

Ku-ring-gai Council



KERBS AND GUTTERS ASSET MANAGEMENT PLAN



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The Institute of Public Works Engineering Australia.

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ABBREVIATIONS

| | |
|-------------|---|
| AAAC | Average annual asset consumption |
| AMP | Asset Management Plan |
| ARI | Average recurrence interval |
| BOD | Biochemical (biological) oxygen demand |
| CRC | Current replacement cost |
| CWMS | Community wastewater management systems |
| DA | Depreciable amount |
| DoH | Department of Health |
| EF | Earthworks/formation |
| IRMP | Infrastructure Risk Management Plan |
| LCC | Life Cycle cost |
| LCE | Life cycle expenditure |
| MMS | Maintenance management system |
| PCI | Pavement condition index |
| RV | Residual value |
| SS | Suspended solids |
| vph | Vehicles per hour |

GLOSSARY

Annual service cost (ASC)

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 operating, maintenance, depreciation, finance / opportunity and disposal costs, less revenue.

Asset class

Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).

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 management

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

Assets

Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12).

Property, plant and equipment including infrastructure and other assets (such as furniture and

fittings) with benefits expected to last more than 12 month.

Average annual asset consumption (AAAC)*

The amount of a local government's asset base consumed during a year. This may be calculated by dividing the Depreciable Amount (DA) by the Useful Life and totalled for each and every asset OR by dividing the Fair Value (Depreciated Replacement Cost) by the Remaining Life and totalled for each and every asset in an asset category or class.

Brownfield asset values**

Asset (re)valuation values based on the cost to replace the asset including demolition and restoration costs.

Capital expansion expenditure

Expenditure that extends an existing asset, at the same standard as is currently enjoyed by residents, to a new group of users. It is discretionary expenditure, which increases future operating, and maintenance costs, because it increases council'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

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 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

Capital new expenditure

Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.

Capital renewal expenditure

Expenditure on an existing asset, which returns the service potential or the life 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 has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, e.g.

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. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital upgrade expenditure

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 operating and maintenance expenditure in the future because of the increase in the Council's asset base, e.g. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

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

An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.

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, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.

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.

Current replacement cost "As New" (CRC)

The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.

Cyclic Maintenance**

Replacement of higher value components / sub-components of

assets that is undertaken on a regular cycle including repainting, building roof replacement, cycle, 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.

Depreciable amount

The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)

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.

Fair value

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

Greenfield asset values **

Asset re)valuation values based on the cost to initially acquire the asset.

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 of the entity or of another entity that contribute to meeting the public's need for access to major economic and social facilities and services, e.g. 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 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 (AASB 140.5)

Level of service

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

Life Cycle Cost **

The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. 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 actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Expenditure to give an initial indicator of life cycle sustainability.

Loans / borrowings

Loans result in funds being received which are then repaid over a period of time with interest (an additional cost). Their primary benefit is in 'spreading the burden' of capital expenditure over time. Although loans enable works to be completed sooner, they are only ultimately cost effective where the capital works funded (generally renewals) result in operating and maintenance cost savings, which are greater than the

cost of the loan (interest and charges).

Maintenance and renewal gap

Difference between estimated budgets and projected expenditures for maintenance and renewal of assets, totalled over a defined time (e.g. 5, 10 and 15 years).

Maintenance and renewal sustainability index

Ratio of estimated budget to projected expenditure for maintenance and renewal of assets over a defined time (e.g. 5, 10 and 15 years).

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

An item is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances.

Modern equivalent asset.

A structure similar to an existing structure and having the equivalent productive capacity, which could be built using modern materials, techniques and design. Replacement cost is the basis used to estimate the

cost of constructing a modern equivalent asset.

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, e.g. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operating expenditure

Recurrent expenditure, which is continuously required excluding maintenance and depreciation, eg power, fuel, staff, plant equipment, on-costs and overheads.

Pavement management system

A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

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.

PMS Score

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

Rate of annual asset consumption*

A measure of average annual consumption of assets (AAAC) expressed as a percentage of the depreciable amount (AAAC/DA). Depreciation may be used for AAAC.

Rate of annual asset renewal*

A measure of the rate at which assets are being renewed per annum expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade*

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

Reactive maintenance

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

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 operating and maintenance expenditure.

Recurrent funding

Funding to pay for recurrent expenditure.

Rehabilitation

See capital renewal expenditure definition above.

Remaining life

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

Renewal

See capital renewal expenditure definition above.

Residual value

The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.

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, e.g. 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 capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.

Service potential remaining*

A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide a service that is still available for use in providing services (DRC/DA).

Strategic Management Plan (SA) **

Documents Council objectives for a specified period (3-5 yrs), the principle activities to achieve the objectives, the means by which that will be carried out, estimated income and expenditure, measures to assess performance and how rating policy relates to the Council's objectives and activities.

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. It is the same as the economic life.

Value in Use

The present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. 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 new cash flows, where if deprived of the asset its future economic benefits would be replaced.

Source: DVC 2006, Glossary

Note: Items shown:

* Modified to use DA instead of CRC

** Additional glossary items shown

1. EXECUTIVE SUMMARY

What Council Provides

Council provides a Kerb and Gutter network to encourage run-off and rainfall to flow away from the roads and into council's stormwater drainage network allowing safer travel throughout the Council area.

Kerb and Gutter assets are separated into different types and sizes including; asphalt, dish cutters, V drains, Jersey kerbs, roll tops as well as 100 and 200 kerbs.

What does it Cost?

There are two (2) key indicators of cost to provide the kerb and gutter service.

- The life cycle cost being the average cost over the life cycle of the asset, and
- The total maintenance and capital renewal expenditure required to deliver existing service levels in the next 10 years covered by Council's long term financial plan.

The life cycle cost to provide the kerb and gutter service is estimated at \$2.15 million per annum. Council's planned life cycle expenditure for Year 1 of the Asset Management Plan is \$163,000 which gives a life cycle sustainability index of 0.07.

The total maintenance and capital renewal expenditure required to provide the kerb and gutter service the in the next 10 years is estimated at \$21.5 million. This is an average of \$2.15 million per annum.

Council's maintenance and capital renewal expenditure for Year 1 of the

Kerb & Gutter Asset Management Plan of \$163,000 giving 10 year sustainability index of 0.07.

Plans for the Future

Council plans to operate and maintain the kerb and gutter network to achieve the following strategic objectives.

1. Ensure the kerb and gutter network is maintained at a safe and functional standard as set out in this Kerb & Gutter Asset Management Plan.
2. Ensure sufficient funding is maintained to keep the kerb and gutter network at an average or better condition rating.
3. Keep the Kerb and Gutter Asset Register and Pavement Management System updated to ensure equity in the distribution of funding.

Measuring our Performance

Quality

Kerb and gutter assets will be maintained in a reasonably usable condition. Defects found or reported that are outside our service standard will be repaired. See our maintenance response service levels for details of defect prioritisation and response time.

Function

Our intent is that an appropriate kerb and gutter network is maintained in partnership with other levels of government and stakeholders to allow water to run away from impermeable surfaces and maintain

the safety and condition of Council's road network.

Kerb and gutter asset attributes will be maintained at a safe level and associated signage and equipment be provided as needed to ensure public safety. We need to ensure key functional objectives are met:

- Ensure sufficient funding is maintained to keep the kerb and gutter network at an average or better condition rating.
- Keep the Kerb and Gutter Asset Register and Pavement Management System updated to ensure equity in the distribution of funding

The main functional consequence of the kerb and gutter network being maintained at a safe standard is to prevent ongoing liabilities for Council.

Safety

We inspect all kerb and gutter assets regularly and prioritise and repair defects in accordance with our inspection schedule to ensure they are safe.

The Next Steps

The actions resulting from this Kerb & Gutter Asset Management Plan are:

- Identify the annual depreciation required to achieve sufficient funding for kerb and gutter.
- Identify levels of service required.
- Identify the risks associated with not providing the funding.
- Identify priorities for funding.

2. INTRODUCTION

2.1 Background

This Kerb & Gutter Asset Management Plan is to demonstrate responsive management of assets (and services provided from assets), compliance with regulatory requirements, and to communicate funding required to provide the required levels of service.

The Kerb & Gutter Asset Management Plan is to be read with the following associated planning document:

Asset Management Policy and Asset Management Strategy.

This Kerb & Gutter Asset Management Plan covers the following infrastructure assets:

All kerbs and gutters in Council's local government area.

Table 2.1. Assets covered by this Plan

| Asset category | Dimensions (meters) | Replacement Value (\$M) |
|-----------------|---------------------|-------------------------|
| Asphalt Gutter | 13,530m | \$1,082,400 |
| Dish Gutter | 4,511.67m | \$812,100 |
| 100 Kerb | 239,431m | \$31,126,030 |
| 200 Kerb | 505,801m | \$70,824,740 |
| K1 | 207,900m | \$207,900 |
| K2 | 1,777m | \$115,505 |
| MK | 65m | \$3,575 |
| MKG | 106m | \$13,780 |
| Jersey Kerb | 21m | \$18,900 |
| Roll Top Gutter | 5,828m | \$815,920 |
| V-Drain | 1,260.44m | \$226,880 |
| TOTAL | 776,201m | \$105,247,740 |

Key stakeholders in the preparation and implementation of this Kerb & Gutter Asset Management Plan are:

| | |
|------------------------------|---|
| Director Operations | Preparation and direction of the AMP. |
| Manager Engineering Services | Management of works and budgets. |
| Pavements Engineer | Development and programs and specifications for works and updating of asset management systems. |
| Civil Works Co-ordinator | Development of maintenance programs and quality of work. |
| Pavements Co-ordinator | Supervision of construction works. |
| Roads Supervisor | Supervision of maintenance works. |

2.2 Goals and Objectives of Asset Management

The Council exists to provide services to its community. Some of these services are provided by infrastructure assets. Council has acquired infrastructure assets by 'purchase', by contract, construction by Council staff and by donation of assets constructed by developers and others to meet increased levels of service.

