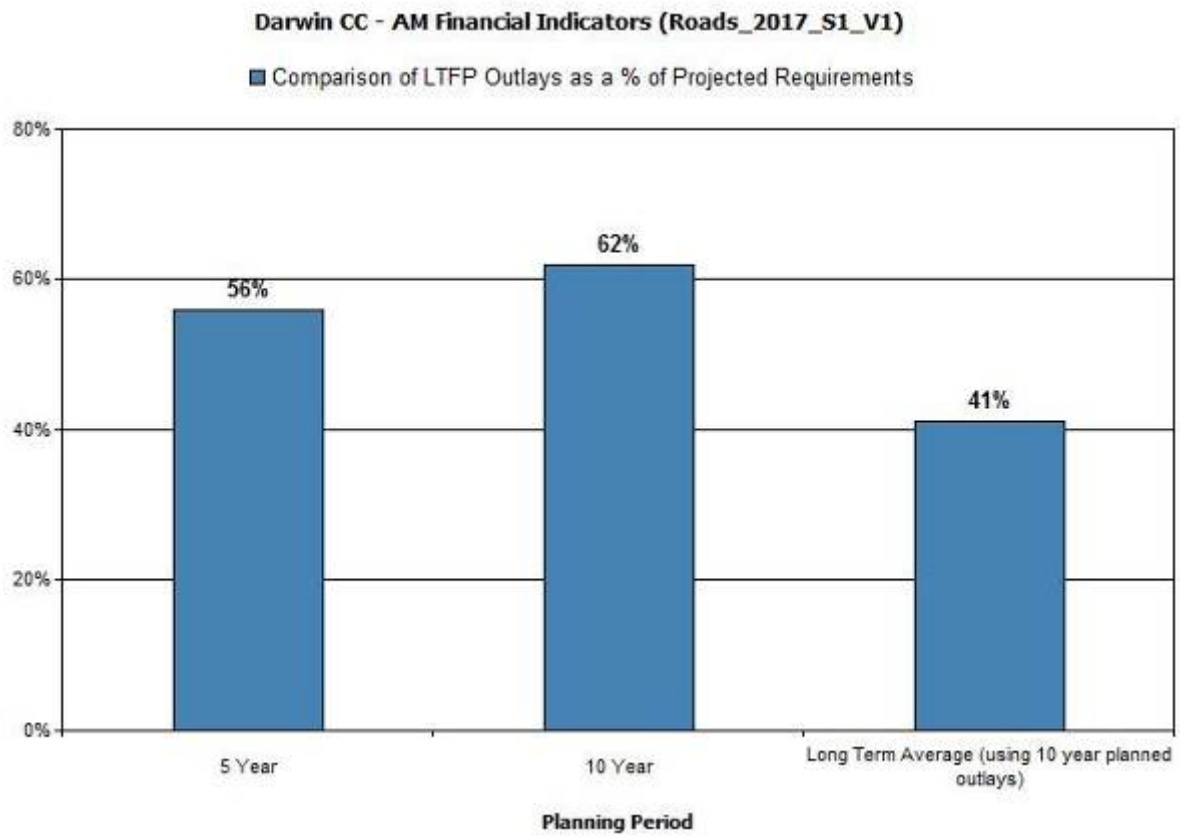
[11] AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

Roads_2017_S1_V1	
Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	**33%**
Long Term - Life Cycle Costs	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$26,839**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$11,065**
Life Cycle Gap [life cycle expenditure – life cycle cost (-ve = gap)]	**$-15,775**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**41%**
Medium Term - 10 year financial planning period	
10 yr Ops, Maint & Renewal Projected Expenditure	**$17,828**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$11,065**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**$-6,764**
10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**62%**
Medium Term – 5 year financial planning period	
5 yr Ops, Maint & Renewal Projected Expenditure	**$19,776**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$11,076**
5 year financing shortfall [5 yr proj exp - LTFP Budget exp]	**$-8,700**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**56%**

Asset management financial indicators

Figure 7B shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

Figure 7B: Asset Management Financial Indicators



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.

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AMP. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

Figure 8: Projected and LTFP Budgeted Renewal Expenditure

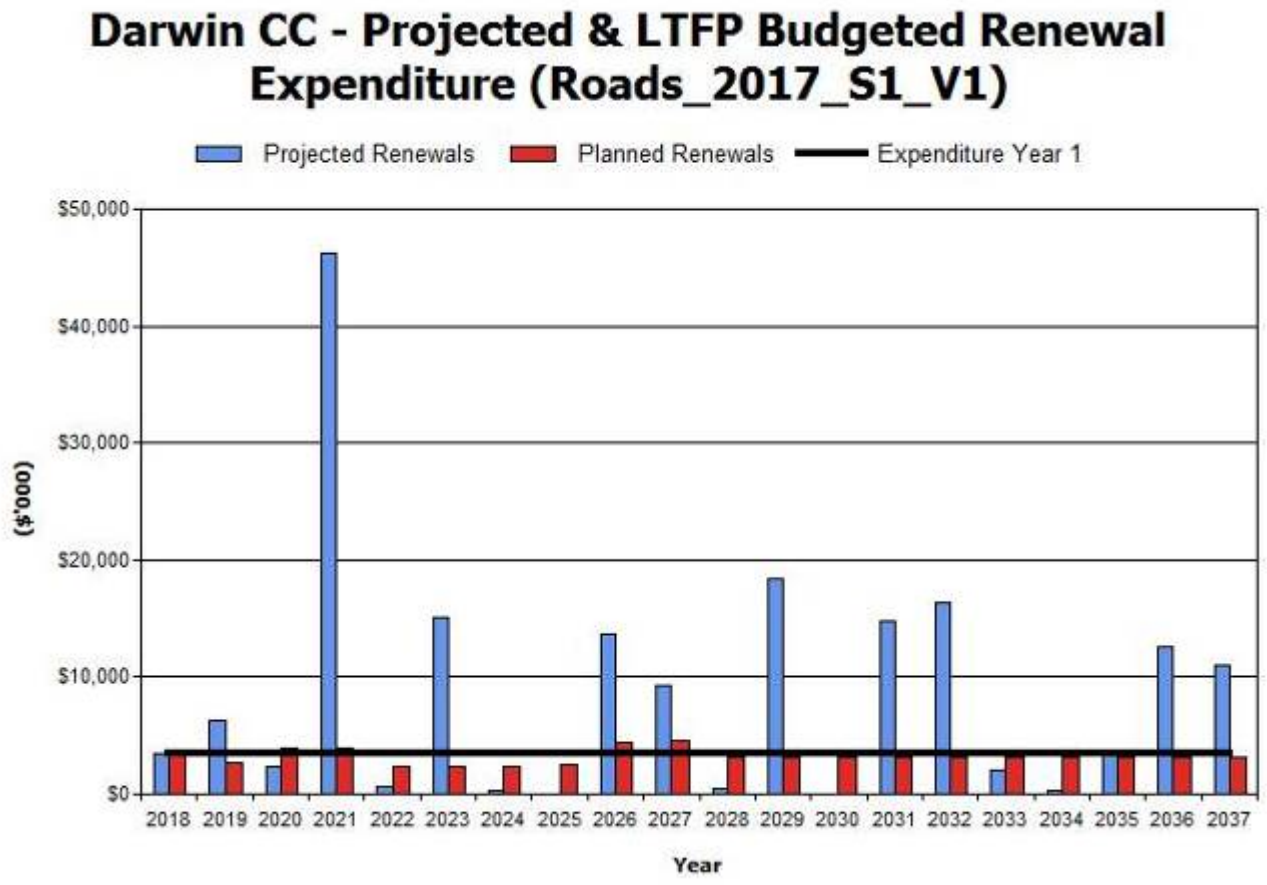


Table 6.1.1 (S1) shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long term financial plan or extrapolated from current budgets are shown in Appendix D.

Table 6.1.1 (S1): Projected and LTFP Budgeted Renewals and Financing Shortfall

Year End June 30	Projected Renewals ($'000)	LTFP Renewal Budget ($'000)	Renewal Financing Shortfall (- gap, + surplus) ($'000)	Cumulative Shortfall (- gap, + surplus) ($'000)
2018	$3,535	$3,451	$-84	$-84
2019	$6,295	$2,606	$-3,689	$-3,773
2020	$2,370	$3,876	$1,506	$-2,267
2021	$46,230	$3,953	$-42,277	$-44,544
2022	$628	$2,282	$1,654	$-42,891
2023	$15,135	$2,315	$-12,820	$-55,711
2024	$307	$2,348	$2,041	$-53,670
2025	$5	$2,482	$2,477	$-51,194
2026	$13,733	$4,417	$-9,316	$-60,510
2027	$9,220	$4,496	$-4,724	$-65,234
2028	$478	$3,223	$2,744	$-62,489

2029	$18,421	$3,223	$-15,199	$-77,688
2030	$0	$3,223	$3,223	$-74,465
2031	$14,732	$3,223	$-11,510	$-85,975
2032	$16,376	$3,223	$-13,154	$-99,128
2033	$1,989	$3,223	$1,234	$-97,895
2034	$347	$3,223	$2,876	$-95,019
2035	$3,569	$3,223	$-346	$-95,365
2036	$12,517	$3,223	$-9,294	$-104,659
2037	$11,083	$3,223	$-7,860	$-112,519

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the AMP (including possibly revising the LTFP) before finalising the asset management plan to manage required service levels and funding to eliminate any funding gap.

We will manage the 'gap' by developing this asset management plan 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.

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 (S1) shows the projected expenditures for the 10 year long term financial plan for Scenario 1.

Expenditure projections are in 2017 real values.

Table 6.1.2 (S1): Projected Expenditures for Long Term Financial Plan ($000)

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade/New	Disposals
2018	$719	$7,123	$3,535	$650	$0
2019	$720	$7,132	$6,295	$8,417	$0
2020	$732	$7,254	$2,370	$3,094	$0
2021	$737	$7,299	$46,230	$4,271	$0
2022	$743	$7,361	$628	$2,978	$0
2023	$747	$7,404	$15,135	$1,813	$0
2024	$750	$7,430	$307	$2,116	$0
2025	$753	$7,461	$5	$610	$0
2026	$754	$7,470	$13,733	$634	$0
2027	$755	$7,479	$9,220	$2,731	$0
2028	$759	$7,519	$478	$2,731	$0
2029	$763	$7,558	$18,421	$2,731	$0
2030	$767	$7,598	$0	$2,731	$0

2031	$771	$7,637	$14,732	$2,731	$0
2032	$775	$7,677	$16,376	$2,731	$0
2033	$779	$7,716	$1,989	$2,731	$0
2034	$783	$7,756	$347	$2,731	$0
2035	$787	$7,795	$3,569	$2,731	$0
2036	$791	$7,835	$12,517	$2,731	$0
2037	$795	$7,875	$11,083	$2,731	$0

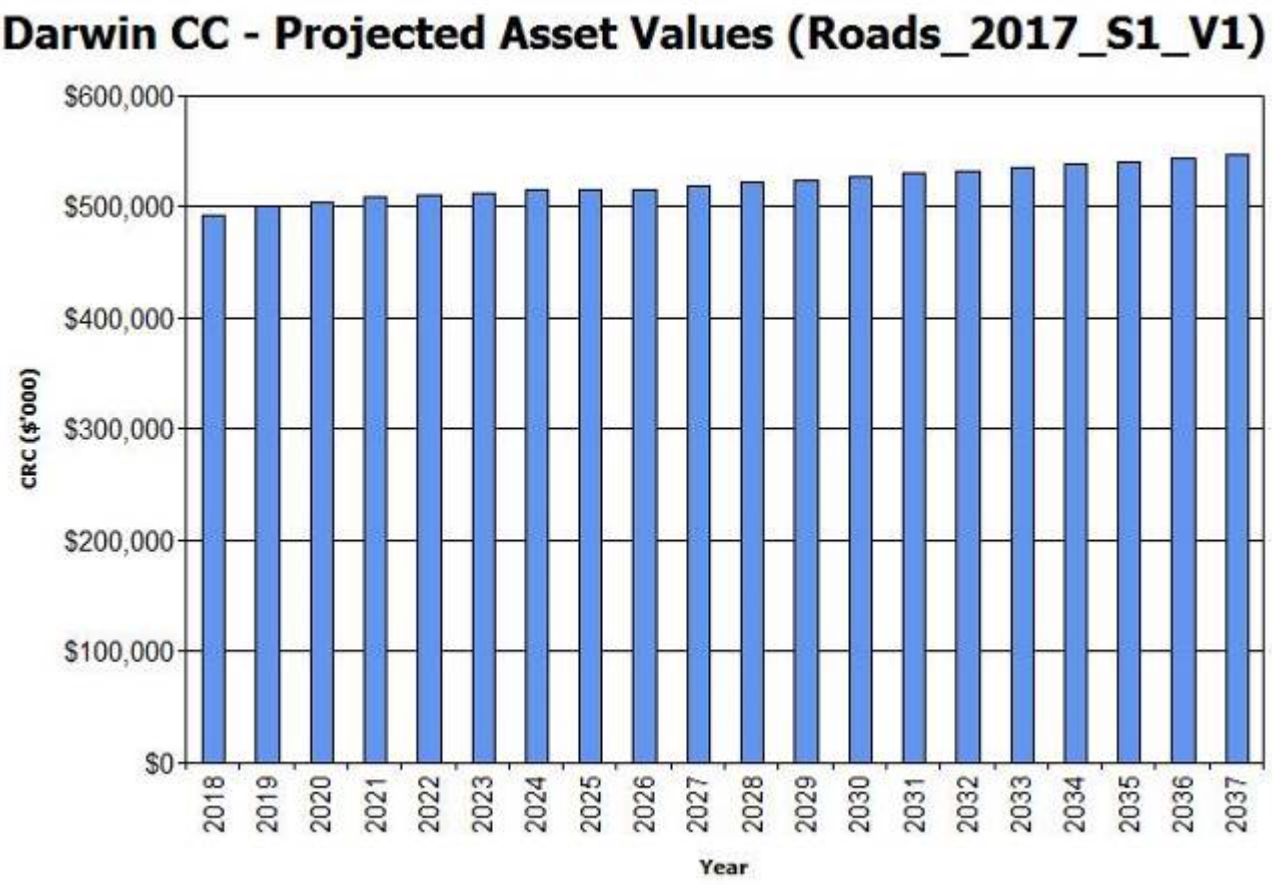
6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council's 10 year long term financial plan.

6.3 Valuation Forecasts

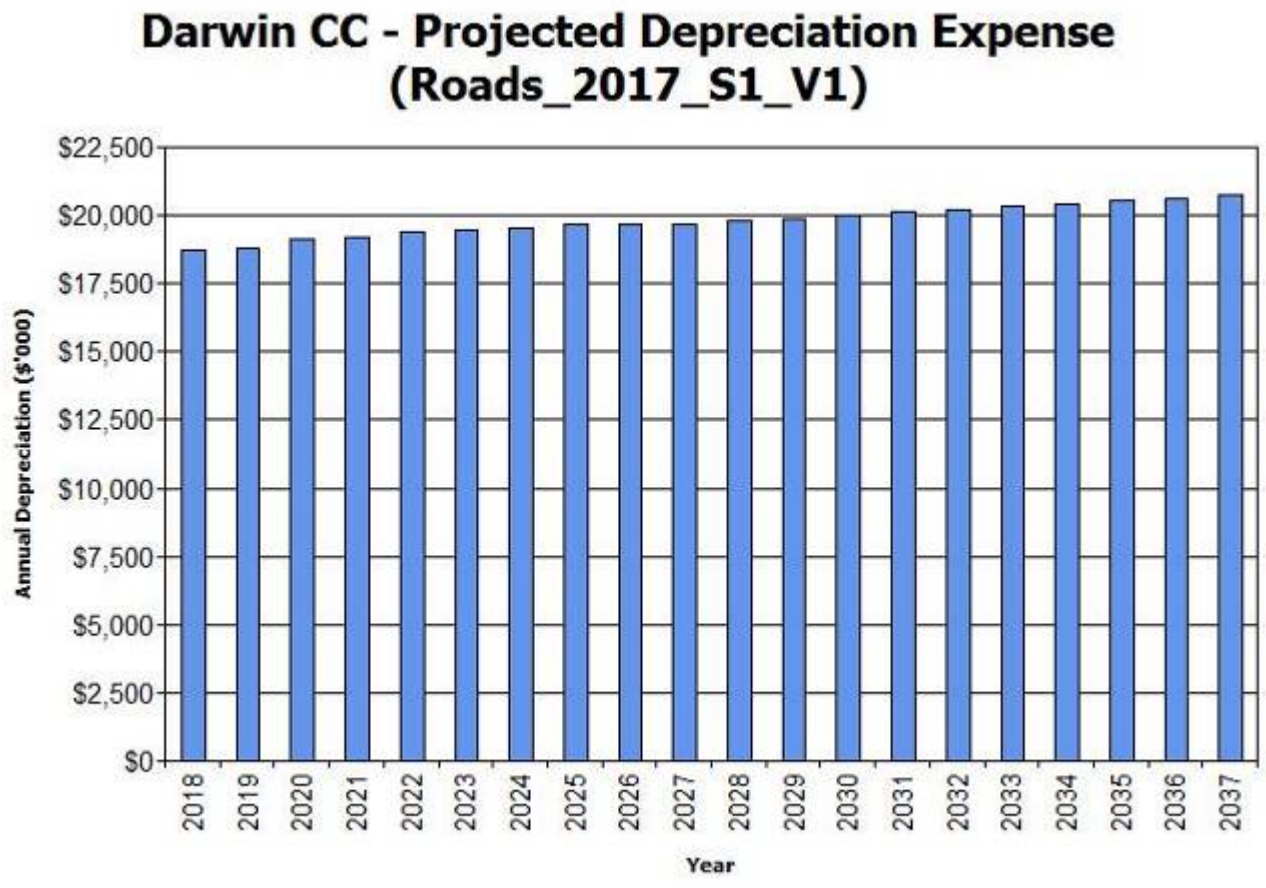
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 9: Projected Asset Values



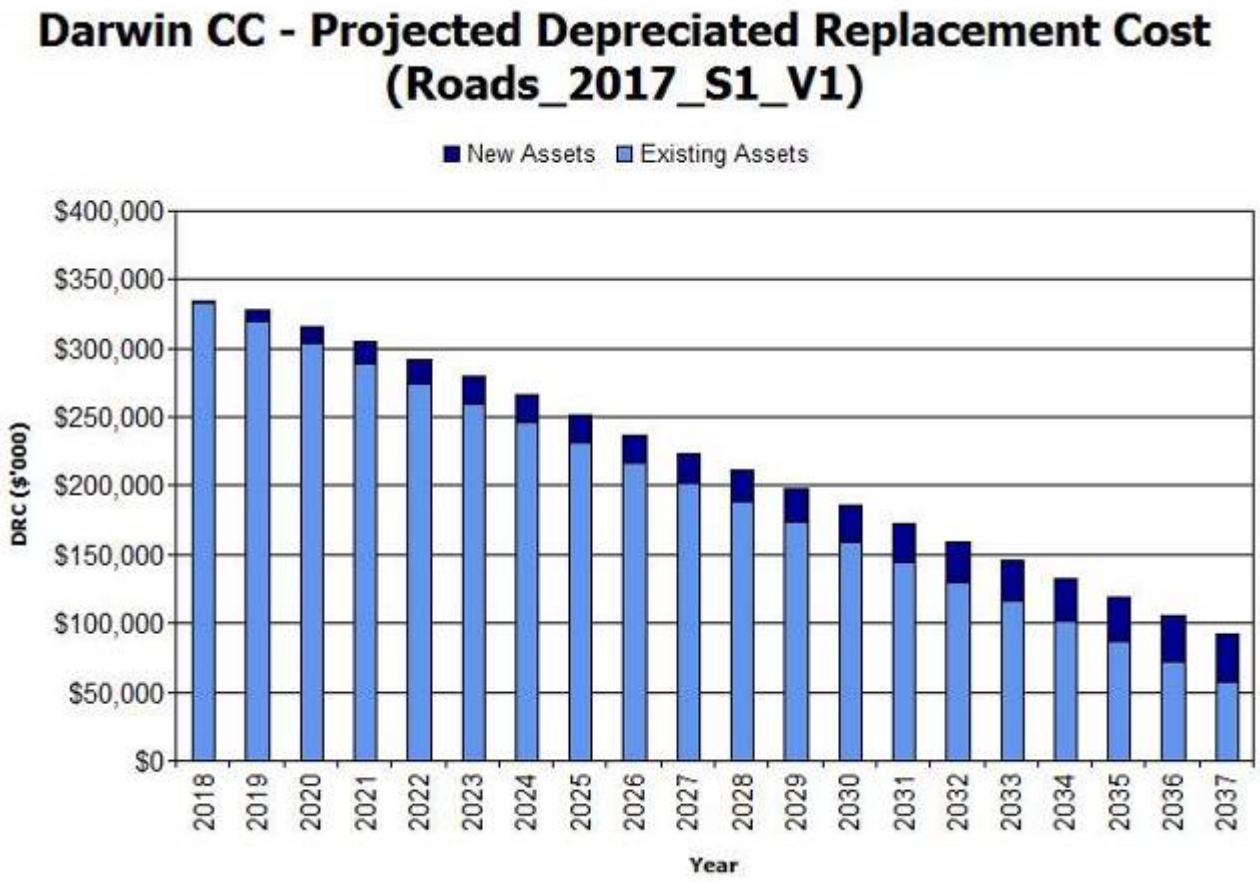
Depreciation expense values are forecast in line with asset values as shown in Figure 10.

Figure 10: Projected Depreciation Expense



The depreciated replacement cost 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. Forecast of the assets' depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 11: Projected Depreciated Replacement Cost



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 made in this asset management plan and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in AMP and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Escalation of 2014 revaluations using LTFP inflation figures reflects 2017 values.	Subsequent revaluations may differ and require rework to AMP
No assets created since 2014 valuation	Additional funding requirement not captured
No growth allowance (other than new/upgrade projects identified in 10yr capital works program).	Additional funding requirement not captured

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AMP are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[12] in accordance with Table 6.5.

[12] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

Table 6.5: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AMP is shown in Table 6.5.1.

Table 6.5.1: Data Confidence Assessment for Data used in AMP

Data	Confidence Assessment	Comment
Demand drivers	B	Nil
Growth projections	B	Nil
Operations expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Maintenance expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Projected Renewal exps. - Asset values	B	Based on 2014 revaluation and not augmented by technical data.
- Asset residual values	B	Based on 2014 revaluation and not augmented by technical data.
- Asset useful lives	B	Based on 2014 revaluation and not augmented by technical data.
- Condition modelling	N/A	Condition data not used in financial modelling – is used in capex program development however
- Network renewals	B	Based on 10 year capex plan based on pavement modelling from condition data – this provides highly reliable surface information, though pavement information is considered slightly less reliable.
- Defect repairs	N/A	Not used in modelling
Upgrade/New expenditures	B	Based on 10 year capex plan based on pavement modelling from condition data – this provides highly reliable surface information, though pavement information is considered slightly less reliable.
Disposal expenditures	N/A	No disposals included or anticipated

Over all data sources the data confidence is assessed as medium confidence level for data used in the preparation of this AMP.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

CoD uses Authority as its accounting system.

Accountabilities for financial systems

Accountabilities are considered within Council's Financial Policies.

Accounting standards and regulations

All relevant Australian Accounting Standards, including;

AASB 13 Fair value measurement

AASB 136 Property, plant and equipment

Capital/maintenance threshold

In general, works with a value over $5000 are considered to be capital works.

7.1.2 Asset management system

CoD uses a combination of AssetFinda and ArcGIS, with some support from spreadsheets in minor databases.

Asset registers

Asset registers are stored within AssetFinda or ArcGIS.

Linkage from asset management to financial system

There is no current link between the systems. Procedures are established to ensure the systems are aligned as much as is practical.

Accountabilities for asset management system and data maintenance

Asset Management Procedures are in place to ensure the correct collection, recording and maintenance of asset data. Audits are also carried out on the data on intervals no less than the defined condition survey intervals.

7.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Levels of Service definition	Separate project	Unknown	Unknown
2	Asset hierarchy development	Asset Management team	Within existing resources	Next AMP Review
3	Identification of critical assets	Asset Management team	Within existing resources	Next AMP Review

7.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognise 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 annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan. Updated financial information will be included every four years following the revaluation of the asset class.

7.4 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 Council's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- 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 Council's Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8. REFERENCES

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

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City of Darwin Strategic Plan – Evolving Darwin Towards 2020

City of Darwin Municipal Plan 2017-18

City of Darwin Policy No 055 – Asset Management

City of Darwin 2014 Revaluation, by APV Valuers & Asset Management

9. APPENDICES

Appendix A Maintenance Response Levels of Service

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Appendix C Projected 10 year Capital Upgrade/New Works Program

Appendix D LTFP Budgeted Expenditures Accommodated in AMP

Appendix E Abbreviations

Appendix F Glossary

Appendix A Maintenance Response Levels of Service

To be developed.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Developed, but not included within this document, 3 year programs are developed and refined from the 10 year program.

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

Row Labels	Sum of 2018	Sum of 2019	Sum of 2020	Sum of 2021	Sum of 2022	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026
New	$ 649,620	$8,416,701	$3,094,109	$4,270,554	$2,977,680	$1,812,935	$2,116,322	$ 610,342	$ 634,497
Roads	$ 649,620	$8,416,701	$3,094,109	$4,270,554	$2,977,680	$1,812,935	$2,116,322	$ 610,342	$ 634,497
BARNESON STREET	$ -	$5,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
BOULTER ROAD UPGRADE TO URBAN CROSS SECTION	$ -	$ -	$ -	$1,658,500	$1,658,500	$ -	$ -	$ -	$ -
CAVENAGH STREET, BENNETT STREET INTERSECTION UPGRADE	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CBD PARKING STRATEGY: SIGNAGE & METER MODIFICATIONS	$ 100,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
CHIN QUAN AVENUE	$ -	$ -	$ -	$ -	$ -	$ 500,000	$1,500,000	$ -	$ -
DICKWARD CRV - KARRINGAL ST INTERSECTION TRAFFIC CONSTRUCTION	$ 100,000	$2,700,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DINAH BEACH ROAD (EXCLUDING S/W) UPGRADE TO URBAN CROSS SECTION	$ 63,407	$ 156,518	$ 475,553	$ -	$ -	$ -	$ -	$ -	$ -
DYNAMIC SPEED SIGNS	$ 15,000	$ -	$ 15,000	$ -	$ 15,000	$ -	$ 15,000	$ -	$ 15,000
LEE POINT ROAD UPGRADE	$ -	$ -	$2,037,000	$2,037,000	$ 720,500	$ 720,500	$ -	$ -	$ -
LOCAL AREA TRAFFIC MANAGEMENT	$ 254,368	$ 258,183	$ 262,056	$ 265,987	$ 269,976	$ 274,026	$ 278,136	$ 282,309	$ 286,543
SMITH STREET WEST -OFF STREET CAR PARKING	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
STREET LIGHTING UPGRADES	$ 116,845	$ 300,000	$ 304,500	$ 309,068	$ 313,704	$ 318,409	$ 323,185	$ 328,033	$ 332,953
Grand Total	$ 649,620	$8,416,701	$3,094,109	$4,270,554	$2,977,680	$1,812,935	$2,116,322	$ 610,342	$ 634,497

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Darwin CC**

Roads_2017_S1_V1 **Asset Management Plan**

First year of expenditure projections **2018** (financial yr ending)

Roads_2017

Asset values at start of planning period

Current replacement cost	$491,880	(000)	Calc CRC from Asset Register: $491,880 (000)
Depreciable amount	$491,880	(000)	This is a check for you.
Depreciated replacement cost	$346,730	(000)	
Annual depreciation expense	$18,757	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	0.82%
Additional maintenance	1.19%
Additional depreciation	3.81%

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 **2018** values

Financial year ending	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)										
Operations										
Operations **budget**	$3,220	$3,220	$3,220	$3,220	$3,220	$3,220	$3,220	$3,220	$3,220	$3,220
Management **budget**	$805	$805	$805	$805	$805	$805	$805	$805	$805	$805
AM systems **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total operations	$4,025	$4,025	$4,025	$4,025	$4,025	$4,025	$4,025	$4,025	$4,025	$4,025
Maintenance										
Reactive maintenance **budget**	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876
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	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876	$5,876
Capital										
Planned renewal **budget**	$5,466	$4,616	$3,656	$3,762	$3,870	$4,375	$4,375	$4,375	$4,375	$4,375
Planned upgrade/new **budget**	$7,897	$4,907	$8,082	$8,016	$960	$7,225	$7,225	$7,225	$7,225	$7,225
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	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $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)

	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000
Forecast Capital Renewal from Forms 2A & 2B	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Forecast Capital Upgrade from Form 2C	$650	$8,417	$3,094	$4,271	$2,978	$1,813	$2,116	$610	$634	$2,731

Appendix E Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AMP	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix F Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

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.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. , drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service
The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of a Council (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary

Additional and modified glossary items shown *

ATTACHMENT B

Pathways

Footpaths, Shared Paths, Walkways

Asset Management Plan

Document Control	

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Rev No	Date	Revision Details	Author	Reviewer	Approver
0	June 2017	Preliminary Working Draft	GHD	COD	
	March 2018	Final Draft for Presentation to RMAC	COD		

Review Period

Once every 3 years, or as required following a revaluation and/or change requiring review.

