



camden council



Stormwater Drainage Asset Management Plan



*Transforming Community
Vision into Action*

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Executive Summary

Camden Council recognises the importance of asset management planning to deliver agreed levels of service to the community. Councils are complex organisation providing many and varied services to the community. Much of these services are supported by infrastructure assets which may contribute to one or many of the services provided.

What does this Asset Management Plan Cover?

The preparation of this Stormwater Drainage Asset Management Plan is another step in providing guidance to Council on improving its asset management systems and practices. Camden Council has nominated the following categories of stormwater drainage assets within this plan: channels; flood mitigation; headwalls; pipes; pits and stormwater quality improvement devices (SQID).

The current value of Stormwater Drainage Assets is \$138,553,669. Generally, the Stormwater Drainage Assets of Council are in satisfactory condition, with only a very small percent of the major assets (Pipes) requiring significant intervention.

What does it cost?

There are two key indicators of cost to provide stormwater drainage asset services:

- The life cycle cost being the average cost over the lifecycle of the asset; and
- The total maintenance and renewal expenditure required to deliver existing service levels over the next 10 years covered by Council's long term financial plan¹.

The lifecycle cost to provide stormwater drainage assets to the community is estimated at \$1,495,440 per annum. The total maintenance and renewal expenditure required to provide Stormwater Drainage assets to the community over the next 10 years is estimated at \$6,100,660. This is an average of \$610,066 per annum.

Currently Camden Council has implemented a Community Infrastructure Renewal Program (CIRP) utilising a Special Rate Variation (SRV) which is due to expire in June this year, to improve the 'renewal' component of its assets expenditure. Council's preferred long term funding strategy is to seek a continuation of a one-off 1.1% Special Rate Variation over and above the ministerial allowable limit, so that Council's road assets will be able to be maintained at a standard overall which better reflects the existing standard. Unfortunately there will be some deterioration in the average standard, it may begin to affect usability of the asset, and therefore further significant additional investment over the next ten years will be required.

Plans for the Future

Camden Council plans to operate and maintain the stormwater drainage asset network to achieve the following strategic objectives:

1. Ensure the stormwater drainage network of assets is maintained at a safe and functional standard as set out in this asset management plan;

¹ Based on asset management modelling to give an indicative figure only.

2. Manage the civil public infrastructure in a sustainable manner;
3. Continue to develop and maintain an integrated asset management system;
4. Minimize adverse impact from asset users, such as developers and utilities on the infrastructure assets;
5. Maintain stormwater drainage assets to an agreed serviceability standard.

The Next Steps

This actions resulting from this asset management plan are:

- Review and test asset management data, condition assessment and long term financial modeling reliability;
- Develop performance measures and targets for stormwater drainage asset service criteria, considering community/customer expectations; strategic goals; legislative requirements, and Council's resource ability to meet measures and targets;
- Review and improve maintenance practices and procedures to reduce the potential liability exposures associated with the maintenance of stormwater drainage assets
- Review opportunities for improvement of accounting and condition data integration for calculation of fair value asset valuation;
- Review elements of the Conquest to ensure that sufficient funds are provided to undertake condition testing of the stormwater drainage network on a four year rolling program; and
- Review community service level priorities against the use of assets that provide the service.

Glossary of Terms

ABS	Australian Bureau of Statistics
Acquisition	The act of acquiring or gaining possession of an asset
Age	The current date less year when asset was constructed
AMP	Asset Management Plan
Asset	A physical component of a facility, which has value, enables services to be provided and has an economic life greater than 12 months
Asset Class	A logical grouping of assets at its highest functional level within the asset hierarchy
Asset Management	A systematic process to guide the planning, acquisition, operation and maintenance, renewal and disposal of assets
Asset Management Information System	An asset management system is a combination of processes, data and software applied to provide the essential outputs for effective asset management such as reduced risk and optimum infrastructure investment
Asset Management Plan	A plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques over the lifecycle of the asset in the most cost effective manner to provide a specific level of service
Asset Register	A record of asset information including: condition, construction, financial, historical, inventory and technical details
Building	Includes all ancillary buildings, amenities, structures such as change rooms, toilets, shade structures, etc.
Camden 2040	The Community Strategic Plan developed following community consultation which captures the Camden community's aspirations and which has been developed in line with the DLG's Integrated Planning & Reporting framework
CAPEX	Capital Expenditure
Capital Works	The creation of new assets or an increase in the capacity of existing assets beyond their original design capacity or service potential
Community Strategic Plan	A plan developed by the Council for the community based on the Integrated Planning & Reporting framework developed by the DLG
Conquest	An asset management software package that includes Council's Asset Register and Asset Maintenance Management System
Council	Camden Council
CPI	Consumer Price Index
CWP	Capital Works Program
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for by the allocation of the cost (or revalued amount) of the asset

	less its residual value over its useful life
Depreciation Method	The depreciation method used in Conquest is straight line method which is constant consumption of the asset over its useful life
Disposal	Activities necessary to dispose of decommissioned assets
DLG	NSW Division of Local Government, Department of Premier and Cabinet (and its successors)
DNR	NSW Department of Natural Resources
Facility	A complex comprising many assets which represent a single management unit for financial, operational, maintenance and other purposes
Fair Value	The best estimate of the price reasonably obtainable in the market at the date of the valuation
GIS	Geographical Information System, mapping and spatial location technology systems which show location and relationship to key geographical datum points
IIMM2006	International Infrastructure Management Manual 2006
IP&R	Integrated Planning and Reporting framework
IPWEA	Institute of Public Works & Engineering Australia
Levels of Service	The defined service quality or provision rate for a particular activity (ie. roads) or a service area (ie. a particular footpath) against which service performance may be measured. Levels of service are set in order to meet community service expectations.
LGA	Local Government Area
Local Road	Local Roads are roads within the LGA under the care and control of the Local Council, which are not State Roads as identified in the Roads & Transport Asset Management Plan (Section 1.2). Local Roads include Regional Roads
LOS	Levels of Service
Lifecycle	The cycle of activities that an asset goes through while it retains an identity as a particular asset (ie. From planning & design to decommissioning or disposal)
Maintenance	All actions for works or actions necessary for retaining an asset as near as practical to an acceptable condition, but excluding refurbishment or renewal
MMS	Maintenance Management System – for Camden Council this is its Conquest System.
New Works	New work expenditure is Capital Works expenditure, i.e. money spent on new works (development costs) and upgrades to an existing asset or on creating a new asset
OH&S	Occupational Health & Safety
Operational Costs	A combination of both 'Operational & Maintenance' expenditure
Operational Expenditure	Costs associated with the process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. An operational cost is money spent on managing and servicing the asset, such as inspections, cleaning and

	administration.
Operational Plan	Generally comprise detailed implementation plans and information with a 1-4 year outlook (short-term). The plans detail structure, authority, responsibilities, defined levels of service and emergency responses
PMS	Pavement Management System - A civil engineering software package designed for determining road network condition ratings
Remaining Useful Life	Remaining useful life is determined for each individual asset from the condition rating. Reliable condition decay profiles for roads are available in Council's pavement management system (PMS). It is the time that the asset provides future economic benefit, from acquisition to expected replacement, renewal in full or replacement /disposal
Renewal	Works or actions to upgrade; refurbish or replace components of an asset to restore it to near new and required functional condition, extending its current remaining life
Residual Value	Residual value is the estimated amount Council will obtain from the disposal of the asset. The residual value is recognized, where the asset is renewed or replaced in full and the cost to restore the asset to as new condition is less than the replacement cost
Risk Management	The process of managing 'possibility values' relating to key factors associated with a risk in order to determine the likely outcomes and the probability of the outcome occurring
Service	A benefit gained from utilising or accessing an asset and the associated work done by Council staff or others associated with the Council
Service Expectation	The description of Level of Service available to users of an asset and any associated services, as described through consultation in developing and reviewing the Community Strategic Plan
Stakeholder	A person; group; company or government department representing an interest in an asset; project or service utilising an asset
State Roads	State Roads are roads within the LGA under the care and control of the State Government. State Roads are identified in the Roads & Transport Asset Management Plan (Section 1.2).
Useful Life	The period over which a depreciable asset is expected to be in service / used
WIK	Works In Kind or other material public benefit arrangement in lieu of the part or full payment of either a monetary payment or the dedication of land required under Council's Section 94 contributions

1. Introduction

1.1 Background

The aim of the Camden Council’s Stormwater Drainage Asset Management Plan is to provide a framework to detail and examine existing management practices for stormwater drainage infrastructure to meet community service expectations, and to form the basis of an improvement programme to progressively meet any identified deficiencies.

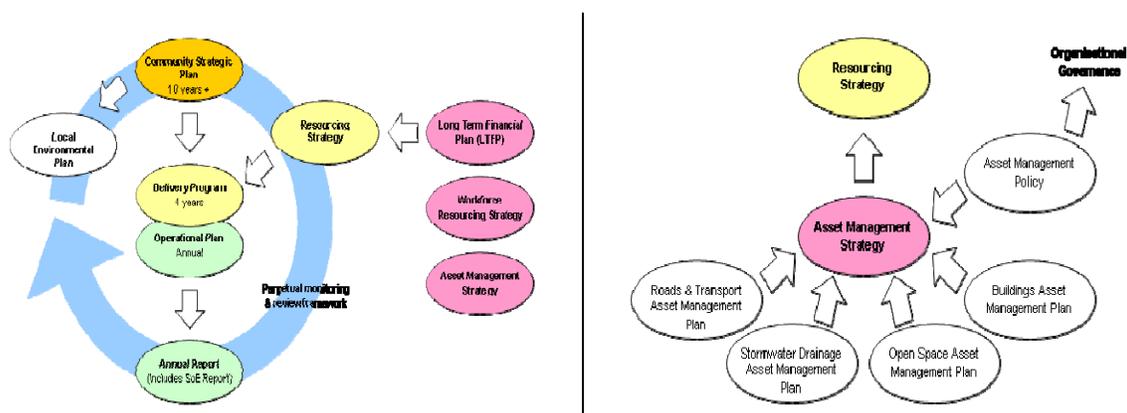
Stormwater drainage is a public asset, and for the purpose of this plan, the following categories of drainage assets are considered: channels; flood mitigation; headwalls; pipes; pits and stormwater quality improvement devices (SQID). The stormwater drainage network is generally funded and maintained by Council. Stormwater drainage under the ownership of Sydney Water and the NSW Roads & Traffic Authority (RTA) are not considered within this plan. However these State Government assets link in with the assets owned and managed by Council.

This Plan provides information and the tools to enable Council’s management to make logical and progressive decisions in regard to the provision and maintenance of stormwater drainage infrastructure. It offers a rational and controlled framework for asset life cycle management, risk management and financial management to be conducted effectively, and to the satisfaction of stakeholders.

