

University of Southern Queensland
Faculty of Health, Engineering & Sciences

Asset Management Framework for NSW Local Government

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Abstract

Modern societies rely heavily on engineering infrastructure to underpin the fabric of society for transport, communication, water supply or waste disposal. Effective management of this infrastructure is essential to ensure sustainability in an environment of scarce global resources and limited economic means. In Australia, the majority of infrastructure assets are managed and maintained by the Local Government. This study reviews the currently recommended best practice within Australia and proposes a simplified framework that a New South Wales Local Government Organisation can use to implement or benchmark a best practice framework.

The International Infrastructure Management Manual (IIMM) states that the objective of asset management is *"to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers"* (IPWEA, NAMS & AECOM 2011). The Local Government delivers services to the local community utilising public funds, thus understanding the level of service required by the community and responsibly using funds to achieve it is the highest priority. The NSW State Government currently has a particular focus on sustainable, fit-for-purpose Local Government systems generating a greater demand for Local Governments to thoroughly understand their infrastructure assets and manage them appropriately.

This study has reviewed the currently endorsed best practice methodology at the national level through recommendations by the Institute of Public Works Engineers Australia (IPWEA). Each state's requirements have then been reviewed and case studies of government entities within NSW undertaken. The findings of the research and case studies have been used to generate a framework for local government and suggest model systems to meet the asset management requirements.

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I further certify that the work is original and has not been previously submitted for assessment in any other course or institution, except where specifically stated.

M. BUTLER

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Chapter 1

Introduction

1.1 Outline of the Study

Local Government Organisations are required to manage a growing infrastructure network predominately comprising assets constructed in the *"...1950s, 1960s and 1970s. Growth steadied in the 1980s and has slowed down in the 1990s."* (Burns, Hope & Roorda 1998). Due to the age of these assets, Local Government Organisations are finding that their assets are coming to the end of their useful life and are requiring increasingly more maintenance or complete renewal while the funding levels are remaining relatively consistent. Understanding the infrastructure assets components, life and costs is key to determining the most efficient use of available funds to develop the future works programs and understand the long term sustainability of the government organisation. This study, titled "Asset Management Framework for NSW Local Government", will identify the essential and desirable framework of an asset management system and the processes involved within. This will ensure a LGA within New South Wales can meet its requirements in legal reporting and responsibility to the community as well as have an accurate understanding of their long term sustainability.

1.2 Study Area

This study will be undertaken in the Local Government Environment of New South Wales. State Government Policy's such as 'Fit for the Future' (NSW Government 2015*b*) require

that Local Government Organisations have a solid understanding of their current and long term sustainability. According to the NSW Government Fit for the Future website a fit for the future Council is one that is:

- Sustainable
- Efficient
- Effectively manages infrastructure and delivers services for communities
- Has the scale and capacity to engage effectively across community, industry and government.

The first three of these criteria can be comprehensively responded to through a well developed and comprehensive Asset Management System. While the recommendations from this study will not be available until after the closing date of the 'Fit for the Future' policy (NSW Government 2015*b*), similar reporting requirements and the likelihood of future NSW Government Policies furthering sustainable practices will prove a quality asset management framework invaluable.

The Local Government Area of Cabonne Council does not currently have a comprehensive Asset Management System and thus will be the focus of this study. Cabonnes data is currently captured in a variety of Microsoft Excel Spreadsheets and GIS formats that do not have a central location nor sole position responsible for their upkeep.

Cabonne Council is a rural council located in Central West NSW, surrounds Orange City Council and neighbours Blayney Council, Bathurst Council, Wellington Council, Dubbo City Council, Parkes Shire Council, Forbes Shire Council and Cowra Council. Cabonne covers an area of 6108 square kilometres and has 13,481 residents between 7 villages, the largest of which is Molong. Cabonne's largest asset portfolio is Road Infrastructure which has 210, 603 and 1229 kilometres of sealed regional roads, sealed locals roads and unsealed local roads respectively. These roads make up 73.6% of the Current Replacement Cost of transport infrastructure which is Cabonne's largest asset portfolio; consequently this study will be completed primarily in the context of road assets, but the findings will be applicable to all asset classes.