Asset Management Plan Responsibilities

Key Stakeholder	Role in Asset Management Plan
Elected Members	Allocate resources to meet the organisation's objectives in providing services while managing risks, Ensure organisation is financial sustainable.
Executive Leadership Team	Executive management endorsement
Asset Management Team/Manager	Review of Asset Management Plan Development and updating of replacement programs
Asset Management Steering Group	Endorsement of Asset Management Plan
Financial Services	Financial data input
City Operations	Strategic and operational unit input Undertaking asset maintenance and replacement programs
Asset custodian	Asset data, service level, asset lifecycle inputs

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1. EXECUTIVE SUMMARY

Context

This Asset Management Plan (AMP) covers the Pathway Assets for City of Darwin.

The pathways network comprises:

- Footpaths – 388.8km
- Walkway – 17.0km
- Shared – 74.7km (including 3.0km on-road)

These infrastructure assets have a replacement value of $63.748M.

What does it Cost?

This asset management plan has been developed using 2 analysis scenarios with Scenario 1 being presented within this Asset Management Plan. Scenario 1 (S1) uses asset valuation data to predict renewals based on end of life projections. Scenario 3 (S3) is based on councils current programmed asset renewals. Note that Scenario 2 is not utilised as it is not relevant for this asset class. Using the scenarios, an overview of the cost of providing the assets can be determined, of which Scenario 1 is used. The 10 year asset management financial indicator is 110% for pathways assets.

Project outlays required to provide the services covered by this Asset Management Plan (AMP) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period are summarised below.

Pathways – Summary	**($000)**
10 year total cost	33,878
10 year total budget	37,352
10 year average cost	3,388
10 year average budget	3,735
10 year average shortfall	374

What we will do

Council plans to operate and maintain the pathways network so that it meets the needs of the community and in accordance with Council Policy Number 048 – Footpaths and Shared Paths and Council Policy Number 056 - Walkways.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Major weather events
- Unknown non-visual asset conditions
- Level of Service expectations

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

- Optimising condition surveys
- Developing levels of service

Confidence Levels

This AMP is based on medium level of confidence information.

The Next Steps

The actions resulting from this asset management plan are:

- Develop Levels of Service
- Identify asset hierarchy and critical assets

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the City of Darwin community's road needs. These assets include pathways and associated infrastructure, throughout the community area that enable people to use pathways to access services.

What is an Asset Management Plan?

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

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Most of the Council's road network was constructed by developers and the government, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are now approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

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

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,
5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that pathways services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For pathways, the service level reduction may include lower quality surfaces, increased pavement defects and longer rectification timeframes.

What can we do?

We can develop options, costs and priorities for future pathway services, consult with the community to plan future services to match the community service needs with ability to pay for services and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

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

The asset management plan follows the format for AMPs recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The asset management plan is to be read with the organisation's Asset Management Policy, and Asset Management Strategy.

This infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide access to services in the community.

Table 2.1: Assets covered by this Plan

Asset category	Measure	Replacement Value ($000's)
Footpaths	388.8km	45,446
Walkways	17.0km	4,784
Shared	74.7km	13,514
TOTAL	**480.5km**	**63,754**

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Table 2.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Elected Members	Represent needs of community/shareholders Allocate resources to meet the organisation's objectives in providing services while managing risks Ensure organisation is financial sustainable
Risk Management and Audit Committee	Independent assurance and assistance to Council on Council's risk, control and compliance frameworks, and external accountability.
Executive Leadership Team	Executive management endorsement
Asset Management Steering Group	Endorsement of Asset Management Plan and associated procedures Development of long-term asset management strategies and related policies in accordance with legislation and good management practices Coordination of financial, operational and strategic inputs

Our organisational structure for service delivery of infrastructure assets is available on our website at www.darwin.nt.gov.au

[1] IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

2.2 Goals and Objectives of Asset Management

City of Darwin as an organisation provides services to its community, and many services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others.

Our goal in managing infrastructure assets is to meet the community's desired level of service (in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

2.3 Plan Framework

Key elements of the plan are

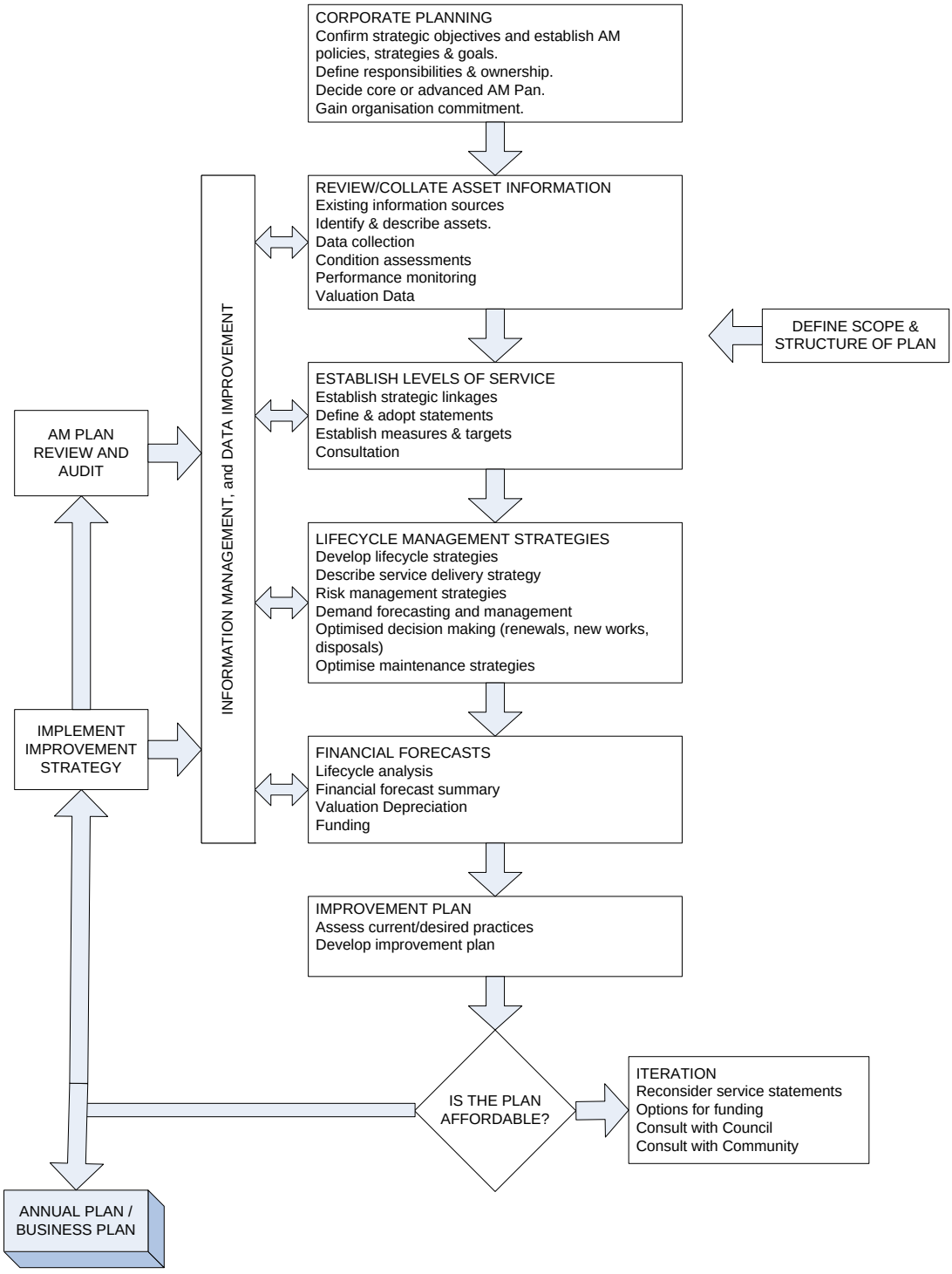
- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives,
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

[2] Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

2.5 Community Consultation

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

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council undertakes an annual Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent community satisfaction survey (2015) reported satisfaction levels for the following services relating to pathways infrastructure.

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level	Target
Footpaths/shared paths	3.6	>4

A scale of 1-5 is used, from 1 being not satisfied and 5 being very satisfied.

3.2 Strategic and Corporate Goals

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

Our vision is:

"A tropical, liveable city that creates opportunity and choice for our community"

Our mission is:

"Council will work with the community to maintain and promote the City of Darwin as the tropical capital of the Northern Territory, offering opportunities and a vibrant lifestyle for our residents and visitors"

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

Table 3.2: Organisational Goals relevant to this Plan

Goal	Outcome	Strategy Relevant to this Plan
Strategic Goal 2:	Improved access and	2.1.1 Improve the pathway and cycle networks and

[3] IPWEA, 2011, IIMM.

Vibrant, flexible and tropical lifestyle	connectivity	encourage cycling and walking
	2.4 Economic growth supported	2.4.1 Deliver, advocate for, and partner in infrastructure and services that support Darwin's economic growth
Strategic Goal 2: Effective and responsible governance	5.5 Responsible financial and asset management	5.5.1 Manage Council's business based on a sustainable financial and asset management strategy

The organisation will exercise its duty of care to ensure public safety is accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 5.2

3.3 Legislative Requirements

The organisation has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act (NT) 2008	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health and Safety (National uniform legislation) Act	Sets out the rules and responsibilities to secure the health, safety and welfare of persons at work
All relevant Australian Standards and Codes of Practice	National and international guidance and legislation relating to design, installation, maintenance, approvals, testing to be applied to assets as required.
Environmental Assessment Act	Outlines legislative requirements in relation to the assessment of the environmental effects of development proposals and for the protection of the environment
Environmental Offences and Penalties Act 1996	Outlines offences local governments local governments (and other parties) may be liable for where their acts and omissions maybe detrimental to the protection of the environment.
Land Title Act & Regulations	Outlines legislative issues local governments need to consider in relation to land ownership, easements and other purposes that may impact on various assets, such as roads, stormwater and buildings that the local government has under it care and control.
Lands Acquisition Act & Regulations	Outlines legislative issues local governments need to consider in relation to land they own that could be compulsorily acquired by the Northern Territory for the purpose of the provision of essential services and facilities being power (including gas), water, sewerage, road or communication services or facilities to or across the prescribed land, or access to any of them.
National Trust (Northern Territory) Act	Outlines legislative issues local governments need to consider in relation to the impacts that the National Trust (Northern Territory) activities could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Northern Territory Aboriginal Sacred Sites Act	Outlines legislative issues local governments need to consider in relation to the impacts that the Aboriginal Sacred Sites could have on the various assets, such as roads, stormwater, buildings and land, that the local

	government has under it care and control.
Planning Act & Regulations	Outlines legislative issues local governments need to consider in relation to providing for appropriate and orderly planning and control of the use and development of land within the municipality

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AM Plan. Management of risks is discussed in Section 5.2.

3.4 Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in asset management planning are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

Technical Levels of Service support the community service levels as operational and technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures can be linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

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

Community and technical levels of service will be developed for future asset management plans.

4. FUTURE DEMAND

4.1 Demand Drivers

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

[4] IPWEA, 2011, IIMM, p 2.22

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population	83,465 Estimated residential population (2016)	1.5% annual growth per annum (over 10 years)	Little or no impact
Development	Slowing economy	Moderate growth over medium term	Little or no impact
Technological	N/A	No major technology advances anticipated	Little or no impact
Legislative change	Inclusion of Area Plans in Planning Scheme	Change of use and increasing density	Likely impact on functional use of existing assets and increasing demand as density increases
Climate change	No impact	Unlikely to affect pathway assets in medium term	Little or no impact
Community expectations	N/A	Ongoing increase in levels of service expectations	Potential requirement for higher quality, improved access and capacity.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[5].

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

Table 4.4: Demand Management Plan Summary

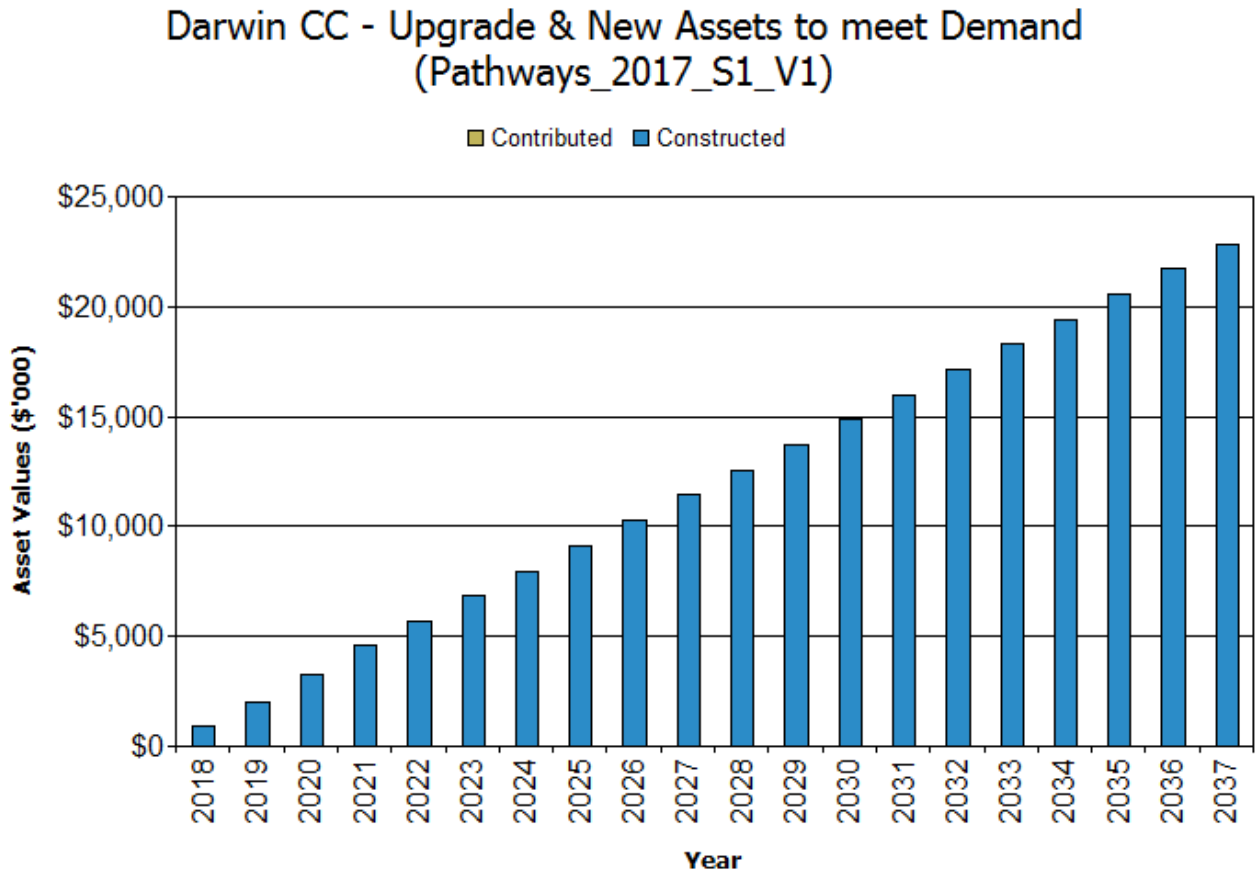
Demand Driver	Impact on Services	Demand Management Plan
Customer expectations	Potential requirement for higher quality, improved access and capacity.	Whole of life cost assessment of potential new assets and impacts on operational and maintenance and consultation with community to ensure informed decision making.
Area Plans (NT Planning Scheme)	Changing and increasing demand on services.	Provide input into area plan developments, forecast potential needs

[5] IPWEA, 2011, IIMM, Table 3.4.1, p 3|58.

4.5 Asset Programs to meet Demand

The new assets required to meet growth will be acquired free of cost from land developments or constructed by the organisation. New assets constructed/acquired by the organisation are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarised in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand



Acquiring these new assets will commit the organisation to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the organisation 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

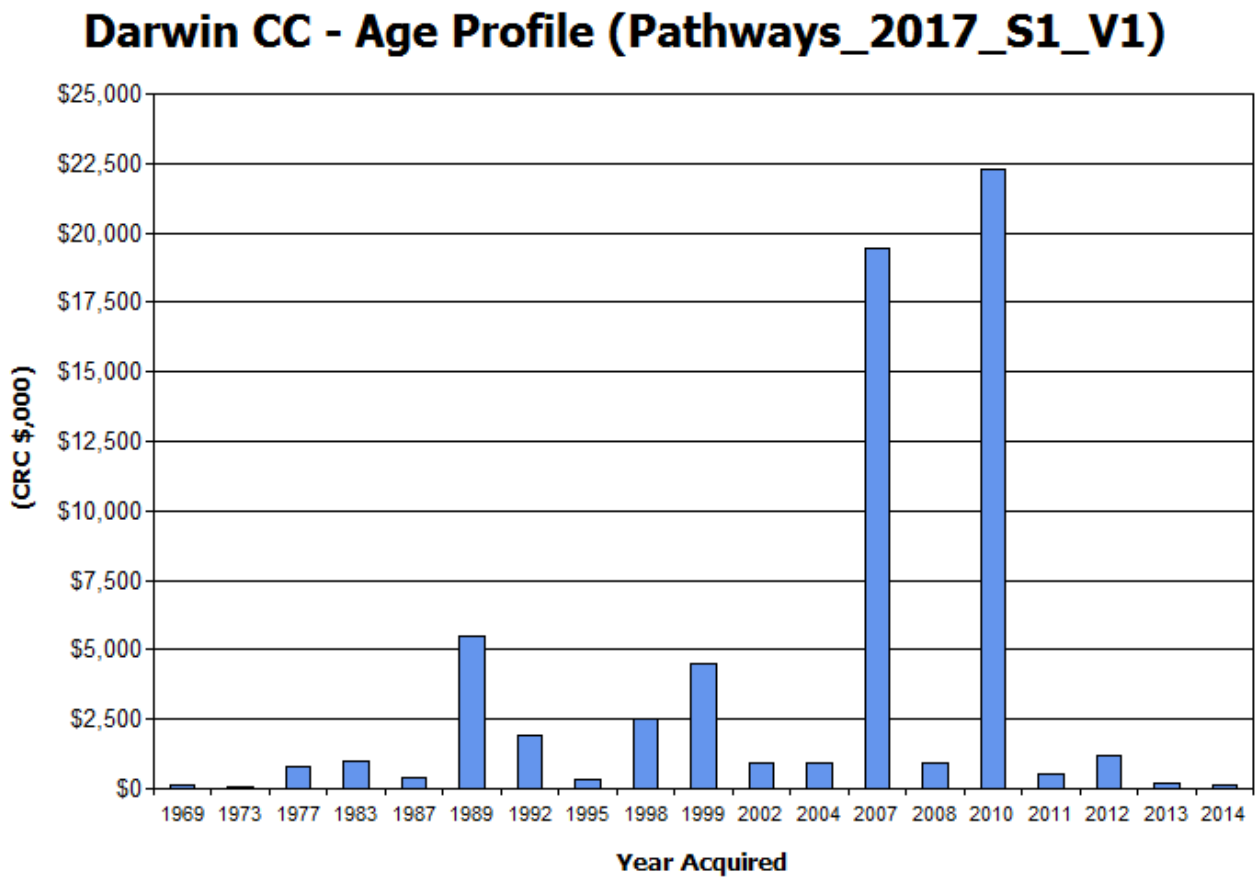
5.1.1 Physical parameters

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

The pathways asset class includes shared, footpath and walkway type assets.

The age profile of the assets include in this AM Plan is shown in Figure 2.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

The organisation's services are generally provided to meet design standards where these are available. However, in accordance with the Footpath and Shared path policy, there are a number of footpaths considered obsolete. These will be further detailed in future Plans.

5.1.3 Asset condition

Condition is monitored through a regular inspection program. Pathways asset condition is recorded every four years, with additional inspections occurring as needed.

The condition profile of our assets is not available for this Asset Management Plan. Condition is measured using a 1 – 5 grading system[6] as detailed in Table 5.1.3.

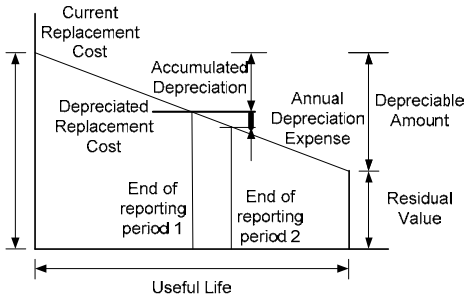
Table 5.1.3: Simple Condition Grading Model

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

5.1.4 Asset valuations

Assets were last revalued at 2014 using a fair value methodology. The valuations have been adjusted using the following escalation rates to estimate the 2017 values:

2014/15 – 4.4%
2015/16 – 1.9%
2016/17 – 0.5%



The adjusted revaluation are as follows (000's):

Current Replacement Cost	$63,748
Depreciable Amount	$63,748
Depreciated Replacement Cost[7]	$43,482
Annual Depreciation Expense	$1,543

Useful lives were reviewed in June 2014 as part of the revaluation of assets.

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	2.4%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	1.6%

In 2018 the organisation plans to renew assets at 67.1% of the rate they are being consumed and will be increasing its asset stock by 1.5% in the year.

5.1.5 Historical Data

To be included in future revisions of this Asset Management Plan.

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[6] IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.
[7] Also reported as Written Down Current Replacement Cost (WDCRC).

5.2 Infrastructure Risk Management Plan

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' to the organisation. 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.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management, the Risk Management and Audit Committee, and Council.

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *
Pathways Asset Management	**Failure to develop, implement and maintain a corporate asset register** - Inconsistent and fragmented approach to the collection and storage of asset information - Lack of data available to monitor the condition of assets - Inability to plan long and short term asset management programs - Inability to adequately budget for asset management - Inability to monitor and assess ratepayer and public demands for levels of service - Inability to monitor and assess actual levels of service delivery	VH	Asset Management Steering Group in place and continues to meet quarterly Implementation of the corporate asset register is underway and will provide a central location for data storage	H
Pathways Asset Management	**Failure to develop and promote asset management policies, standards and procedures** - Failure to ensure a consistent approach to asset management is applied across Council - Loss of corporate asset knowledge - Failure to ensure asset management is undertaken in accordance with Australian and International Standards	VH	Asset Management Steering Group in place and continues to meet quarterly Development of procedures undertaken for data collection and asset management Cyclic reviews undertaken of policies, standards and procedures Asset management roles and responsibilities allocated to specific individuals across the organisation Implementation of asset sustainability review recommendations will ensure policies, standards	H

[8] Infrastructure Department Operational Risk Assessment (Rev 5) June 2016

			and procedures are developed and monitored	

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

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, eg cleansing, street sweeping, grass mowing and street lighting.

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.

5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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, eg road patching but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

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

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. A hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery. An asset hierarchy will be developed for future Asset Management Plans.

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

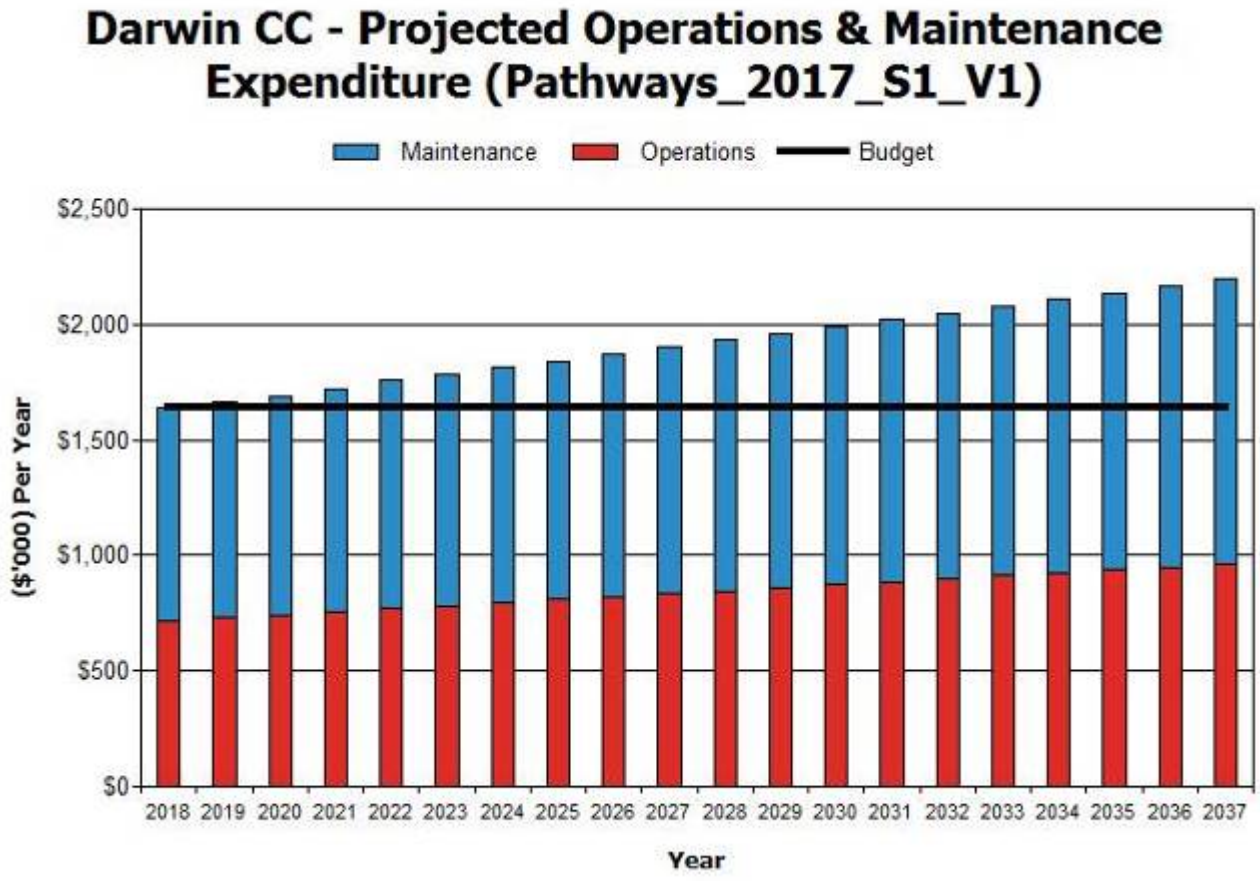
Standards and specifications

Maintenance work is carried out in accordance with relevant Australian Standards, Austroads Guidelines and Northern Territory specifications.

5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (ie real values).

Figure 4: Projected Operations and Maintenance Expenditure



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

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

5.4 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 or lesser required 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

Assets requiring renewal/replacement are identified from Council's Asset Register data (used for 2014 valuations) to project the renewal costs using acquisition year and useful life to determine the renewal year.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1.

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful life
Shared	Asphalt (30), chipseal (30), Concrete (50), pavers (20), XAG (50)
Walkways	Asphalt (30), chipseal (30), Concrete (50), pavers (20), XAG (50), gravel (30), no surface (80)
Footpaths	Asphalt (30), chipseal (30), Concrete (50), pavers (20), XAG (50), gravel (30)

5.4.2 Renewal and Replacement Strategies

The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, and
    - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

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, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).[9]

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

[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.

- Have a high consequence of failure,
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- 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
- Where replacement with modern equivalent assets would yield material savings.[10]

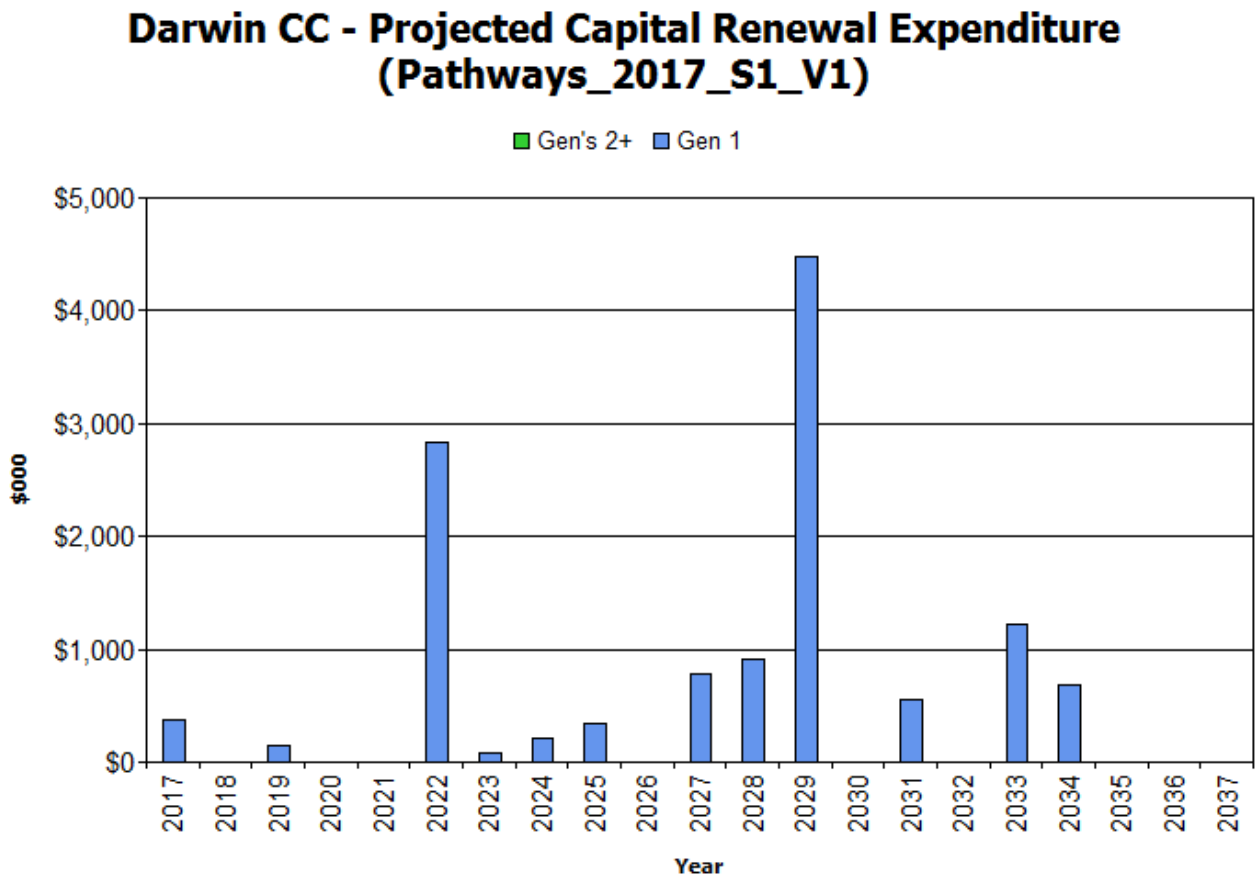
Standards and specifications

Renewal and replacement work is carried out in accordance with relevant Australian Standards, Austroads Guidelines and Northern Territory specifications.