This asset management plan has been aligned with the following associated documents:

- Camden 2040 - 30 year vision (May 2013);
- 4 Year Delivery Program & Operational Plan;
- Asset Management Policy;
- Asset Management Strategy;
- Other Asset Management Plans (eg Roads & Transport);
- Long-Term Financial Management Plan; and
- Workforce Strategy

Figure 1 Relationship of Documents – CSP and Asset Management



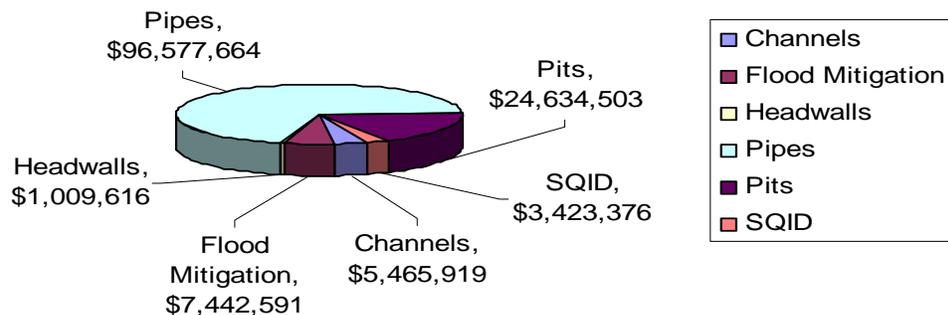
This asset management plan covers the following stormwater drainage infrastructure assets:

Table 1 Stormwater Drainage Assets covered by this plan

Asset Category	Sub-category	Quantity / Volume	Replacement Value As at 30/06/2010
Channels	Open Form	277,050m ³	\$3,296,895
	Concrete Closed	773m ³	\$256,073
	Concrete Lined	5,385m ³	\$1,793,710
	Drop Structures	349m ³	\$119,241
Flood Mitigation	Outlet Conduits	500m	\$301,296
	Basin Earthworks	406,412m ³	\$4,836,303
	Apron	40m ³	\$13,391
	Basin Retaining Wall	5,852m ³	\$1,468,852
	Spillway Concrete	632m ³	\$215,911
	Spillway Sandstone	1915m ³	\$480,565
	Basin Head / Wingwall concrete	60m ³	\$19,698
	Basin Head / Wingwall sandstone	425m ³	\$106,575
Headwalls	Headwalls	505	\$1,009,616
Pipes	Pipes	265,331m	\$96,577,664
Pits	Pits	10,962	\$24,634,503
Stormwater Quality Improvement Devices (SQID)	Water Quality Devices	232	\$3,060,700
	Sand Filters	1	\$266,660
	Rectangular Large GPT	1	\$96,016
Total Stormwater Drainage			\$138,553,669

Note: Kerb & Gutter assets are not included in the Stormwater Drainage Asset Management Plan. They are covered separately in the Roads & Transport Asset Management Plan.

Figure 2 Proportion of Replacement Value per Category



1.2 Key Stakeholders

Key stakeholders in the preparation and implementation of this asset management plan (both external and internal to Council) are indicated in table 2 below:

Table 2 Key Stakeholders

Asset Category	External Stakeholder	Internal Stakeholder
Stormwater Drainage	Federal and State Governments; Roads and Maritime Services; Environment & Climate Change Departments; Natural Resource Departments; Water Catchment Authorities; Utility Companies; Local Community, including Rate Payers; Tourists / Visitors; Developers; Employees / Volunteers; Emergency Services; Contractors / Suppliers; and Insurers	Strategic Planning Branch responsible for setting LGA wide strategic outcomes; Section 94 and WIK agreements. Environmentally Sustainable Design Branch responsible for setting service levels; design and documentation of new assets Capital Works Branch responsible for the construction and overseeing performance contracts Asset Branch responsible for the provision of services, construction and maintenance of assets Development Branch responsible for assessing Development Applications where new assets are created and monitoring delivery of the asset to Council Finance Branch responsible for provision of finance to manage acquisition and maintenance of assets Camden Tourism Employees Councillors

Camden Council's catchments flow into those of other Authorities. The authorities are:

- Penrith City Council;
- Hawkesbury City Council;
- National Parks and Wildlife Service (NPWS);
- Sydney Catchment Authority; and
- Hawkesbury – Nepean Catchment Management Authority

1.3 Goals & Objectives

The AMP provides clear guidelines for the effective management of the stormwater drainage assets owned and maintained by Council.

The overall objective of stormwater drainage asset management is to:

- Demonstrate responsible and sustainable management of stormwater assets;
- Develop an integrated drainage asset management system;
- Improve understanding of service level standards and options;
- Minimise adverse impacts and / or the risks of asset failure;
- Achieve savings by optimising whole of life costs; and
- Support long term financial planning.

Local Authorities exist principally to supply core services that meet the needs of their communities. Some of these services are the provision of infrastructure assets such as roads and stormwater drainage. The Council has obtained these infrastructure assets by acquisition; by contract; by construction by Council staff and by donation of assets constructed by developers through Section 94, Works in Kind Agreements (WIKAs) and Voluntary Planning Agreements (VPA) to meet accepted levels of service.

Council's goal in acquiring and managing infrastructure assets is to meet the required level of service in a sustainable manner for present and future stakeholders. The key elements of infrastructure asset management are:

- Demonstrating responsible stewardship;
- Taking a life cycle approach to asset ownership;
- Defining the infrastructure assets physically and financially;
- Providing a defined Level of Service and monitoring the performance against service levels and service expectations;
- Understanding and meeting the demands of growth through demand management and infrastructure investment;
- Managing risks associated with asset failure;
- Support long term financial planning; and
- Plan drainage improvements in accordance with community priorities.

Relevant Council high-level goals and objectives and how these are addressed in this asset management plan are shown in table 3 below:

Table 3 Council Goals and Objectives

2040 Goal	Corporate Objectives	Asset Management Actions*
Council has a long term vision for sustainability	Ensure financial strategies underpin Council's asset management policies and strategic vision	Prepare and review the Council's short and medium term financial plans for Risk Management; Plant & Equipment; Information Technology; S94 / WIK Plans; Asset Management Plans and cash reserves
Council is a leader in the delivery of social, financial, environmental, and operational activities	Ensure good governance and administrative support for the Council and organization	Prepare and review the Council's short and medium term financial plans for Risk Management, Plant & Equipment,

		Information Technology, S94/WIK Plans, Asset Management Plans and cash reserves.
Our public assets are planned, managed and funded to meet the community service expectations and defined levels of service.	Conduct programmed asset maintenance management in accordance with adopted service levels.	Maintain stormwater infrastructure (Channels, headwalls, pipes, pits and SQIDs)
	Continue to implement Strategic Asset Management plans to deliver intergenerational equity and meet the Council's obligations as the custodian of our community's assets.	Implement AMP to ensure the Council's assets are managed and maintained to target service levels
		Implement required financial arrangements for stormwater drainage infrastructure.
Safety of our community is paramount and is acknowledged and supported through proactive policies, programs and strategies	Conduct minor reactive maintenance management in accordance with adopted service levels.	Respond in a timely manner to community requests for repairs to storm water drainage structures. Develop risk criteria for categorization of responses for reactive maintenance.

*Aligned to individual delivery plans

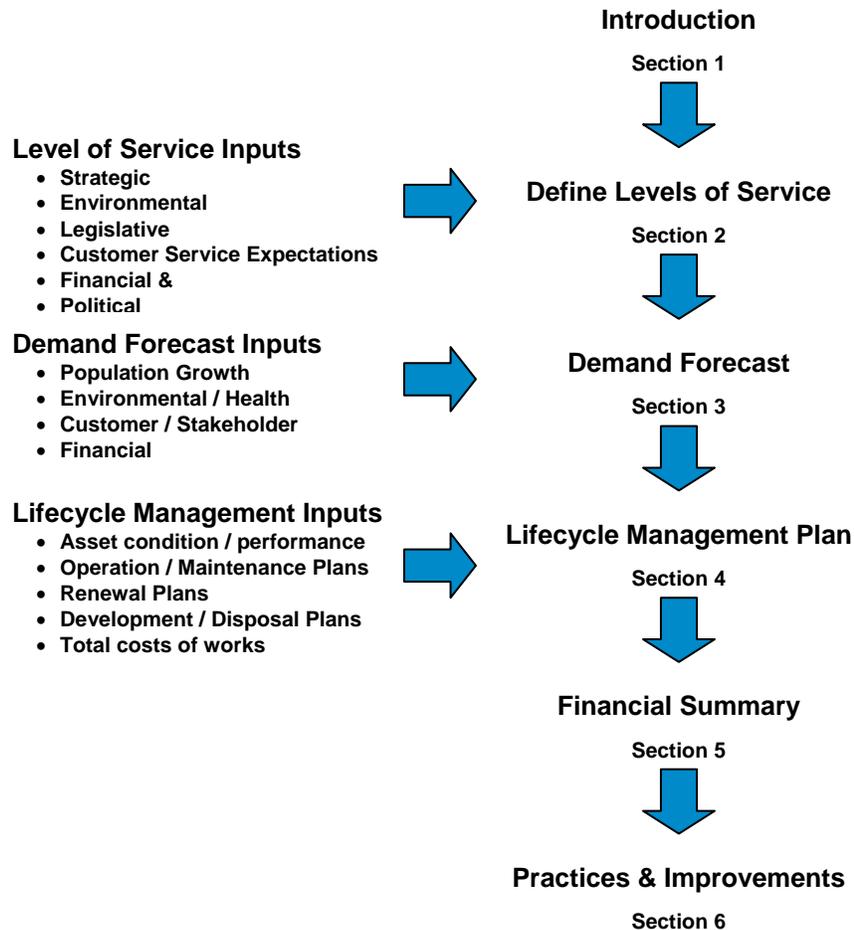
1.4 The Asset Management Plan

The Asset Management Plan (AMP) process is a tool combining management, financial and technical practices to ensure the level of service required by customers is provided at the most economical cost to the community. The plan is also intended to protect the environmental, cultural and social value of the assets providing the service.

Key elements of the plan are:

- Service Expectations – Outlines the community's expectations of the service supported by the relevant assets;
- Levels of Service – nominates the standard of reliability, quality, capacity and condition, which in turn influences the level of maintenance of the asset to be provided by Council;
- Future Demand – how this will impact on future service delivery;
- Lifecycle Management – how Council will manage its existing and future assets;
- Risk Management – reviewing and estimating risks associated with asset failure;
- Financial Management – what funding is and will be required to provide assets for the provision of services; and
- Asset Management Practices – the application of acquisition, operation, maintenance, renewal and disposal lessons learnt and where to from here.

Figure 3 below provides the map for preparing an asset management plan:

Figure 3 Asset Management Plan Format

1.5 Basic / Intermediate and Advanced Asset Management Planning

This asset management plan is prepared as a 'basic' asset management plan in accordance with the International Infrastructure Management Manual². It has been prepared to initially meet minimum legislative and organisational requirements for the sustainable accountability on the management of stormwater drainage infrastructure and long-term financial planning and reporting.

This plan is considered a 'basic' plan due to its top-down approach where key analysis has been applied at the 'system' or 'network' level of asset management planning. However it is also a plan that is progressing towards an 'intermediate' level due to recent asset data collection for the NSW Division of Local Government's requirement³ for Local Government Authorities to prepare,

² International Infrastructure Management Manual Version 3, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2006

³ NSW Division of Local Government (DLG) Circular 06-75 – Valuation of Assets at Fair Value, December 2006

document and implement asset valuations or 'revaluations' based of the principle of 'fair value' market rate rather than the traditional 'straight-line' depreciation of the asset.

2. Level of Service

2.1 Customer Research & Expectations

Understanding Levels of Service is vital for the lifecycle management of assets. These will determine what type of assets will be provided, how often they will be maintained, and when assets will be rehabilitated or replaced. Levels of Service define the assets performance targets, in relation to reliability; quantity; quality; responsiveness; safety; capacity; environmental impacts; comfort; cost / affordability and legislative compliance.

As Camden Council has not had the opportunity to engage with the Community / Customer in relation to specific detailed asset service levels, the LOS for this asset management plan for road & transport assets have been derived from current practices and standards, and the broad Community Survey undertaken in September 2011, which has informed the Camden 2040 Community Strategic Plan and the included Service Expectations.