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

- taking a life cycle approach,
- developing cost-effective management strategies for the long term,
- providing a defined level of service and monitoring performance,
- understanding and meeting the demands of growth through demand management and infrastructure investment,
- managing risks associated with asset failures,
- sustainable use of physical resources,
- continuous improvement in asset management practices.¹

This Kerb & Gutter Asset Management Plan is prepared under the direction of Council's vision, mission, goals and objectives.

¹ IIMM 2006 Sec 1.1.3, p 1.3

Council's vision is:

Ku-ring-gai will be a creative, vibrant place where citizens respect each other and conserve the magnificent environment and society for our children and grandchildren.

Council's mission is:

Ensure its assets are sustainable and sufficient funding is provided to maintain them at a satisfactory standard.

Relevant Council goals and objectives and how these are addressed in this Kerb & Gutter Asset Management Plan are:

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

| Goal | Objective | How Goal and Objectives are addressed in IAMP |
|---|--|--|
| Better Techniques | Improve current asset management processes. | Development of programs which will bring the standard of all Council's kerb and gutter to a good or better condition. |
| Assessed Level of Risk | Assets and procedures for cost and risk documented. | Develop, register and utilise standards for the inclusion of risk in asset management. |
| Sustainable Assets | An established program that provides funding to maintain Council's assets at a sustainable standard. | Adopt an Asset Management Plan for all Council's assets and an agreed profile in accordance with the Long term Financial Plan. |
| Greater understanding of asset management | Understanding of AMPs for relevant staff. | Provides framework for stakeholders to understand their role in asset management and may highlight areas for further training. |

2.3 Plan Framework

Key elements of the plan are:

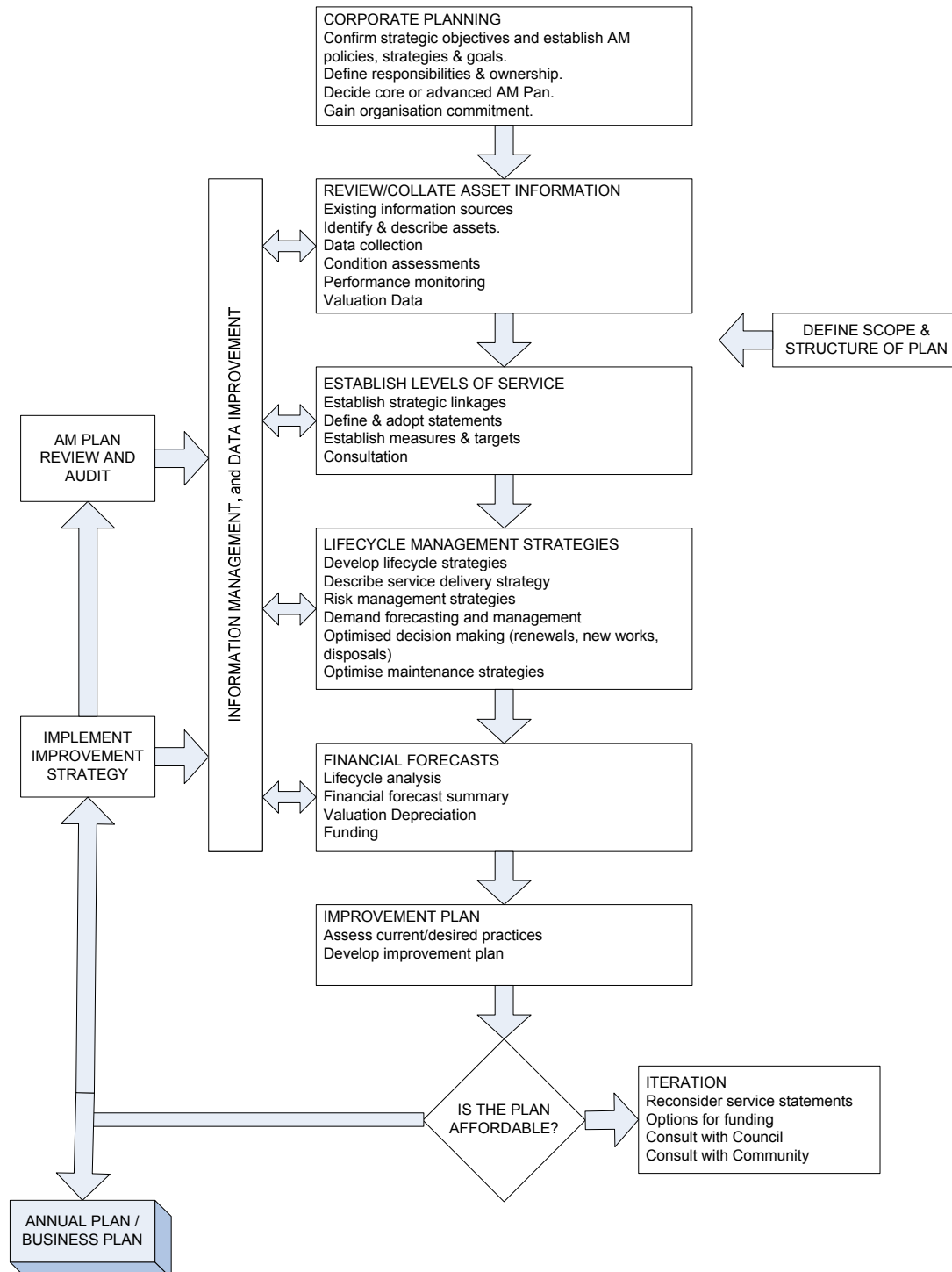
- Levels of service
Specifies the services and levels of service to be provided by Council.
- Future demand
How this will impact on future service delivery and how this is to be met.
- Life cycle management
How Council will manage its existing and future assets to provide the required services.
- Financial summary
What funds are required to provide the required services.

- Asset management practices
- Monitoring
How the plan will be monitored to ensure it is meeting Council’s objectives.
- Asset Management Improvement Plan.

A road map for preparing a Kerb & Gutter Asset Management Plan is shown below.

Road Map for preparing an Asset Management Plan

Source: IIMM Fig 1.5.1, p 1.11



2.4 Core and Advanced Asset Management

This Kerb & Gutter Asset Management Plan is prepared as a 'core' Asset Management Plan in accordance with the International Infrastructure Management Manual. 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 Kerb & Gutter 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.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Council has not carried out any research on customer expectations of the kerb and gutter network. This will be investigated for future updates of the Kerb & Gutter Asset Management Plan. Most feedback comes through the Customer Request System and this is used to gain an idea about the community satisfaction with the kerb and gutter network.

Council uses this information in developing the Strategic Management Plan and in allocation of resources in the budget.

3.2 Legislative Requirements

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

Table 3.2. Legislative Requirements

| Legislation | Requirement |
|---|--|
| <i>Local Government Act</i> | 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. |
| <i>Roads Act</i> | Sets out role, purpose, responsibilities and powers of local governments relating to the management and control of road assets |
| <i>Occupational Health and Safety Act</i> | Sets out roles and responsibilities to secure the health , safety and welfare of persons at work |

3.3 Current Levels of Service

Council has defined service levels in two (2) terms.

Community levels of service relate to how the community receives services in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.

To support this service, an operational or technical measure of service was developed to ensure that the minimum Community Levels of Service are met.

Technical measures relate to service criteria such as:

| Service Criteria | Technical measures may relate to |
|------------------|--------------------------------------|
| Quality | Condition of kerb & gutter |
| Quantity | Number of streets with kerb & gutter |
| Safety | Number of injury accidents |

Council's current service levels are detailed in Table 3.3.

Table 3.3. Current Service Levels

| Key Performance Measure | Level of Service | Performance Measure Process | Performance Target | Current Performance |
|------------------------------------|--|---|---|---|
| COMMUNITY LEVELS OF SERVICE | | | | |
| Quality | Kerb and gutters are in average or better condition | Customer request system | Satisfaction ratings greater than 50% | 57% |
| Function | Allow a safe, efficient kerb and gutter system for road users | Customer Requests relating to functionality | 2 day response to requests | Not recorded |
| Safety | Provide a working kerb and gutter network, free of hazards | Number of injury accidents | Not applicable | Not applicable |
| TECHNICAL LEVELS OF SERVICE | | | | |
| Condition | Carry out routine maintenance as per Council policy for roads | Customer service requests relating to maintenance | Based on inspections | As indicated in fair value data |
| Cost effectiveness | Carry out repairs in accordance with maintenance schedule | Maintenance cost \$/meter/yr | Weekly turnaround on advice and repairs | Based on CRM |
| Efficiency | Carry out reconstruction in accordance with PMS system | Only when identified in road works program | As per road works program | 85% of program to be completed annually |
| Safety | Provide safe suitable kerb and gutter network, free from hazards | Insurance claim history | Not specified | Not recorded |

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including residents' feedback, service requests and correspondence. Council has yet to quantify desired levels of service for kerb and gutter and this will be done when all asset data has been obtained and recorded. This will be done in future revisions of this Kerb & Gutter Asset Management Plan.

4. FUTURE DEMAND

4.1 Demand Forecast

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

Demand factor trends and impacts on service delivery are summarised in Table 4.1.