5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

Fig 5: Projected Capital Renewal and Replacement Expenditure



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

[10] Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.

Renewals and replacement expenditure in the organisation's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

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 organisation from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as Council and community requests, proposals identified by strategic plans or partnerships with other organisations, and are incorporated into Council's long term financial plans.

5.5.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

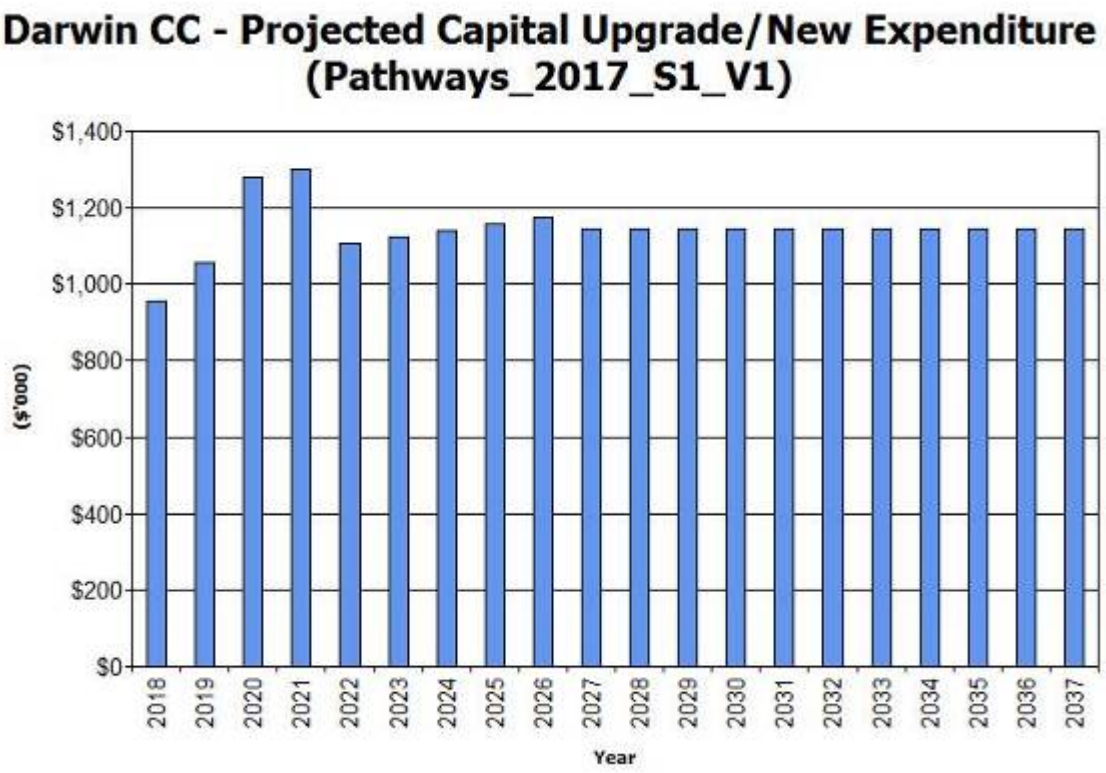
- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,
    - the project objectives to rectify the deficiency including value management for major projects,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - management of risks associated with alternative options,
    - and evaluate the options against evaluation criteria adopted by Council, and
    - select the best option to be included in capital upgrade/new programs,
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Fig 6. The projected upgrade/new capital works program is shown in Appendix C and is based on the 2017 long term capital works plan. All amounts are shown in real values.

Fig 6: Projected Capital Upgrade/New Asset Expenditure



5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council's long term financial plan.

No pathways assets are identified for disposal, except for those identified as obsolete, as discussed seperately.

5.7 Service Consequences and Risks

The organisation has prioritised decisions made in adopting this AMP to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AMPs.

Scenario 1 - What we would like to do based on asset register data

Scenario 2 – What we should do with existing budgets and identifying level of service and risk consequences (ie what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AMP.

Scenario 3 – What we can do and be financially sustainable with AMPs matching long-term financial plans.

The development of scenario 1 and scenario 2 AMPs provides the tools for discussion on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

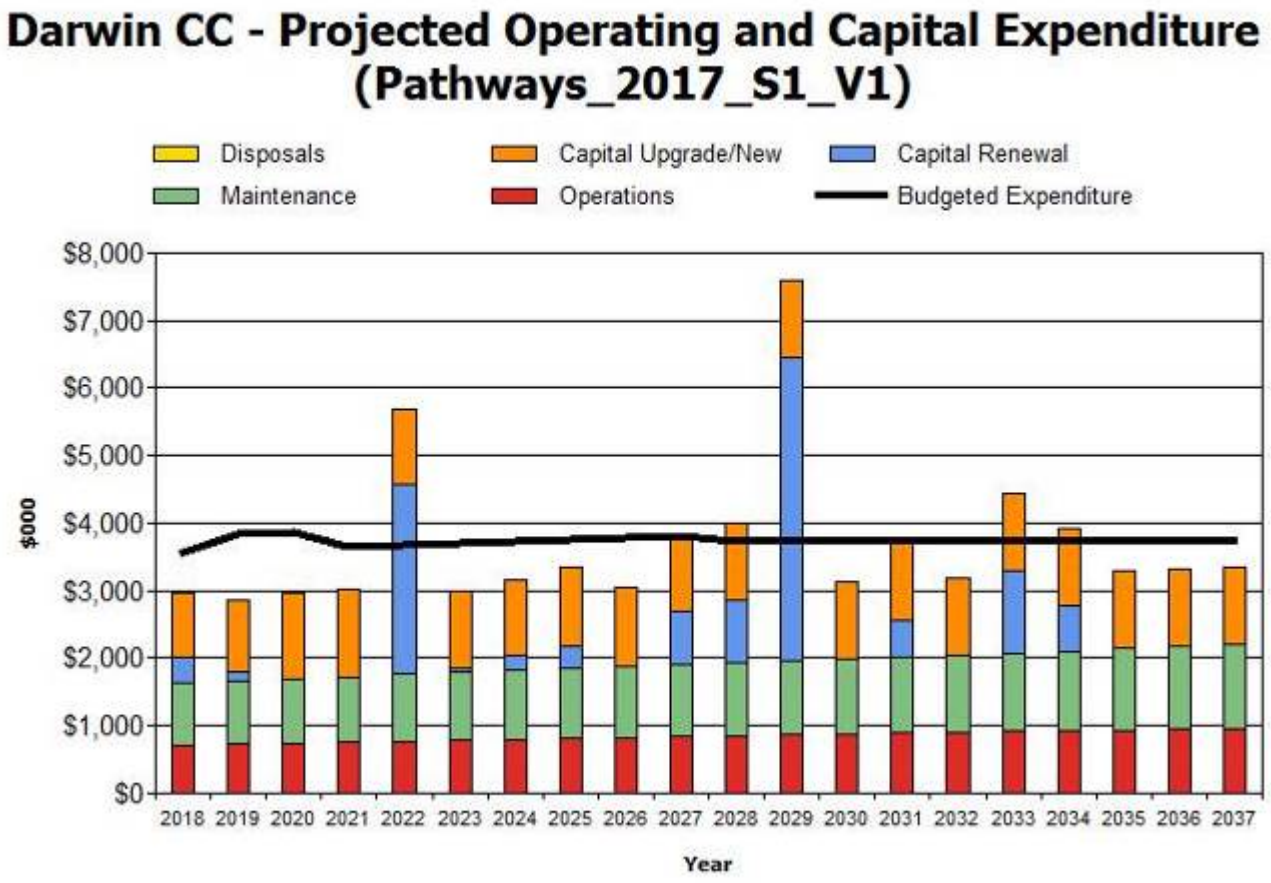
6. FINANCIAL SUMMARY

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.

6.1 Financial Statements and Projections

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

Fig 7: Projected Operating and Capital Expenditure



6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 233%

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 233% of the funds required for the optimal renewal and replacement of its assets.

[11] AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

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 long term, 5 and 10 year periods. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the long term, 5 and 10 year periods to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

These figures are included in figure 7A.

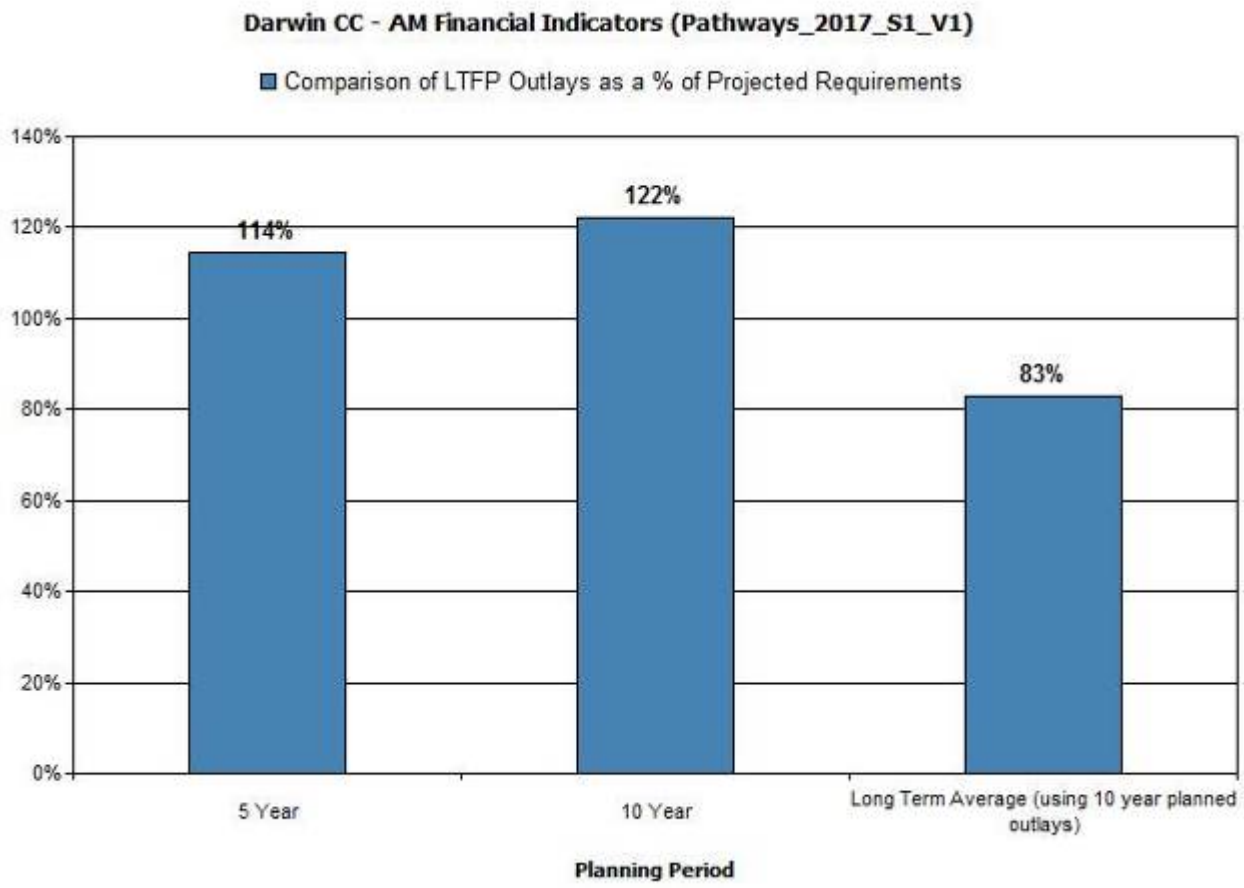
Fig 7A: Projected Sustainability

Pathways_2017_S1_V1	
Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	**233%**
Long Term - Life Cycle Costs	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$3,311**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$2,741**
Life Cycle Gap [life cycle expenditure – life cycle cost (-ve = gap)]	**$-571**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**83%**
Medium Term - 10 year financial planning period	
10 yr Ops, Maint & Renewal Projected Expenditure	**$2,245**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,741**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**$496**
10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**122%**
Medium Term – 5 year financial planning period	
5 yr Ops, Maint & Renewal Projected Expenditure	**$2,364**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,703**
5 year financing shortfall [5 yr proj exp - LTFP Budget exp]	**$339**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**114%**

Asset management financial indicators

Figure 7B shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

Figure 7B: Asset Management Financial Indicators



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.

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AM Plan. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

Figure 8: Projected and LTFP Budgeted Renewal Expenditure

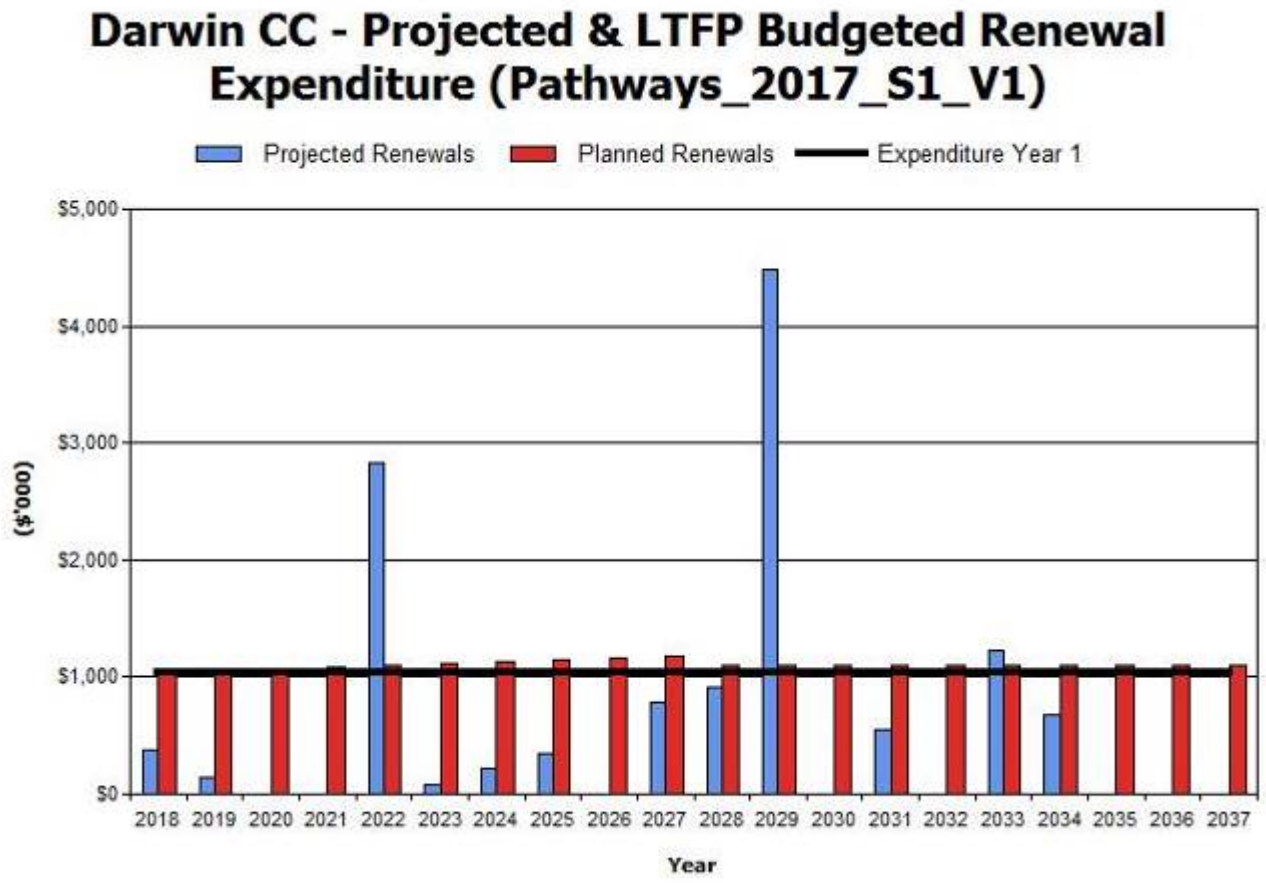


Table 6.1.1 shows the shortfall between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long term financial plan or extrapolated from current budgets are shown in Appendix D.

Table 6.1.1 (S1): Projected and LTFP Budgeted Renewals and Financing Shortfall

Year End June 30	Projected Renewals ($'000)	LTFP Renewal Budget ($'000)	Renewal Financing Shortfall (- gap, + surplus) ($'000)	Cumulative Shortfall (- gap, + surplus) ($'000)
2018	$380	$1,036	$656	$656
2019	$143	$1,050	$907	$1,563
2020	$0	$1,065	$1,065	$2,628
2021	$0	$1,079	$1,079	$3,707
2022	$2,829	$1,094	$-1,735	$1,972
2023	$78	$1,109	$1,031	$3,003
2024	$215	$1,125	$910	$3,913
2025	$341	$1,140	$799	$4,711
2026	$0	$1,156	$1,156	$5,867
2027	$781	$1,172	$391	$6,259
2028	$913	$1,103	$190	$6,449

2029	$4,482	$1,103	$-3,379	$3,069
2030	$0	$1,103	$1,103	$4,172
2031	$547	$1,103	$556	$4,728
2032	$0	$1,103	$1,103	$5,831
2033	$1,220	$1,103	$-118	$5,713
2034	$680	$1,103	$423	$6,136
2035	$0	$1,103	$1,103	$7,238
2036	$0	$1,103	$1,103	$8,341
2037	$0	$1,103	$1,103	$9,444

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the AMP (including possibly revising the LTFP) before finalising the asset management plan to manage required service levels and funding to eliminate any funding gap.

~~We will manage the 'gap' by developing this asset management plan 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.~~

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2017 real values.

Table 6.1.2 (S1): Projected Expenditures for Long Term Financial Plan ($000)

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade/New	Disposals
2018	$719	$919	$380	$955	$0
2019	$730	$933	$143	$1,057	$0
2020	$742	$948	$0	$1,278	$0
2021	$756	$966	$0	$1,300	$0
2022	$771	$985	$2,829	$1,105	$0
2023	$783	$1,001	$78	$1,122	$0
2024	$796	$1,017	$215	$1,139	$0
2025	$809	$1,034	$341	$1,156	$0
2026	$822	$1,050	$0	$1,173	$0
2027	$835	$1,067	$781	$1,143	$0
2028	$848	$1,084	$913	$1,143	$0
2029	$861	$1,100	$4,482	$1,143	$0
2030	$874	$1,117	$0	$1,143	$0
2031	$887	$1,133	$547	$1,143	$0
2032	$899	$1,150	$0	$1,143	$0
2033	$912	$1,166	$1,220	$1,143	$0

2034	$925	$1,183	$680	$1,143	$0
2035	$938	$1,199	$0	$1,143	$0
2036	$951	$1,216	$0	$1,143	$0
2037	$964	$1,232	$0	$1,143	$0

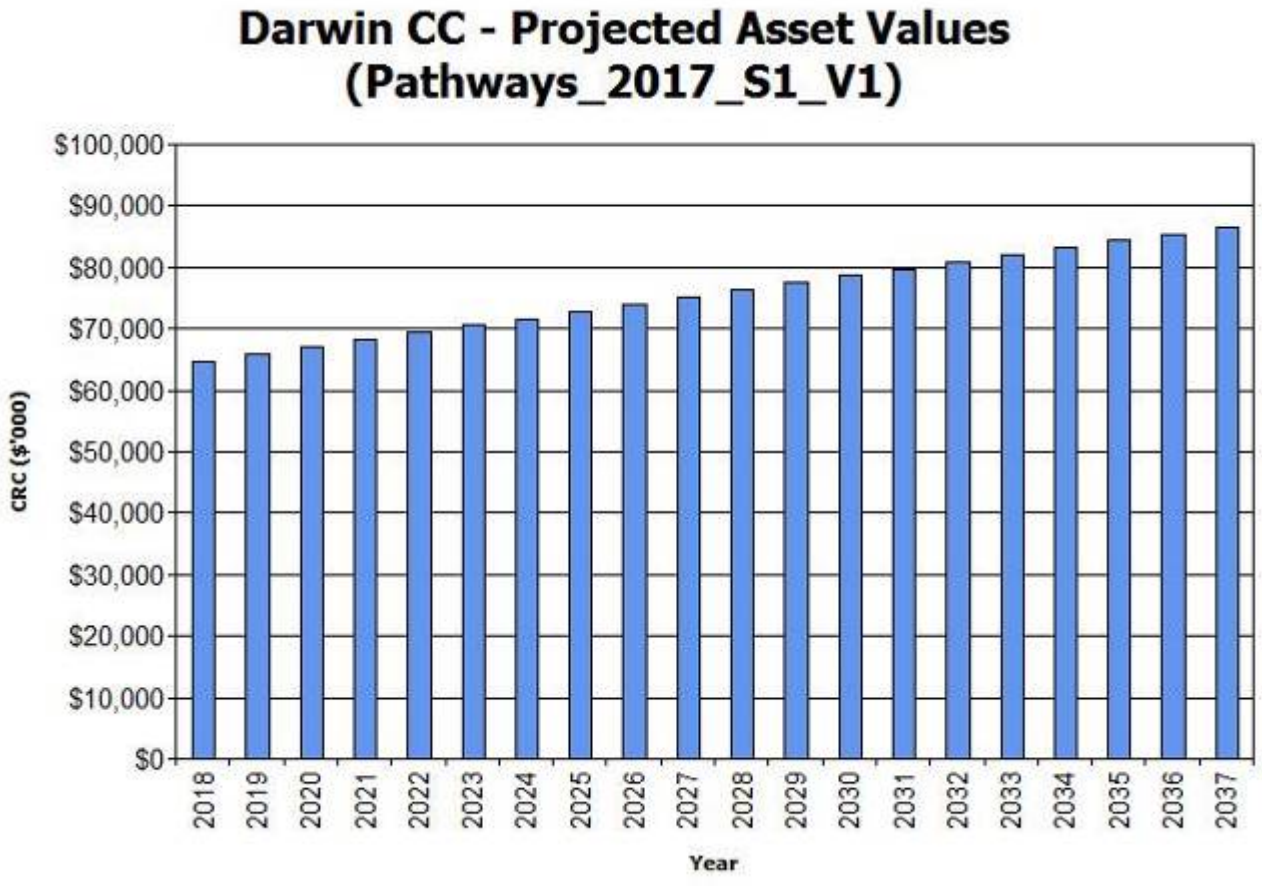
6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council's 10 year long term financial plan.

6.3 Valuation Forecasts

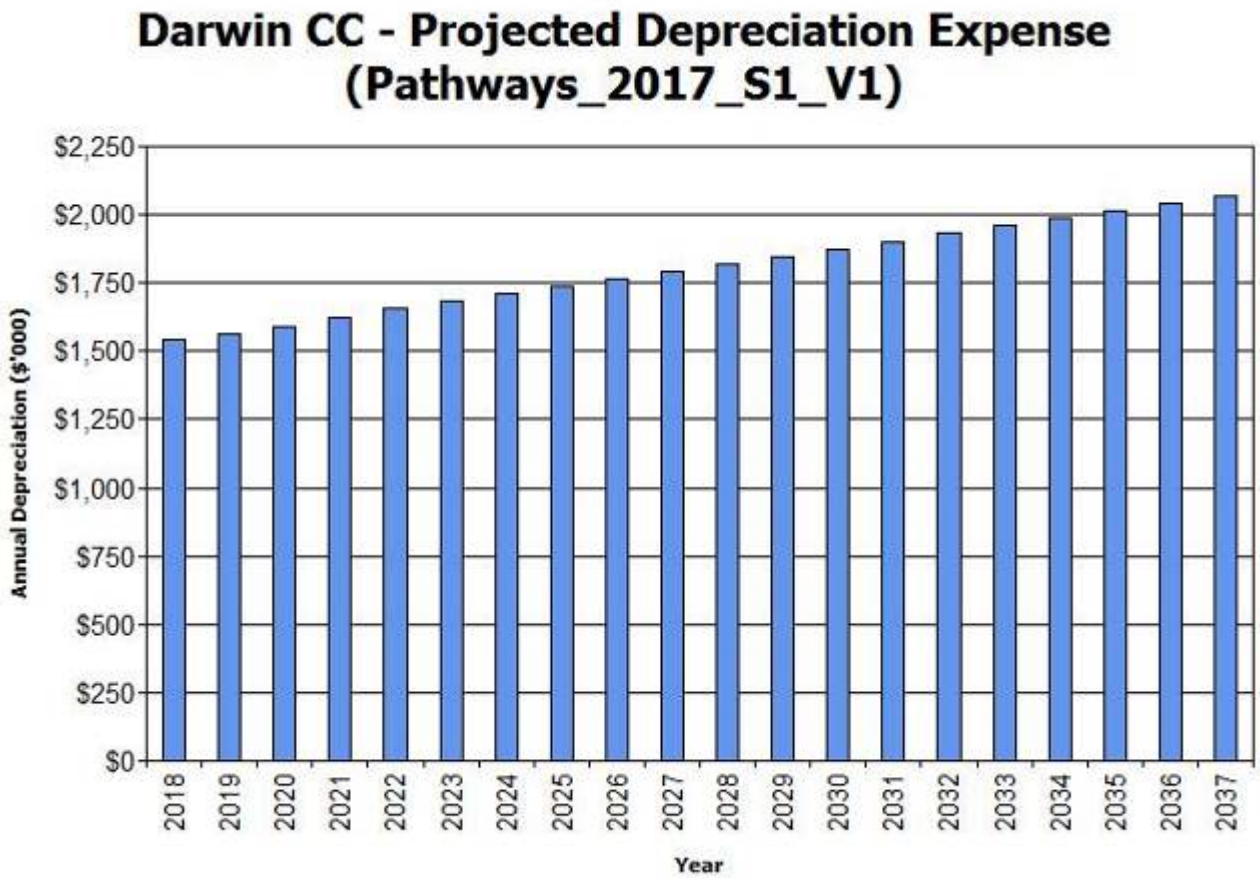
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 9: Projected Asset Values



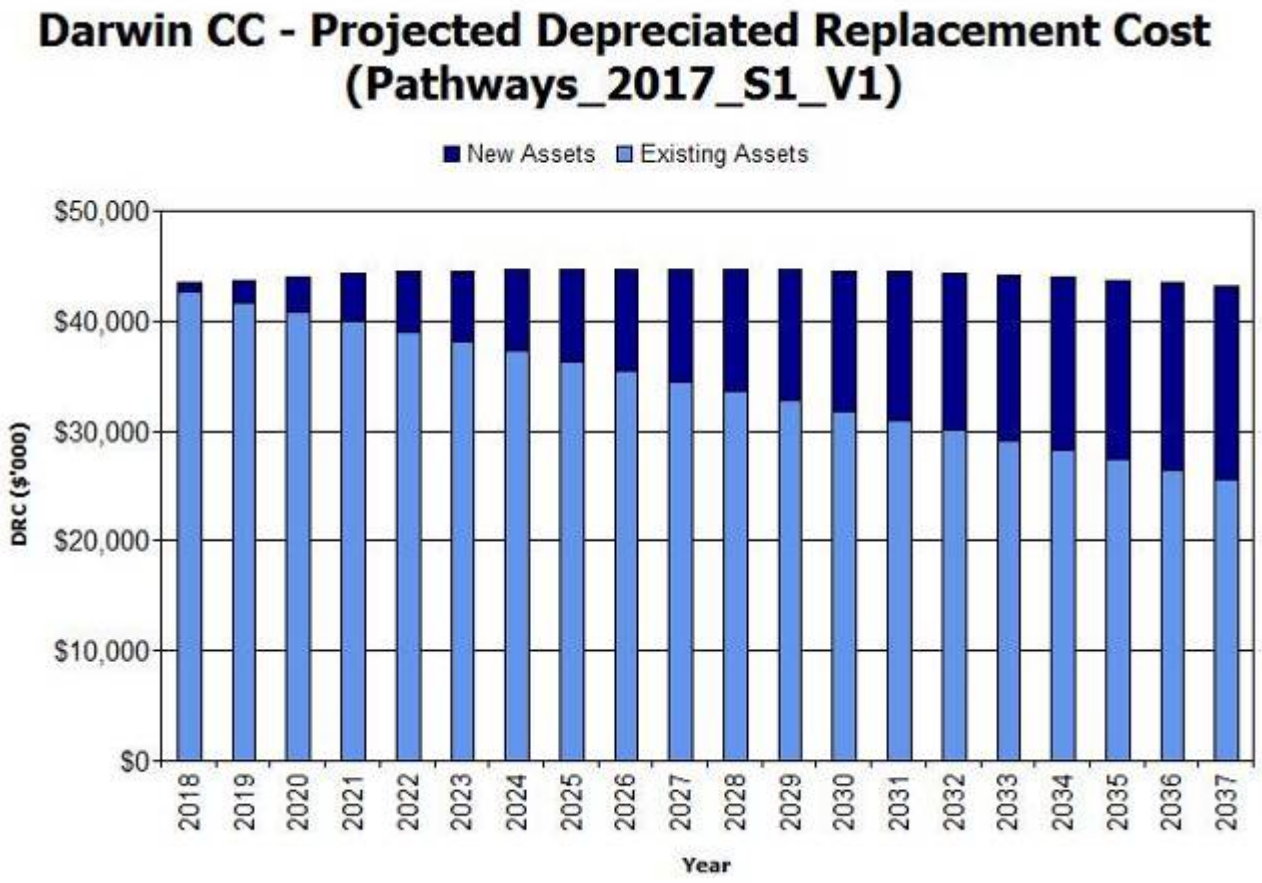
Depreciation expense values are forecast in line with asset values as shown in Figure 10.