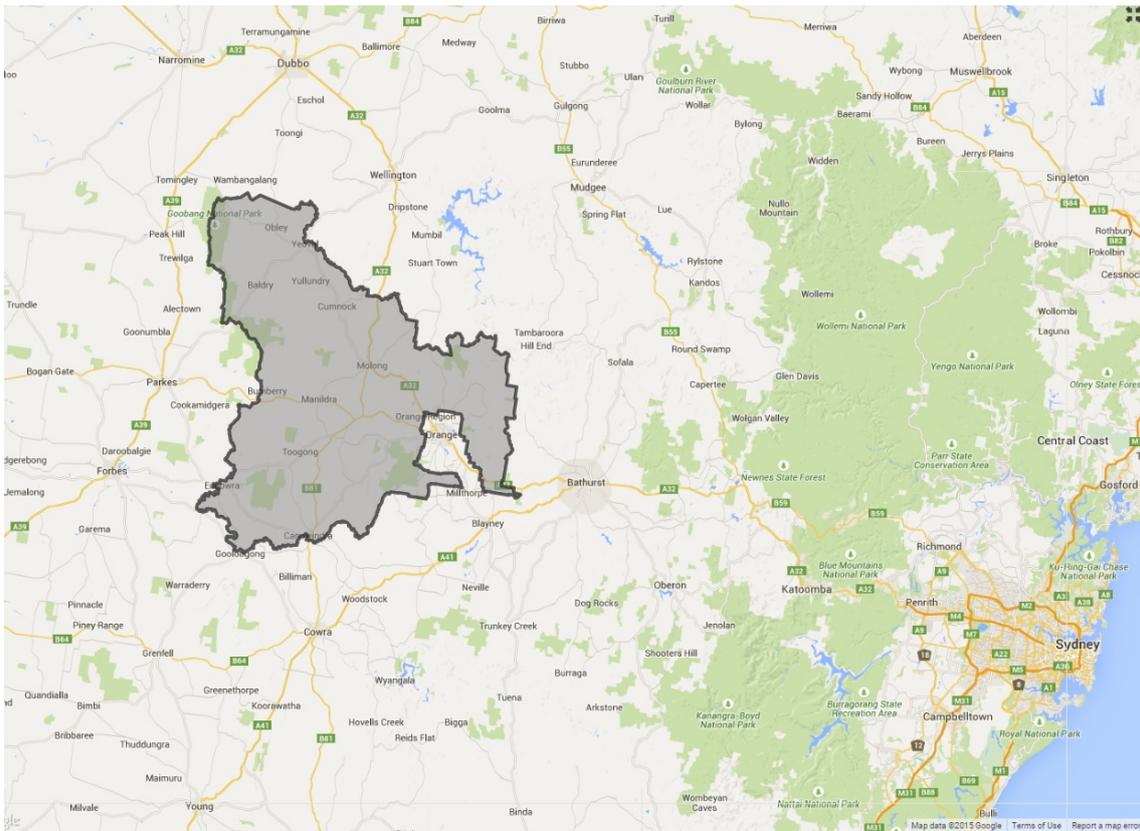


Figure 1.1: Cabonne Local Government Area
Office of Local Government, <http://www.olg.nsw.gov.au/>

1.3 Objectives

The objectives of this dissertation are to:

1. Undertake literature review of asset management processes and systems.
2. Review asset management legal requirements, including sustainability, in NSW.
3. Determine the internal requirements of an asset management system.
4. Identify issues and develop a research methodology to address them.
5. Visit the State Government Agency 'Roads and Maritime Services' (RMS) and 2 Councils in NSW to determine the system and framework they are using.
6. Develop a suggested model for use in NSW local governments.
7. Construct a model - focusing on internal systems and asset data updates after inspection/maintenance/renewal/capital works.

8. Write and submit dissertation in required format.
9. If time permits: Trial the model - for a basic asset renewal/capital works

It is noted that there was insufficient time in the course of this study to undertake implementation and trial of the suggested models. This will be undertaken subsequent to this studies completion.