Table 4.1. Demand Factors, Projections and Impact on Services

| Demand factor | Present position | Projection | Impact on services |
|---------------|------------------|------------|--|
| Population | 108,135 | 118,000 | Increased development to provide for improved kerb and gutter. |

4.2 Changes in Technology

Technology changes are forecast to have little effect on the delivery of services covered by this plan.

Table 4.2. Changes in Technology and Forecast effect on Service Delivery

| Technology Change | Effect on Service Delivery |
|--|---|
| Improvements to the use or recycling materials | Could result in savings in construction costs. |
| Asset data collection | Likely to improve asset data information. |
| Improvements in construction techniques | May lead to faster and possibly cheaper construction. |

4.3 Demand Management Plan

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

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this Kerb & Gutter Asset Management Plan.

Table 4.3. Demand Management Plan Summary

| Service Activity | Demand Management Plan |
|------------------|--|
| Cycling | Further investigation is needed on the provision of bike services to encourage riding to work but where the cyclists are going to ride will be improved by having a kerb and gutter network. |

4.4 New Assets from Growth

The new assets required to meet growth will be acquired from land developments and constructed by Council. Essentially there will be limited new assets from growth apart from assets which will be constructed as a result of a development control plan and local environment plan within Ku-ring-gai town centres.

These future costs associated with the new kerb and gutter is expected to have a minimal effect on Council's maintenance budget and the construction of new kerb and gutter will be at the expense of the developer.

5. LIFECYCLE MANAGEMENT PLAN

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

5.1 Background Data

5.1.1 Physical parameters

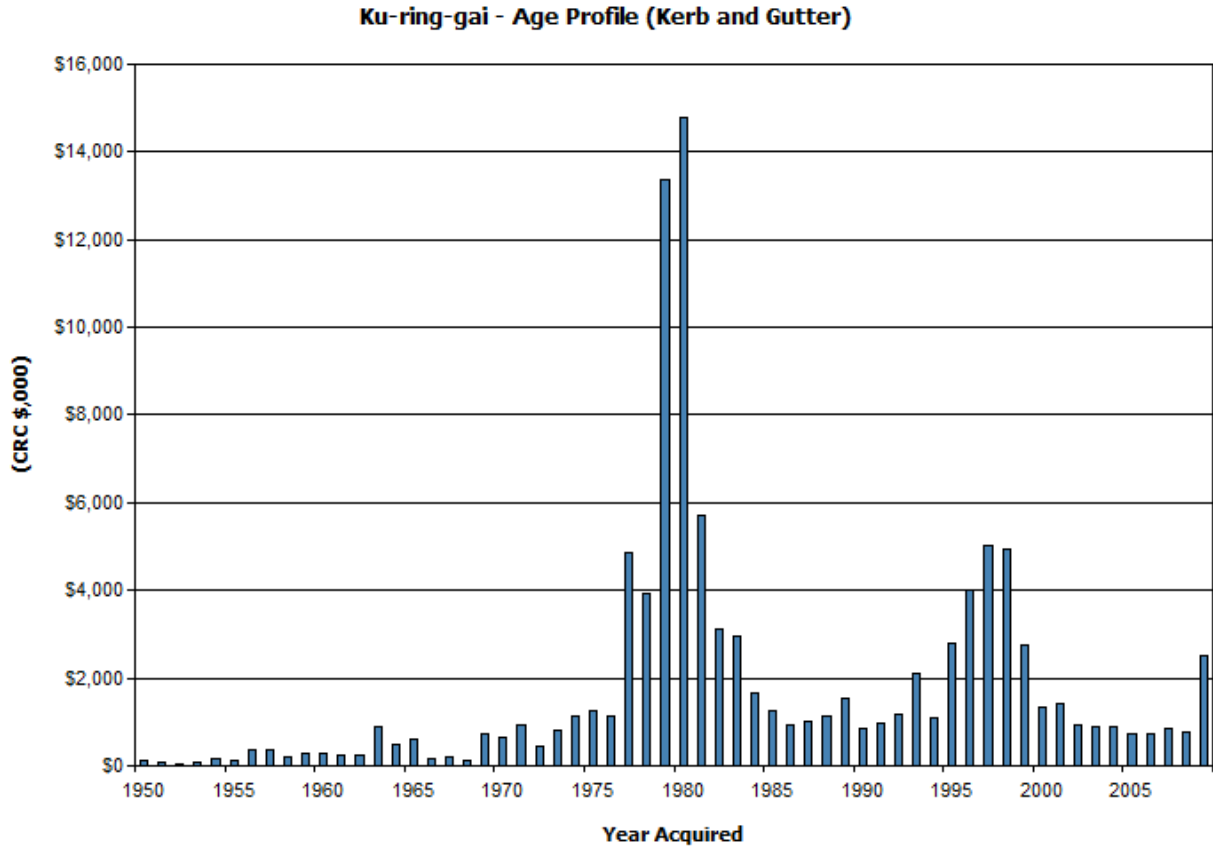
The assets covered by this Kerb & Gutter Asset Management Plan are shown below:

| | |
|---------------|-----------------|
| Kerb & Gutter | Asphalt Gutter |
| Kerb & Gutter | Dish Gutter |
| Kerb & Gutter | 100 Kerb |
| Kerb & Gutter | 200 Kerb |
| Kerb & Gutter | K1 |
| Kerb & Gutter | K2 |
| Kerb & Gutter | MK |
| Kerb & Gutter | MKG |
| Kerb & Gutter | Jersey Kerb |
| Kerb & Gutter | Roll Top Gutter |
| Kerb & Gutter | V-Drain |

There is over 770km of the various kinds of kerb and gutter in the local government area. Kerb and gutter is responsible for directing stormwater away from the road surface into the drainage network, minimising the water left on the road and increasing the safety of Council's road network.

The age profile of Council's assets is shown below. However, the profile is most likely affected due to the fact that Council had minimal records of the installation dates prior to 1970.

Fig 2. Asset Age Profile



5.1.2 Asset capacity and performance

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

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

Table 5.1.2. Known Service Performance Deficiencies

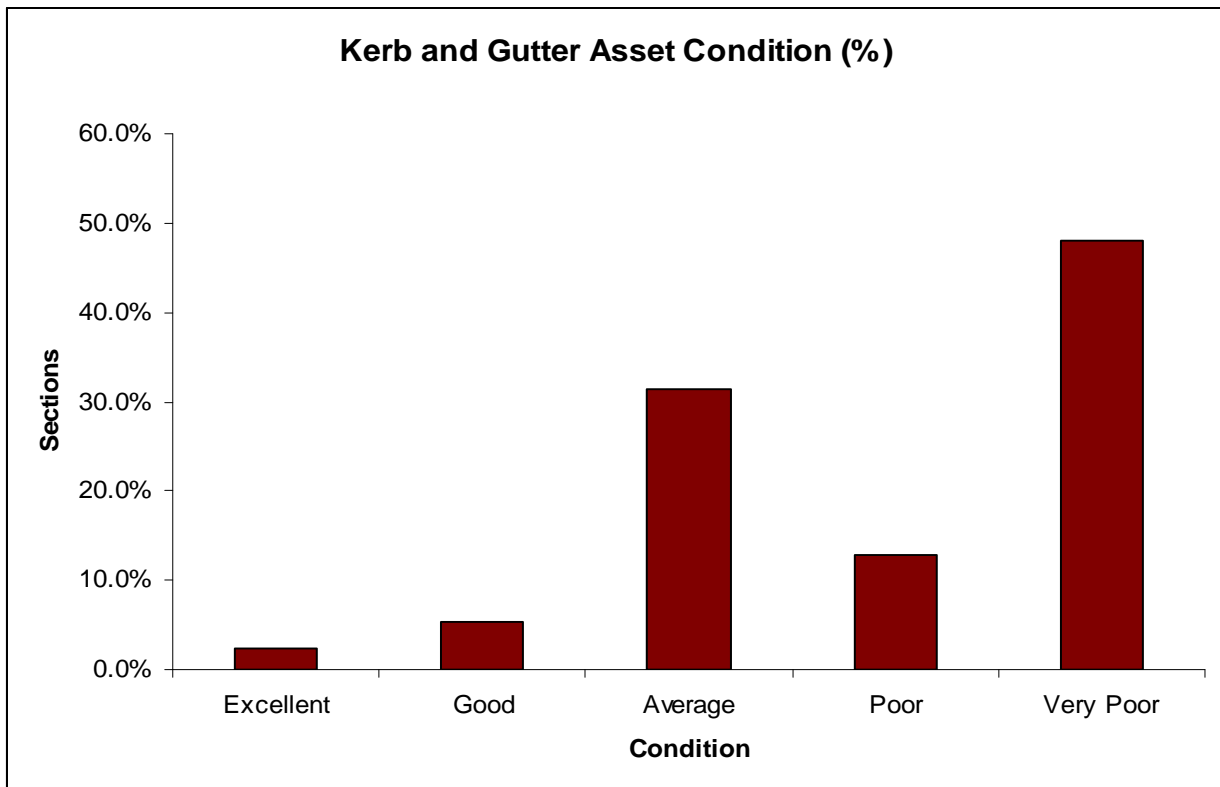
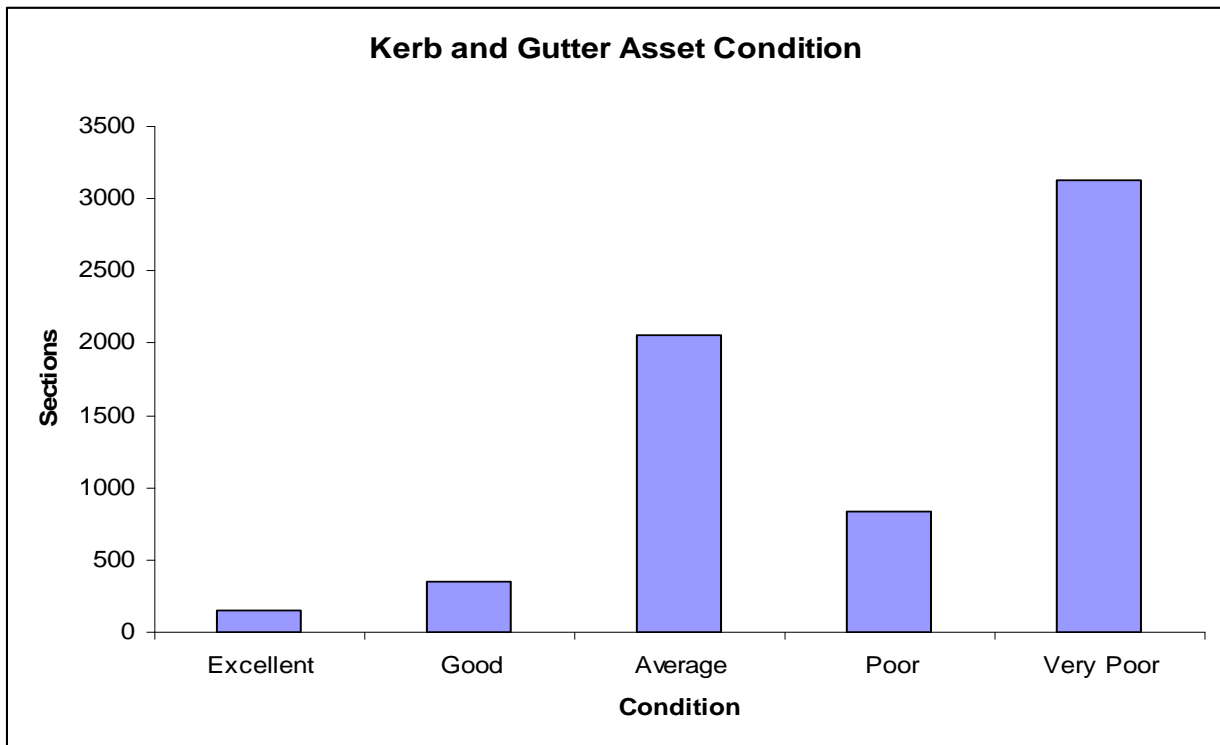
| Location | Service Deficiency |
|---------------|--|
| Asphalt K & G | Percentage of kerb and gutter rated as poor or very poor |
| Dish Gutter | Percentage of kerb and gutter rated as poor or very poor |
| 100 Kerb | Percentage of kerb and gutter rated as poor or very poor |
| 200 Kerb | Percentage of kerb and gutter rated as poor or very poor |
| K1 | Percentage of kerb and gutter rated as poor or very poor |
| K2 | Percentage of kerb and gutter rated as poor or very poor |