Figure 10: Projected Depreciation Expense



The depreciated replacement cost 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. Forecast of the assets' depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 11: Projected Depreciated Replacement Cost



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 made in this asset management plan and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Escalation of 2014 revaluations using LTFP inflation figures reflects 2017 values.	Subsequent revaluations may differ and require rework to AMP
No assets created since 2014 valuation	Additional funding requirement not captured
No growth allowance (other than new/upgrade projects identified in 10yr capital works program).	Additional funding requirement not captured

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[12] in accordance with Table 6.5.

Table 6.5: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.5.1.

Table 6.5.1: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	B	Nil
Growth projections	B	Nil
Operations expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Maintenance expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Projected Renewal exps. - Asset values	C	Based on 2014 revaluation and not augmented by technical data.
- Asset residual values	C	Based on 2014 revaluation and not augmented by technical data.
- Asset useful lives	C	Based on 2014 revaluation and not augmented by technical data.
- Condition modelling	N/A	Condition data not used in modelling but is used for capex planning.
- Network renewals	C	Based on 10 year capex plan but uncertain if based on technical assessment
- Defect repairs	N/A	Not used in modelling
Upgrade/New expenditures	B	Based on 10 year capex plan based on pavement modelling from condition data – this provides highly reliable surface information, though pavement information is considered slightly less reliable.
Disposal expenditures	N/A	No disposals included

[12] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

Over all data sources the data confidence is assessed as medium confidence level for data used in the preparation of this AMP.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

CoD uses Authority as its accounting system.

Accountabilities for financial systems

Accountabilities are considered within Council's Financial Policies.

Accounting standards and regulations

All relevant Australian Accounting Standards, including;

AASB 13 Fair value measurement

AASB 136 Property, plant and equipment

Capital/maintenance threshold

In general, works with a value over $5000 are considered to be capital works.

7.1.2 Asset management system

CoD uses a combination of AssetFinda and ArcGIS, with some support from spreadsheets in minor databases.

Asset registers

Asset registers are stored within AssetFinda or ArcGIS.

Linkage from asset management to financial system

There is no current link between the systems. Procedures are established to ensure the systems are aligned as much as is practical.

Accountabilities for asset management system and data maintenance

Asset Management Procedures are in place to ensure the correct collection, recording and maintenance of asset data. Audits are also carried out on the data on intervals no less than the defined condition survey intervals.

7.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Levels of Service definition	Separate project	Unknown	Unknown
2	Asset hierarchy development	Asset Management team	Within existing resources	Next AMP Review
3	Identification of critical assets	Asset Management team	Within existing resources	Next AMP Review
4	Obselete footpaths for disposal identification	Asset Management team	Within existing resources	Next AMP Review

7.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognise 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 annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan. Updated financial information will be included every four years following the revaluation of the asset class.

7.4 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 Council's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- 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 Council's Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8. 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, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMG.

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

City of Darwin Strategic Plan – Evolving Darwin Towards 2020

City of Darwin Municipal Plan 2017-18

City of Darwin Policy No 055 – Asset Management

City of Darwin 2014 Revaluation, by APV Valuers & Asset Management

9. APPENDICES

Appendix A Maintenance Response Levels of Service

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Appendix C Projected 10 year Capital Upgrade/New Works Program

Appendix D LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix E Abbreviations

Appendix F Glossary

Appendix A Maintenance Response Levels of Service

To be developed.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Developed, but not included within this document, 3 year programs are developed and refined from the 10 year program.

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

Row Labels	Sum of 2018	Sum of 2019	Sum of 2020	Sum of 2021	Sum of 2022	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026
New	$ 964,896	$ 1,056,993	$ 1,278,448	$ 1,300,297	$ 1,105,275	$ 1,121,854	$ 1,138,681	$ 1,155,762	$ 1,173,098
Pathways	$ 964,896	$ 1,056,993	$ 1,278,448	$ 1,300,297	$ 1,105,275	$ 1,121,854	$ 1,138,681	$ 1,155,762	$ 1,173,098
DALY SMITH ST INTERSECTION	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
EAST POINT; LAKE ALEXANDER CYCLEPATH	$ -	$ -	$ 205,600	$ 211,357	$ -	$ -	$ -	$ -	$ -
FOOTPATH RECONSTRUCTION	$ 426,476	$ 432,873	$ 439,366	$ 445,957	$ 452,646	$ 459,436	$ 466,327	$ 473,322	$ 480,422
LIGHTING PATHWAYS	$ 110,567	$ 200,000	$ 203,000	$ 206,045	$ 209,136	$ 212,273	$ 215,457	$ 218,689	$ 221,969
LIGHTING UPGRADES	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
SHARED PATHS PROGRAM	$ 341,567	$ 346,690	$ 351,891	$ 357,169	$ 362,526	$ 367,964	$ 373,484	$ 379,086	$ 384,772
WALKWAYS UPGRADES	$ 76,285	$ 77,429	$ 78,591	$ 79,770	$ 80,966	$ 82,181	$ 83,413	$ 84,665	$ 85,935
Grand Total	$ 964,896	$ 1,056,993	$ 1,278,448	$ 1,300,297	$ 1,105,275	$ 1,121,854	$ 1,138,681	$ 1,155,762	$ 1,173,098

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Darwin CC**

Pathways_2017_S1_V1 **Asset Management Plan**

First year of expenditure projections **2018** (financial yr ending)

Pathways_2017

Asset values at start of planning period

			Calc CRC from Asset Register
Current replacement cost	$63,748	(000)	$63,748 (000)
Depreciable amount	$61,448	(000)	This is a check for you.
Depreciated replacement cost	$43,482	(000)	
Annual depreciation expense	$1,513	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	0.19%
Additional maintenance	1.11%
Additional depreciation	2.12%

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 **2018** values

Financial year ending	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)										
Operations										
Operations **budget**	$121	$121	$121	$121	$121	$121	$121	$121	$121	$121
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	$121	$121	$121	$121	$121	$121	$121	$121	$121	$121
Maintenance										
Reactive maintenance **budget**	$708	$708	$708	$708	$708	$708	$708	$708	$708	$708
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	$708	$708	$708	$708	$708	$708	$708	$708	$708	$708
Capital										
Planned renewal **budget**	$647	$647	$647	$647	$647	$647	$647	$647	$647	$647
Planned upgrade/new **budget**	$677	$677	$677	$677	$677	$677	$677	$677	$677	$677
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	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $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)

	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000
Forecast Capital Renewal from Forms 2A & 2B	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Forecast Capital Upgrade from Form 2C	$955	$1,057	$1,278	$1,300	$1,105	$1,122	$1,139	$1,156	$1,173	$1,143

Appendix E Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix F Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

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.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service
The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of a Council (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary

Additional and modified glossary items shown *

ATTACHMENT C

Stormwater

Pits, Pipes, Open Drains

Asset Management Plan

Document Control	

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Rev No	Date	Revision Details	Author	Reviewer	Approver
0	June 2017	Preliminary Working Draft	GHD	COD	
	March 2018	Final Draft for Presentation to RMAC	COD		

Review Period

Once every 3 years, or as required following a revaluation and/or change requiring review.

Asset Management Plan Responsibilities

Key Stakeholder	Role in Asset Management Plan
Elected Members	Allocate resources to meet the organisation's objectives in providing services while managing risks, Ensure organisation is financial sustainable.
Executive Leadership Team	Executive management endorsement
Asset Management Team/Manager	Review of Asset Management Plan Development and updating of replacement programs
Asset Management Steering Group	Endorsement of Asset Management Plan
Financial Services	Financial data input
City Operations	Strategic and operational unit input Undertaking asset maintenance and replacement programs
Asset custodian	Asset data, service level, asset lifecycle inputs

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1. EXECUTIVE SUMMARY

Context

This Asset Management Plan (AMP) covers the stormwater assets for City of Darwin.

The stormwater network comprises:

- Stormwater drains – 348km
- Subsoil drainage – 23km
- Pits – 10,259
- Open drains – 11km

These infrastructure assets have a replacement value of $324.2M.

What does it Cost?

This asset management plan has been developed using 2 analysis scenarios with Scenario 1 being presented within this Asset Management Plan. Scenario 1 (S1) uses asset valuation data to predict renewals based on end of life projections. Scenario 3 (S3) is based on councils current programmed asset renewals. Note that Scenario 2 is not utilised as it is not relevant for this asset class. Using the scenarios, an overview of the cost of providing the assets can be determined, of which Scenario 1 is used. The 10 year asset management financial indicator is 117% for stormwater assets.

Project outlays required to provide the services covered by this Asset Management Plan (AMP) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period are summarised below.

Stormwater – Summary	**($000)**
10 year total cost	32,786
10 year total budget	38,230
10 year average cost	3,279
10 year average budget	3,823
10 year average shortfall	544

What we will do

Council plans to operate and maintain the transport network so that it meets the needs of the community.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Major weather events
- Unknown non-visual asset conditions
- Level of Service expectations

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

- Optimising condition surveys
- Developing levels of service

Confidence Levels

This AMP is based on medium level of confidence information.

The Next Steps

The actions resulting from this asset management plan are:

- Develop Levels of Service
- Identify asset hierarchy and critical assets

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the City of Darwin community's road needs. These assets include stormwater and associated infrastructure, throughout the community area that enable people to use road transport to access services.

What is an Asset Management Plan?

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

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Most of the Council's road network was constructed by developers and the government, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are now approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

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

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,
5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that stormwater services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For stormwater, the service level reduction may include lower quality surfaces, increased pavement defects and longer rectification timeframes.

What can we do?

We can develop options, costs and priorities for future stormwater services, consult with the community to plan future services to match the community service needs with ability to pay for services and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

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

The asset management plan follows the format for AMPs recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The asset management plan is to be read with the organisation's Asset Management Policy, and Asset Management Strategy.

This infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide access to services in the community.

Table 2.1: Assets covered by this Plan

Asset category	Dimension	Replacement Value (000's)
Stormwater Drains	347.7km	$285,603
Subsoil drainage	23.0km	$1,619
Pits	10,259	$31,233
Open drains	11.0km	$5,775
TOTAL		**$324,230**

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Key Stakeholder	Role in Asset Management Plan
Elected Members	Represent needs of community/shareholders Allocate resources to meet the organisation's objectives in providing services while managing risks Ensure organisation is financial sustainable
Risk Management and Audit Committee	Independent assurance and assistance to Council on Council's risk, control and compliance frameworks, and external accountability.
Executive Leadership Team	Executive management endorsement
Asset Management Steering Group	Endorsement of Asset Management Plan and associated procedures Development of long-term asset management strategies and related policies in accordance with legislation and good management practices Coordination of financial, operational and strategic inputs

Our organisational structure for service delivery of infrastructure assets is available on our website at www.darwin.nt.gov.au

2.2 Goals and Objectives of Asset Management

City of Darwin as an organisation provides services to its community, and many services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others.

[1] IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

Our goal in managing infrastructure assets is to meet the community's desired level of service (in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

2.3 Plan Framework

Key elements of the plan are

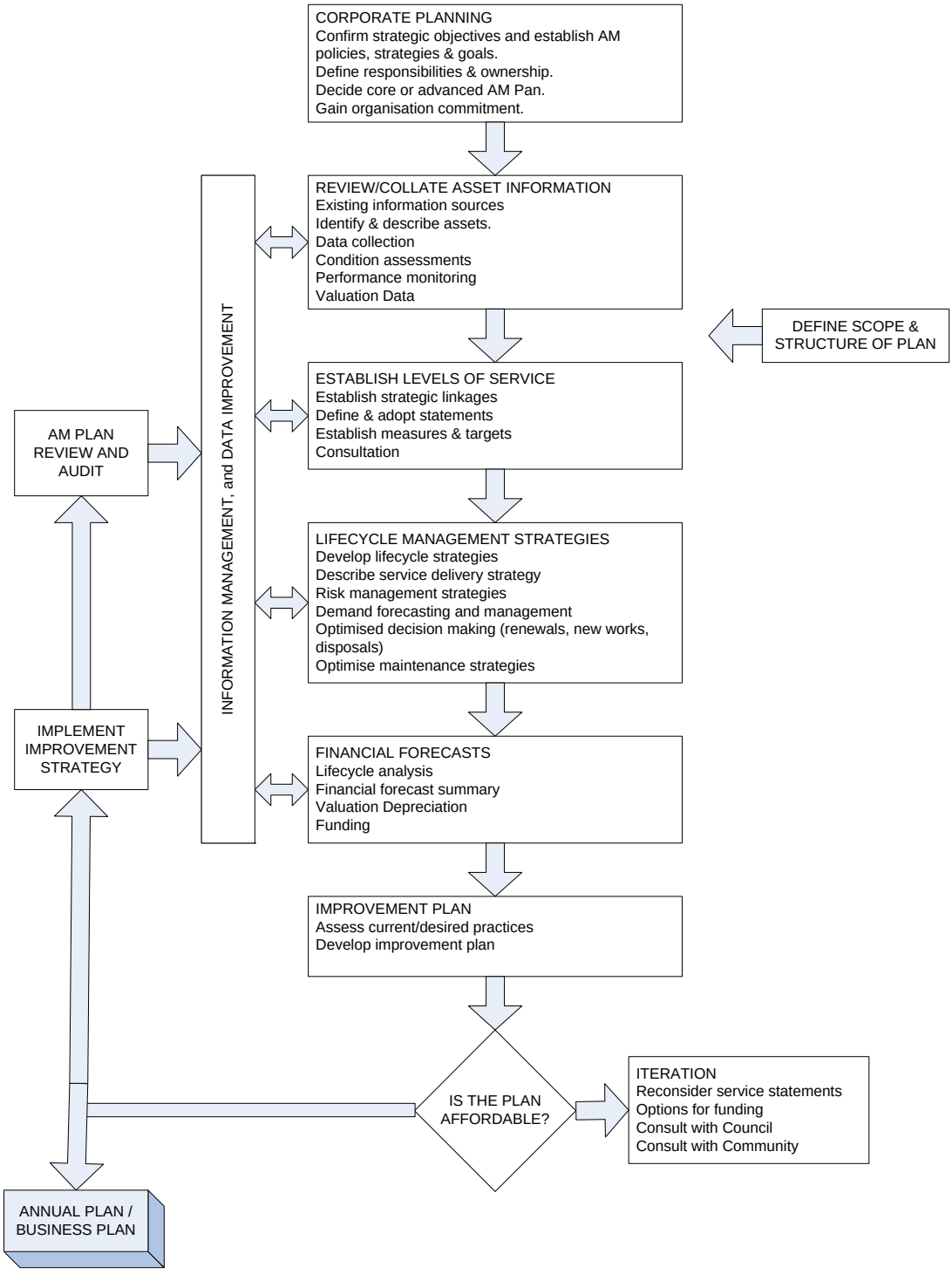
- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives,
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

[2] Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

2.5 Community Consultation

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

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council undertakes an annual Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services. The most recent community satisfaction survey (2015) reported satisfaction levels for the following services relating to stormwater infrastructure.

Table 3.1: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level	Target
Stormwater drainage	TBC	>4

A scale of 1-5 is used, from 1 being not satisfied and 5 being very satisfied.

3.2 Strategic and Corporate Goals

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

Our vision is:

"A tropical, liveable city that creates opportunity and choice for our community"

Our mission is:

"Council will work with the community to maintain and promote the City of Darwin as the tropical capital of the Northern Territory, offering opportunities and a vibrant lifestyle for our residents and visitors"

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

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

Goal	Outcome	Strategy Relevant to this Plan
Strategic Goal 2:	2.4 Economic growth	2.4.1 Deliver, advocate for, and partner in

[3] IPWEA, 2011, IIMM.

Vibrant, flexible and tropical lifestyle	supported	infrastructure and services that support Darwin's economic growth
Strategic Goal 2: Effective and responsible governance	5.5 Responsible financial and asset management	5.5.1 Manage Council's business based on a sustainable financial and asset management strategy

The organisation will exercise its duty of care to ensure public safety is accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 5.2

3.3 Legislative Requirements

The organisation has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act (NT) 2008	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health and Safety (National uniform legislation) Act	Sets out the rules and responsibilities to secure the health, safety and welfare of persons at work
All relevant Australian Standards and Codes of Practice	National and international guidance and legislation relating to design, installation, maintenance, approvals, testing to be applied to assets as required.
Environmental Assessment Act	Outlines legislative requirements in relation to the assessment of the environmental effects of development proposals and for the protection of the environment
Environmental Offences and Penalties Act 1996	Outlines offences local governments local governments (and other parties) may be liable for where their acts and omissions maybe detrimental to the protection of the environment.
Land Title Act & Regulations	Outlines legislative issues local governments need to consider in relation to land ownership, easements and other purposes that may impact on various assets, such as roads, stormwater and buildings that the local government has under it care and control.
Lands Acquisition Act & Regulations	Outlines legislative issues local governments need to consider in relation to land they own that could be compulsorily acquired by the Northern Territory for the purpose of the provision of essential services and facilities being power (including gas), water, sewerage, road or communication services or facilities to or across the prescribed land, or access to any of them.
National Trust (Northern Territory) Act	Outlines legislative issues local governments need to consider in relation to the impacts that the National Trust (Northern Territory) activities could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Northern Territory Aboriginal Sacred Sites Act	Outlines legislative issues local governments need to consider in relation to the impacts that the Aboriginal Sacred Sites could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Planning Act & Regulations	Outlines legislative issues local governments need to consider in relation to providing for appropriate and orderly planning and control of the use and

	development of land within the municipality

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AM Plan. Management of risks is discussed in Section 5.2.

3.4 Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in asset management planning are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

Technical Levels of Service support the community service levels as operational and technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures can be linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

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

Community and technical levels of service will be developed for future asset management plans.

4. FUTURE DEMAND

4.1 Demand Drivers

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

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

[4] IPWEA, 2011, IIMM, p 2.22

4.3 Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population	83,465 Estimated residential population (2016)	1.5% annual growth per annum (over 10 years)	Little or no impact
Development	Slowing economy	Moderate growth over medium term	Increased density in established areas can increase stormwater flows, impacting on the capacity requirements of the stormwater systems.
Technological	N/A	No major technology advances anticipated	Little or no impact
Legislative change	Inclusion of Area Plans in Planning Scheme	Change of use and increasing density	Likely impact on functional use of existing assets and increasing demand as density increases
Climate change	No impact	Increased quantity and intensity of storms is possible.	Increased stormwater runoff requiring additional infrastructure.
Community expectations	N/A	Ongoing increase in levels of service expectations	Potential requirement for higher protection from flooding.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[5].

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

Table 4.4: Demand Management Plan Summary

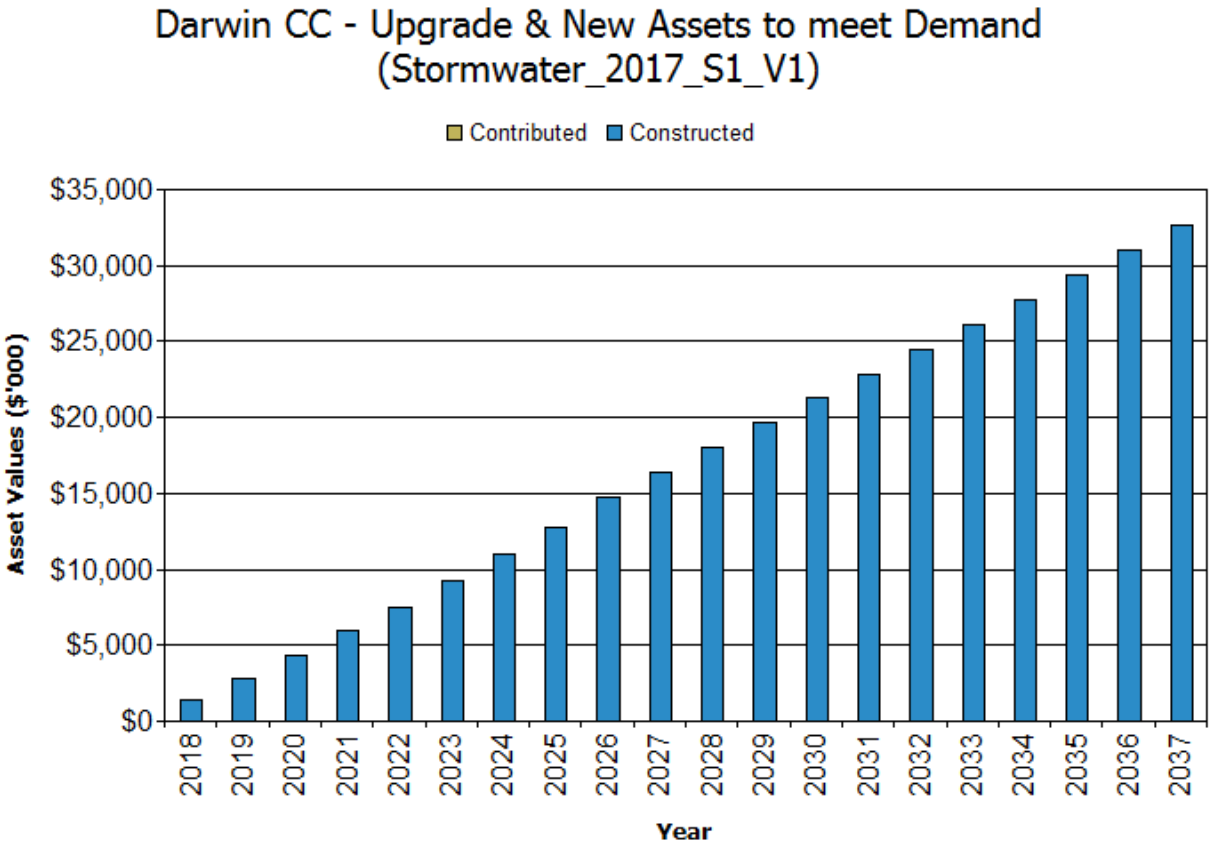
Demand Driver	Impact on Services	Demand Management Plan
Customer expectations	Potential requirement for higher quality, improved access and capacity.	Whole of life cost assessment of potential new assets and impacts on operational and maintenance and consultation with community to ensure informed decision making.
Area Plans (NT Planning Scheme)	Changing and increasing demand on services.	Provide input into area plan developments, forecast potential needs

[5] IPWEA, 2011, IIMM, Table 3.4.1, p 3|58.

4.5 Asset Programs to meet Demand

The new assets required to meet growth will be acquired free of cost from land developments or constructed by the organisation. New assets constructed/acquired by the organisation are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarised in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand



Acquiring these new assets will commit the organisation to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the organisation 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

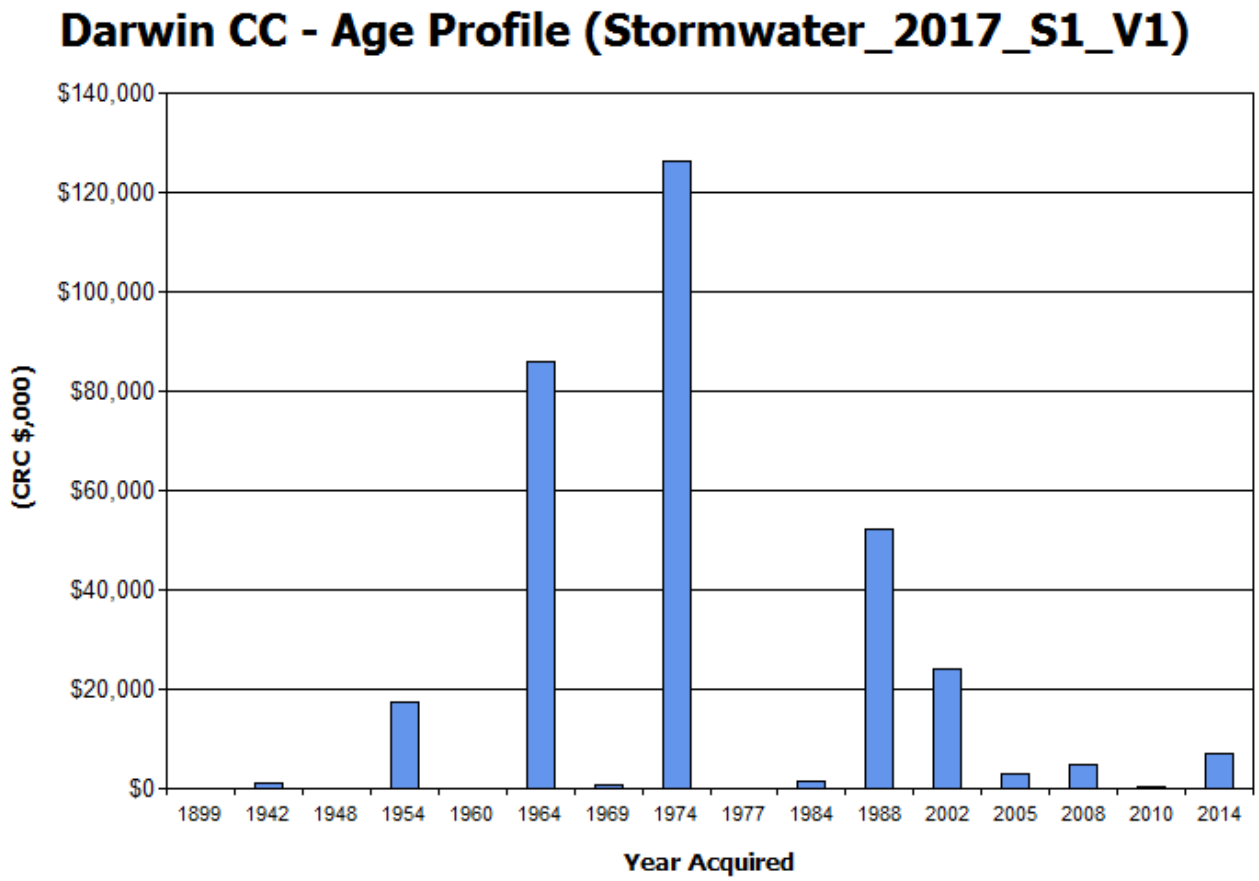
5.1.1 Physical parameters

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

The stormwater asset class includes pits, pipes and open drains.

The age profile of the assets include in this AM Plan is shown in Figure 2, noting that many assets were generically recorded as being constructed in 1974.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

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

5.1.3 Asset condition

Condition is monitored through a regular inspection program. Stormwater pipe asset condition is recorded on a representative portion of the assets annually. Open drains condition is recorded every four years. Stormwater pit asset condition is recorded annually.

The condition profile of our assets is not available for this Asset Management Plan. Condition is measured using a 1 – 5 grading system[6] as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

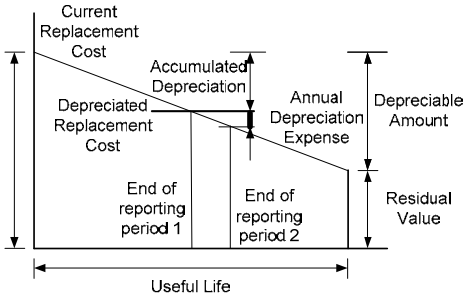
Condition Grading	Description of Condition
1	**Very Good**: only planned maintenance required
2	**Good**: minor maintenance required plus planned maintenance
3	**Fair**: significant maintenance required
4	**Poor**: significant renewal/rehabilitation required
5	**Very Poor**: physically unsound and/or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

[6] IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.

5.1.4 Asset valuations

Assets were last revalued at 2014 using a fair value methodology. The valuations have been adjusted using the following escalation rates to estimate the 2017 values:

2014/15 – 4.4%
2015/16 – 1.9%
2016/17 – 0.5%



The adjusted revaluation are as follows (000's):

Current Replacement Cost	$324,230
Depreciable Amount	$324,230
Depreciated Replacement Cost[7]	$158,398
Annual Depreciation Expense	$4,076

Useful lives were reviewed in June 2014 as part of the revaluation of assets.

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	1.3%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	0.4%

In 2018 the organisation plans to renew assets at 28.7% of the rate they are being consumed and will be increasing its asset stock by 0.4% in the year.

5.1.5 Historical Data

To be included in future revisions of this Asset Management Plan.

5.2 Infrastructure Risk Management Plan

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' to the organisation. 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.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management, the Risk Management and Audit Committee, and Council.

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *

[7] Also reported as Written Down Current Replacement Cost (WDCRC).
[8] Infrastructure Department Operational Risk Assessment (Rev 5) June 2016

Stormwater Asset Management	**Failure to develop, implement and maintain a corporate asset register** - Inconsistent and fragmented approach to the collection and storage of asset information - Lack of data available to monitor the condition of assets - Inability to plan long and short term asset management programs - Inability to adequately budget for asset management - Inability to monitor and assess ratepayer and public demands for levels of service - Inability to monitor and assess actual levels of service delivery	VH	Asset Management Steering Group in place and continues to meet quarterly Implementation of the corporate asset register is underway and will provide a central location for data storage	H
Stormwater Asset Management	**Failure to develop and promote asset management policies, standards and procedures** - Failure to ensure a consistent approach to asset management is applied across Council - Loss of corporate asset knowledge - Failure to ensure asset management is undertaken in accordance with Australian and International Standards	VH	Asset Management Steering Group in place and continues to meet quarterly Development of procedures undertaken for data collection and asset management Cyclic reviews undertaken of policies, standards and procedures Asset management roles and responsibilities allocated to specific individuals across the organisation Implementation of asset sustainability review recommendations will ensure policies, standards and procedures are developed and monitored	H
Stormwater Drainage Maintenance	**Failure to plan, budget and implement stormwater drainage management program**	H	Stormwater inspection program in place Budget allocation for stormwater asset management Sign off processes in place for acceptance of new infrastructure from developers	M
Stormwater Drainage Maintenance	**Failure to plan, budget and implement stormwater drainage management program**	H	Stormwater inspection program in place Budget allocation for stormwater asset	M

			management Sign off processes in place for acceptance of new infrastructure from developers	

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

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, eg cleansing, street sweeping, grass mowing and street lighting.