Chapter 2

Background and Literature Review

2.1 Background

Asset Management is a rapidly growing sector of the professional engineering community. Local Government Organisations once had a single or small group of engineers responsible for the development of their annual and long term works program who were intimately familiar with the condition of their network. While effective in the short term, access to this knowledge by those outside of this core group was limited and all detailed requests had to go through these individuals. Further, while some aspects of the network were well known within the organisation validating that knowledge was difficult. An increased need for transparency in reporting and the continuity of knowledge between staff members has demanded that this information be stored in an easily accessible format, that reports are easily and procedurally generated and that the ability to change the asset information is both tracked and limited within the organisation.

Formal asset management systems have been in use in some NSW Local Government Organisations since the late 20th century. They became more commonly adopted after the 2006 NSW Department of Local Government Position Paper titled "Asset Management Planning for NSW Local Government" (DLG 2006*a*) and the July 2006 mandate (DLG 2006*b*) that NSW councils commence valuing infrastructure, property, plant and equipment at fair value. After this mandate, Local Government Organisations were re-

quired to complete a register of all of the aforementioned assets and assess their condition to determine their fair value. Part of this valuation also involved determining the useful life of each component that made up an asset.

Experience within Cabonne Council has shown that for asset management to be effective its users are required to have three things:

- a detailed knowledge of the engineering properties of their assets
- a working knowledge of the financial standards
- an understanding that the above two things do not yield the same result.

While the financial standards (AASB 2014*a*) do set the principles of how to value assets and assess their useful lives, it is important to note that the value determined is an averaged unit rate for the asset class or component. This means that site specific challenges or opportunities are not taken into account and the determined asset values cannot be used to directly budget for works.

2.2 NSW Local Government Legislative Requirements

According to page 133 of the Integrated Planning and Reporting Guidelines (Premier and Cabinet 2013), the legislation and standards that detail the specific asset reporting requirements for NSW local government are:

- Local Government Act and Regulation
- NSW Local Government Code of Accounting Practice and Financial Reporting
- Australian Accounting Standards
- Integrated Planning and Reporting Manual

It is important to note that while the Integrated Planning and Reporting Manual is not labelled as a standard or an act, it is endorsed in clause 406 of the Local Government Act 1993 and thus carries the same authority.

2.2.1 Local Government Act 1993 (NSW)

Chapter 13 of the Local Government Act 1993 (NSW Government 2015c), titled "*How are councils made accountable for their actions?*", details the way that Local Government Organisations are required to show due diligence in the responsible utilisation of resources. Part 2 of this chapter outlines planning requirements, Part 3 is the associated financial management to achieve that planning and Part 4 is how that financial management is reported. It is noted that in clause 428 there is an allowance for additional reporting as detailed in the Integrated Planning and Reporting Guidelines (Premier and Cabinet 2013)

The Local Government Act 1993 states that "*Each local government area must have a community strategic plan developed by the council for the future of the local community covering a period of at least 10 years. To support the community strategic plan, a council must have a long-term resourcing strategy that includes long-term financial planning, workforce management planning and asset management planning.*" (NSW Government 2015c)

The notable elements required by the Act for each of these plans is as follows:

(Cl. 402) Community Strategic Plan: An overarching planning document, the community strategic plan is required to establish the strategic objectives and strategies to meet those objectives over a minimum of a 10 year period. It must be adequately informed to address civic leadership and social, environmental and economic issues in an integrated manner and ensure that each is addressed. This is required to be done in consideration of the State government's State Plan and any other relevant State Policy or planning at the time. It also must utilise community consultation, both in the development and review stages. To ensure that the Community is adequately consulted, it also requires a minimum public exhibition period of 28 days.

The Act is somewhat ambiguous, but it implies that the opportunity for changing the plan is following the ordinary election of councillors until the end of the financial year. During this period the council may endorse or amend the existing plan or develop a new plan to ensure that the area has a community strategic plan for the next 10 years.