2.2 Legislative Requirements

There are many Australian and NSW State Legislation and Regulations that impinge on Camden Council activities as a service provider and infrastructure owner. The table below outlines some of the legislative requirements that the Council must meet as an infrastructure service provider:

Table 4 Legislative Requirements

Legislation	Requirement
Local Government Act 1993	Sets out the role, purpose, responsibility and powers of a Local Government Authority including the preparation of a long-term financial plan supported by asset management plans and a workforce strategy for sustainable service delivery.
Local Government (General) Amendment (Stormwater) Regulation under the Local Government Act 1993	The object of this Regulation is to amend the <i>Local Government (General) Regulation 2005</i> : (a) to prescribe the maximum amount that may be charged by a council for the provision of stormwater management services, and (b) to provide that certain information regarding stormwater management services is to be included in a council's draft management plan, and (c) to provide that a council's annual report is to include certain information relating to the provision of stormwater management services. This Regulation is made under the <i>Local Government Act 1993</i> , including sections 403 (1), 428 (2) (r), 496A and 748 (the general regulation-making power).
Protection of the Environment Administration Act 1991	The objects of this Act are as follows: (a) to constitute the Environment Protection Authority, (b) to provide integrated administration for environment protection, (c) to require the Authority to perform particular tasks in relation to

	the quality of the environment, environmental audit and reports on the state of the environment.
Water Management Act 2000	The objects of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular: <ul style="list-style-type: none"> (a) to apply the principles of ecologically sustainable development, and (b) to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and (c) to recognise and foster the significant social and economic benefits to the State that result from the sustainable and efficient use of water, including: <ul style="list-style-type: none"> (i) benefits to the environment, and (ii) benefits to urban communities, agriculture, fisheries, industry and recreation, and (iii) benefits to culture and heritage, and (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water, (d) to recognise the role of the community, as a partner with government, in resolving issues relating to the management of water sources, (e) to provide for the orderly, efficient and equitable sharing of water from water sources, (f) to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna, (g) to encourage the sharing of responsibility for the sustainable and efficient use of water between the Government and water users, (h) to encourage best practice in the management and use of water.
Australian Accounting Standard AASB116	Reporting on asset condition and consumption to Councillors, management and the community.

2.3 Levels of Service

Levels of Service (LOS) provide the basis for the life cycle management strategies and the works program identified within the asset management plan. They support the organisation's strategic goals and are based on customer service expectations and statutory and technical requirements. LOS are also governed by the strategic and corporate goals of the Council.

In the case of assets, our customers are many and varied. They include ratepayers, service authorities, pedestrians, residents, businesses, and visitors to the LGA. Each of the four asset

management plans deals specifically with the LOS for each asset category. These LOS have been combined to deliver four asset related service level outcomes. The LOS outcomes are:

- Reliability
- Quality
- Capacity
- Condition

Each of the LOS outcomes is related directly or indirectly to the six Key Directions of the Council's Community Strategic Plan. The Key Directions are; Actively Managing Camden's Growth; Healthy Urban & Natural Environments; a Prosperous Economy; Effective & Sustainable Transport; An Enriched & Connected Community and Strong Local Leadership. These service level outcomes are essential to ensure the asset portfolio is not only maintained to a satisfactory level but also caters for the future demands of the community, whilst balancing the potential risks to the community and the Council.

Council's Levels of Service are detailed in the table below:

Table 5 Levels of Service

Service Level Outcome	Principal Activity	Strategic Elements	Performance Outcome	Assessed By
Reliability	Healthy Urban & Natural Environments	The Water is Clean & Bushland is Protected	Appropriate infrastructure for the protection and enhancement of biodiversity throughout the LGA	Water Quality Testing (TBD)
Quality	Healthy Urban & Natural Environments	The Water is Clean	Improving water quality in local rivers and waterways	Water Quality Testing (TBD)
	Effective & Sustainable Stormwater Management	Roads are high quality, free-flowing and safe	Long-term asset management planning of stormwater infrastructure	TBD
Capacity	A Prosperous Economy	People can access what they need	Appropriate infrastructure to support access to services, information and facilities	TBD
Condition	A Prosperous Economy	People can access what they need	Long-term asset management planning of stormwater infrastructure	Progression of asset management plans to Intermediate
	Strong Local	It is Well	Stewardship of assets	Inspection and

	Leadership	Governed	through effective planning for asset provision, maintenance and renewal	condition rating for stormwater assets
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TBD – To Be Developed

2.4 Desired Levels of Service

At present, indications of meeting or understanding the desired Levels of Service are obtained from various sources including the 2011 Community Survey; the Customer Request Management System (CRMS) – for asset management / maintenance / failures; feedback from Councillors and staff; and current asset management practices and technology.

Council has yet to quantify the desired levels of service for stormwater drainage assets. This will be investigated in future revisions of this asset management plan. Initially however the Level of Service will be based on the current average condition ratings and asset management costs for storm water drainage assets.

3. Future Demand

3.1 Demand Forecast

Population growth alone is not the sole driver for the volume and value of stormwater drainage assets. Population growth can create demand for new dwellings and associated infrastructure. Factors affecting demand for stormwater drainage assets include population growth and density; changes in demographics; seasonal factors; social and economic factors; agricultural practices; environmental awareness and technological changes.

Stormwater drainage assets are required to be constructed with all future land development and the key drivers of demand for stormwater drainage infrastructure in the Camden LGA are:

- Population growth (South West Growth Area);
- Residential development;
- Commercial, industrial and tourism growth;
- Demographic changes;
- Demand for increased services; and
- Strategic extensions to the network

As development increases the hard surface areas within the LGA will also increase, requiring active management of stormwater runoff.

Detailed predicted growth data is currently unavailable. However, Camden is one of the fastest growing areas in NSW and currently has a population of just over 59,000, with an estimated growth in population of 250,000 by 2040⁴. A key objective of demand forecasting is to identify possible locations where future stormwater drainage infrastructure may be required given current area trends. Demand forecasting aims to identify factors influencing the demand for an asset and the associated impact on the management and utilisation of the asset.

Table 6 Demand Factors and Impact on Service Provision

Demand Factor	Present Position	Projection	Impact on Services
Population	59,000 (Estimate as at 30 June 2012)	Camden Council's population will experience a dramatic increase over the next 30 years to peak at approximately 250,000	An increase in population will require an increase in community and infrastructure services.
Demographics	At the 2006 Census compared with Sydney's average, Camden's population had: <ul style="list-style-type: none"> • > percentage of 0 	Number of people per household is expected to increase. Percentage of people over 65 is expected to increase.	Greater need for aged care facilities and disability access. Increase in population will require improvements to public

⁴ Camden 2040 Working Together to Achieve the Community's Vision for the Future, Draft Version May 2013

	<p>to 4 year olds (8.6% compared to 6.6%);</p> <ul style="list-style-type: none"> • > percentage of 5 to 11 year olds (11.9% compared to 9.1%); • > percentage of 12 to 17 year olds (10.0% compared to 7.9%); and • < percentage of 70 to 84 year olds (4.8% compared to 7.3%). 	<p>Number of people below the age of 15 is expected to increase.</p>	<p>transport infrastructure and the management of stormwater systems for delivering desired lifestyle.</p>
Climate change	Future unusual weather patterns	Climate change is likely become a major factor for consideration in the future both for new assets, and existing stormwater drainage assets.	The potential for intensified weather events is likely to have a major impact on existing assets ability to meet storm events and to shorten asset life.

3.2 Changes in Technology

Technology changes are forecast to affect the delivery of stormwater drainage services covered by this plan in the following areas:

Table 7 Changes in Technology and Forecast Effect

Technology Change	Effect on Service Delivery
Water Treatment Technology	Ongoing improvement to the cost and effectiveness of water treatment technology will be needed to assist in resolving the issues associated with stormwater recycling. Improved infiltration and ground water aquifer recharge opportunities and water harvesting opportunities such as harvesting water from base flows in pipes and Gross Pollutant Traps (GPTs).
Lifecycle Management – Stormwater infrastructure design	Reduction in maintenance costs and improved targeting of operational and maintenance work. Improvements to the design and construction of stormwater assets that will minimize the maintenance and operating costs; and minimize impacts on the surrounding environment.
Asset Maintenance Technology	Further improvement of the design of units and techniques used to reduce maintenance cost is likely but difficult to predict.

3.3 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.

The current stormwater drainage network is expected to adequately service potential future growth in existing or established areas. However as new release areas are developed, and impermeable areas are increased, pressure on existing drainage infrastructure will also increase. Selective improvement / upgrading will be required to remedy undersized pipes, open channel high flow areas and rectify infrastructure in poor condition. The extent of the new stormwater drainage infrastructure network will change dramatically with additions from new subdivision and developments.

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

Table 8 Water Cycle Management Strategies

Activity	Agency Responsible
Water reuse - making use of water from diverse sources, other than our fresh drinking water supply.	Whole of Government / Sydney Water
Direct reuse involves using rainwater, greywater, stormwater or wastewater without treatment.	Whole of Government / Sydney Water
Rainwater or stormwater (harvested) stored and reused to for particular uses in parks, ovals and open space areas.	Local Council
Stormwater - runoff from roofs, roads and driveways. Stormwater must generally be treated for use. Water caught in rainwater tanks is suitable for some uses	Local Council
Innovation in the design and documentation (incorporating lifecycle analysis) of stormwater drainage infrastructure assets — Urban land release areas / new subdivisions / South West Growth Area	Local Council / Developers / GCC

3.4 New Assets from Growth

New stormwater drainage infrastructure assets required to meet the rapid expansion of growth in the Camden LGA will be required from developers within each new release area. As each new release area and development comes online, Council will need to have conditions and/or plans that require the installations of new stormwater assets located within the 'developments' catchment area.

In addition to the above points water harvesting in urban areas may have an impact on the volume of urban runoff entering the stormwater infrastructure. In some instances water tanks may act as a detention device during a storm event.

An increase in stormwater flowing into the natural areas would be treated adequately by the existing gross pollutant traps. However, this would require the maintenance frequency to be increased. Selective improvement may also be required to remedy maintenance access and safety improvements; this would improve the functionality of the device and ease of maintenance. The extent of new stormwater drainage assets will change significantly with any addition from new subdivisions, as the newly constructed stormwater drainage assets will become Council assets.

Acquiring these new assets will commit the Council to fund ongoing operation and maintenance costs for the period that the service provided by the asset is required. These future costs need to be identified and considered in developing forecasts of future operating, maintenance and renewal costs.

Estimated residential developments occurring during the next thirty years 2010 - 2040:

Table 9 Land for Residential Purposes

Zoning Requirements	Suburb / Area	No of Lots	No of Dwellings	No of People
Currently zoned	Elderslie	1,918	1,978	6,060
	Harrington Park 1	600	600	1,860
	Harrington Grove	1,150	1,150	3,565
	Harrington Park South	180	200	593
	Manooka Valley	400	400	1,240
	Mater Dei	210	210	651
	Mount Annan South	445	445	1,380
	Narellan	147	147	456
	Narellan Release Area	155	155	481
	Mount Annan Business Centre	149	149	328
	Camden Infill	50	50	155
	Spring Farm	3,747	3,747	11,616
To be zoned	Central Hills	870	920	2,780
	Yamba	25	25	78
Growth Centre	Oran Park	7,541	7,541	21,470
	Turner Road	4,020	4,020	12,266
	Bringelly	2,000	2,000	6,000
	Catherine Fields	8,000	8,000	24,000
	Catherine Fields North	9,500	9,500	28,500
	East Leppington	300	300	900
	Leppington North	3,000	3,000	9,000

	Leppington South	12,000	12,000	36,000
	Lowes Creek	2,000	2,000	6,000
	Marylands	9,000	9,000	27,000
	Rossmore	4,500	4,500	13,500
'Radar' Sites	Camden - Camden High School	5	0	100
	Narellan - Elyard Gardens	5	0	300
	Narellan - Macarthur Anglican School	5	0	100
	Kirkham Views	100	100	0
	Ironbark (bus depot)	5	0	100
Total		72,027	72,137	216,477

Estimated employment development occurring during the next thirty years 2010 - 2040:

Table 10 Land Zoned for Employment Purposes

Area	No of hectares
Smeaton Grange (Zoned Industrial)	230
Glenlee and WSN (planning underway) <i>note this figure includes land in both Camden and Campbelltown LGAs</i>	186
Oran Park - employment	17
Oran Park - retail/commercial	29
Turner Road - employment	87
Turner Road - retail/commercial	16
Total	565

Stormwater Drainage and associated assets are an essential part of each new release / development area; providing save access and a measure of water quality control.