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.

5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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, eg road patching but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

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

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Develop and regularly review appropriate emergency response capability,

- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. A hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery. An asset hierarchy will be developed for future Asset Management Plans.

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

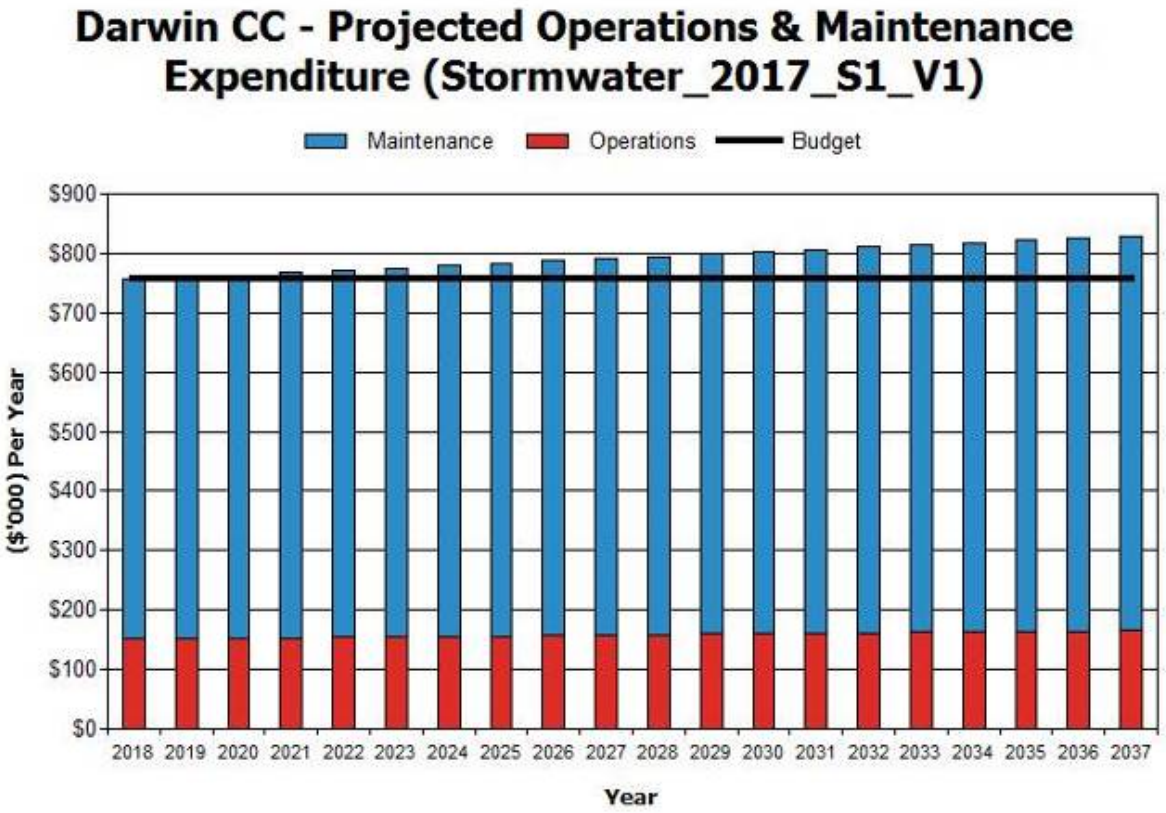
Standards and specifications

Maintenance work is carried out in accordance with relevant Australian Standards, Guidelines and Northern Territory specifications.

5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017dollar values (ie real values).

Figure 4: Projected Operations and Maintenance Expenditure



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

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

5.4 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 or lesser required 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

Assets requiring renewal/replacement are identified from Council's Asset Register data (used for 2014 valuations) to project the renewal costs using acquisition year and useful life to determine the renewal year.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1.

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful life (years)
Stormwater drains	80
Subsoil drains	80
Pits	80
Open drains	60

5.4.2 Renewal and Replacement Strategies

The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, and
    - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

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, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).[9]

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 a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- 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
- Where replacement with modern equivalent assets would yield material savings.[10]

Standards and specifications

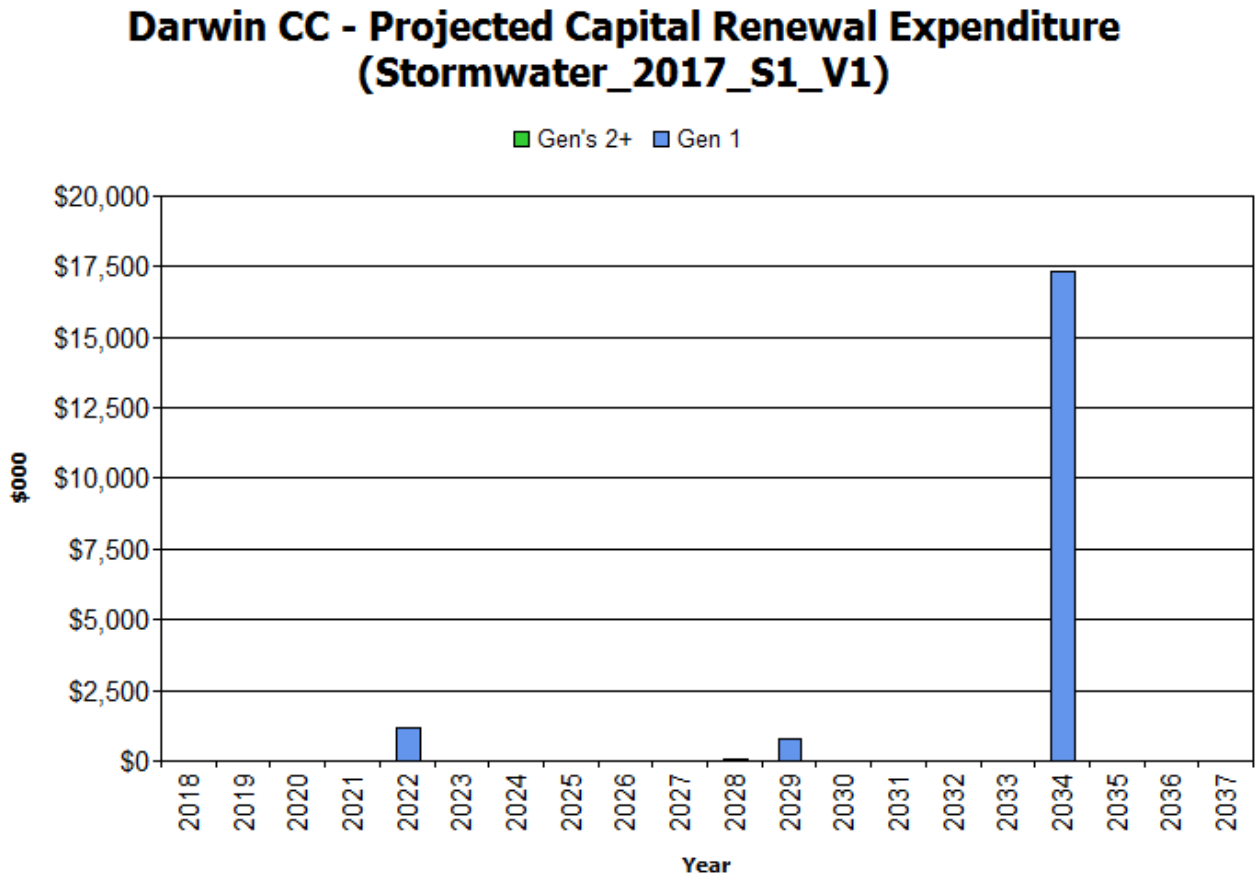
Renewal and replacement work is carried out in accordance with relevant Australian Standards, guidelines and Northern Territory specifications.

5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

Fig 5: Projected Capital Renewal and Replacement Expenditure

[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.
[10] Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.



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

Renewals and replacement expenditure in the organisation's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

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 organisation from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as Council and community requests, proposals identified by strategic plans or partnerships with other organisations, and are incorporated into Council's long term financial plans.

5.5.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,

- the project objectives to rectify the deficiency including value management for major projects,
- the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
- management of risks associated with alternative options,
- and evaluate the options against evaluation criteria adopted by Council, and
- select the best option to be included in capital upgrade/new programs,

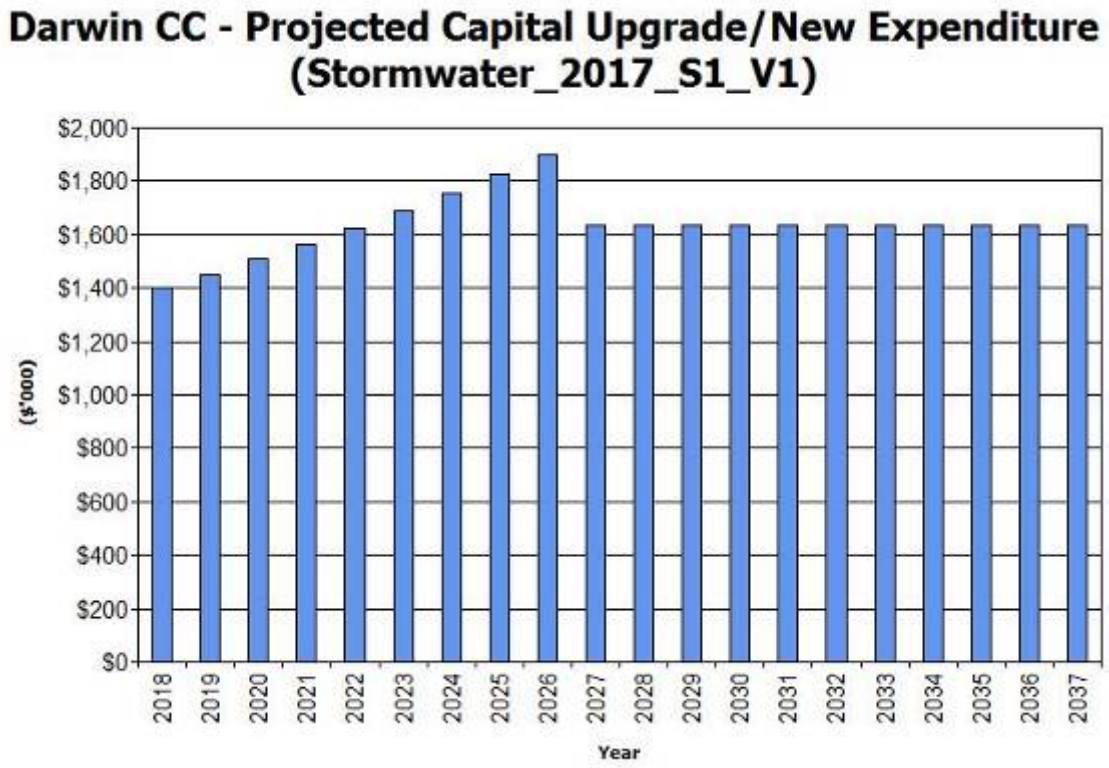
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Fig 6. The projected upgrade/new capital works program is shown in Appendix C and is based on the 2017 long term capital works plan. All amounts are shown in real values.

Fig 6: Projected Capital Upgrade/New Asset Expenditure



5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council's long term financial plan.

No stormwater assets are identified for disposal.

5.7 Service Consequences and Risks

The organisation has prioritised decisions made in adopting this AMP to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AMPs.

Scenario 1 - What we would like to do based on asset register data

Scenario 2 – What we should do with existing budgets and identifying level of service and risk consequences (ie what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AMP.

Scenario 3 – What we can do and be financially sustainable with AMPs matching long-term financial plans.

The development of scenario 1 and scenario 2 AMPs provides the tools for discussion on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

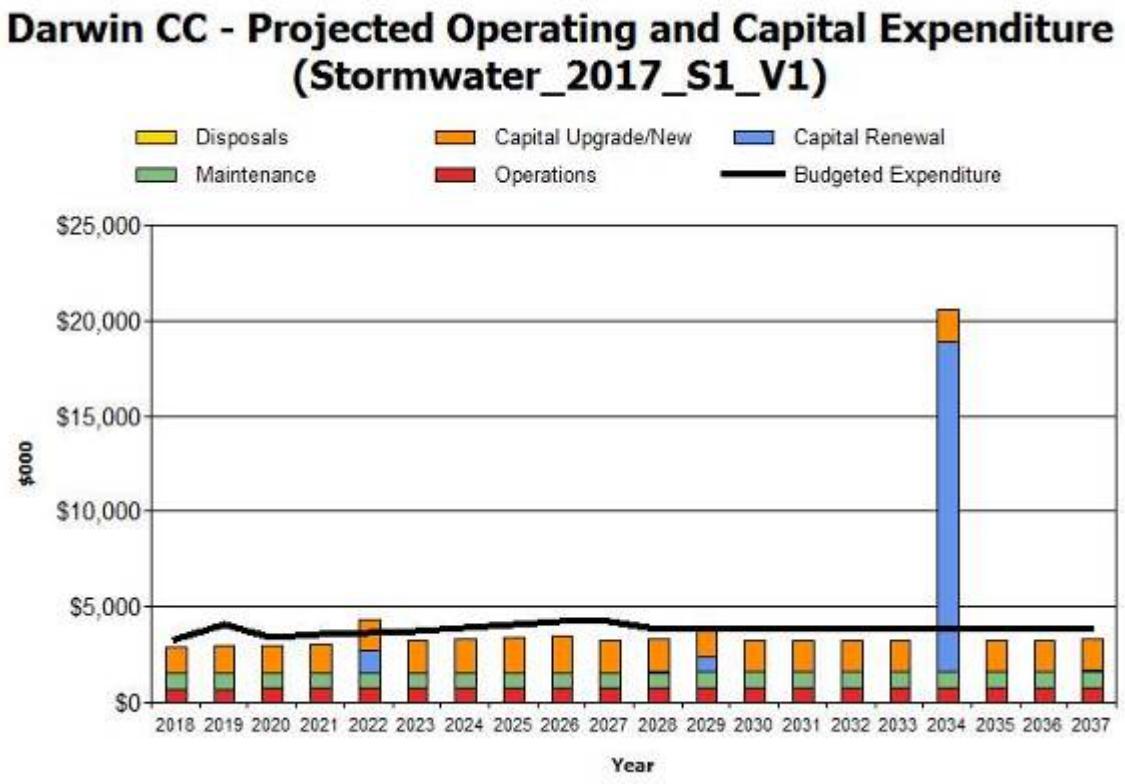
6. FINANCIAL SUMMARY

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.

6.1 Financial Statements and Projections

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

Fig 7: Projected Operating and Capital Expenditure



6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 1229%

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 1229% of the funds required for the optimal renewal and replacement of its assets.

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 long term, 5 and 10 year periods. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the long term, 5 and 10 year periods to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

These figures are included in figure 7A.

Fig 7A: Projected Sustainability

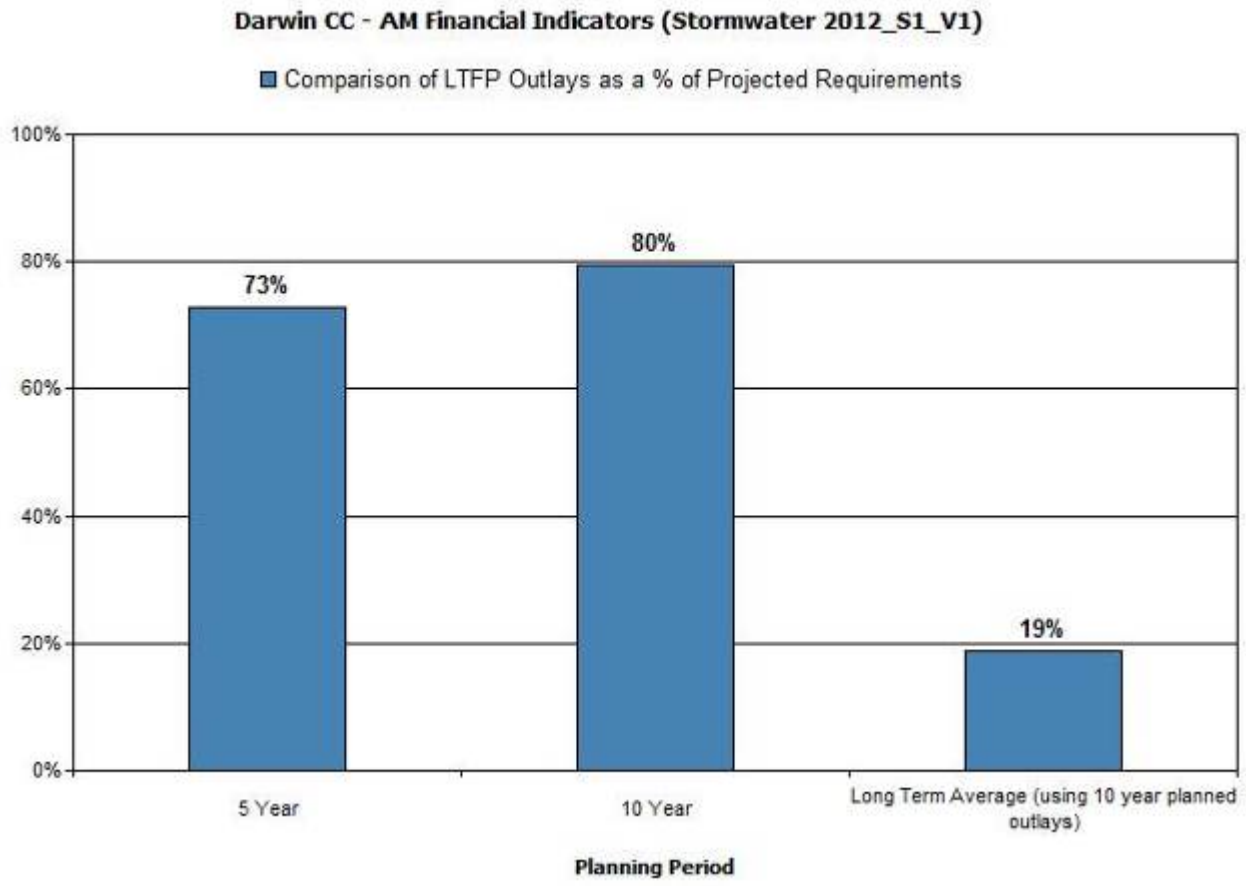
Stormwater_2017_S1_V1	
Asset Renewal Funding Ratio	
Asset Renewal Funding Ratio	**1229%**
Long Term - Life Cycle Costs	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$5,603**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$2,966**
Life Cycle Gap [life cycle expenditure – life cycle cost (-ve = gap)]	**$-2,638**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**53%**
Medium Term - 10 year financial planning period	
10 yr Ops, Maint & Renewal Projected Expenditure	**$1,644**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,966**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**$1,321**
10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**180%**
Medium Term – 5 year financial planning period	
5 yr Ops, Maint & Renewal Projected Expenditure	**$1,743**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$2,864**
5 year financing shortfall [5 yr proj exp - LTFP Budget exp]	**$1,122**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**164%**

Asset management financial indicators

[11] AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

Figure 7B shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

Figure 7B: Asset Management Financial Indicators



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.

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AM Plan. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

Figure 8: Projected and LTFP Budgeted Renewal Expenditure

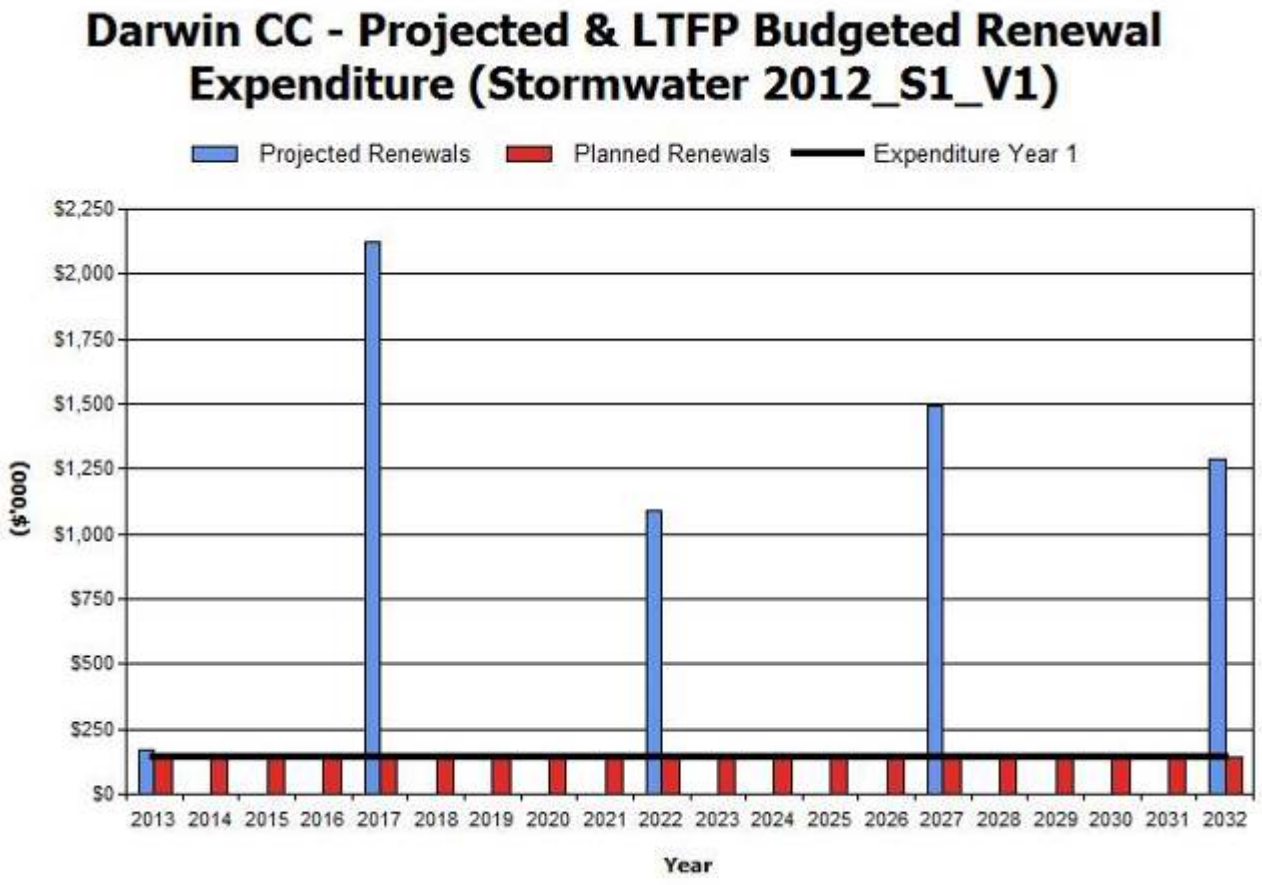


Table 6.1.1 (S1): Projected and LTFP Budgeted Renewals and Financing Shortfall

Year End June 30	Projected Renewals ($'000)	LTFP Renewal Budget ($'000)	Renewal Financing Shortfall (- gap, + surplus) ($'000)	Cumulative Shortfall (- gap, + surplus) ($'000)
2018	$0	$1,170	$1,170	$1,170
2019	$0	$1,881	$1,881	$3,051
2020	$4	$1,195	$1,191	$4,242
2021	$0	$1,264	$1,264	$5,506
2022	$1,167	$1,336	$169	$5,675
2023	$0	$1,414	$1,414	$7,089
2024	$0	$1,497	$1,497	$8,586
2025	$0	$1,585	$1,585	$10,171
2026	$0	$1,679	$1,679	$11,850
2027	$0	$1,684	$1,684	$13,534
2028	$88	$1,471	$1,383	$14,916
2029	$792	$1,471	$678	$15,595
2030	$0	$1,471	$1,471	$17,065
2031	$0	$1,471	$1,471	$18,536

2032	$0	$1,471	$1,471	$20,006
2033	$0	$1,471	$1,471	$21,477
2034	$17,299	$1,471	$-15,828	$5,648
2035	$0	$1,471	$1,471	$7,119
2036	$0	$1,471	$1,471	$8,589
2037	$22	$1,471	$1,448	$10,038

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the AMP (including possibly revising the LTFP) before finalising the asset management plan to manage required service levels and funding to eliminate any funding gap.

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2017 real values.

Table 6.1.2 (S1): Projected Expenditures for Long Term Financial Plan ($000)

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade / New	Disposals
2018	$719	$776	$0	$1,400	$0
2019	$722	$779	$0	$1,451	$0
2020	$725	$783	$4	$1,506	$0
2021	$729	$786	$0	$1,563	$0
2022	$732	$790	$1,167	$1,623	$0
2023	$736	$794	$0	$1,687	$0
2024	$739	$798	$0	$1,754	$0
2025	$743	$802	$0	$1,825	$0
2026	$747	$807	$0	$1,900	$0
2027	$752	$811	$0	$1,634	$0
2028	$755	$815	$88	$1,634	$0
2029	$759	$819	$792	$1,634	$0
2030	$762	$823	$0	$1,634	$0
2031	$766	$827	$0	$1,634	$0
2032	$770	$831	$0	$1,634	$0
2033	$773	$835	$0	$1,634	$0
2034	$777	$839	$17,299	$1,634	$0
2035	$781	$842	$0	$1,634	$0
2036	$784	$846	$0	$1,634	$0
2037	$788	$850	$22	$1,634	$0

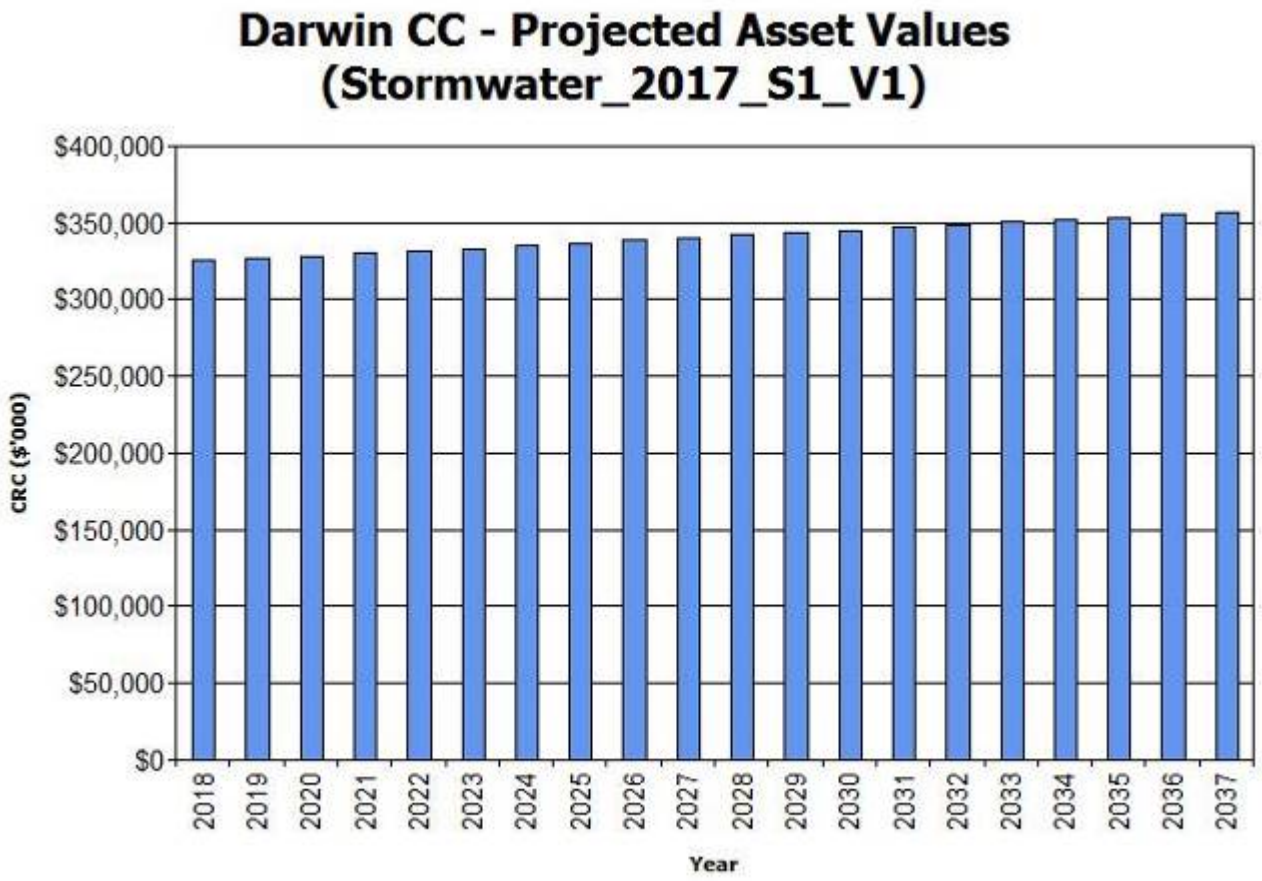
6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council's 10 year long term financial plan.