The above service deficiencies were identified from Council’s Pavement Management System as well as the Kerb and Gutter Asset Register.

5.1.3 Asset condition

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

Fig 3. Asset Condition Profile



Condition is measured between 0 – 1 on a continuous scale where 0 is worst possible rating and 1 is best possible rating.

5.1.4 Asset valuations

The value of assets as at 30th June 2010 covered by this Kerb & Gutter Asset Management Plan is summarised below. Assets were last revalued at 30th June 2010. Assets are valued at brownfield rates.

| | |
|---------------------------------|------------------|
| Current Replacement Cost | \$105,247,730.00 |
| Fair Value (Depreciable Amount) | \$42,389,280.28 |
| Depreciated Replacement Cost | \$62,858,449.72 |
| Annual Depreciation Expense | \$1,808,248.83 |

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

| | |
|--------------------------|-------|
| Asset Consumption | 1.72% |
| Asset renewal | 0.0% |
| Annual Upgrade/expansion | 0.01% |

5.2 Risk Management Plan

An assessment of risks² associated with service delivery from infrastructure assets has identified critical risks to Council. 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

are identified in the Infrastructure Risk Management Plan which are summarised following in Table 5.2.

Table 5.2. Critical Risks and Treatment Plans

| Asset at Risk | What can Happen | Risk Rating (VH, H) | Risk Treatment Plan |
|---------------|-------------------------------|---------------------|-----------------------|
| Asphalt K & G | Can lead to flooding of roads | High | More frequent repairs |
| Asphalt K & G | Injury to pedestrians | Med | More frequent repairs |
| Dish Gutter | Can lead to flooding of roads | High | More frequent repairs |

² Risk Management Plan 2009/162222

| | | | |
|-------------|-------------------------------|------|-----------------------|
| Dish Gutter | Injury to pedestrians | Low | More frequent repairs |
| 100 Kerb | Can lead to flooding of roads | High | More frequent repairs |
| 100 Kerb | Injury to pedestrians | Med | More frequent repairs |
| 200 Kerb | Can lead to flooding of roads | Med | More frequent repairs |
| 200 Kerb | Injury to pedestrians | High | Possible warnings |

5.3 Routine Maintenance Plan

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 Maintenance plan

Maintenance includes reactive, planned and cyclic 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.

Cyclic maintenance is replacement of higher value components / sub-components of assets that are undertaken on a regular cycle including repainting, building roof replacement, etc. This work generally falls below the capital/maintenance threshold.

Maintenance expenditure trends are shown in Table 5.3.1

Table 5.3.1. Maintenance Expenditure Trends

| Year | Maintenance Expenditure | | |
|---------|-------------------------|----------|--------|
| | Reactive | Planned | Cyclic |
| 2007/08 | \$59,109 | \$60,000 | \$0 |
| 2008/09 | \$56,831 | \$40,000 | \$0 |
| 2009/10 | \$56,000 | \$60,000 | \$0 |

Planned maintenance work is 50% of total maintenance expenditure.

Maintenance expenditure levels are considered to be adequate to meet required service levels. However, they are not sufficient to bring the kerb and gutter asset up to a satisfactory standard. Future revision of this Kerb & Gutter Asset Management Plan will include linking required maintenance expenditures with required service levels.

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

5.3.2 Standards and specifications

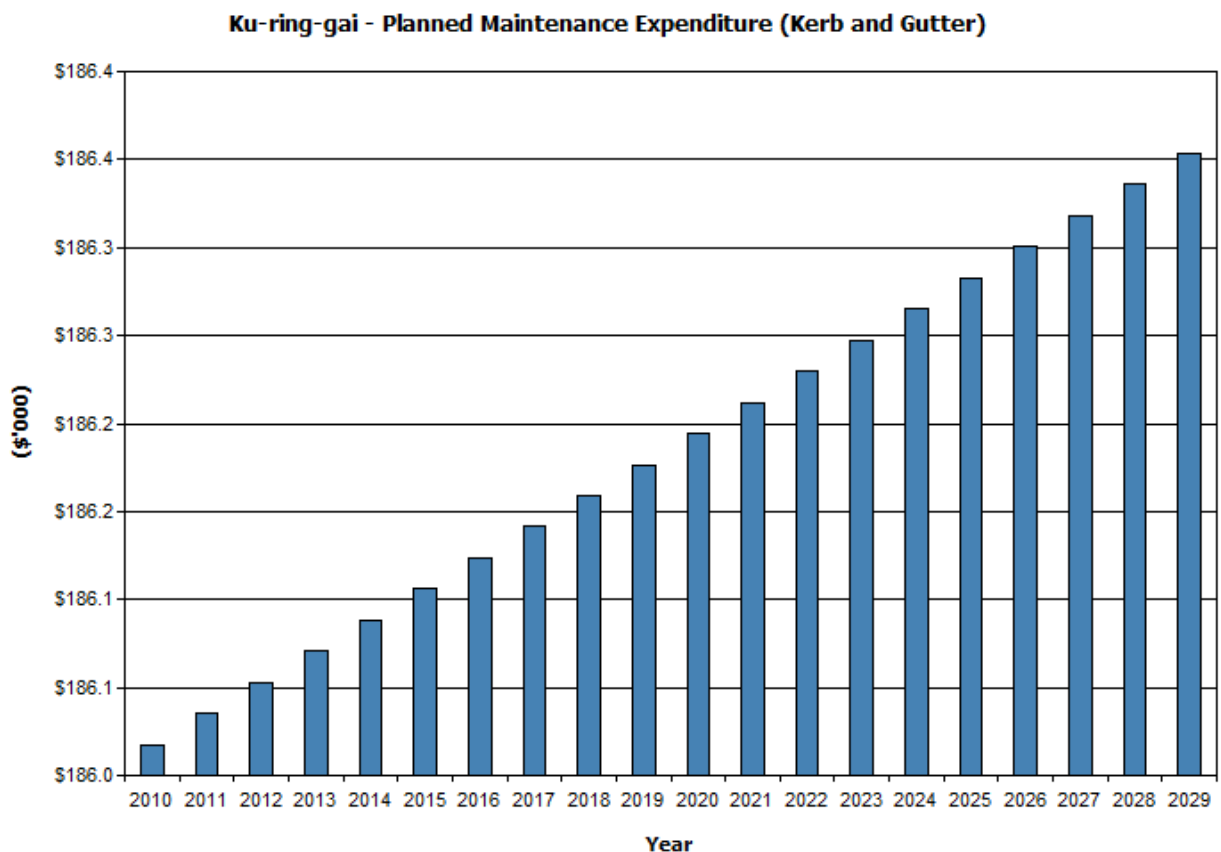
Maintenance and construction work is carried out in accordance with Australian Standards and Specifications.