Camden Council has identified the following provision rates for future assets:

Table 11 Provision Rates – Community and Recreation facilities

Asset Area	Provision Rate (Est. 3 persons/lot)	Additional Assets*
Stormwater Pipes	8.33m/lot	1,083,077m
Stormwater Pits	1/5 lots	355,556

*Based on estimated population growth of 256,000 by 2040

Roads and Stormwater Assets calculation based on typical subdivision in Spring Farm

4.1.2 Lifecycle Definitions

In order to understand the lifecycle of stormwater drainage infrastructure assets, it is important to explore some terminology and definitions. This section of the asset management plan will discuss how certain asset management words are utilized throughout the document.

Life Cycle costing is defined in the *Australian Standard AS/NZS 4536:1999 Life Cycle Costing – An Application Guide* as a "process to determine the sum of all expenses associated with a product or project, including acquisition, installation, operation, maintenance, refurbishment, discarding and disposal costs"

The Standard also defines several phases in the life cycle of asset. These are investigated and aligned with the International Infrastructure Management Manual 2006⁶ in the table below:

Table 13 Lifecycle Definitions

Activity	Description
Acquisition	Acquisition includes – identification, concept, preliminary, detailed design and development, construction and transfer of ownership of an asset
Capital Works	The creation of new assets or an increase in the capacity of existing assets beyond their original design capacity or service potential
Disposal	The cost of decommissioning the structure at the end of its life, which includes all activities necessary to dispose of decommissioned assets
Maintenance	All actions for works or actions necessary for retaining an asset as near as practical to an acceptable condition, but excluding refurbishment or renewal. These works do not add to the value of the asset. In general maintenance falls into two broad categories: <ol style="list-style-type: none"> 1. Planned (proactive) - maintenance planned to prevent asset failure; and 2. Unplanned (reactive) - maintenance to correct asset malfunctions and failures as required, such as emergency repairs. A key element of advanced asset management planning is determining the most cost-effective mix of planned and unplanned maintenance.
New Works	New work is the same as Capital Works i.e. money spent on new works (development costs) and upgrades to an existing asset or on creating a new asset
Operation	The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. Operational expenditure is money spent on managing and servicing the asset, such as inspections, cleaning and administration
Renewal	The cost of unusual restoration events. Works or actions to upgrade; refurbish or replace components of an asset to restore it to near new and required functional condition, extending its current remaining life

⁶ *International Infrastructure Management Manual Version 3, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2006*

4.1.3 Asset Inspections

Asset inspections are a key factor of asset management. Asset inspections are designed to identify defects that have the potential to create a risk of damage or inconvenience to the public and may impact on overall asset life. The asset inspections are to be aligned with the hierarchy and recommend outcomes that may require maintenance or changes to maintenance and operational processes.

A full condition inspection of Council's stormwater drainage network was carried out in the 2009/2010 financial year to coincide with the 'fair valuation' documentation for the Division of Local Government. Listed below are the suggested inspection regimes for each asset category. It should be noted that at the present time there is no formal or corporate defects register in use.

Table 14 Asset Inspection Regime for Stormwater Drainage

Asset Category	Inspection Type	Inspection Frequency
Channels	Condition Inspection	Once every 5 years for critical assets, 10% per year for all other inspections
Flood Mitigation	Condition Inspection	Once every 5 years for critical assets, 10% per year for all other inspections
Headwalls	Condition Inspection	Once every 5 years for critical assets, 10% per year for all other inspections
Pipes	Condition Inspection	Once every 5 years for critical assets, 10% per year for all other inspections
Pits	Condition Inspection	Once every 12 months, 10% per year for all other inspections
Stormwater Quality Improvement Devices (SQIDs)	Preventative Maintenance Inspection	Once every four months or after a storm event for SQIDs identified as a high potential for blockage.

Critical Assets (ie those that are essential in terms of business continuity or that need to perform at a level above that generally accepted for the asset class) have yet to be defined within each asset management plan. Assessment on how work programs for Critical Assets are prioritised is discussed in Section 4.3 Risk Management.

4.2 Stormwater Drainage Assets Overview

4.2.1 Physical Parameters

The function of the civil stormwater drainage system is to collect stormwater runoff from Council and RTA road infrastructure and private property and direct this flow to natural waterways. This is

achieved through a network that consists of kerb and gutter⁷, pits, pipes, open channels and water quality devices. Critical aspects of this function are:

- Minimisation of traffic hazards due to stormwater;
- Protection of road infrastructure from damage by stormwater;
- Minimisation of impact of road stormwater to private and public property;
- Reduction of sediment and gross pollutants entering natural waterways; and
- Minimise inundation on private property.

The cost of stormwater drainage infrastructure is inherently expensive as it requires excavations and underground works. Camden Council has continued to investigate and use alternative solutions, to be progressive and up to date. This includes the use of modern methods of design, construction and disposal of stormwater.

The assets covered by this asset management plan are shown in the table below following Camden Council's asset hierarchy from left to right:

Table 15 Stormwater Drainage Asset Category Descriptions

Asset Class	Asset Category	Sub-Category (Description)	Replacement Value <i>As at 30/06/2010</i>
Stormwater Drainage	Channel	Open formed channel, Concrete closed channel, Concrete lined channel and Drop structures	\$5,465,919
	Flood Mitigation	Outlet conduits, Basin earthworks, Aprons, Basin retaining walls, Spillways and Basin head / wingwalls	\$7,442, 591
	Headwalls	Headwalls	\$1,009,616
	Pipes	Class 2 and Class 3 Pipes	\$96,577,664
	Pits	Grated gully pits, Junction pits, Kerb inlet pits, Letterbox pits, Median pits, Standard kerb inlet pits and Surcharge pits	\$24,634,503
	Stormwater Water Quality Devices (SQID)	CDS Units, Net traps, Open rectangular large Gross Pollutant Traps (GPT), Pit baskets, Sand filters, Steel trash racks and Wire basket GPTs.	\$3,423,376
Total Stormwater Drainage			\$138,553,669

These Asset Categories are further explained and quantified below:

Channels

Across the Camden LGA there are three main types of channels structures:

- Open formed channels – 277,050m³ are generally excavated from existing landform;

⁷ Kerb & Gutter assets are not included in the Stormwater Drainage Asset Management Plan. They are covered separately in the Roads & Transport Asset Management Plan.

- Concrete closed channels – 773m³ and Concrete lined channels – 5,385m³ are typically lined using concrete; concrete and rock pitching; or rock rubble; and
- Drop structures – 349m³.

Flood Mitigation

Flood Mitigation assets are those designed to control water volumes during extended rain periods or sudden storms. These assets include outlet conduits; basins; aprons; retaining walls; dams; spillways and head/wingwalls. Apart from the earthworks associated with constructing the basin most of these assets are constructed using concrete or sandstone.

Headwalls

A headwall is an entry or exit point of a stormwater pipe or basin. A headwall reduces the amount of erosion surrounding the entry/exit point and controls water flows 'into' and 'out of' the pipe or water course at the required point. Again as per Flood Mitigation assets these assets are usually constructed of either concrete or sandstone. As at 30 June 2010, Camden Council has 505 headwalls across the stormwater drainage networks, which are generally in good functional working condition.

Pipes

Stormwater pipes are provided to convey rainwater and stormwater from streets and adjoining properties without nuisance for storm events of a given frequency as defined by average recurrence interval (ARI) (Australian Rainfall and Runoff ARR87⁸). Stormwater pipes are the most significant asset in the drainage network across the Camden LGA. The pipe network totals just over 265km in length. Pipes vary in size from 375mm through to 1200mm in diameter. Pipes are generally concrete in material.

Pits

Stormwater pits are typically located on the side of the road to collect stormwater runoff. In addition, pits are also used as pipe junctions to change the direction of pipelines or as drop pits to effect a level change. As at 30 June 2010 there are 10,962 pits within Camden Council's stormwater drainage network. Typical styles of pits used in the Camden Council area are as below:

- Extended Kerb Grated Gully Pit;
- Extended Kerb Inlet Pit;
- Grated Gully Pit;
- Junction Pit;
- Standard Kerb Inlet Pit;
- Letterbox Pit;
- Median Pit; and
- Surcharge Pit

Stormwater Quality Improvement Devices

The Stormwater Quality Improvement Device (SQID) category of stormwater assets are generally considered to be forms of Gross Pollutant Traps. These devices trap coarse pollutants in stormwater - notably litter and coarse sediments. Gross pollutants are large pieces of debris typically, litter and vegetation, that are flushed through urban catchments and stormwater systems. Gross pollutants are recognised as a threat to both wildlife and aquatic habitats, look

⁸ *Institution of Engineers, Australia (1987) Australian Rainfall and Runoff: A Guide to Flood Estimation , Vol. 1, Editor-in-chief D.H. Pilgrim, Revised Edition 1987 (Reprinted edition 1998), Barton, ACT*

unpleasant, and attract vermin and their removal from urban waterways is an important issue in sustainability because of their detrimental impact on the environment;

Camden Council's SQID devices include the following asset components:

- CDS Units;
- Net Traps;
- Open Rectangular Large Gross Pollutant Traps (GPT)
- Pit Baskets;
- Sand Filters;
- Steel Trash Racks; and
- Wire Basket GPTs

4.2.2 Asset Capacity and Performance

The performance of an asset is the ability of the asset to provide the required level of service to the user, customer or community. Generally this can be assessed in terms of reliability, availability, and capacity to meet the required demand and need of the asset.

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 the table below:

Table 16 Known Service Performance Deficiencies

Location	Works Required	Cost \$	Priority
Lake Annan, Mount Annan	Desilting work	\$1,000,000	-
Open GPT in Dunbar Place, Mount Annan	Upgrade of existing unit	\$50,000	-
Total		\$1,050,000	

The above deficiencies were identified and prioritised from requests for maintenance of Council's drainage assets as recorded in Council's customer request management system and from asset inspections.

A Floodplain Risk Management Study and Plan (FRMS&P) is used to investigate flood behaviour, including identification of flood extents, flood levels and flood velocities for a range of flood sizes. These studies are carried out in accordance with the *Floodplain Management Manual*⁹ from the NSW Department of Natural Resources and assess options for minimising the danger to life and property during floods. These options aim to achieve an equitable balance between environmental, social, economic, financial and engineering considerations. The outcome of a Floodplain Risk Management Study is a Floodplain Risk Management Plan.

The purpose of Floodplain Risk Management Studies and Plans is to provide Council with:

- An adopted Floodplain Risk Management Study and Plan for various catchments' floodplains that addresses existing, future and continuing flood problems;
- A basis for sound management of land within the identified floodplains and ensure that Council's flood management policies are consistent with current legislation and best practice in relation to floodplain management; and

⁹ *Floodplain Development Manual, NSW Department of Natural Resources, 2005*

- An adopted Floodplain Risk Management Plan from which funding assistance can be sought from various state and commonwealth agencies to enable implementation of the plan.

Revised Floodplain Risk Management Studies will provide input into new stormwater drainage requirements and facilities for developing areas.