6.3 Valuation Forecasts

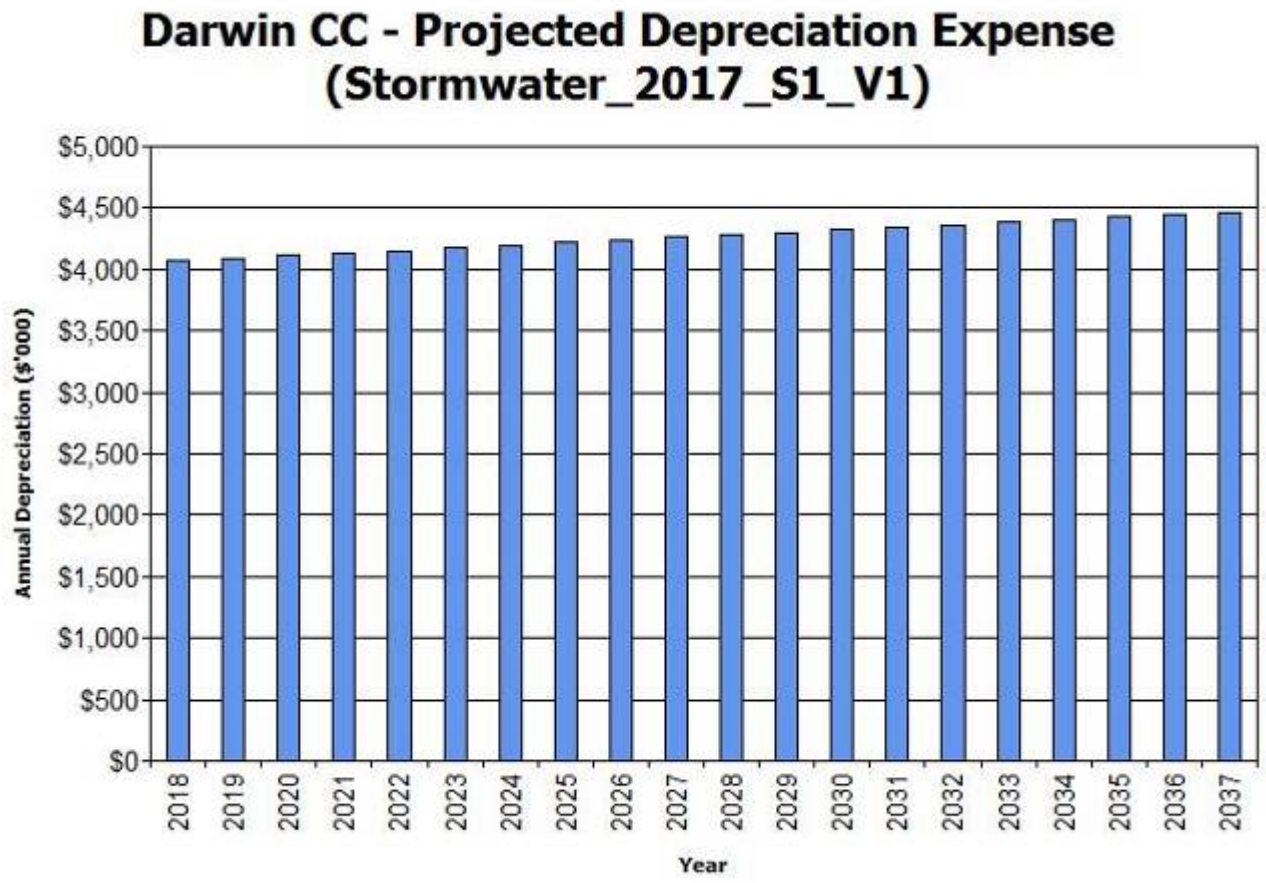
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 9: Projected Asset Values



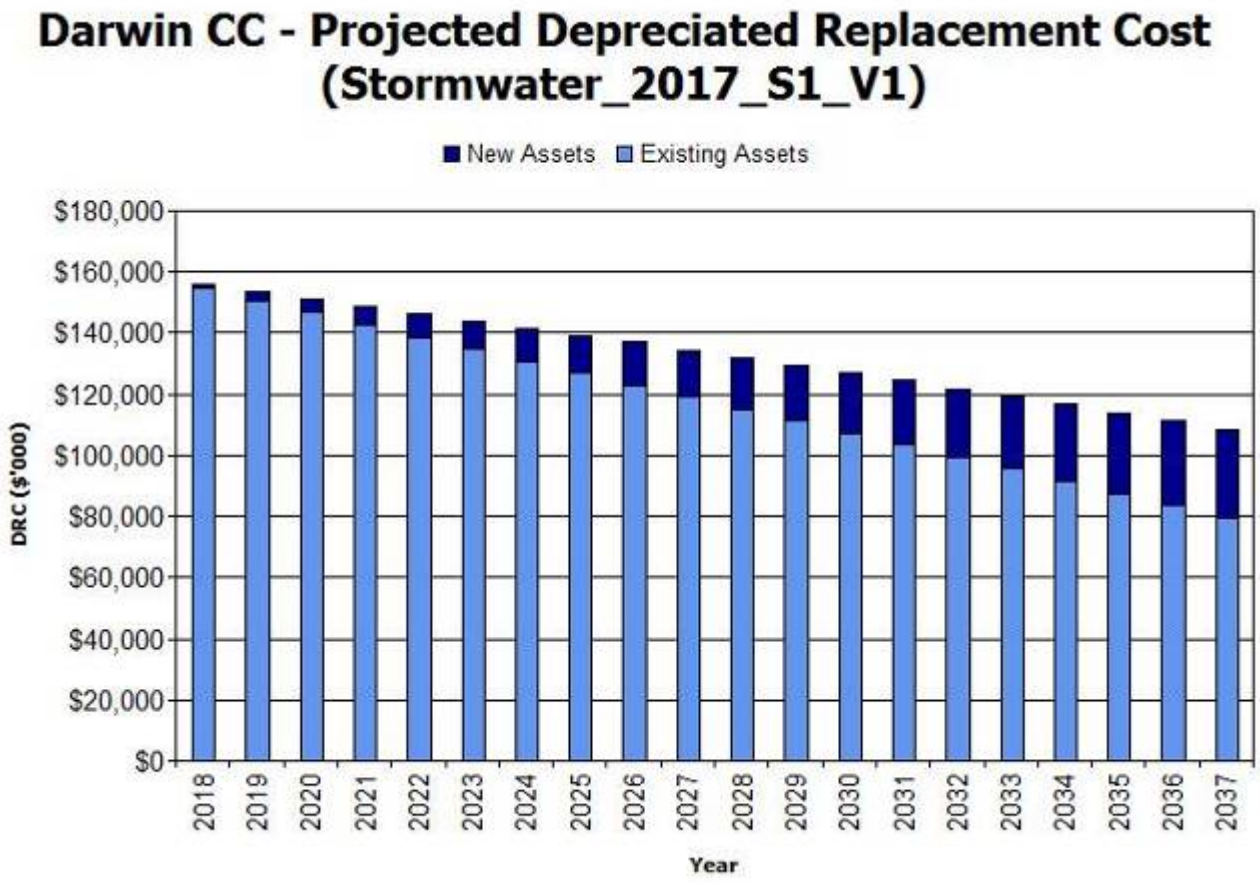
Depreciation expense values are forecast in line with asset values as shown in Figure 10.

Figure 10: Projected Depreciation Expense



The depreciated replacement cost 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. Forecast of the assets' depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 11: Projected Depreciated Replacement Cost



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 made in this asset management plan and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Escalation of 2014 revaluations using LTFP inflation figures reflects 2017 values.	Subsequent revaluations may differ and require rework to AMP
No assets created since 2014 valuation	Additional funding requirement not captured
No growth allowance (other than new/upgrade projects identified in 10yr capital works program).	Additional funding requirement not captured

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[12] in accordance with Table 6.5.

Table 6.5: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.5.1.

Table 6.5.1: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	B	Nil
Growth projections	B	Nil
Operations expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Maintenance expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Projected Renewal exps. - Asset values	C	Based on 2014 revaluation and not augmented by technical data.
- Asset residual values	C	Based on 2014 revaluation and not augmented by technical data.
- Asset useful lives	C	Based on 2014 revaluation and not augmented by technical data.
- Condition modelling	N/A	Condition data not used in modelling
- Network renewals	C	Based on 10 year capex plan but uncertain if based on technical assessment
- Defect repairs	N/A	Not used in modelling
Upgrade/New expenditures	B	Based on 10 year capex plan based on pavement modelling from condition data – this provides highly reliable surface information, though pavement information is considered slightly less reliable.
Disposal expenditures	N/A	No disposals included

[12] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

Over all data sources the data confidence is assessed as medium confidence level for data used in the preparation of this AMP.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

CoD uses Authority as its accounting system.

Accountabilities for financial systems

Accountabilities are considered within Council's Financial Policies.

Accounting standards and regulations

All relevant Australian Accounting Standards, including;

AASB 13 Fair value measurement

AASB 136 Property, plant and equipment

Capital/maintenance threshold

In general, works with a value over $5000 are considered to be capital works.

7.1.2 Asset management system

CoD uses a combination of AssetFinda and ArcGIS, with some support from spreadsheets in minor databases.

Asset registers

Asset registers are stored within AssetFinda or ArcGIS.

Linkage from asset management to financial system

There is no current link between the systems. Procedures are established to ensure the systems are aligned as much as is practical.

Accountabilities for asset management system and data maintenance

Asset Management Procedures are in place to ensure the correct collection, recording and maintenance of asset data. Audits are also carried out on the data on intervals no less than the defined condition survey intervals.

7.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Levels of Service definition	Separate project	Unknown	Unknown
2	Asset hierarchy development	Asset Management team	Within existing resources	Next AMP Review
3	Identification of critical assets	Asset Management team	Within existing resources	Next AMP Review

7.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognise 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 annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan. Updated financial information will be included every four years following the revaluation of the asset class.

7.4 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 Council's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- 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 Council's Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8. 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, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMG.

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

City of Darwin Strategic Plan – Evolving Darwin Towards 2020

City of Darwin Municipal Plan 2017-18

City of Darwin Policy No 055 – Asset Management

City of Darwin 2014 Revaluation, by APV Valuers & Asset Management

9. APPENDICES

Appendix A Maintenance Response Levels of Service

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Appendix C Projected 10 year Capital Upgrade/New Works Program

Appendix D LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix E Abbreviations

Appendix F Glossary

Appendix A Maintenance Response Levels of Service

To be developed.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Developed, but not included within this document, 3 year programs are developed and refined from the 10 year program.

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

Row Labels	Sum of 2018	Sum of 2019	Sum of 2020	Sum of 2021	Sum of 2022	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026
⊟New	$ 1,400,000	$ 1,451,450	$ 1,505,674	$ 1,562,845	$ 1,623,147	$ 1,686,778	$ 1,753,946	$ 1,824,874	$ 1,899,800
⊟Stormwater	$ 1,400,000	$ 1,451,450	$ 1,505,674	$ 1,562,845	$ 1,623,147	$ 1,686,778	$ 1,753,946	$ 1,824,874	$ 1,899,800
STORMWATER UPGRADES	$ 800,000	$ 812,000	$ 824,180	$ 836,543	$ 849,091	$ 861,827	$ 874,755	$ 887,876	$ 901,194
STORMWATER UPGRADES AND RECONSTRUCTION	$ 600,000	$ 639,450	$ 681,494	$ 726,302	$ 774,056	$ 824,951	$ 879,191	$ 936,998	$ 998,606
Grand Total	$ 1,400,000	$ 1,451,450	$ 1,505,674	$ 1,562,845	$ 1,623,147	$ 1,686,778	$ 1,753,946	$ 1,824,874	$ 1,899,800

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Darwin CC**

Stormwater_2017_S1_V1 **Asset Management Plan**

IPWEA JRA

First year of expenditure projections **2018** (financial yr ending)

Stormwater_2017

Asset values at start of planning period

			Calc CRC from Asset Register
Current replacement cost	$324,230	(000)	$324,230 (000)
Depreciable amount	$324,230	(000)	This is a check for you.
Depreciated replacement cost	$158,398	(000)	
Annual depreciation expense	$4,076	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	0.05%
Additional maintenance	0.19%
Additional depreciation	1.26%
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 **2018** values

Financial year ending	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)										
Operations										
Operations **budget**	$30	$30	$30	$30	$30	$30	$30	$30	$30	$30
Management **budget**	$121	$121	$121	$121	$121	$121	$121	$121	$121	$121
AM systems **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total operations	$151	$151	$151	$151	$151	$151	$151	$151	$151	$151
Maintenance										
Reactive maintenance **budget**	$515	$515	$515	$515	$515	$515	$515	$515	$515	$515
Planned maintenance **budget**	$91	$91	$91	$91	$91	$91	$91	$91	$91	$91
Specific maintenance items **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total maintenance	$606	$606	$606	$606	$606	$606	$606	$606	$606	$606
Capital										
Planned renewal **budget**	$141	$141	$141	$141	$141	$141	$141	$141	$141	$141
Planned upgrade/new **budget**	$439	$2,657	$2,350	$1,709	$3,196	$1,789	$1,789	$1,789	$1,789	$1,789
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	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $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)

	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000
Forecast Capital Renewal from Forms 2A & 2B	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Forecast Capital Upgrade from Form 2C	$1,400	$1,451	$1,506	$1,563	$1,623	$1,687	$1,754	$1,825	$1,900	$1,634

Appendix E Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix F Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

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.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service
The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of a Council (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary

Additional and modified glossary items shown *

ATTACHMENT D

Buildings

Asset Management Plan

Document Control	

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Rev No	Date	Revision Details	Author	Reviewer	Approver
0	June 2017	Preliminary working draft	GHD	COD	
	March 2018	Final Draft for Presentation RMAC	COD		

Review Period

Once every 3 years, or as required following a revaluation and/or change requiring review.

Asset Management Plan Responsibilities

Key Stakeholder	Role in Asset Management Plan
Elected Members	Allocate resources to meet the organisation's objectives in providing services while managing risks, Ensure organisation is financial sustainable.
Executive Leadership Team	Executive management endorsement
Asset Management Team/Manager	Review of Asset Management Plan Development and updating of replacement programs
Asset Management Steering Group	Endorsement of Asset Management Plan
Financial Services	Financial data input
City Operations	Strategic and operational unit input Undertaking asset maintenance and replacement programs
Asset custodian	Asset data, service level, asset lifecycle inputs

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1. EXECUTIVE SUMMARY

Context

This Asset Management Plan (AMP) covers the Building Assets for City of Darwin.

The Building assets are key to the continued provision of a number of council services. The assets comprise 142 buildings across the municipality. The amenities these service include:

- Office buildings
- Amenities blocks
- Animal pound facilities
- Depot buildings
- Childcare centres
- Car parks
- Pool buildings
- Darwin entertainment centre
- Community/neighbourhood Centres
- Libraries
- Parks and sporting club facilities
- Weighbridge buildings

These infrastructure assets have a replacement value of $115.4M.

What does it Cost?

This asset management plan has been developed using 2 analysis scenarios with Scenario 1 being presented within this Asset Management Plan. Scenario 1 (S1) uses asset valuation data to predict renewals based on end of life projections. Scenario 3 (S3) is based on councils current programmed asset renewals. Note that Scenario 2 is not utilised as it is not relevant for this asset class. Using the scenarios, an overview of the cost of providing the assets can be determined, of which Scenario 1 is used. The 10 year asset management financial indicator is 77% for building assets.

Project outlays required to provide the services covered by this Asset Management Plan (AMP) includes operations, maintenance, renewal and upgrade of existing assets over the 10 year planning period are summarised below.

Buildings – Summary	**($000)**
10 year total cost	165,219
10 year total budget	126,604
10 year average cost	16,522
10 year average budget	12,660
10 year average shortfall	-3,862

What we will do

Council plans to operate and maintain building assets so that they meet the needs of the community.

Managing the Risks

There are risks associated with providing the service and not being able to complete all identified activities and projects. We have identified major risks as:

- Major weather events
- Unknown non-visual asset conditions
- Level of Service expectations

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

- Optimising condition surveys
- Developing levels of service

Confidence Levels

This AMP is based on medium level of confidence information.

The Next Steps

The actions resulting from this asset management plan are:

- Develop Levels of Service
- Identify asset hierarchy and critical assets

Questions you may have

What is this plan about?

This asset management plan covers the infrastructure assets that serve the City of Darwin community's building and facilities needs.

What is an Asset Management Plan?

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

An asset management plan details information about infrastructure assets including actions required to provide an agreed level of service in the most cost effective manner. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services.

Why is there a funding shortfall?

Most of the Council's buildings were constructed by developers and the government, often provided and accepted without consideration of ongoing operations, maintenance and replacement needs.

Many of these assets are now approaching the later years of their life and require replacement, services from the assets are decreasing and maintenance costs are increasing.

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

What options do we have?

Resolving the funding shortfall involves several steps:

1. Improving asset knowledge so that data accurately records the asset inventory, how assets are performing and when assets are not able to provide the required service levels,
2. Improving our efficiency in operating, maintaining, renewing and replacing existing assets to optimise life cycle costs,
3. Identifying and managing risks associated with providing services from infrastructure,
4. Making trade-offs between service levels and costs to ensure that the community receives the best return from infrastructure,
5. Identifying assets surplus to needs for disposal to make saving in future operations and maintenance costs,
6. Consulting with the community to ensure that building services and costs meet community needs and are affordable,
7. Developing partnership with other bodies, where available to provide services,
8. Seeking additional funding from governments and other bodies to better reflect a 'whole of government' funding approach to infrastructure services.

What happens if we don't manage the shortfall?

It is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For buildings, the service level reduction may include reduced maintenance of surfaces (painting etc) and longer periods between refurbishment.

What can we do?

We can develop options, costs and priorities for future building services, consult with the community to plan future services to match the community service needs with ability to pay for services and maximise community benefits against costs.

2. INTRODUCTION

2.1 Background

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

The asset management plan follows the format for AMPs recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The asset management plan is to be read with the organisation's Asset Management Policy, and Asset Management Strategy.

This infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide access to services in the community.

Table 2.1: Assets covered by this Plan

Asset Facility category	Building type	Count	Replacement Value (ooo's)
Community	Halls, community centres, information centres, youth centres, senior citizen, sheds associated with these buildings	13	$27,038
Libraries and cultural	Libraries, galleries	1	$4,243
Sporting	Pavilions, sporting clubs, leisure centre and pool, sheds associated with these buildings	21	$13,326
Municipal	Council administration, waste centres, animal pounds, works depot, pump stations, sheds associated with these buildings	34	$19,776
Public amenity	Toilet blocks and public change rooms	36	$9,950
Other/Miscellaneous/Heritage	Other income generating buildings ie, golf courses, childcare, car parking	12	$41,100
TOTAL			**$115,433**

Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Table 2.1.1: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Elected Members	Represent needs of community/shareholders Allocate resources to meet the organisation's objectives in providing services while managing risks Ensure organisation is financial sustainable
Risk Management and Audit Committee	Independent assurance and assistance to Council on Council's risk, control and compliance frameworks, and external accountability.
Executive Leadership Team	Executive management endorsement
Asset Management Steering Group	Endorsement of Asset Management Plan and associated procedures

[1] IPWEA, 2011, Sec 4.2.6, *Example of an Asset Management Plan Structure*, pp 4|24 – 27.

	Development of long-term asset management strategies and related policies in accordance with legislation and good management practices Coordination of financial, operational and strategic inputs

Our organisational structure for service delivery of infrastructure assets is available on our website at www.darwin.nt.gov.au

2.2 Goals and Objectives of Asset Management

City of Darwin as an organisation provides services to its community, and many services are provided by infrastructure assets. We have acquired infrastructure assets by 'purchase', by contract, construction by our staff and by donation of assets constructed by developers and others.

Our goal in managing infrastructure assets is to meet the community's desired level of service (in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.[2]

2.3 Plan Framework

Key elements of the plan are

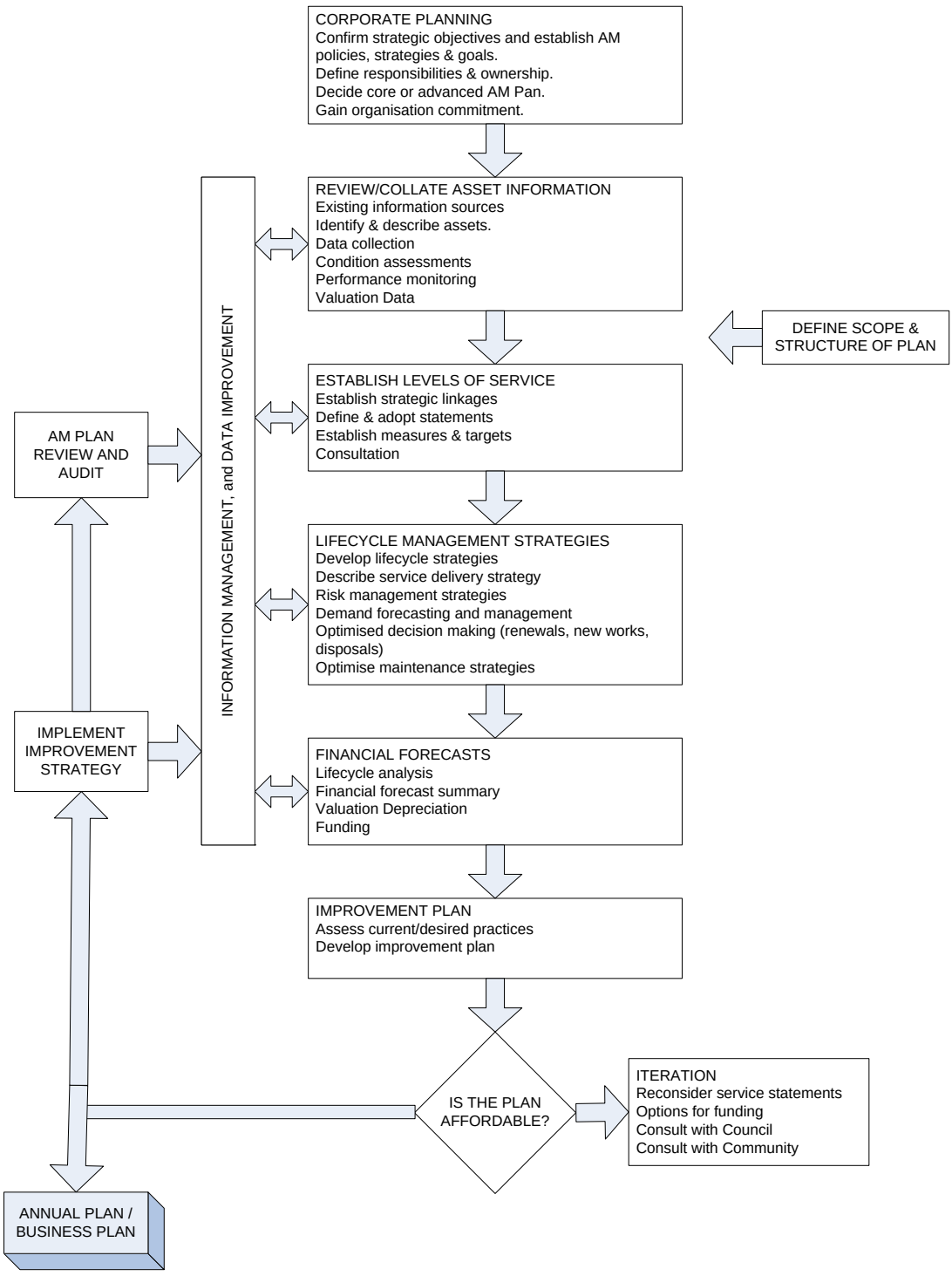
- Levels of service – specifies the services and levels of service to be provided by the organisation,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Life cycle management – how Council will manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices,
- Monitoring – how the plan will be monitored to ensure it is meeting organisation's objectives,
- Asset management improvement plan.

A road map for preparing an asset management plan is shown below.

[2] Based on IPWEA, 2011, IIMM, Sec 1.2 p 1|7.

Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11.



2.4 Core and Advanced Asset Management

This asset management plan is prepared as a 'core' asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual[3]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this asset management plan will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimisation of activities and programs to meet agreed service levels in a financially sustainable manner.

2.5 Community Consultation

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

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council undertakes an annual Customer Satisfaction survey. However, at this time, buildings are not considered within this survey to enable data and feedback to be recorded and tracked.

3.2 Strategic and Corporate Goals

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

Our vision is:

"A tropical, liveable city that creates opportunity and choice for our community"

Our mission is:

"Council will work with the community to maintain and promote the City of Darwin as the tropical capital of the Northern Territory, offering opportunities and a vibrant lifestyle for our residents and visitors"

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

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

Goal	Outcome	Strategy Relevant to this Plan
Strategic Goal 2: Vibrant, flexible and tropical lifestyle	2.1 Improved access and connectivity	2.1.5 Enhance access and use of neighbourhood spaces and hubs
	2.4 Economic growth supported	2.4.1 Deliver, advocate for, and partner in infrastructure and services that support Darwin's economic growth
Strategic Goal 2: Effective and responsible governance	5.5 Responsible financial and asset management	5.5.1 Manage Council's business based on a sustainable financial and asset management strategy

[3] IPWEA, 2011, IIMM.

The organisation will exercise its duty of care to ensure public safety is accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 5.2

3.3 Legislative Requirements

The organisation has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act (NT) 2008	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health and Safety (National uniform legislation) Act	Sets out the rules and responsibilities to secure the health, safety and welfare of persons at work
All relevant Australian Standards and Codes of Practice	National and international guidance and legislation relating to design, installation, maintenance, approvals, testing to be applied to assets as required.
Environmental Assessment Act	Outlines legislative requirements in relation to the assessment of the environmental effects of development proposals and for the protection of the environment
Environmental Offences and Penalties Act 1996	Outlines offences local governments local governments (and other parties) may be liable for where their acts and omissions maybe detrimental to the protection of the environment.
Land Title Act & Regulations	Outlines legislative issues local governments need to consider in relation to land ownership, easements and other purposes that may impact on various assets, such as roads, stormwater and buildings that the local government has under it care and control.
Lands Acquisition Act & Regulations	Outlines legislative issues local governments need to consider in relation to land they own that could be compulsorily acquired by the Northern Territory for the purpose of the provision of essential services and facilities being power (including gas), water, sewerage, road or communication services or facilities to or across the prescribed land, or access to any of them.
National Trust (Northern Territory) Act	Outlines legislative issues local governments need to consider in relation to the impacts that the National Trust (Northern Territory) activities could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Northern Territory Aboriginal Sacred Sites Act	Outlines legislative issues local governments need to consider in relation to the impacts that the Aboriginal Sacred Sites could have on the various assets, such as roads, stormwater, buildings and land, that the local government has under it care and control.
Planning Act & Regulations	Outlines legislative issues local governments need to consider in relation to providing for appropriate and orderly planning and control of the use and development of land within the municipality

The organisation will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan linked to this AM Plan. Management of risks is discussed in Section 5.2.

3.4 Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service.

Community Levels of Service measure how the community receives the service and whether the organisation is providing community value.

Community levels of service measures used in asset management planning are:

Quality	How good is the service?
Function	Does it meet users' needs?
Capacity/Utilisation	Is the service over or under used?

Technical Levels of Service support the community service levels as operational and technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures can be linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, energy, inspections, etc.
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (eg road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (eg frequency and cost of road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade – the activities to provide a higher level of service (eg widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (eg a new library).

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

Community and technical levels of service will be developed for future asset management plans.

4. FUTURE DEMAND

4.1 Demand Drivers

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

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets were identified and are documented in Table 4.3.

4.3 Demand Impact on Assets

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

Table 4.3: Demand Drivers, Projections and Impact on Services

[4] IPWEA, 2011, IIMM, p 2.22

Demand drivers	Present position	Projection	Impact on services
Population	83,465 Estimated residential population (2016)	1.5% annual growth per annum (over 10 years)	Little or no impact
Development	Slowing economy	Moderate growth over medium term	Little or no impact
Technological	N/A	No major technology advances anticipated	Little or no impact
Legislative change	Inclusion of Area Plans in Planning Scheme	Change of use and increasing density	Likely impact on functional use of existing assets and increasing demand as density increases
Climate change	No impact	Unlikely to affect building assets in medium term	Little or no impact
Community expectations	N/A	Ongoing increase in levels of service expectations	Potential requirement for higher quality, improved access and capacity.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[5].