5.3.3 Summary of future maintenance expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Fig 4.

Note that all costs are shown in current 2009/10 dollar values.

Fig 4. Planned Maintenance Expenditure



Deferred maintenance is work that is identified for maintenance and unable to be funded are to be included in the risk assessment process in the Infrastructure Risk Management Plan.

Maintenance is funded from Council's operating budget and grants where available. This is further discussed in Section 6.2.

5.4 Renewal/Replacement Plan

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is upgrade / expansion or new works expenditure.

5.4.1 Renewal plan

Assets requiring renewal are identified from estimates of remaining life obtained from the asset register worksheets on the *'Planned Expenditure template'*. Candidate proposals are inspected to verify accuracy of remaining life estimate and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes.

The ranking of future works is determined by the SMEC Pavement Management System and the future program is included in the Long Term Financial Plan.

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

Examples of low cost renewal include asphalt kerb and gutter instead of concrete kerb and gutter.

5.4.2 Renewal standards

Renewal work is carried out in accordance with Australian Specifications and NSROC Standards and Specifications.

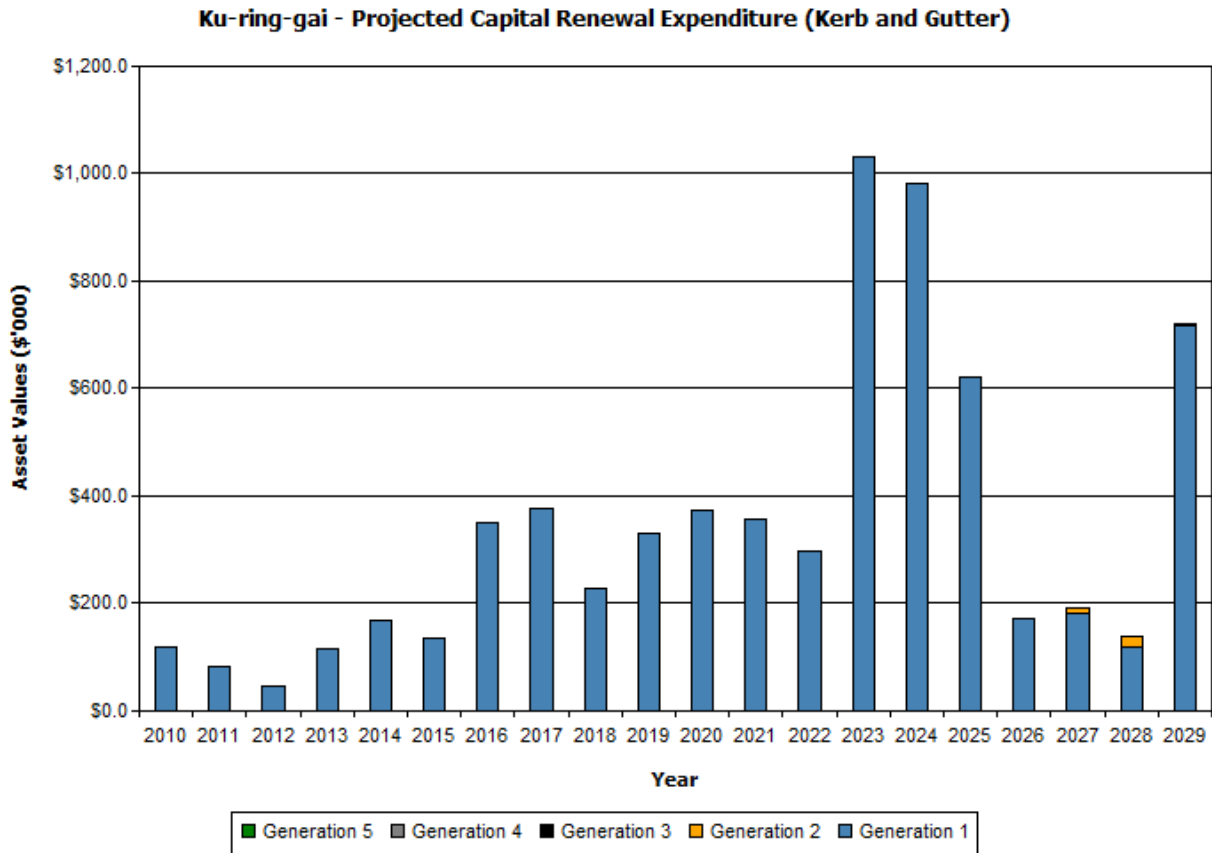
5.4.3 Summary of future renewal expenditure

Projected future renewal expenditures are forecast to increase over time as the asset stock ages. The costs are summarised in Fig 5.

Note that all costs are shown in current 2009/10 dollar values.

The projected Capital Renewal Program is related document B.

Fig 5. Projected Capital Renewal Expenditure



Deferred maintenance is work that is identified for maintenance and unable to be funded. These are to be included in the risk assessment process in the Infrastructure Risk Management Plan.

Maintenance is funded from Council’s operating budget and grants where available. 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 Council 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 Councillor or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate.

New assets are planned within the town centres according to the development control plan but these assets will be considered in future management plans.

5.5.2 Standards and specifications

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.

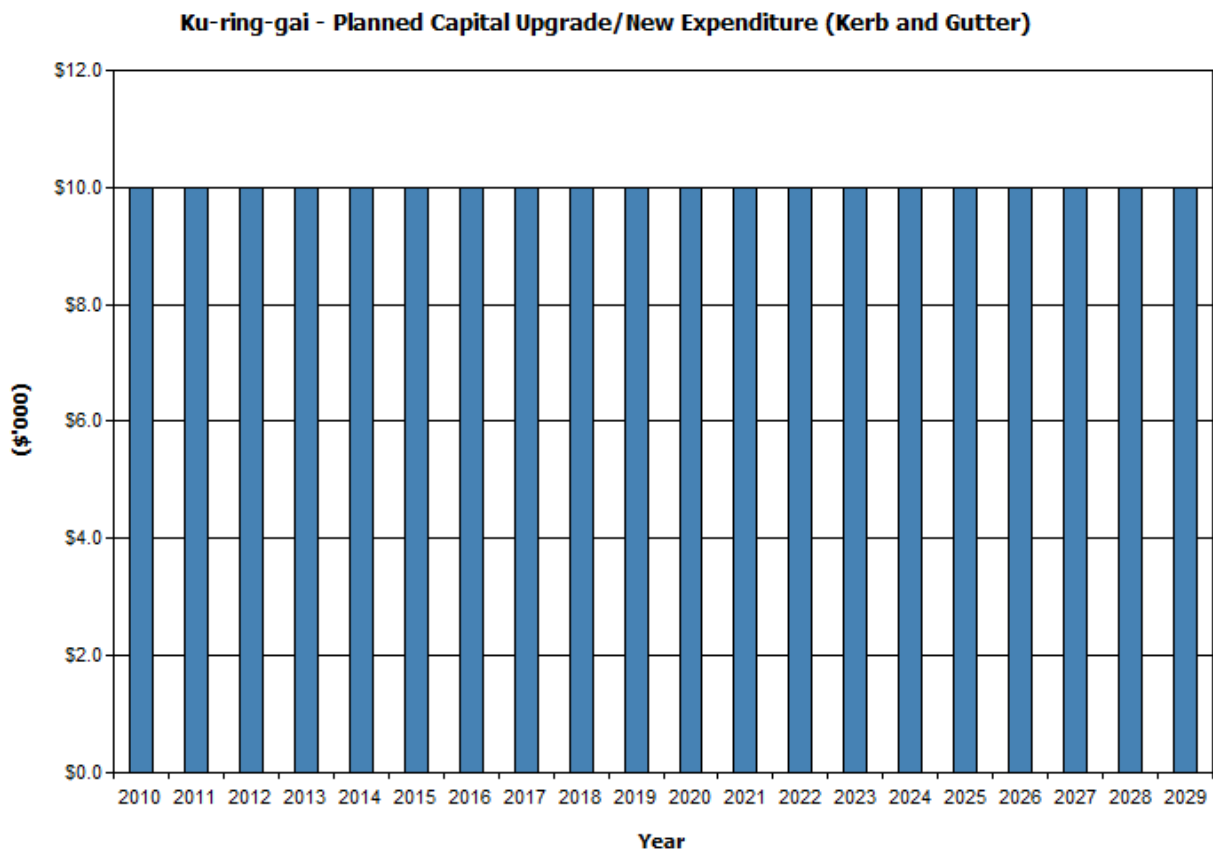
5.5.3 Summary of future upgrade/new assets expenditure

Planned upgrade / new asset expenditures are summarised in Fig 6. The planned upgrade / new Capital Works Program is shown in related Document C.

Note that all costs are shown in current 2009/10 dollar values.

Minimal upgrades are planned and likely to be only associated with new development activity.

Fig 6. Planned Capital Upgrade/New Asset Expenditure



New assets and services are to be funded from Council’s Capital Works Program and grants where available. This is further discussed in Section 6.2.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. 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. At the moment there are no kerb and gutter assets scheduled for disposal.

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this Kerb & Gutter Asset Management Plan.