4.2.3 Asset Condition

Camden Council has applied a consistent approach to the identification of asset condition for each of its asset classes. Camden Council has adopted the following five category model to assess the 'condition'¹⁰ of infrastructure assets, this method was derived from the International Infrastructure Management Manual 2006 and the NSW Division of Local Government (DLG) within the Planning a Sustainable Future – Planning and Reporting Manual for Local Government in NSW¹¹.

Table 17 Condition Rating Categories

DLG Rating	Approx. Moloney Rating	Condition	Description	Guide	Expected Remaining Life
1	0-2	New / Excellent	Sound physical condition	No or very minor work required	100 - 87.5%
2	2-4	Good	Good physical condition	Normal maintenance only	87.5 - 62.5%
3	4-6	Fair / Satisfactory	Average physical condition	Some work required	62.5 - 37.5%
4	6-8	Poor	Failure likely in short-term	Likely need to replace most or all of asset shortly	37.5 - 12.5%
5	8-10	Very Poor	Failed or failure imminent	Immediate need to replace most or all of asset	<12.5%

Camden Council took the opportunity of investigating and rewriting its asset register with the NSW Division of Local Government's requirement¹² for Local Government Authorities to prepare, document and implement 'fair value' asset valuations. As part of this investment Camden Council has purchased and installed Conquest as its Maintenance Management System and Asset Register. The key behind the software system is its ability to assign the asset hierarchy developed by Council to each of the asset classes.

¹⁰ Appendix B Condition Grading Standards – International Infrastructure Management Manual Version 3, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2006.

¹¹ Planning a Sustainable Future: Planning and Reporting Manual for local government in NSW, NSW Department of Local Government, May 2009.

¹² NSW Division of Local Government (DLG) Circular 06-75 – Valuation of Assets at Fair Value, December 2006.

Camden Council also purchased the Moloney Modelling software, for modelling existing asset conditions and expenditure required to improve these conditions. The Moloney modelling software uses a condition rating of 0 – 10 instead of the required 1 – 5, however it allows for an import table to transcribe from the 0 – 10 to 1 – 5 condition ratings. The approximate Moloney condition category is shown in the table above. Most of the graphs depicted throughout this asset management plan show the 0 – 10 condition rating; however for the Long Term Financial Plan these ratings have been converted to the required 1 – 5 rating.

The field collection of the stormwater condition data was across the entire LGA. In addition to this field collection process of stormwater data, staff spent considerable time trawling through ‘work as completed’ and ‘development application’ drawing files to further investigate and locate stormwater assets that were then sorted and collated onto CD to be mapped within the Conquest system.

The condition profile of some of Council’s stormwater drainage assets are shown below:

Figure 4 Condition Profile – Drainage Pipes

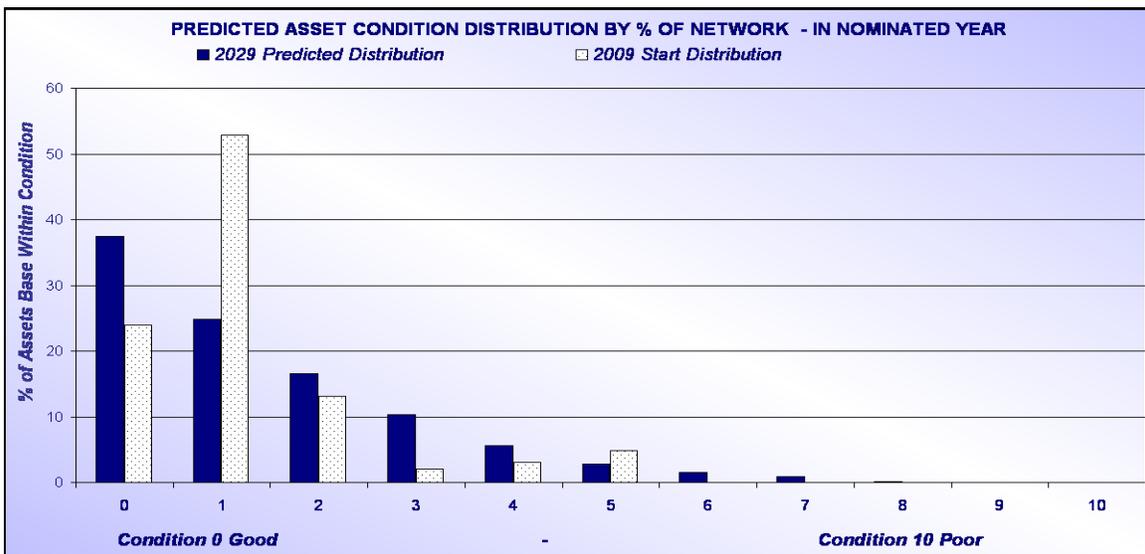
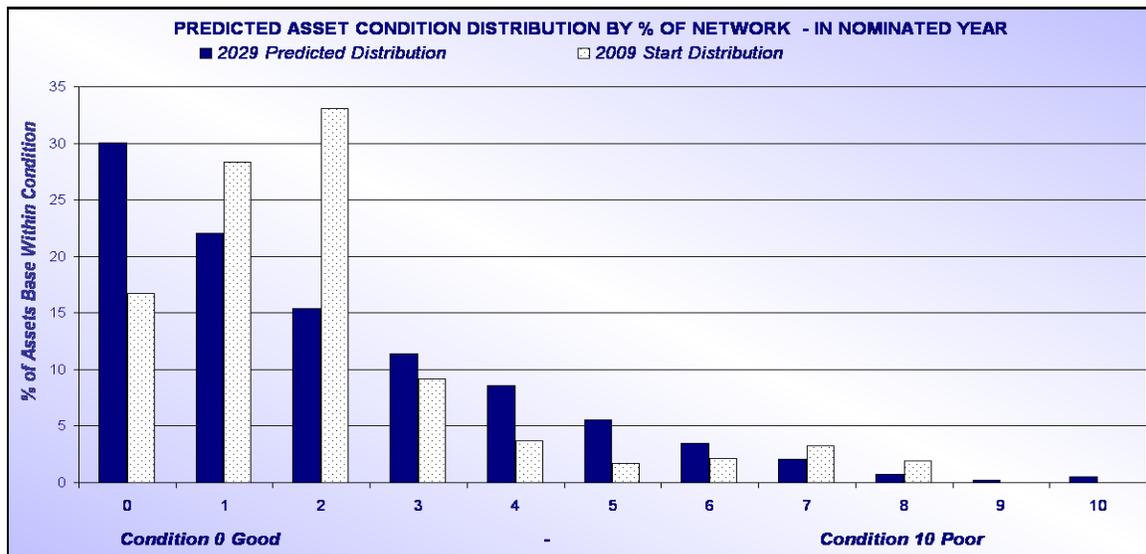


Figure 5 Condition Profile – Drainage Pits

4.2.4 Asset Valuations

The value of Camden Council's stormwater drainage assets as at 30 June 2010 covered by this asset management plan is summarized in the table below. As mentioned in the previous section this valuation is based on 'fair value'.

Table 18 Stormwater Drainage Asset Valuations – Fair Value

Asset Category	Replacement Value	Accumulated Depreciation	Fair Value
Channels	\$5,465,919	\$672,613	\$4,793,306
Flood Mitigation - Conduits	\$301,296	\$62,407	\$238,889
Flood Mitigation – Basins / Walls / Aprons	\$7,141,295	\$558,183	\$6,583,112
Headwalls	\$1,009,616	\$267,915	\$741,701
Pipes	\$96,577,664	\$11,704,435	\$84,873,229
Pits	\$24,634,503	\$6,033,653	\$18,600,850
Stormwater Quality Improvement Devices (SQID)	\$3,423,376	\$799,493	\$2,623,883
Total	\$138,553,669	\$20,098,699	\$118,454,970

Camden Council's sustainability can be assessed by comparing the rate of annual asset consumption (Annual Replacement Cost, which looks at Replacement Value over the Life Expectancy of the asset) versus asset renewal and asset upgrade and expansion.

Table 19 Life Expectancy & Annual Replacement Cost

Asset Class	Asset Category	Replacement Value (as at 30/06/2010)	Life Expectancy (Years)	Annual Replacement Cost
Stormwater Drainage	Channels	\$5,465,919	100	\$54,659
	Flood Mitigation	\$7,442,591	100	\$74,426
	Headwalls	\$1,009,616	70	\$14,423
	Pipes	\$96,577,664	100	\$965,777
	Pits	\$24,634,503	70	\$351,921
	SQIDs	\$3,423,376	100	\$34,234
Total		\$138,553,669		\$1,495,440

From the above table Camden Council's Asset Consumption for Stormwater Drainage Assets is \$1,495,440pa.

4.3 Risk Management

This risk management section of the asset management plan concentrates on identification of practical risks at the asset level. An assessment of the risks associated with the service delivery of stormwater drainage infrastructure assets has identified some 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; and
- Evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Risks are categorized from Low (L); Medium (M); High (H) to Very High (VH). Critical risks, being those assessed as 'Very High' and requiring immediate corrective action and 'High', requiring prioritized corrective action are highlighted in the table below:

Table 20 Critical Risks and Treatment Plans

Asset at Risk	Risk Description	Risk Rating	Treatment Plan
Stormwater Pipes	Pipe failure causing flooding to private property or other key infrastructure	M	Condition assessment to identify pipes requiring replacement or renewal works
Stormwater Pipes	Heavy rain overwhelming stormwater drainage capacity causing flooding and erosion to natural watercourses	L	On site detention policy to ensure that maximum peak flow does not increase with heavy rain or new development
Pollution Control Devices	Pollution spill event	M	Identify high risk catchment areas and streams and

			implement treatment plans
Pollution Control Devices	Units not working correctly due to inadequate maintenance	H	Record and analyze maintenance data to optimize maintenance frequency and treatments
Pollution Control Devices	Units not working correctly due to poor condition	H	Implement renewal program and increase maintenance frequency as the units near the end of their useful lives.

Critical Assets are those which are essential to ongoing business and activity continuity for the community. The Critical Assets are determined by an analysis of the characteristics of each asset grouping. The critical assets will be identified and classified as either High, Medium or Low criticality for each asset category. A detailed analysis of the identified risks relative to the critical assets should be carried out. That analysis could include the cost of treatment to minimise or eliminate the risk, considered against the evaluated post treatment risk score. The aim is to ensure that risks associated with the highly critical assets in each asset category have been assessed.

The following factors were considered on a scale of 1 – 10 for the following criticality criteria:

Table 21 Stormwater Drainage Assets Criticality Factors

Factors	Scoring		
Sub-catchment size	9 – Large	6 – Medium	3 – Small
Culvert sections	9 – Box culverts	0 – No	3 – Open channel
Environmental protection (ie trash racks and GPTs % of sub-catchment)	9 – > 50%	6 – 50-30%	0 – < 30%
Sub catchment subject to flood inundation	9 – Yes		0 – No
Pipes within the sub-catchment run beneath private structures or major roads	9 – Yes		0 – No
Sub-catchment contains the discharge point	9 – Yes		0 – No

4.4 Routine Maintenance Plan

Routine maintenance is the regular on-going work or actions necessary to keep an asset operating or as near as practical to an acceptable condition, but excluding refurbishment or renewal. These works do not add to the value of the asset. In general maintenance falls into two broad categories:

1. Planned (proactive) or maintenance planned to prevent asset failure; and

2. Unplanned (reactive) or maintenance to correct asset malfunctions and failures as required, such as emergency repairs.

A key element of advanced asset management planning is determining the most cost-effective maintenance regime.

4.4.1 Maintenance Plan

Maintenance includes proactive, reactive and cyclic maintenance work activities. Reactive maintenance is unplanned repair work carried out in response to service requests and management / supervisory directions. Community and customers directly affected by the asset generally make these requests. To provide the highest level of service, Council's objective in relation to maintenance requests is to inspect and prioritize the work requests as quickly as possible.