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

Table 4.4: Demand Management Plan Summary

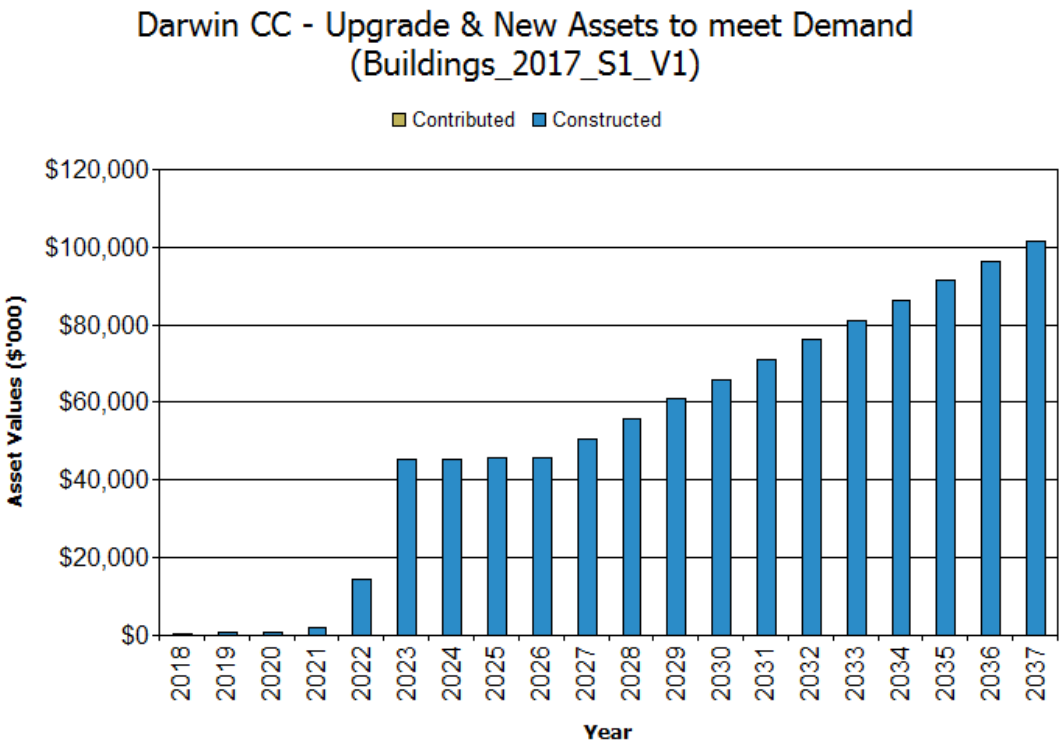
Demand Driver	Impact on Services	Demand Management Plan
Customer expectations	Potential requirement for higher quality, improved access and capacity.	Whole of life cost assessment of potential new assets and impacts on operational and maintenance and consultation with community to ensure informed decision making.
Area Plans (NT Planning Scheme)	Changing and increasing demand on services.	Provide input into area plan developments, forecast potential needs

4.5 Asset Programs to meet Demand

The new assets required to meet growth will be acquired free of cost from land developments or constructed by the organisation. New assets constructed/acquired by the organisation are discussed in Section 5.5. The cumulative value of new contributed and constructed asset values are summarised in Figure 1.

Figure 1: Upgrade and New Assets to meet Demand

[5] IPWEA, 2011, IIMM, Table 3.4.1, p 3|58.



Acquiring these new assets will commit the organisation to fund ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

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

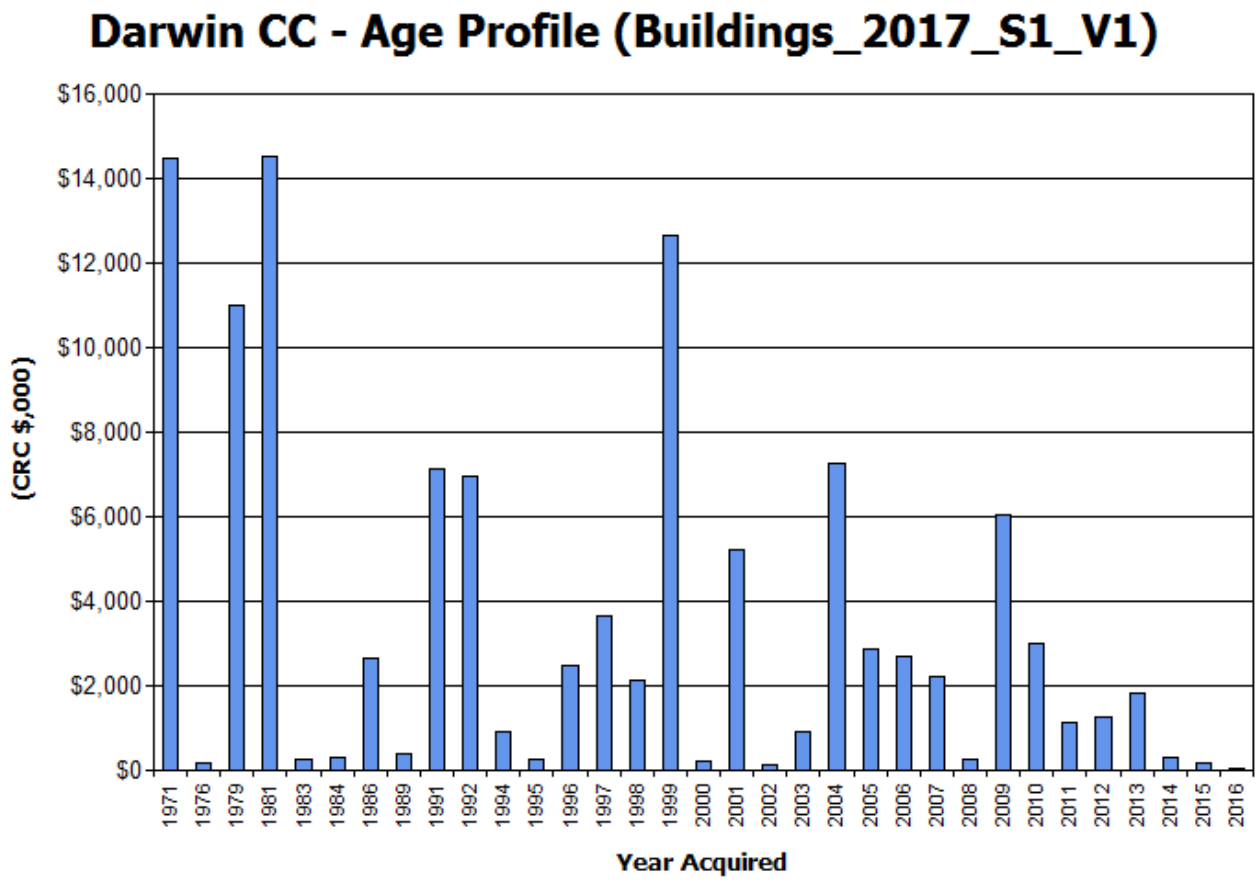
5.1 Background Data

5.1.1 Physical parameters

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

The age profile of the assets include in this AM Plan is shown in Figure 2.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

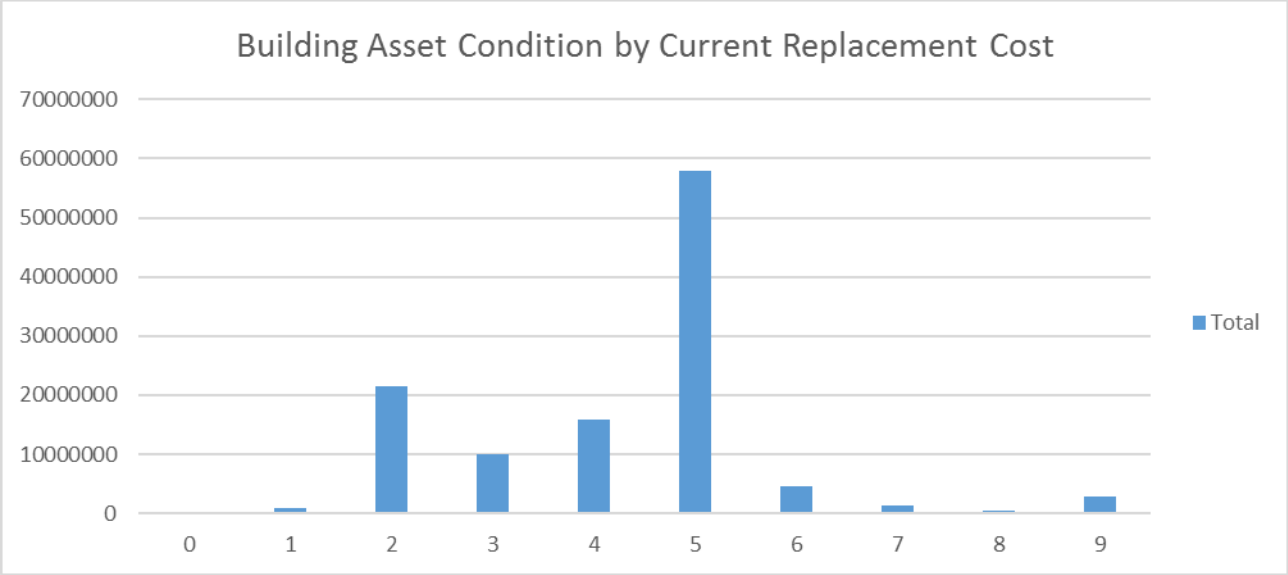
The organisation's services are generally provided to meet design standards where these are available.

5.1.3 Asset condition

Condition is monitored through a regular inspection program. Buildings asset condition is recorded every four years, with additional inspections occurring as needed.

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

Fig 3: Asset Condition Profile



Condition is measured using a 1 – 10 grading system[6] as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

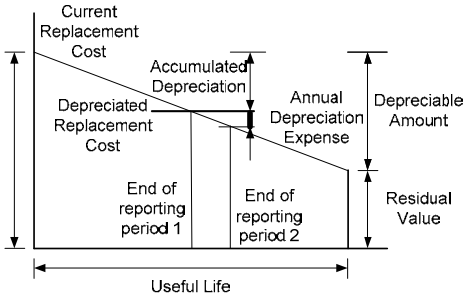
Condition Grading	Description of Condition
0	**As new**
2	**Very Good**: only planned maintenance required
4	**Good**: minor maintenance required plus planned maintenance
6	**Fair**: significant maintenance required
8	**Poor**: significant renewal/rehabilitation required
10	**Very Poor**: physically unsound and/or beyond rehabilitation

5.1.4 Asset valuations

Assets were last revalued at 2016 using a fair value methodology. The valuations have been adjusted using the following escalation rates to estimate the 2017 values:

2016/17 – 0.5%

The adjusted revaluation are as follows (000's):



Current Replacement Cost	$115,433
Depreciable Amount	$115,433
Depreciated Replacement Cost[7]	$66,292
Annual Depreciation Expense	$3,759

Useful lives were reviewed in June 2016 as part of the revaluation of building assets.

[6] IPWEA, 2011, IIMM, Sec 2.5.4, p 2|79.
[7] Also reported as Written Down Current Replacement Cost (WDCRC).

Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	2.2%
Rate of Annual Asset Renewal (Capital renewal exp/Depreciable amount)	0.6%

In 2018 the organisation plans to renew assets at 26.4% of the rate they are being consumed and will be increasing its asset stock by 0% in the year.

5.1.5 Historical Data

To be included in future revisions of this Asset Management Plan.

5.2 Infrastructure Risk Management Plan

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' to the organisation. 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.

Critical risks, being those assessed as 'Very High' - requiring immediate corrective action and 'High' – requiring prioritised corrective action identified in the Infrastructure Risk Management Plan, together with the estimated residual risk after the selected treatment plan is operational are summarised in Table 5.2. These risks are reported to management, the Risk Management and Audit Committee, and Council.

Table 5.2: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *
Buildings Asset Management	**Failure to develop, implement and maintain a corporate asset register** - Inconsistent and fragmented approach to the collection and storage of asset information - Lack of data available to monitor the condition of assets - Inability to plan long and short term asset management programs - Inability to adequately budget for asset management - Inability to monitor and assess ratepayer and public demands for levels of service - Inability to monitor and assess actual levels of service delivery	VH	Asset Management Steering Group in place and continues to meet quarterly Implementation of the corporate asset register is underway and will provide a central location for data storage	H
Buildings Asset Management	**Failure to develop and promote asset management policies, standards and procedures** - Failure to ensure a consistent approach to asset management is applied across Council	VH	Asset Management Steering Group in place and continues to meet quarterly Development of	H

[8] Infrastructure Department Operational Risk Assessment (Rev 5) June 2016

	- Loss of corporate asset knowledge - Failure to ensure asset management is undertaken in accordance with Australian and International Standards		procedures undertaken for data collection and asset management Cyclic reviews undertaken of policies, standards and procedures Asset management roles and responsibilities allocated to specific individuals across the organisation Implementation of asset sustainability review recommendations will ensure policies, standards and procedures are developed and monitored	
Buildings Maintenance	**Failure to undertake building maintenance in accordance with the approved programme and to Australian Standards** - degradation of facilities - health risk from air-conditioning cooling tower sanitation - safety risk from malfunctioning fire panels - safety risk from poorly maintained electrical systems - safety risk from failure of CCTV	H	Ongoing development of the asset management system including budget allocation process Review or expand upon the existing work order system to more accurately capture data on works program expenditure and allow better budgetary processes Implementation of asset sustainability review recommendations will ensure policies, standards and procedures are developed and monitored Preventive maintenance programme maintained in place and reviewed annually All maintenance undertaken in accordance with applicable standards	M
Buildings Maintenance	**Failure to plan, budget and implement a robust building maintenance programme** - Reliance on redundant asset management system - Poor financial management - Condition of assets deteriorates - Increased maintenance / replacement costs	M		M
Buildings Maintenance	**Need for urgent building repairs is not communicated to Council staff in a timely manner** - Repairs not able to be carried out promptly - Potential for injury to staff and the	H	Regular inspection program in place for public facilities Issues identified on inspection reports are rectified according to the	M

	public - Public liability and WC claims - Additional insurance premiums		identified levels of safety and urgency Other matters are dependent upon notification by members of the public Tracking the responsiveness of Council to reported issues is managed through Customer Action Requests Business continuity plans developed Dec 2011 and reviewed Dec 2014	
Buildings Asbestos Management	**Failure to maintain Asbestos registers** - Dangerous Buildings - Increased risk to public/staff - Litigation - Failure to proactively manage the risk from hazardous material	H	Asbestos register is maintained for known and reported sites Register reviewed and updated regularly Ongoing inspection programs in place Control self-assessment in place	M

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

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, eg cleansing, street sweeping, grass mowing and street lighting.

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.

5.3.1 Operations and Maintenance Plan

Operations activities affect service levels including quality and function through street sweeping and grass mowing frequency, intensity and spacing of street lights and cleaning frequency and opening hours of building and other facilities.

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, eg road patching but excluding rehabilitation or renewal. Maintenance may be classified into reactive, planned and specific maintenance work activities.

Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

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

Assessment and prioritisation of reactive maintenance is undertaken by Council staff using experience and judgement.

5.3.2 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

Asset hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. A hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery. An asset hierarchy will be developed for future Asset Management Plans.

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target and refine investigative activities, maintenance plans and capital expenditure plans at the appropriate time.

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical assets failure modes and required operations and maintenance activities are detailed in Table 5.3.2.1.

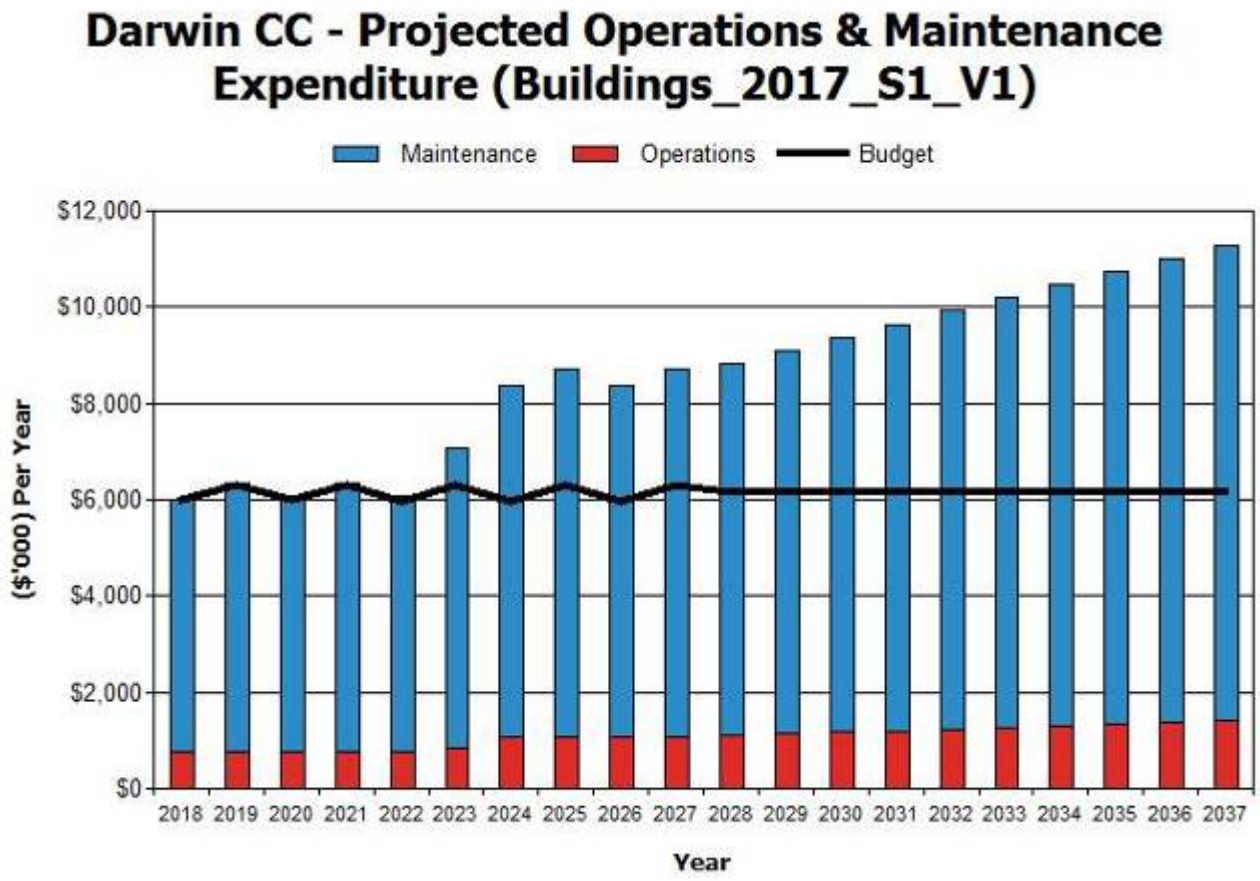
Standards and specifications

Maintenance work is carried out in accordance with relevant Australian Standards, Building Codes and Northern Territory specifications.

5.3.3 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in current 2017 dollar values (ie real values).

Figure 4: Projected Operations and Maintenance Expenditure



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

Maintenance is funded from the operating budget where available. This is further discussed in Section 6.2.

5.4 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 or lesser required 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

Assets requiring renewal/replacement are identified from Council's Asset Register data (used for 2016 valuations) to project the renewal costs using acquisition year and useful life to determine the renewal year.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1.

Table 5.4.1: Useful Lives of Assets

Asset (Sub)Category	Useful life (years)
Substructure	Varies between 30 and 75
Superstructure	Varies between 30 and 75
Services	Varies between 15 and 38
Finishes	Varies between 9 and 23
Fittings	Varies between 6 and 15

5.4.2 Renewal and Replacement Strategies

The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:

- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, and
    - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

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, or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).[9]

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 a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- 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
- Where replacement with modern equivalent assets would yield material savings.[10]

Standards and specifications

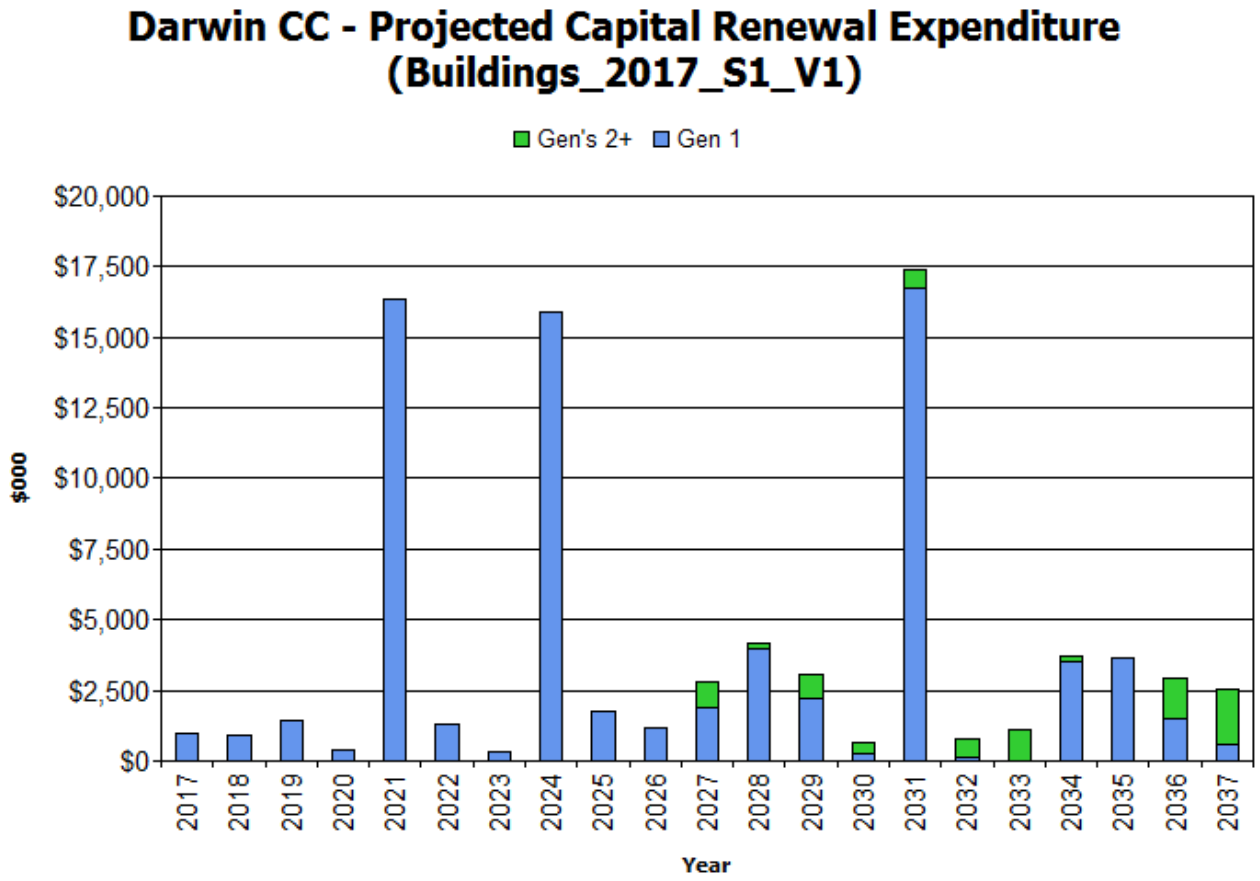
Renewal and replacement work is carried out in accordance with relevant Australian Standards, Building Codes and Northern Territory specifications.

5.4.3 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. The expenditure is summarised in Fig 5. Note that all amounts are shown in real values.

Fig 5: Projected Capital Renewal and Replacement Expenditure

[9] IPWEA, 2011, IIMM, Sec 3.4.4, p 3|60.
[10] Based on IPWEA, 2011, IIMM, Sec 3.4.5, p 3|66.



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

Renewals and replacement expenditure in the organisation's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

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 organisation from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as Council and community requests, proposals identified by strategic plans or partnerships with other organisations, and are incorporated into Council's long term financial plans.

5.5.2 Capital Investment Strategies

The organisation will plan capital upgrade and new projects to meet level of service objectives by:

- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the upgrade/new asset,

- the project objectives to rectify the deficiency including value management for major projects,
- the range of options, estimated capital and life cycle costs for each options that could address the service deficiency,
- management of risks associated with alternative options,
- and evaluate the options against evaluation criteria adopted by Council, and
- select the best option to be included in capital upgrade/new programs,

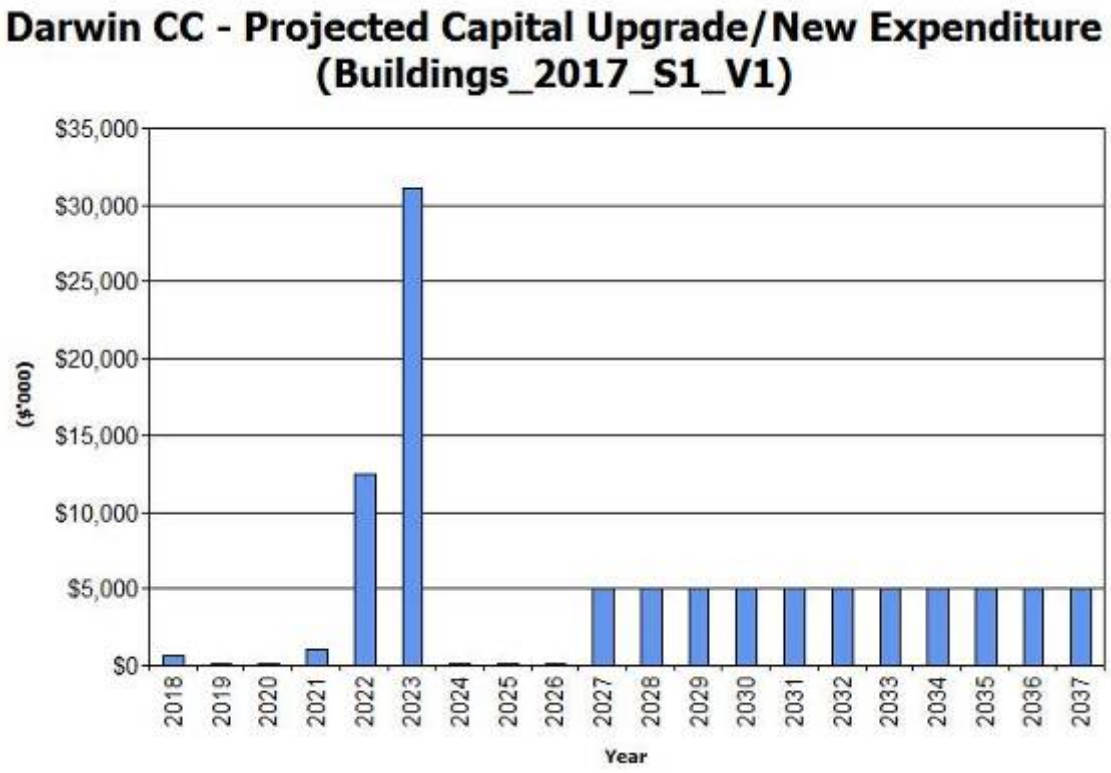
- Review current and required skills base and implement training and development to meet required construction and project management needs,
- Review management of capital project management activities to ensure Council is obtaining best value for resources used.

Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal shown in Section 5.4.2.

5.5.3 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Fig 6. The projected upgrade/new capital works program is shown in Appendix C and is based on the 2017 long term capital works plan. All amounts are shown in real values.

Fig 6: Projected Capital Upgrade/New Asset Expenditure



5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any. Any revenue gained from asset disposals is accommodated in Council's long term financial plan.

No building assets are identified for disposal.

5.7 Service Consequences and Risks

The organisation has prioritised decisions made in adopting this AMP to obtain the optimum benefits from its available resources. Decisions were made based on the development of 3 scenarios of AMPs.

Scenario 1 - What we would like to do based on asset register data

Scenario 2 – What we should do with existing budgets and identifying level of service and risk consequences (ie what are the operations and maintenance and capital projects we are unable to do, what is the service and risk consequences associated with this position). This may require several versions of the AMP.

Scenario 3 – What we can do and be financially sustainable with AMPs matching long-term financial plans.

The development of scenario 1 and scenario 2 AMPs provides the tools for discussion on trade-offs between what we would like to do (scenario 1) and what we should be doing with existing budgets (scenario 2) by balancing changes in services and service levels with affordability and acceptance of the service and risk consequences of the trade-off position (scenario 3).

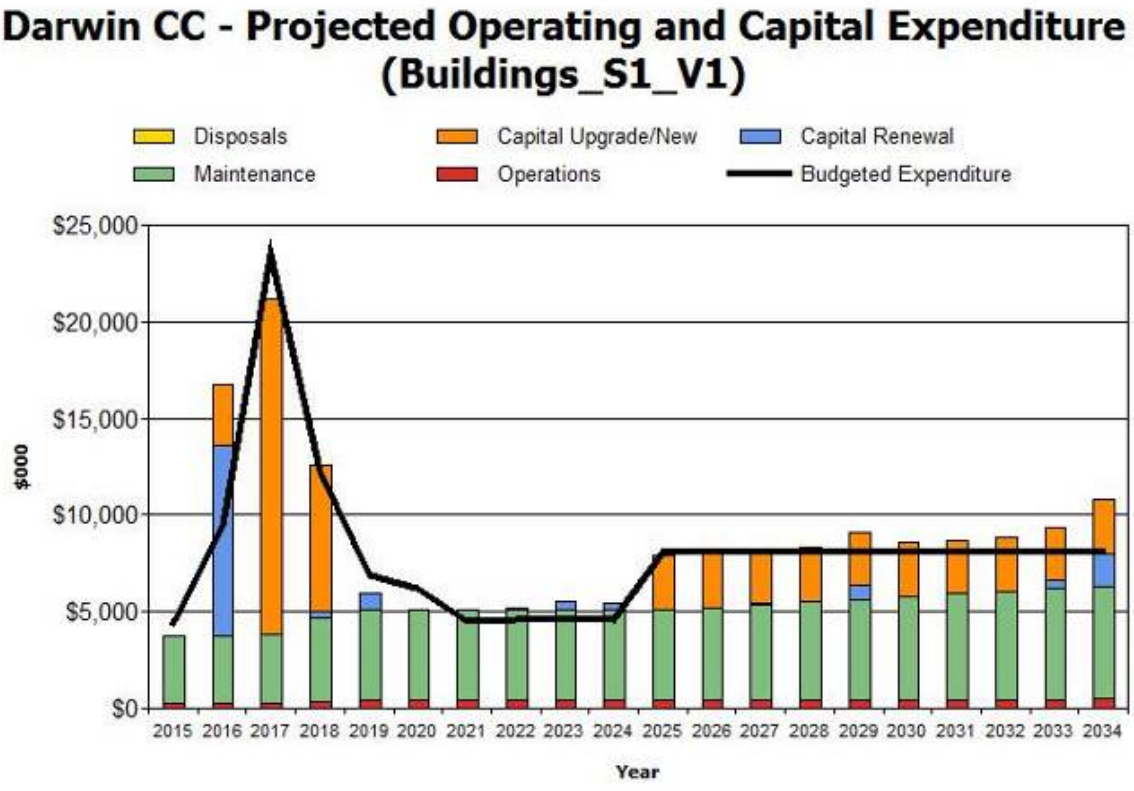
6. FINANCIAL SUMMARY

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.