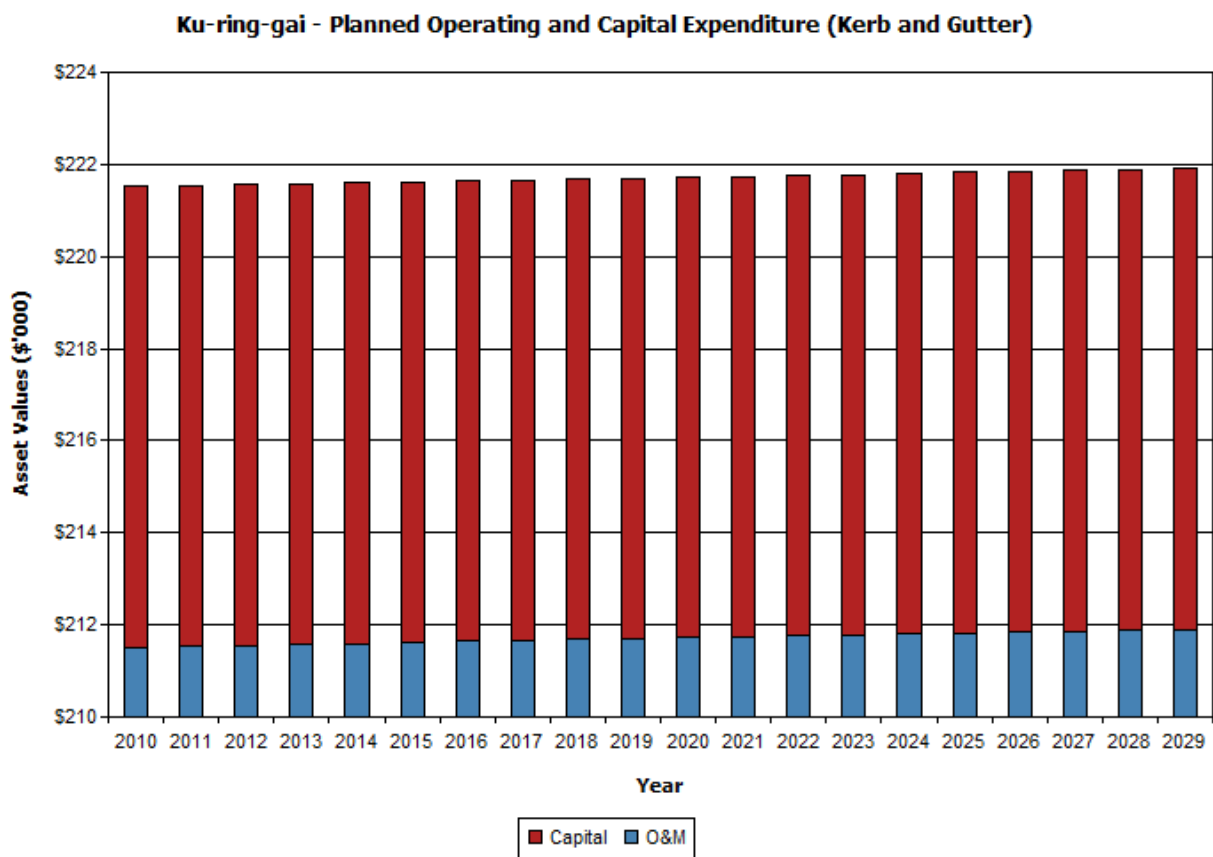
6. FINANCIAL SUMMARY

This section contains the financial requirements resulting from all the information presented in the previous sections of this Kerb & Gutter 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 planned operating (operations and maintenance) and capital expenditure (renewal and upgrade / expansion / new assets).

Fig 7. Planned Operating and Capital Expenditure



Note that all costs are shown in current 2009/10 dollar values.

6.1.1 Sustainability of service delivery

There are two (2) key indicators for financial sustainability that have been considered in the analysis of the services provided by this asset category, these being long term life cycle costs and medium term costs over the 10 year financial planning period.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the longest asset life. Life cycle costs include maintenance and

asset consumption (depreciation expense). The annual average life cycle cost for the services covered in this Kerb & Gutter Asset Management Plan is \$2.215 million.

Life cycle costs can be compared to life cycle expenditure to give an indicator of sustainability in service provision. Life cycle expenditure includes maintenance plus capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure at the start of the plan is \$2,215,896.

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

The life cycle gap for services covered by this Kerb & Gutter Asset Management Plan is \$1.807 million per annum. The life cycle sustainability index is 0.07

Medium term – 10 year financial planning period

This Kerb & Gutter Asset Management Plan identifies the estimated maintenance and capital expenditures required to provide an agreed level of service to the community over a 20 year period for input into a 10 year financial plan and funding plan to provide the service in a sustainable manner.

This may be compared to existing or planned expenditures in the 20 year period to identify any gap. In a core Asset Management Plan, a gap is generally due to increasing asset renewals.

Fig 8 shows the projected asset renewals in the 20 year planning period from the asset register. The projected asset renewals are compared to planned renewal expenditure in the Capital Works Program and Capital Renewal Expenditure in Year 1 of the planning period as shown in Fig 8. Table 6.1.1 shows the annual and cumulative funding gap between projected and planned renewals.

Fig 8. Projected and Planned Renewals and Current Renewal Expenditure

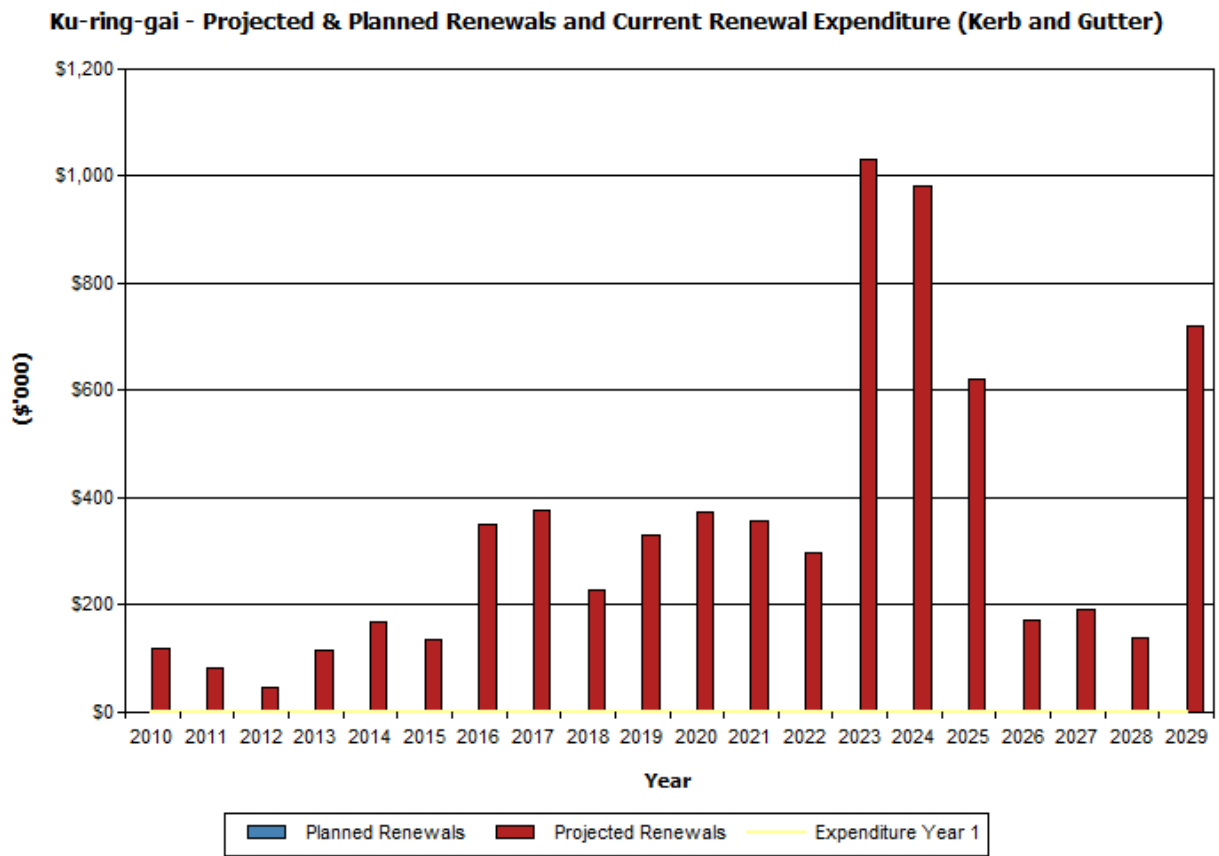


Table 6.1.1 shows the gap between projected and planned renewals.

Table 6.1.1 Projected and Planned Renewals and Expenditure Gap

| Year | Projected Renewals | Planned Renewals | Expenditure Yr1 | Funding Gap | Cumulative Funding Gap |
|------|--------------------|------------------|-----------------|-------------|------------------------|
| | (\$'000) | (\$'000) | (\$'000) | (\$'000) | (\$'000) |
| 2010 | \$119.34 | \$0.00 | \$0.00 | -\$119.34 | -\$119.34 |
| 2011 | \$84.04 | \$0.00 | \$0.00 | -\$84.04 | -\$203.38 |
| 2012 | \$47.32 | \$0.00 | \$0.00 | -\$47.32 | -\$250.70 |
| 2013 | \$114.19 | \$0.00 | \$0.00 | -\$114.19 | -\$364.89 |
| 2014 | \$168.92 | \$0.00 | \$0.00 | -\$168.92 | -\$533.81 |
| 2015 | \$135.16 | \$0.00 | \$0.00 | -\$135.16 | -\$668.97 |
| 2016 | \$351.15 | \$0.00 | \$0.00 | -\$351.15 | -\$1,020.12 |
| 2017 | \$376.73 | \$0.00 | \$0.00 | -\$376.73 | -\$1,396.85 |
| 2018 | \$228.65 | \$0.00 | \$0.00 | -\$228.65 | -\$1,625.50 |
| 2019 | \$331.13 | \$0.00 | \$0.00 | -\$331.13 | -\$1,956.63 |
| 2020 | \$374.41 | \$0.00 | \$0.00 | -\$374.41 | -\$2,331.04 |
| 2021 | \$357.18 | \$0.00 | \$0.00 | -\$357.18 | -\$2,688.22 |
| 2022 | \$296.08 | \$0.00 | \$0.00 | -\$296.08 | -\$2,984.30 |
| 2023 | \$1,030.36 | \$0.00 | \$0.00 | -\$1,030.36 | -\$4,014.66 |
| 2024 | \$981.20 | \$0.00 | \$0.00 | -\$981.20 | -\$4,995.86 |
| 2025 | \$622.65 | \$0.00 | \$0.00 | -\$622.65 | -\$5,618.51 |
| 2026 | \$172.12 | \$0.00 | \$0.00 | -\$172.12 | -\$5,790.63 |
| 2027 | \$192.43 | \$0.00 | \$0.00 | -\$192.43 | -\$5,983.06 |
| 2028 | \$138.95 | \$0.00 | \$0.00 | -\$138.95 | -\$6,122.01 |
| 2029 | \$721.92 | \$0.00 | \$0.00 | -\$721.92 | -\$6,843.93 |

Providing services in a sustainable manner will require matching of projected asset renewals to meet agreed service levels with planned capital works programs and available revenue.