If the maintenance is needed due to public safety, the drainage asset is highlighted for maintenance immediately and programmed in as emergency works. Maintenance requests of a more minor nature will be undertaken as resources permit. Care must be taken that there is no increased risk to the public whilst an asset is waiting for maintenance.

Planned maintenance is repair work that is identified and managed through Council's Conquest Maintenance Management System (MMS). MMS activities include routine inspections, condition assessment of the asset against known failures or breakdowns, prioritizing and scheduling the works, undertaking the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Council aims to obtain best value for its maintenance budget within the constraint of the resources made available. Lack of maintenance may lead to urgent requests or catastrophic failures that will cost more than the relatively minor expenditure required for maintenance delivered under the maintenance program. To ensure that the best value is obtained for the available maintenance dollar, work of the same nature must be grouped in a given area so that work is completed efficiently.

Over the year, this means that, for example, all CCTV work required in an area is programmed for a full days work or a catchment network, rather than a single job by job basis. Maintenance of Council drainage assets must include a regular and accurate assessment of the condition of Council's drainage assets from a condition assessment survey, and a consistent record of customer reports.

As part of the condition assessment blockages should also be noted to highlight areas prone to requiring regular operation maintenance. The maintenance delivery methods outlined above form a significant part of Council's overall drainage management strategy, in which the aim is to minimize the whole of life costs of the asset. In some instances, the imminent capital replacement of an asset may mean it is suitable to either defer or undertake repairs of a temporary nature.

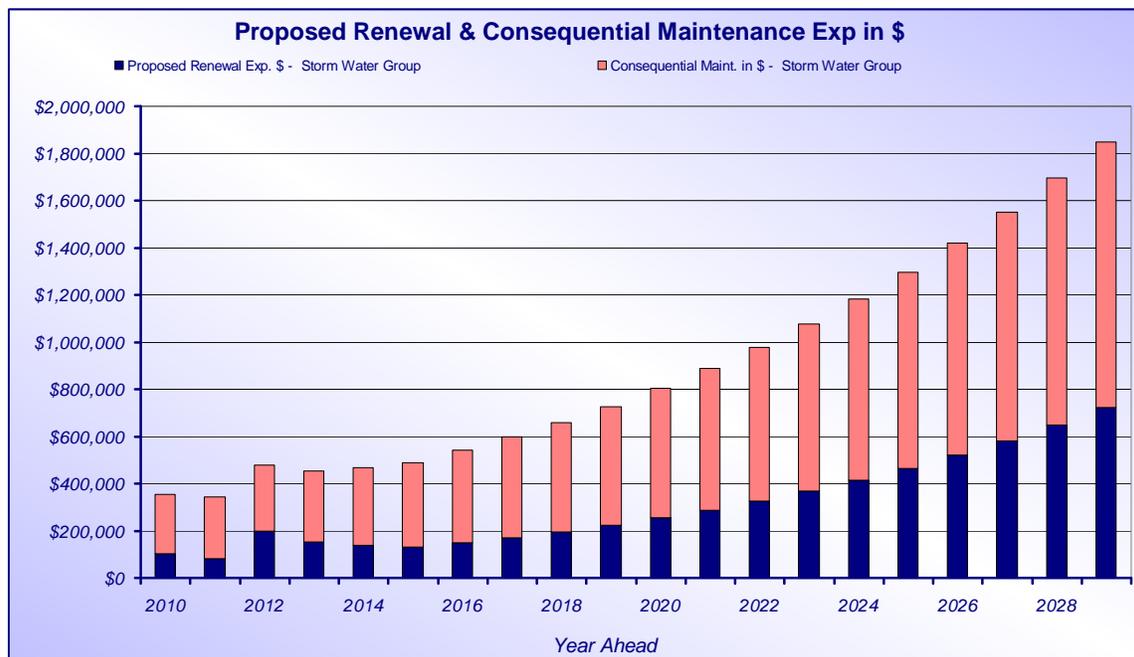
Cyclic maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including activities like repainting, line marking, building roof replacement, etc. This work generally falls below the capital threshold.

Further work exploring maintenance expenditure trends in the stormwater drainage asset class will be undertaken as part of the revision to an ‘intermediate’ level of asset management planning.

4.4.2 Summary of Future Maintenance Expenditures

Future maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in the graph below. Note that all costs are shown in current 2010 dollar values.

Figure 6 Planned Maintenance Expenditure



Deferred maintenance or works that are identified for maintenance and unable to be funded are to be included in the risk assessment process in the operational plan. Maintenance is funded from Camden Council’s operating budget and grants where available. This will be further explored in Section 5 of this asset management plan.

4.5 Renewal / Replacement Plan

Renewal expenditure is major work which does not increase the asset’s intended design capacity but restores; rehabilitates; refurbishes or replaces components of an asset to near new and required functional condition, extending its current remaining life. Work over and above restoring an asset to original service potential is upgrade / expansion or capital work expenditure.

4.5.1 Renewal Plan

As individual assets near the end of their useful life they need to be renewed in order to restore them to a required functional condition or extend their current remaining life. Due to the variance in the lifecycle for the different asset components, renewal needs will vary significantly from year to year.

Customer demand may require the renewal criteria to be raised to provide a higher LOS that meets the community's expectations. When renewals remain unfunded for successive years, the backlog of stormwater drainage projects due for renewal builds up, creating a funding gap. A further effect is that when renewal funding is delayed but then eventually released, a disproportionately amount of stormwater drainage assets has to be renewed over a short period of one to two years.

Indicative considerations for the assessment of renewal or replacement of drainage assets follow. This is not a definitive measure as different areas of drainage may require differing levels of service or be considered higher priority to attend to. Some of the measures that need to be considered are:

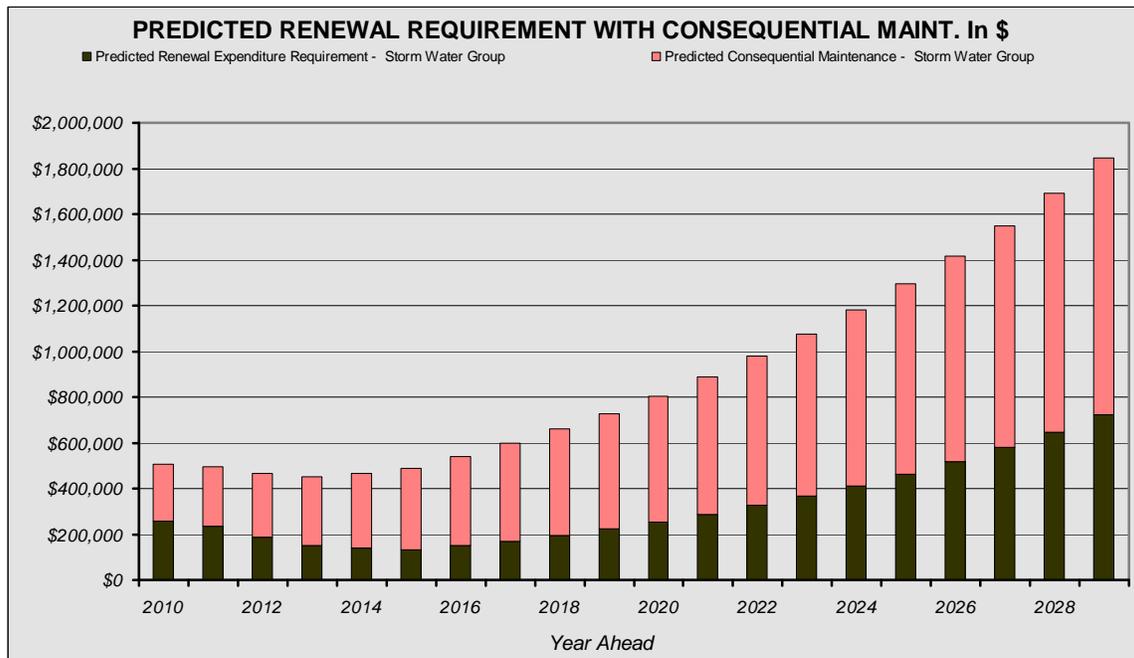
- Likelihood of damage to people, assets or property;
- Consequences of damage to people, assets or property;
- The total cost of works;
- Number of complaints from stakeholders;
- Effectiveness of solution proposed; and
- Current structural condition of asset

These are then ranked in priority based on a risk management matrix using such qualifiers as; risk to community or Council staff; risk to environment; economic risks etc.

4.5.2 Summary of Future Renewal Expenditure

Projected future renewal expenditures are forecast to increase over time as the asset base ages and expand. The costs are shown in the graph below. Note that all costs are shown in current 2010 dollar values.

Figure 7 Projected Capital Renewal Expenditure



Deferred renewal or works that are identified for renewal and not scheduled for renewal in capital works program are to be included in the risk assessment process in the infrastructure risk management plan. Renewals are funded from Camden Council’s capital works program and grants where available. This will be further explored in Section 5 of this asset management plan.

4.6 Creation / Acquisition / Upgrade Plan

Capital or 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 3.4.

A complete end to end process for the acquisition of assets, irrespective of how it is acquired, will be developed to ensure the information about the asset, the associated resources and management activities and financial accounting treatment is fully covered.

4.6.1 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 organizations including developers. A system to assess these requests needs to be developed and will need to ask requestors to consider:

- occupancy / usage rates of other council assets of similar size and in use;
- preliminary costing schedules including operational, maintenance and renewal estimates;

- availability of funds and funding sources; and
- ability for the Council to schedule the works in future operational work programs.

The priority ranking criteria is detailed in the table below:

Table 22 New Assets Priority Ranking Criteria

Criteria	Weighting
Community – Function	30%
Community – Quality	5%
Technical - Condition	5%
Technical – Risk of Failure	30%
Technical – Operating / Maintenance and lifecycle costs	30%
Total	100%

4.7 Disposal Plan

According to the IIMM2006¹³ the term ‘disposal’ is defined as ‘activities necessary to dispose of decommissioned assets’. For stormwater drainage assets this definition is fine and the disposal plan for these assets would include any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. However as a majority of these assets are located underground and rarely cease to provide the service they were intended for, it is unlikely that these assets would be considered for disposal. Those assets identified for possible decommissioning and disposal are shown in the following table. 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.

Table 23 Assets identified for Disposal

Asset	Reason for Disposal	Timing	Cash Flow from disposal
No assets identified for disposal at this time			

Where cash flow projections from asset disposals are not available, these will be developed in future revisions of this asset management plan.

¹³ *International Infrastructure Management Manual Version 3, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2006.*

5. Financial Summary

5.1 Introduction

This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan for stormwater drainage assets. It is anticipated that the financial summary will be reviewed, developed and refined as further information becomes available on desired levels of service, current and projected future asset performance and growth. It will also improve as the organisation embraces the asset management planning process of understanding; managing and operating the assets it owns and manages.