6.1 Financial Statements and Projections

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

Fig 7: Projected Operating and Capital Expenditure



6.1.1 Sustainability of service delivery

There are four key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the asset renewal funding ratio, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[11] 123%

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, Council is forecasting that it will have 123% of the funds required for the optimal renewal and replacement of its assets.

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 long term, 5 and 10 year periods. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the long term, 5 and 10 year periods to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

These figures are included in figure 7A.

Fig 7A: Projected Sustainability

Buildings_S1_V1

Asset Renewal Funding Ratio

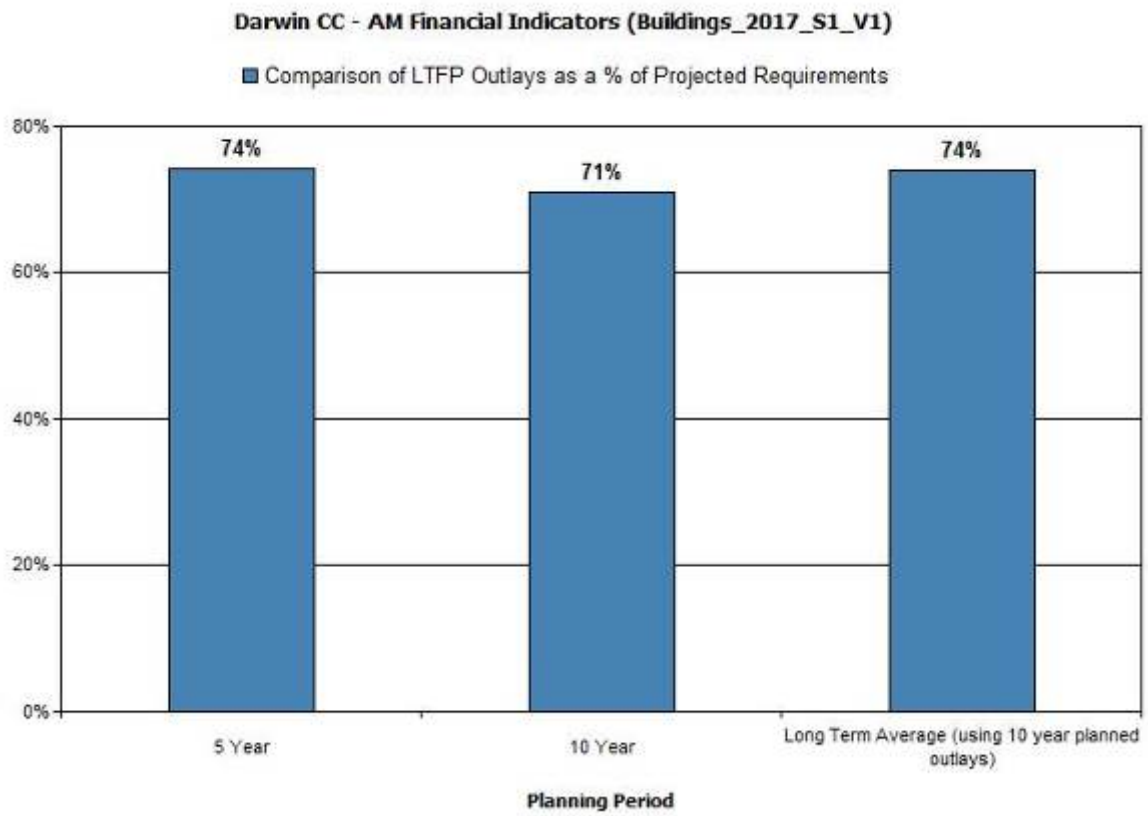
[11] AIFMG, 2012, Version 1.3, Financial Sustainability Indicator 4, Sec 2.6, p 2.16

Asset Renewal Funding Ratio	**123%**
Long Term - Life Cycle Costs	
Life Cycle Cost [average 10 years projected ops, maint exp and deprn.]	**$7,178**
Life Cycle Exp [average 10 years LTFP budget ops, maint & capital renewal exp]	**$5,314**
Life Cycle Gap [life cycle expenditure – life cycle cost (-ve = gap)]	**$239**
Life Cycle Indicator [life cycle expenditure / life cycle cost]	**74%**
Medium Term - 10 year financial planning period	
10 yr Ops, Maint & Renewal Projected Expenditure	**$5,852**
10 yr Ops, Maint & Renewal LTFP Budget Exp	**$5,314**
10 year financing shortfall [10 yr proj exp - LTFP Budget exp]	**$-538**
10 year financing indicator [LTFP Budget exp / 10 yr proj exp]	**91%**
Medium Term – 5 year financial planning period	
5 yr Ops, Maint & Renewal Projected Expenditure	**$6,444**
5 yr Ops, Maint & Renewal LTFP Budget Exp	**$5,712**
5 year financing shortfall [5 yr proj exp - LTFP Budget exp]	**$-732**
5 year financing indicator [LTFP Budget exp / 5 yr proj exp]	**89%**

Asset management financial indicators

Figure 7B shows the asset management financial indicators over the 10 year planning period and for the long term life cycle.

Figure 7B: Asset Management Financial Indicators



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.

Figure 8 shows the projected asset renewal and replacement expenditure over the 20 years of the AM Plan. The projected asset renewal and replacement expenditure is compared to renewal and replacement expenditure in the capital works program, which is accommodated in the long term financial plan

Figure 8: Projected and LTFP Budgeted Renewal Expenditure

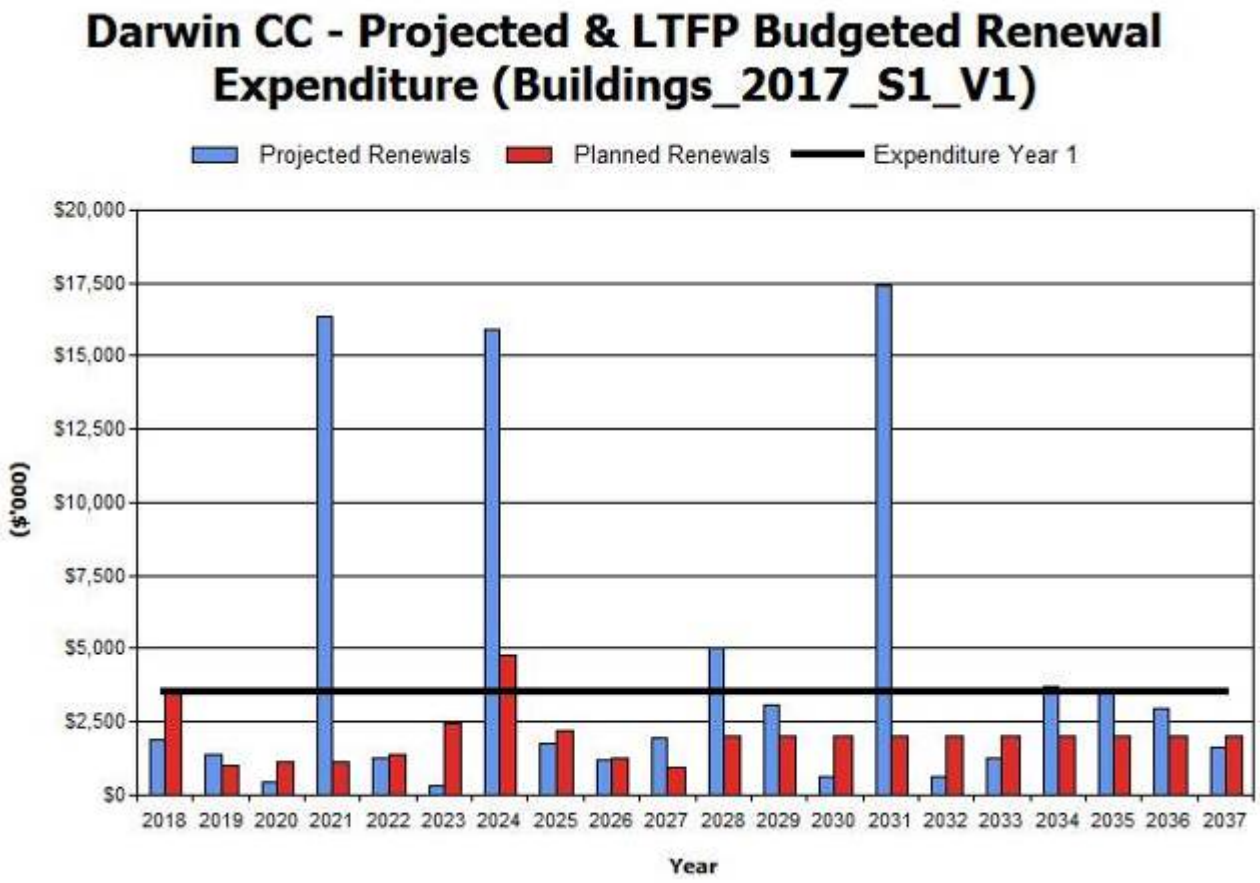


Table 6.1.1 (S1): Projected and LTFP Budgeted Renewals and Financing Shortfall

Year End June 30	Projected Renewals ($'000)	LTFP Renewal Budget ($'000)	Renewal Financing Shortfall (- gap, + surplus) ($'000)	Cumulative Shortfall (- gap, + surplus) ($'000)
2018	$1,909	$3,510	$1,601	$1,601
2019	$1,409	$975	$-434	$1,167
2020	$415	$1,161	$746	$1,913
2021	$16,332	$1,130	$-15,202	$-13,289
2022	$1,273	$1,376	$103	$-13,186
2023	$305	$2,465	$2,160	$-11,026
2024	$15,912	$4,775	$-11,137	$-22,163

2025	$1,733	$2,222	$489	$-21,674
2026	$1,176	$1,287	$111	$-21,564
2027	$1,940	$944	$-996	$-22,559
2028	$5,003	$1,985	$-3,018	$-25,578
2029	$3,055	$1,985	$-1,070	$-26,648
2030	$636	$1,985	$1,349	$-25,300
2031	$17,391	$1,985	$-15,406	$-40,706
2032	$647	$1,985	$1,337	$-39,369
2033	$1,238	$1,985	$746	$-38,622
2034	$3,686	$1,985	$-1,701	$-40,324
2035	$3,671	$1,985	$-1,686	$-42,010
2036	$2,949	$1,985	$-965	$-42,974
2037	$1,657	$1,985	$328	$-42,647

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

Providing services in a sustainable manner will require matching of projected asset renewal and replacement expenditure to meet agreed service levels with the corresponding capital works program accommodated in the long term financial plan.

A gap between projected asset renewal/replacement expenditure and amounts accommodated in the LTFP indicates that further work is required on reviewing service levels in the AMP (including possibly revising the LTFP) before finalising the asset management plan to manage required service levels and funding to eliminate any funding gap.

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2017 real values.

Table 6.1.2 (S1): Projected Expenditures for Long Term Financial Plan ($000)

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade / New	Disposals
2018	$763	$5,250	$1,909	$591	$0
2019	$767	$5,564	$1,409	$87	$0
2020	$767	$5,266	$415	$88	$0
2021	$768	$5,572	$16,332	$1,090	$0
2022	$775	$5,303	$1,273	$12,469	$0
2023	$858	$6,203	$305	$31,079	$0
2024	$1,063	$7,314	$15,912	$94	$0
2025	$1,064	$7,655	$1,733	$95	$0
2026	$1,064	$7,303	$1,176	$97	$0
2027	$1,065	$7,664	$1,940	$5,077	$0
2028	$1,099	$7,740	$5,003	$5,077	$0
2029	$1,132	$7,977	$3,055	$5,077	$0
2030	$1,166	$8,213	$636	$5,077	$0
2031	$1,199	$8,450	$17,391	$5,077	$0

2032	$1,233	$8,686	$647	$5,077	$0
2033	$1,266	$8,923	$1,238	$5,077	$0
2034	$1,300	$9,159	$3,686	$5,077	$0
2035	$1,333	$9,395	$3,671	$5,077	$0
2036	$1,367	$9,632	$2,949	$5,077	$0
2037	$1,401	$9,868	$1,657	$5,077	$0

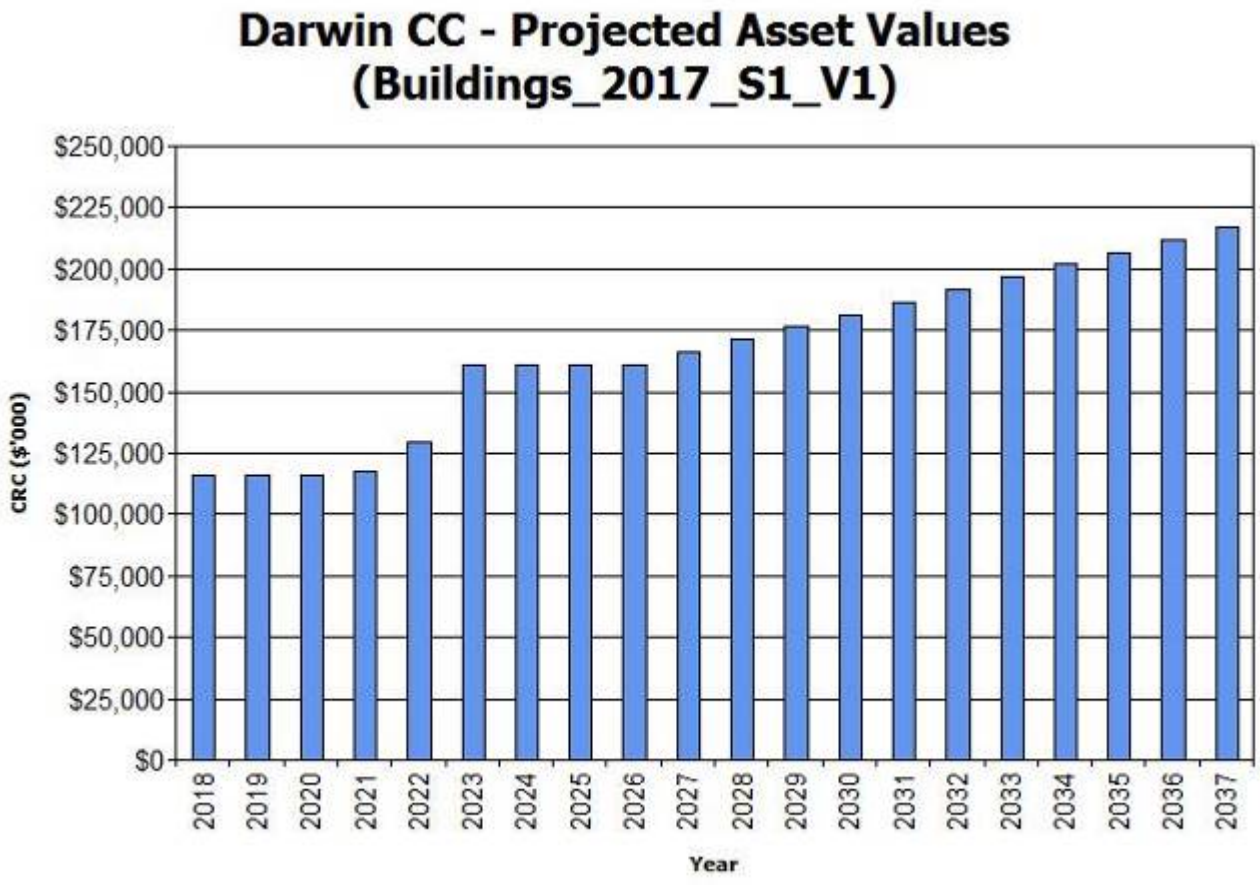
6.2 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability projected expenditures identified in Section 6.1.2 will be accommodated in the Council's 10 year long term financial plan.

6.3 Valuation Forecasts

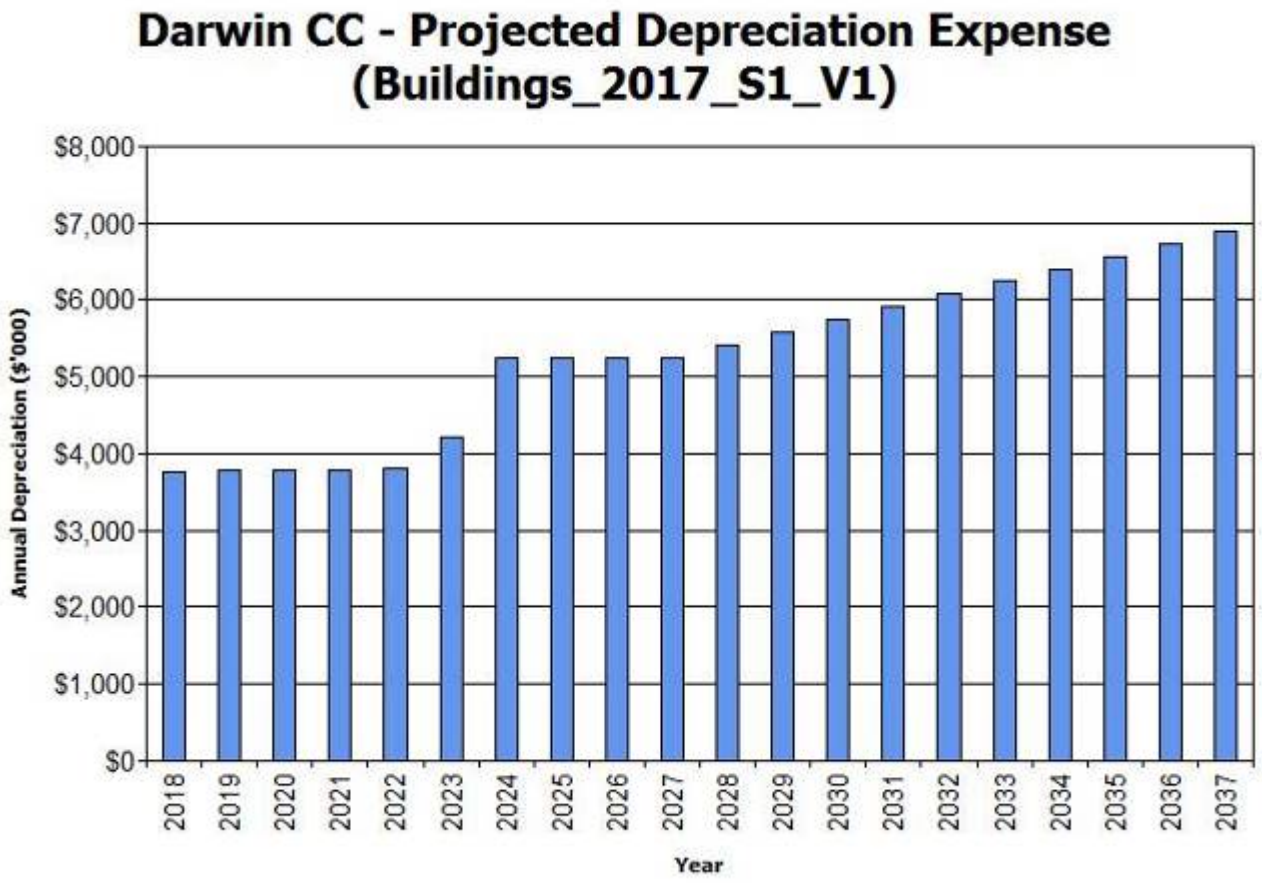
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. Figure 9 shows the projected replacement cost asset values over the planning period in real values.

Figure 9: Projected Asset Values



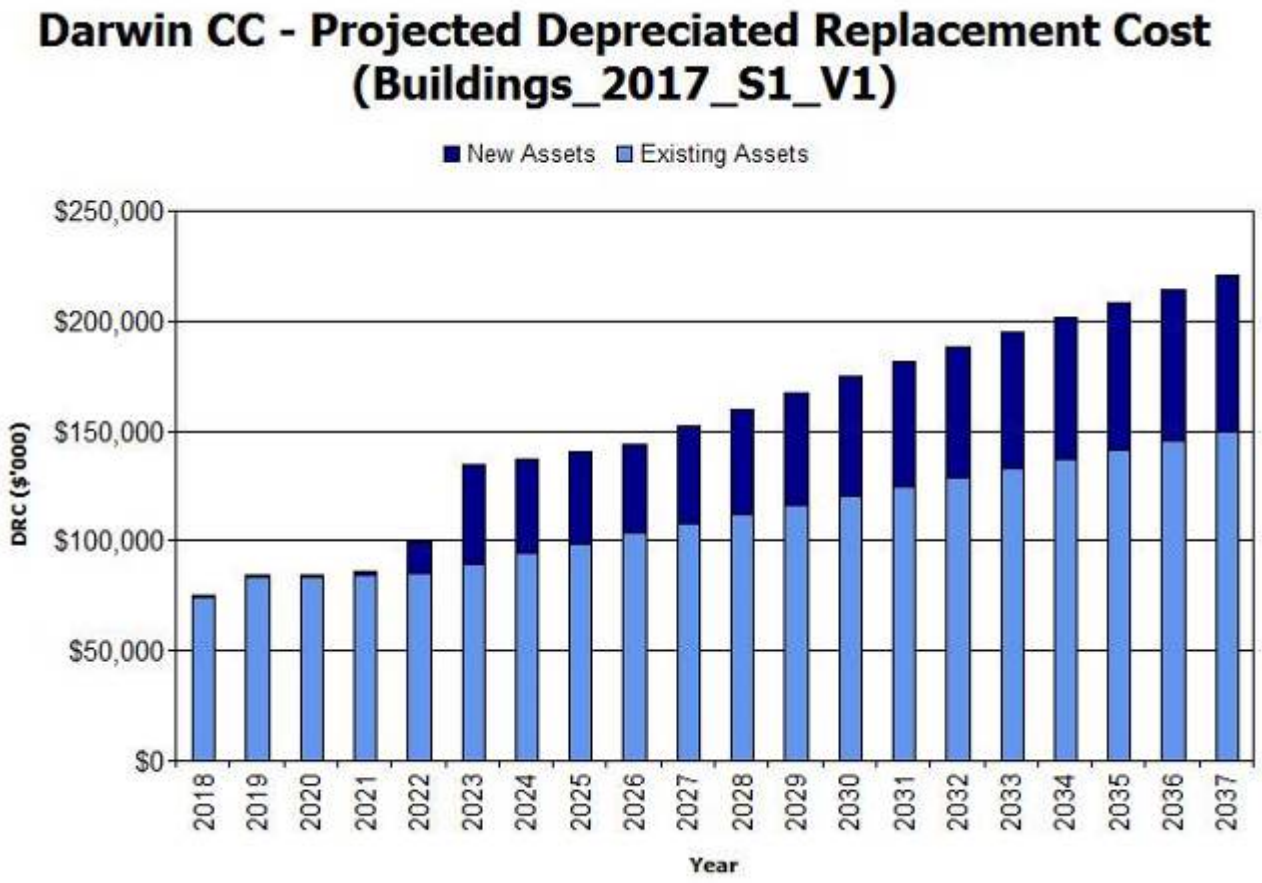
Depreciation expense values are forecast in line with asset values as shown in Figure 10.

Figure 10: Projected Depreciation Expense



The depreciated replacement cost 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. Forecast of the assets' depreciated replacement cost is shown in Figure 11. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 11: Projected Depreciated Replacement Cost



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 made in this asset management plan and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Escalation of 2014 revaluations using LTFP inflation figures reflects 2017 values.	Subsequent revaluations may differ and require rework to AMP
No assets created since 2014 valuation	Additional funding requirement not captured
No growth allowance (other than new/upgrade projects identified in 10yr capital works program).	Additional funding requirement not captured

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[12] in accordance with Table 6.5.

Table 6.5: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.5.1.

Table 6.5.1: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	B	Nil
Growth projections	B	Nil
Operations expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Maintenance expenditures	C	Based on operational and maintenance budgets that may cross over expenditure types
Projected Renewal exps. - Asset values	C	Based on 2016 revaluation and not augmented by technical data.
- Asset residual values	C	Based on 2016 revaluation and not augmented by technical data.
- Asset useful lives	C	Based on 2016 revaluation and not augmented by technical data.
- Condition modelling	B	Nil
- Network renewals	C	Based on 10 year capex plan but uncertain if based on technical assessment
- Defect repairs	N/A	Not used in modelling
Upgrade/New expenditures	B	Based on 10 year capex plan based on pavement modelling from condition data – this provides highly reliable surface information, though pavement information is considered slightly less reliable.
Disposal expenditures	N/A	No disposals included

Over all data sources the data confidence is assessed as medium confidence level for data used in the preparation of this AMP.

[12] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

CoD uses Authority as its accounting system.

Accountabilities for financial systems

Accountabilities are considered within Council's Financial Policies.

Accounting standards and regulations

All relevant Australian Accounting Standards, including;

AASB 13 Fair value measurement

AASB 136 Property, plant and equipment

Capital/maintenance threshold

In general, works with a value over $5000 are considered to be capital works.

7.1.2 Asset management system

CoD uses a combination of AssetFinda and ArcGIS, with some support from spreadsheets in minor databases.

Asset registers

Asset registers are stored within AssetFinda or ArcGIS.

Linkage from asset management to financial system

There is no current link between the systems. Procedures are established to ensure the systems are aligned as much as is practical.

Accountabilities for asset management system and data maintenance

Asset Management Procedures are in place to ensure the correct collection, recording and maintenance of asset data. Audits are also carried out on the data on intervals no less than the defined condition survey intervals.

7.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 7.2.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Levels of Service definition	Separate project	Unknown	Unknown
2	Asset hierarchy development	Asset Management team	Within existing resources	Next AMP Review
3	Identification of critical assets	Asset Management team	Within existing resources	Next AMP Review

7.3 Monitoring and Review Procedures

This asset management plan will be reviewed during annual budget planning processes and amended to recognise 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 annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan. Updated financial information will be included every four years following the revaluation of the asset class.

7.4 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 Council's long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the asset management plan,
- 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 Council's Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8. REFERENCES

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City of Darwin Strategic Plan – Evolving Darwin Towards 2020

City of Darwin Municipal Plan 2017-18

City of Darwin Policy No 055 – Asset Management

City of Darwin 2014 Revaluation, by APV Valuers & Asset Management

9. APPENDICES

Appendix A Maintenance Response Levels of Service

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Appendix C Projected 10 year Capital Upgrade/New Works Program

Appendix D LTFP Budgeted Expenditures Accommodated in AM Plan

Appendix E Abbreviations

Appendix F Glossary

Appendix A Maintenance Response Levels of Service

To be developed.

Appendix B Projected 10 year Capital Renewal and Replacement Works Program

Developed, but not included within this document, 3 year programs are developed and refined from the 10 year program.

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

Row Labels	Sum of 2018	Sum of 2019	Sum of 2020	Sum of 2021	Sum of 2022	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026
New	$ 590,758	$ 87,020	$ 88,325	$ 1,089,650	$ 12,468,907	$ 31,078,834	$ 93,745	$ 95,151	$ 96,579
Buildings	$ 590,758	$ 87,020	$ 88,325	$ 1,089,650	$ 12,468,907	$ 31,078,834	$ 93,745	$ 95,151	$ 96,579
CBD MULTI STOREY CAR PARKING	$ -	$ -	$ -	$ 1,000,000	$ 12,377,912	$ 30,985,474	$ -	$ -	$ -
DARWIN ENTERTAINMENT CENTRE: AIR CONDITIONING	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DISABILITY ACCESS PROGRAM	$ 55,284	$ 56,113	$ 56,955	$ 57,809	$ 58,676	$ 59,556	$ 60,450	$ 61,357	$ 62,277
PARAP POOL: MASTERPLAN	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
SOLAR PV	$ 205,024	$	$	$	$	$	$	$	$
SPORTS FACILITY UPGRADES & REFURBISHMENT	$ 30,450	$ 30,907	$ 31,370	$ 31,841	$ 32,319	$ 32,803	$ 33,295	$ 33,795	$ 34,302
VELODROME	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Grand Total	$ 590,758	$ 87,020	$ 88,325	$ 1,089,650	$ 12,468,907	$ 31,078,834	$ 93,745	$ 95,151	$ 96,579

Appendix D Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management **Darwin CC**

Buildings_2017_S1_V1 **Asset Management Plan**

First year of expenditure projections **2018** (financial yr ending)

Buildings_2017

Asset values at start of planning period

Current replacement cost	$115,433	(000)	Calc CRC from Asset Register: $115,433 (000)
Depreciable amount	$115,433	(000)	This is a check for you.
Depreciated replacement cost	$66,292	(000)	
Annual depreciation expense	$3,759	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	4.85%
Additional maintenance	12.63%
Additional depreciation	3.26%

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 **2018** values

Financial year ending	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Expenditure Outlays included in Long Term Financial Plan (in current $ values)										
Operations										
Operations **budget**	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601
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	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601	$5,601
Maintenance										
Reactive maintenance **budget**	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577
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	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577	$14,577
Capital										
Planned renewal **budget**	$12,078	$12,736	$3,825	$4,799	$3,968	$8,359	$8,359	$8,359	$8,359	$8,359
Planned upgrade/new **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
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	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $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)

	2018 $000	2019 $000	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000
Forecast Capital Renewal from Forms 2A & 2B	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Forecast Capital Upgrade from Form 2C	$591	$87	$88	$1,090	$12,489	$31,079	$94	$95	$97	$5,077

Appendix E Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AM Plan	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRC	Written down current replacement cost

Appendix F Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

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.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an organisation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future operations and maintenance costs, because it increases the organisation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the organisation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision- making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.

Current replacement cost (CRC)
The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of organisations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service
The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the organisation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Council, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of a Council (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, Glossary

Additional and modified glossary items shown *