A gap between projected asset renewals, planned asset renewals and funding indicates that further work is required to manage required service levels and funding to eliminate any funding gap.

Council will manage the 'gap' by developing this Kerb & Gutter Asset Management Plan to provide guidance on future service levels and resources required to provide these services, and provided Council maintains the funding level shown in the Long Term Financial Plan, then the gap of good kerb and gutter to poor kerb and gutter should reduce.

Council's Long Term Financial Plan covers the first 10 years of the 20 year planning period. The total maintenance and capital renewal expenditure required over the 10 years is \$22.15 million.

This is an average annual required expenditure of \$2.215 million per annum. Estimated maintenance and Capital Renewal Expenditure in Year 1 is \$163,000. The 10 year sustainability index is 0.07.

6.2 Funding Strategy

Projected expenditure identified in Section 6.1 is to be funded from Council's operating and capital budgets. The funding strategy is detailed in the Council's 10 year Long Term Financial Plan.

Achieving the financial strategy will require Council to maintain its current level of funding and frequently revisiting the figures to assure they are still relevant.

An assessment of the level of funding and associated risks will be undertaken when all asset data is available.

6.3 Valuation Forecasts

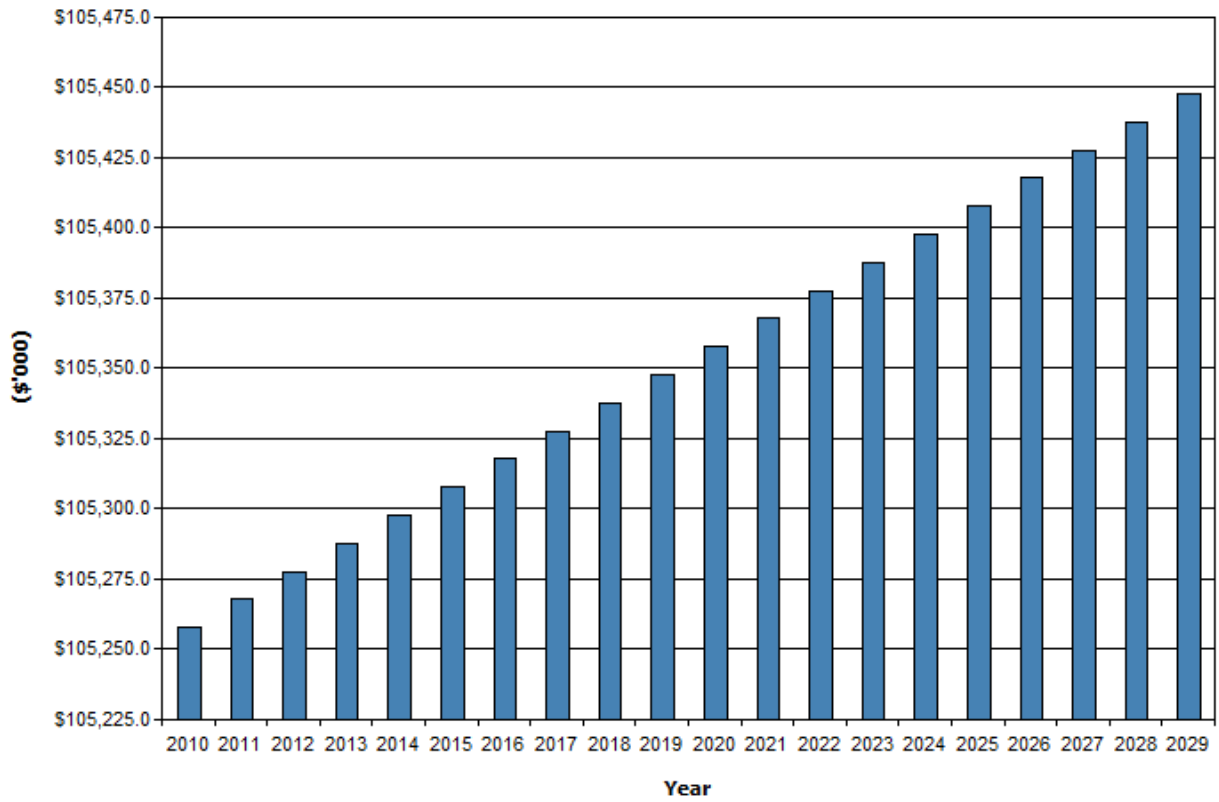
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council.

Fig 9 shows the projected replacement cost asset values over the planning period.

Note that all costs are shown in current 2009/10 dollar values.

Fig 9. Projected Asset Values

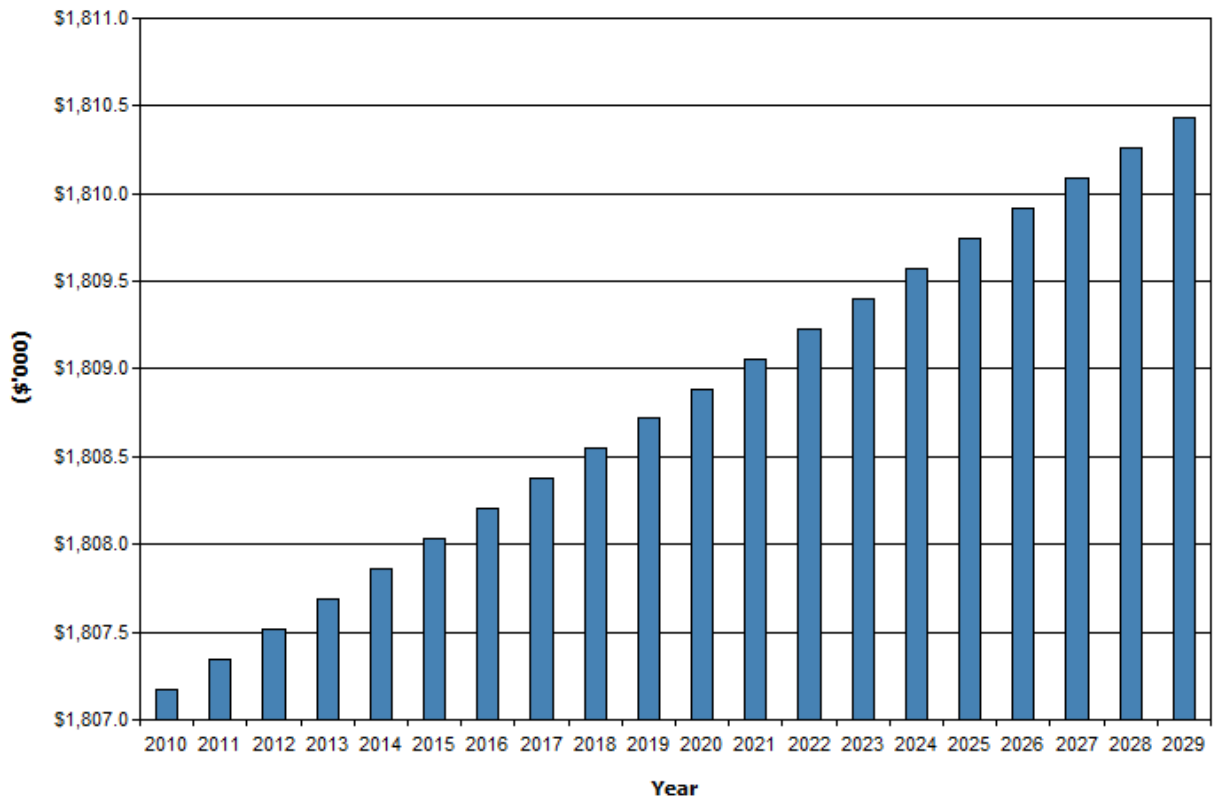
Ku-ring-gai - Projected Asset Values (Kerb and Gutter)