Information in this section of the Asset Management Plan is presented using the following financial definitions:

Table 24 Asset Management Financial Definitions

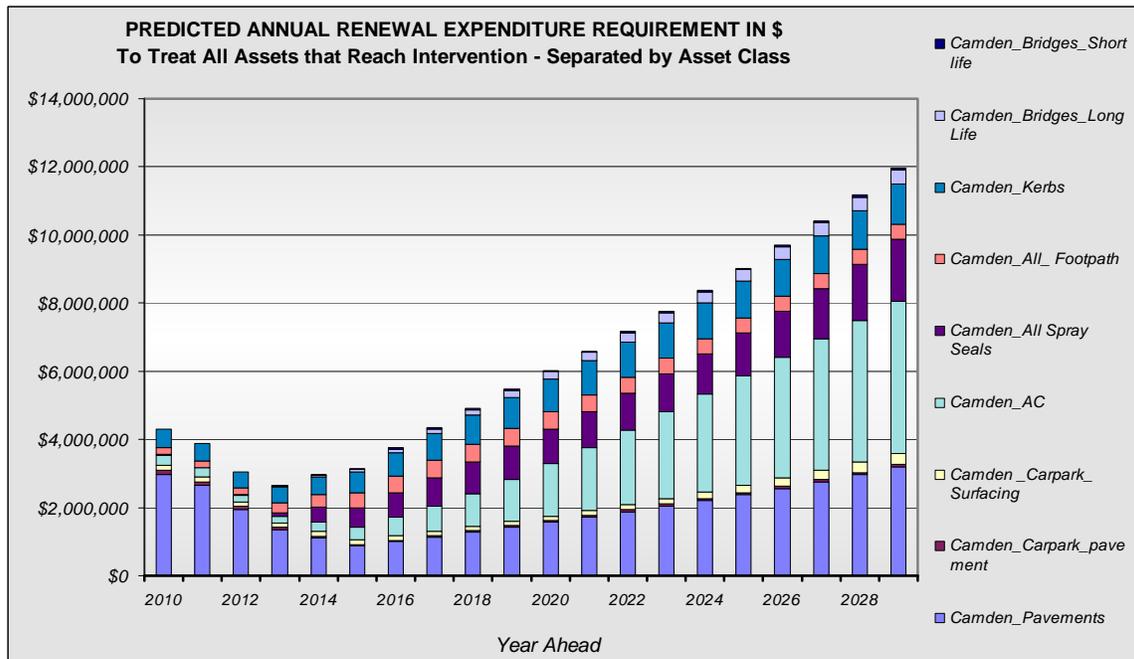
Expenditure Activity	Activity Definition
Capital	Expenditure for the creation of new assets or an increase in the capacity of existing assets beyond their original design capacity or service potential.
Maintenance	Costs associated with all actions for works or actions necessary for retaining an asset as near as practical to an acceptable condition, but excluding refurbishment or renewal. These works do not add to the value of the asset. Maintenance expenditure is from operating expenditure.
New Works	Expenditure for New work is the same as Capital Works i.e. money spent on new works (development costs) and upgrades to an existing asset or on creating a new asset.
Operational	Costs associated with the process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials. An operational cost is money spent on managing and servicing the asset, such as inspections, cleaning and administration.
Renewal	Costs associated for works or actions to upgrade; refurbish or replace components of an asset to restore it to near new and required functional condition, extending its current remaining life. Renewal expenditure comes from capital expenditure.

5.2 Sustainability of Service Delivery

Medium term – 20 year financial planning period

This 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 or 20 year financial plan to provide the service in a sustainable manner.

Figure 8 Projected Asset Renewal



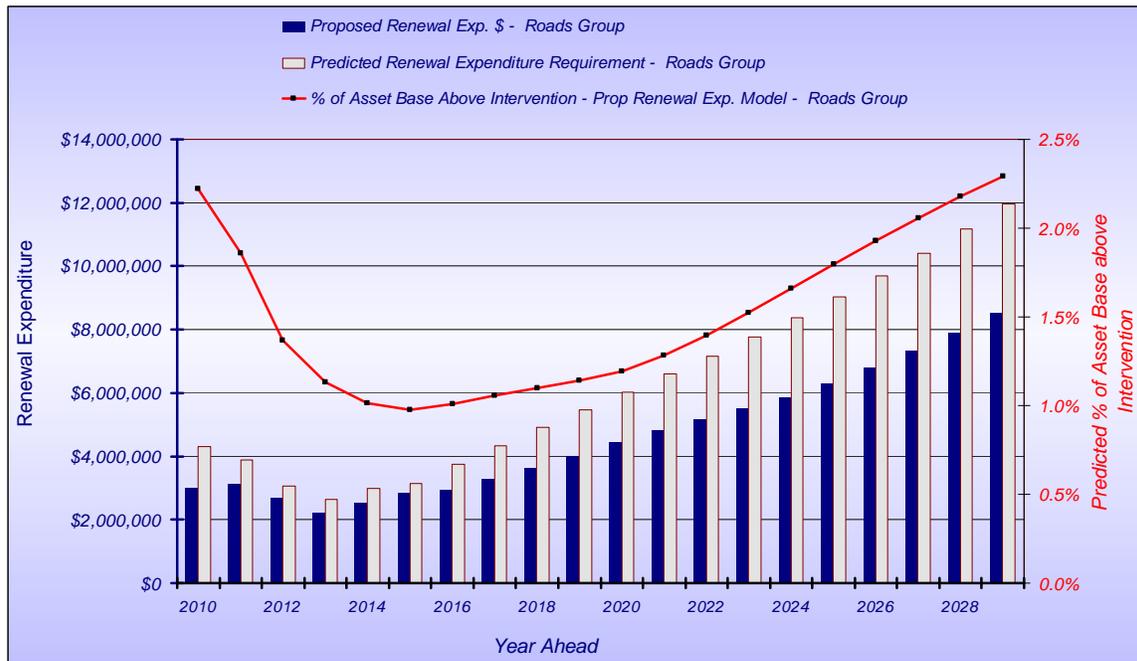
This may be compared to existing or planned expenditures to identify any gap. In a core asset management plan, a gap is generally due to increasing asset renewals. The above graph shows the projected asset renewals in the 20 year planning period from the asset register. The projected asset renewals are compared to planned renewal expenditure in the operational works program.

In June 2010 Camden Council was successful in obtaining approval for a Special Rate Variation (SRV). The SRV or ‘Community Infrastructure Renewal Program’ (CIRP) involves a **one-off** increase in rates of 4.5% in the 2010/11 financial year (separate to any rate pegging amount set by the Minister for Local Government). The DLG has permitted this increase to last for three (3) years after which rates will drop back to current levels with CPI increases.

The total budget for the current 3 year CIRP is \$3.68 million. To date, more than \$3.2 million has been completed with the balance to be spent before 30 June 2013. Importantly, there is still much more to do following the completion of the current CIRP.

The following two graphs represent the differences in Renewal Funding (backlog) between finishing the CIRP at the 2012/2013 end date and continuing the CIRP beyond the 2012/2013 end date.

Figure 9 Current Planned Renewals showing Expenditure Gaps



In this first graph the proposed renewal expenditure is modelled on the existing budget and finishing the CIRP at 2012/2013. The modelling tool shows the requirement outstripping the available funds and the condition of the assets deteriorating.

Figure 10 Proposed Increased Planned Renewals to remove Expenditure Gap



In this second graph the proposed renewal expenditure is modelled on the existing budget with the continuation of the CIRP for the next ten years. The modelling tool shows the budget with the CIRP maintaining equal pace with required expenditure and the condition of the assets improving over the 20 year period.

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 and planned asset renewals 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 further developing its asset management system and resulting plans to provide guidance on future service levels and resources required to provide these services or identify the changes in revenue / expenditure required, and review the background data for this asset management plan. Council will also consider a range of service level scenarios that predict the likely service consequences of the current funding level, the target funding level and options to extend the asset life.

In 2012, Council again undertook a survey of residents for the purposes of understanding how satisfied the community is with Council's performance and to identify those areas of Council's performance that require priority attention. The recent survey identifies that infrastructure assets is still the number one concern for residents in relation to Council's performance, particularly maintenance and the condition of local roads, footpaths, kerbing and sporting fields.

In November 2012, Council identified an asset renewal backlog of \$12.6 million which is expected to increase each year until such time as additional funds are available for reducing the backlog. If

renewal work is not undertaken, over time there will be a decrease in the standard of community infrastructure across the Camden LGA with a range of impacts including safety of roads, wear and tear on vehicles, amenity in the area, low utilisation of facilities and the cost of renewing assets will become unsustainable.

In order to address the community's concerns about infrastructure assets and continue to deliver the existing range of services and facilities, it is recommended that Council consider continuing the current CIRP in one form or another. A \$6 million program of renewal works has been developed for council to implement.

Table 25 Six (6) Year \$6M Renewal Works Program

Infrastructure Category	Funds Required
Road reconstruction & reseal	\$3,185,000
Parks and reserves renewal program	\$1,310,000
Buildings and surrounds renewal program	\$536,000
Bridge renewal program	\$431,000
Kerb and gutter renewal program	\$364,000
Footpath and cycleway renewal program	\$174,000
Total CIRP	\$6,000,000

Council's long term financial plan covers the whole 10 year planning period. Council's asset management plans cover an industry standard 20 year period.

5.3 Funding Strategy

Camden Council is aware that its current budget is not able to fully fund its asset liabilities, and has developed the following three funding strategies.

5.3.1 Continuation Strategy of the current 4.5% SRV to 2016/2017

The first strategy is based on continuing the current funding arrangement in place for the Community Infrastructure Renewal Program (CIRP) at 4.5% p.a. for four (4) more years, ending in 2016/2017. This option will generate an additional \$6 million and the necessary funding for the project program of works. This option completes the program of works in four (4) years.

The current rate increase for the CIRP has enabled the Council to progressively treat some of the renewal gaps within infrastructure asset classes. Overall the current rate increase has had a limited impact on reducing the renewal gaps, as evidenced by the 2012 community survey, due to the continuing deterioration in condition of the assets and the increase of assets coming under Councils ownership and management.

This strategy will enable the Council to continue addressing the funding gap in asset renewal, and bring the gap down to a manageable level; however this strategy will not fully address the required renewal works and is not going to be sustainable in the long term.

5.3.2 Combination Strategy with a reduced SRV of 1.1% to 2018/2019

This second strategy is based on a combination of utilizing internal reserves, a reduced Special Rate Variation and loan borrowings via the Loan Infrastructure Renewal Scheme – Round 2. This option completes the program of works over 6 years.

Table 26 Six (6) Year Combination Strategy Funding Sources

Funding Source	Amount	Comments
Loan Infrastructure Renewal	\$2,000,000	Repayment over 10 years
Special Rate Variation	\$2,500,000	one-off increase of 1.10% for 6 years
Admin Building Reserve	\$1,000,000	
Capital Works Reserve	\$500,000	
Total Funding	\$6,000,000	6 Year Program (2013/2014 – 2018/2019)

Note - this option is dependent on Council's application for a \$2 million Infrastructure Renewal Scheme loan being successful and IPART approving a continuation of the Special Rate Variation (SRV) at 1.10%.

This second strategy will also enable the Council to continue addressing the funding gap in asset renewal; however it will be a lot less effective in bringing the gap to a manageable level. This strategy will appeal more to the community by not placing a larger funding burden through the rating process.

5.3.3 Community Infrastructure Renewal Program continuing plus other service requirements, leading to a rate increase of up to 11%

This third strategy is based on seeking an increase to cover all service requirements including the Community Infrastructure Renewal Program (CIRP). This would require the rates to increase by up to 11%. This level of rate increase provides Council with sufficient funds to meet expectations across **all** its services, not just asset management. This increase will enable the Council to fund its renewal, maintenance and operation aspects of asset management.

The problem with this third strategy is the funding burden placed on the community, to reach up to 11% rate rise required to undertake the strategy.

5.3.4 Preferred Funding Strategy

A report was prepared outlining the background and the analysis of the three options above and submitted to the Ordinary Council Meeting held on 11 December 2012. The elected Council moved to pursue Option 2 (Combination Strategy) above; notify IPART of Council's intention to apply for a Special Rate Variation for 2013/14 under Section 508(2) of the Local Government Act and approve that public exhibition and community consultation of the proposed Community Infrastructure Renewal Program commence as soon as practicable.

Subsequent to this approval the Council held several public exhibition and community consultation events of the proposed Community Infrastructure Renewal Program with the result reported back to the elected Council on 12 March 2013.

The Council is seeking to implement the Second (2) Strategy above and proceed with a formal application to IPART for a one off 1.1% special rate variation over and above the ministerial allowable limit, commencing 1 July 2013 and concluding 30 June 2019.