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

Fig 10. Projected Depreciation Expense

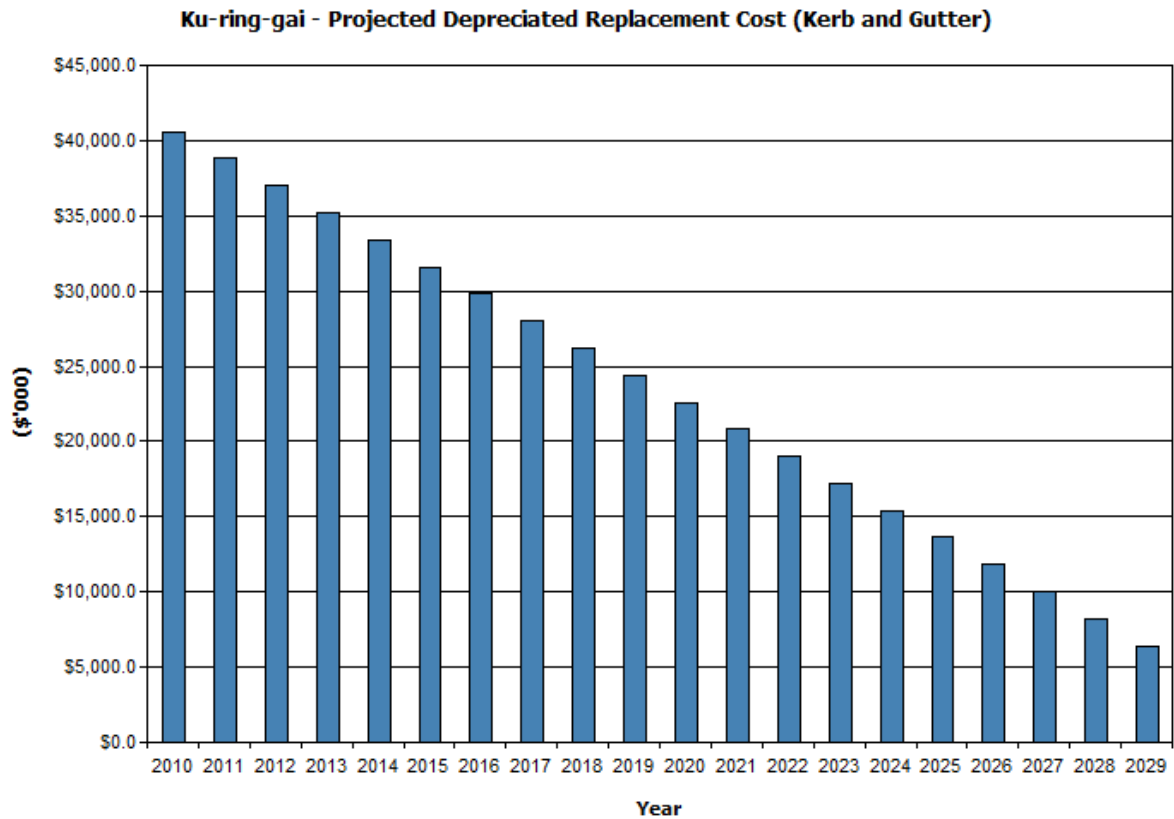
Ku-ring-gai - Projected Depreciation Expense (Kerb and Gutter)



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

Forecast of the assets' depreciated replacement cost is shown in Fig 11.

Fig 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 Kerb & Gutter 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 Kerb & Gutter Asset Management Plan are:

- that Council continues to provide the same level of funding
- that the infrastructure levy continues beyond 2013
- that the assumptions made by the Pavement Management System are consistent with reality
- that the kerb and gutter does not deteriorate faster than predicted due to increased construction activity.

Accuracy of future financial forecasts may be improved in future revisions of this Kerb & Gutter Asset Management Plan by the following actions.

- review of the assumptions with the PMS.
- review of the materials useful lives.
- more accurate unit costs become available.
- better construction techniques are employed.

7. ASSET MANAGEMENT PRACTICES

7.1 Accounting/Financial Systems

Tech One financial systems for recording of actual costs against assets.

Both Operations and Corporate staff are responsible for recording and allocating costs against assets.

Compliance with International Accounting Standards.

Continued allocations for both renewal and maintenance until roads are in good condition.

7.2 Asset Management Systems

The Pavement Management System will be used to determine the rolling works programs.

When the Asset Management System has been developed, both the PMS and the Asset system will need to be linked.

Operations staff will be responsible for the maintenance of data and recording of costs against assets.

7.3 Information Flow Requirements and Processes

The key information flows *into* this Kerb & Gutter Asset Management Plan are:

- Asset register data on size, age, value, remaining life of the network;
- Unit rates for categories of work/material;
- Adopted service levels;
- Projections of various factors affecting future demand for services;
- Correlations between maintenance and renewal, including decay models;
- Data on new assets acquired by Council.

The key information flows *from* this Kerb & Gutter Asset Management Plan are:

- Assumed Works Program and trends;
- Resulting budget, valuation and depreciation projections;
- Useful life analysis.

These will impact the Long Term Financial Plan, Strategic Business Plan, annual budget and departmental business plans and budgets.

7.4 Standards and Guidelines

This plan is developed in accordance with Council's Asset Management Policy and Improvement Strategy.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Performance Measures

The effectiveness of the Kerb & Gutter Asset Management Plan can be measured in the following ways:

- The degree to which the required cashflows identified in this Kerb & Gutter Asset Management Plan are incorporated into Council's Long Term Financial Plan and Strategic Management 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.

8.2 Improvement Plan

The Asset Management Improvement Plan generated from this Kerb & Gutter Asset Management Plan is shown in Table 8.2.

Table 8.2 Improvement Plan

| Task No | Task | Responsibility | Resources Required | Timeline |
|----------------|---|-----------------------|---------------------------|-----------------|
| 1. | Review of component condition assumptions | CWC | Reflect | June 11 |
| 2. | Review of useful Life | CWC | Reflect | Sept 11 |
| 3. | Review of remaining useful lives | CWC | Reflect | Sept 11 |
| 4. | Update of data based on completed works | CWC | Reflect | Aug 11 |

8.3 Monitoring and Review Procedures

This Kerb & Gutter Asset Management Plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and / or resources available to provide those services as a result of the budget decision process.

The Plan has a life of four (4) years and is due for revision and updating within two (2) years of each Council election.

9 Conclusion

From the fair value calculations for kerb and gutter, the following table provides a summary of the condition of Council's kerb and gutter at 30 June 2010:

| Kerb & Gutter Condition | Replacement Cost (\$) | Fair Value (\$) |
|-------------------------|-----------------------|---------------------|
| New | \$3,943,835 | \$3,304,000 |
| Good | \$8,224,005 | \$5,127,503 |
| Fair | \$54,796,120 | \$26,663,794 |
| Poor | \$28,934,500 | \$6,654,702 |
| Failed | \$9,349,270 | \$639,281 |
| Total | \$105,247,730 | \$42,389,280 |

The cost to bring Council's kerb and gutter to a satisfactory standard is based on the kerb and gutter at a condition less than fair and is the difference between the replacement cost and the fair value for these kerb and gutter.

| Kerb & Gutter Condition | Replacement Cost (\$) | Fair Value (\$) |
|-------------------------|-----------------------|--------------------|
| Poor | \$28,934,500 | \$6,654,702 |
| Failed | \$9,349,270 | \$639,281 |
| Total | \$38,283,770 | \$7,293,983 |

Therefore the cost to bring Council's kerb and gutter to a satisfactory standard is **\$30,989,787**

For the Long Term Financial Plan the annual depreciation amount for the rate of consumption of Council's kerb and gutter is **\$1.807 million**.

| Asset | Replacement Cost | Fair Value | Annual Depreciation | Annual maintenance requirement | Annual life cycle cost |
|-----------------|------------------|--------------|---------------------|--------------------------------|------------------------|
| Kerb and Gutter | \$105,247,730 | \$42,389,280 | \$1,807,000 | \$408,896 | \$2,215,896 |

| Very Good | Good | Fair | Poor | Failed | Cost to Satisfactory |
|-----------|------|-------|-------|--------|----------------------|
| 3.7% | 7.8% | 52.1% | 27.5% | 8.9% | \$30,989,787 |

| Annual Capital | Annual Maintenance | Total Allocation | Sustainability Index | Gap |
|----------------|--------------------|------------------|----------------------|--------------|
| | \$163,000 | \$163,000 | 0.07 | -\$2,052,896 |

The figures above indicate that there is a significant gap in terms of funding to bring the asset up to a satisfactory standard. At this stage it not proposed to recommend any changes to the level of funding until Council assesses all of its assets and the associated risks with each of its assets classes.

While the figures shown above indicates that there is no annual capital funding for kerb and gutter, works on improving the condition of the kerb and gutter is carried out when roads are upgraded and this work is included in the roads funding.

Although the current sustainability index is less than 1, the risks associated with not undertaking kerb and gutter works is considered to be low.

REFERENCES

Ku-ring-gai Council, 'Delivery Program and Operational Plan 2010 – 2014,

Ku-ring-gai Council, 'Annual Plan and Budget.

DVC, 2006, 'Asset Investment Guidelines', 'Glossary', Department for Victorian Communities, Local Government Victoria, Melbourne,
<http://www.dvc.vic.gov.au/web20/dvclgv.nsf/allDocs/RWP1C79EC4A7225CD2FCA257170003259F6?OpenDocument>

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au

RELATED DOCUMENTS

| | |
|------------|--|
| Document A | Long Term Financial Plan Funding for Road (internal reference 2010/098362) |
| Document B | Capital Works Program for Road (internal reference 2010/09382) |
| Document C | SMEC Predication Model (internal reference 2009/173241) |
| Document D | Fair Value calculations (internal reference 2010/134089) |
| Document E | Asset Management and Road Maintenance Policies Asset Management Policy (internal reference 2009/017576) Road Maintenance & Repairs Policy (internal reference 956121) Road Maintenance Procedure (internal reference 957548) |
| Document F | Risk Management Plan and Template for Roads Risk Management Plan (internal reference 2009/162222) Template for Road (internal Reference 2009/162171) |