5.4 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 financial 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 are:

- The current register is up to date and complete;
- The estimates used for current rates of renewal and maintenance will remain constant at current 2010 values for the next 20 years;
- The calculation for the average annual asset consumption (AAAC) for each asset subcategory (channels; flood mitigation; headwalls; pipes; pits and SQID's) has been correctly calculated and that the AAAC has then been used as the average rate of renewal required for the next 20 years. This calculation has been based on the average life across the asset class as depicted in table 19 on page 34.

Accuracy of future financial forecasts may be improved in future revisions of this asset management plan by the following actions:

- Develop performance measures and targets for stormwater drainage asset service criteria, considering community / customer expectations; strategic goals; legislative requirements, and Council's resource ability to meet measures and targets;
- Review and improve maintenance practices, considering service agreements for maintenance activities, and procedures to reduce the potential liability exposures associated with the maintenance of stormwater assets;
- Review and improve the system to monitor and control damage to public assets from development works;
- Run modeling scenarios for different service level outcomes using the Moloney Modeling software;
- Review expenditure options for maintenance and renewal combinations to reduce overall life cycle cost without increasing risk.
- Ensure sufficient funds are provided to undertake condition testing of one asset class every year, including the storm water drainage assets.

6. Asset Management Practices

6.1 Overview

This section of the asset management plan outlines any asset management practices and improvements that have arisen during the process of documenting this first basic plan and can be incorporated into the organisation's methodology for further enhancement to the asset management practice as the second tier (ie. 'Intermediate') asset management plan is undertaken.

A principle of good asset management practice is that existing assets will be maintained and renewed where necessary, before the acquisition of new assets are considered. However, due to the rapid growth in the Camden LGA over the next 30 years, there will need to be more of an evolutionary process rather than the "fix existing before acquiring more". Both activities will need to happen in parallel. A major assumption therefore, is that any improvement program will be assessed according to that principle, and that the allocation of resources for the proposed improvement program will be prioritised separately from new capital works.

To improve the Council's asset management practices, solutions to reduce the impact of these weaknesses have been proposed. Although insufficient resources prevents all of these changes being implemented immediately, it has been assumed that adequate resources will be made available to permit commencement in the 2013/2014 financial year.

Due to the recent implementation of the Conquest asset register, a current issue is relating these individual tools to have an integrated system for the purposes of avoiding data duplication and to increase control over data accuracy.

6.2 Conquest Maintenance Management System

Camden Council uses a number of asset management tools for the management of its stormwater drainage assets. Camden Council has purchased and installed Conquest as its Assets Management System software and asset register. The key behind the software system is its ability to assign the asset hierarchy developed by Council to each of the asset classes.

The Conquest Maintenance Management System provides Camden Council with a 'toolset' to manage its entire asset portfolio. While ideally suited for managing infrastructure assets, the Conquest II System has been tailored to meet the needs of the Council and its particular asset portfolio. The Conquest system has been set up into four basic work areas:

1. Asset Register
2. Knowledge Base
3. Action Management
4. Customer Services

The first two are the main work areas that are currently being utilised with the latter two to be brought online at a later stage.

Camden Council has set up the Asset Register following the Asset Hierarchy established by the Council for its infrastructure assets down to its component level. It is in this section that the raw data is documented including lengths; widths; sizes; and condition of each asset type.

The Knowledge Base mirrors the Asset Hierarchy of the Asset Register but is the governing work area of the system. This section provides the guidelines or parameters for the various inputs that allow the Asset Register to be assembled; it is also the section that contains the valuation rates required for each asset component and then the system applies this rate depending on condition across the asset type.

Table 27 Asset Management System Actions

Asset	Current System	Proposed	Implementation Date	Comments
Stormwater Drainage	Data for stormwater assets located in spreadsheets / WAE / S94 / WIK / Development Branch documents	Conquest Asset Register – form for required data inputs	June 2011	Currently being reviewed
Stormwater Drainage	Separate asset management systems Conquest / Authority*	Conquest / Authority integration	To be assessed	Not considered essential

*Note – Authority is to be upgraded in 2011

6.3 Accounting / Financial Systems

Camden Council uses Authority (produced by Civica) as its financial management system. The Authority application is designed specifically for Local Government and the inherent single database design eliminates duplication of data throughout the enterprise application. The Authority Financial Applications incorporate core accounting, budgeting and reporting functionality via its ledger modules, in addition to workflow enabled supply management, inventory, treasury, loans, investments, contract management, plant and asset management facilities. Transactions processed by any of the subsidiary modules update both the subsidiary modules and the general ledgers at the same time ensuring currency of data and ease of management of the application. Full facilities are provided to drill from any account to all transactional data including links back to the source module and transaction.

Camden Council has decided not to integrate Conquest with Authority at this stage. Authority will hold financial information down to the sub-category level only whilst Conquest will be used to maintain detailed asset information.

6.4 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in the table below:

Table 28 Asset Management Improvement Plan

Task No.	Task	Responsibility	Resources Required	Timeline
1	Review historical trends for Capital / Renewal – Maintenance – Operation funding to develop forecast projections			Dec 2011
2	Complete asset maturity audit of asset management plan from 'basic' to 'intermediate'			June 2014 (AMP 4yr life)
3	Continue to update Asset Register with: <ol style="list-style-type: none"> 1. New Assets (Catchments etc) 2. Works in Kind (WIK) Assets 3. Section 94 Assets 			Annually as acquired
4	Continue to implement 'fair valuation' across the Asset Class to include WIK and Section 94 assets			Annually
5	Review and develop Maintenance Expenditure trends across asset categories			Dec 2011

6.5 Monitoring & Review Procedures

Regular monitoring and review of this asset management plan is essential in order to ensure the document is able to continue to provide strategic guidance in the sustainable management of Council's stormwater drainage assets. This is the first version of the AMP and it will be reviewed and further developed over the next few years.

The following table outlines the suggested monitoring and review actions for this AMP that are currently proposed, additional review and monitoring methods may be incorporated in future versions of this Plan.

Table 29 Review / Monitoring Actions

Item	Review / Monitoring Actions	Target Date
1	AMP to be reviewed annually in order to incorporate changes in levels of service and new knowledge resulting from asset condition assessments	During annual operating plan preparation
2	This latest version to be reviewed by an external consultant (Morrison Low) prior to public exhibition	April 2011
3	Annual audit of actual financial information with a comparative review against projections used within the plan. The initial focus should be on validating maintenance and renewal allocations.	By end of August each year

4	Monitoring of performance against defined levels of service.	By end of August each year
5	Update information regarding improvement plans, asset inventory information etc when necessary.	Ongoing

The AMP has a life of 4 years with 20 year rolling forecasts and is due for revision and updating within the financial year after each Council election.

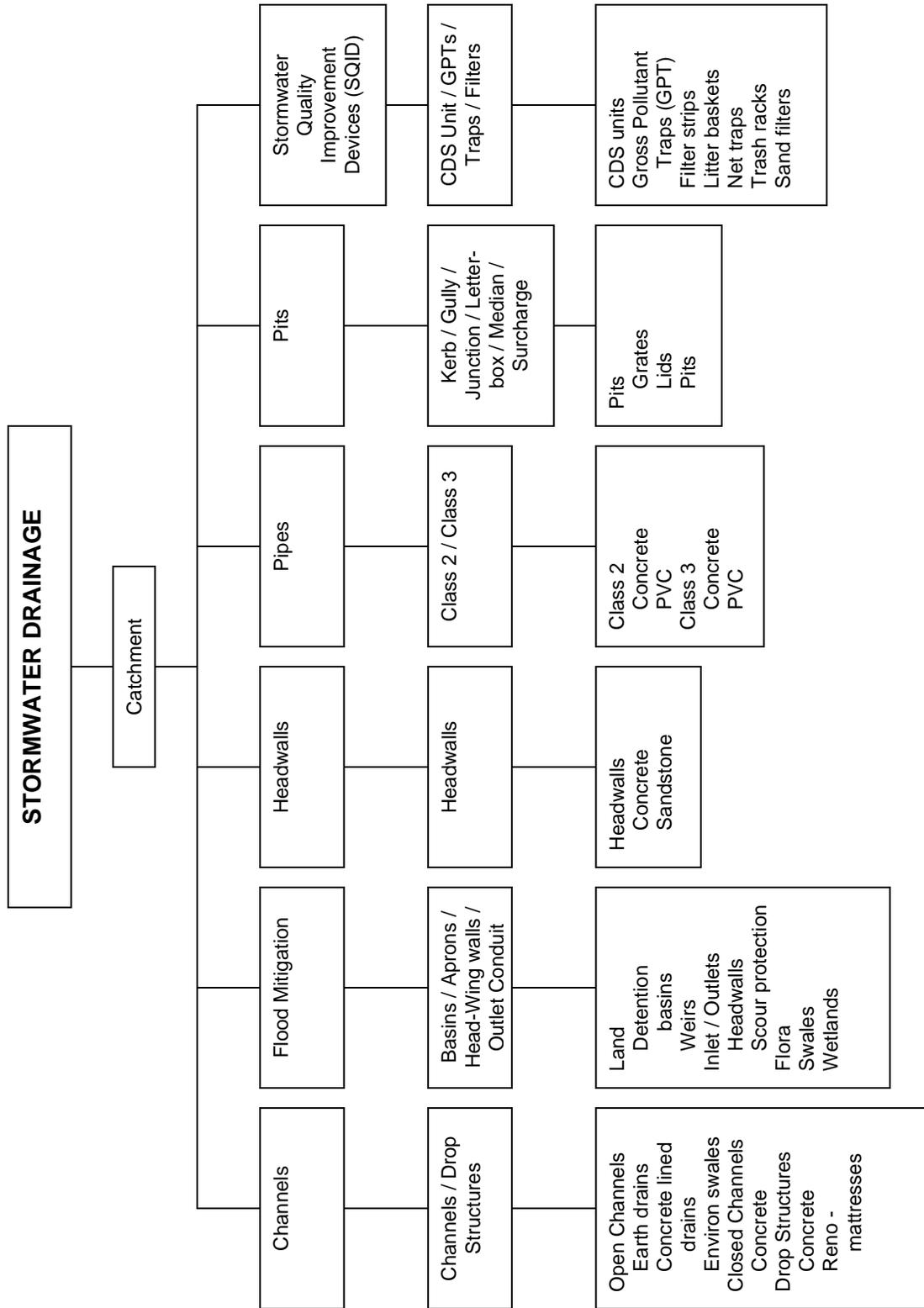
6.6 Standards and Guidelines

The following list of Standards and guidelines have been used to develop this asset management plan:

- International Infrastructure Management Manual Version 3, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2006
- Australian Infrastructure Financial Management Guidelines, the Association of Local Government Engineering New Zealand Inc (INGENIUM) and the Institute of Public Works Engineering Australia (IPWEA), 2009
- Planning a Sustainable Future: Planning and Reporting Manual for local government in NSW, NSW Department of Local Government, May 2009
- NSW Division of Local Government (DLG) Circular 06-75 – Valuation of Assets at Fair Value, December 2006
- AASB116 Australian Accounting Standard – Infrastructure, Plant, Property and Equipment
- Institution of Engineers, Australia (1987) Australian Rainfall and Runoff: A Guide to Flood Estimation , Vol. 1, Editor-in-chief D.H. Pilgrim, Revised Edition 1987 (Reprinted edition 1998), Barton, ACT
- Engineering Design Specifications, Camden Council, adopted 10 February 2009
- Engineering Construction Specifications, Camden Council, adopted 10 February 2009

Appendices

1. [Stormwater Drainage Asset Hierarchy](#)



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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
01	BW	HH				04/04/11