(Cl. 403) Resourcing Strategy: The practical element of the Community Strategic Plan, the Resourcing Strategy includes long term financial planning, workforce manage-

ment planning and asset management planning to provide the resources to meet the objectives of the Strategic Plan.

(Cl. 404) Delivery Program: The Delivery Program utilises the Community Strategic Plan and the Resourcing Strategy to determine the principle activities to be undertaken over the 4 year period commencing 1 July following the ordinary election of Councillors. Again, this program required community consultation and a minimum 28 days public exhibition period.

The delivery program is required to have a method of assessment to determine the effectiveness of each principle activity within the program, and measure how they meet the strategic objectives set out in the community strategic plan. The general manager must ensure that regular progress reports are compiled, at a minimum of bi-annually.

(Cl. 405) Operational Plan: The operational plan must be prepared annually and detail the activities and works to be undertaken by council as part of the Delivery Program for that year. This plan is required to be put on public exhibition for a minimum of 28 days, invite public comment and have a map that shows all works available for public inspection.

(Cl. 406) Integrated Planning and Reporting Guidelines: Introduced in the Local Government Act 1993 version for 1 October 2009 to 7 January 2010, this is a somewhat more recent development in the proactive management of Local Government Organisations. This clause allows for the Integrated Planning and Reporting Guidelines to impose requirements on the preparation, development and/or review of the aforementioned planning documents. This can include but is not limited to the procedures to be followed, the matters they address or the modification of the required level of community consultation.

It is important to note that the Director-General of a state may review and amend the guidelines from time to time, but must make written notification to each Local Government Organisation under their direction.

2.2.2 Local Government Regulation 2005

Having undertaken a review of the Local Government Regulation 2005, the reporting requirements do not require additional information from an asset perspective.

2.2.3 NSW Local Government Code of Accounting Practice and Financial Reporting Guidelines

The NSW Local Government Code of Accounting Practice and Financial Reporting Guidelines review and relate the Australian Accounting Standards to the Local Government environment. The purpose of the guidelines are stated as: "*The Local Government Code of Accounting Practice and Financial Reporting (the Code) prescribes the form of the financial statements approved by the Office of Local Government (the Office)*" (OLG 2015a).

While the code primarily focuses on financial reporting, there are some elements that relate to asset management. Of particular importance is the required valuation methods. Some are to be undertaken internally while others require external valuation, and can thus be used by a Local Government Organisation to prioritise the order that additional information for asset classes are collected and how the method of asset management is advanced. The list is as follows:

- Operational land (External Valuation)
- Buildings; Specialised/Non Specialised (External Valuation)
- Water/Sewerage Networks (Internal Valuation)
- Plant and equipment (as approximated by depreciated historical cost)
- Road assets; roads, bridges and footpaths (Internal Valuation)
- Drainage assets (Internal Valuation)
- Bulk earthworks (Internal Valuation)
- Community land (Internal Valuation)
- Land Improvements (as approximated by depreciated historical cost)
- Other structures (as approximated by depreciated historical cost)
- Other assets (as approximated by depreciated historical cost)

The revaluation of these asset classes has been mandated by the Department of Local Government (Premier and Cabinet 2012) in the order and groupings as per Table 2.1

Table 2.1: Asset Revaluation Groupings

Asset Class	Due
Water and Sewer	30 June 2012
Property, plant and equipment, operational land, buildings	30 June 2013
Roads, bridges, footpaths, drainage, bulk earth works	30 June 2015
Community Land, other assets, land improvements	30 June 2016

While some of these due dates occur in the past, they indicate the order of and time frames that have been allowed for the undertaking of the asset valuations and can be used to estimate the future revaluation requirements. It is noted that Roads, bridges, footpaths, drainage and bulk earthworks are given two years for revaluation, while all other assets are given one.

The Accounting Practice Guidelines states that: *"Land is not depreciated. Depreciation on other assets is calculated using the straight line method to allocate their cost, net of their residual values, over their estimated useful lives."* (OLG 2015a). The AASB 116 definition of useful life as applied to engineering infrastructure is: *"The period over which an asset is expected to be available for use by an entity."* . This straight line method referred to is the constant depreciation of the assets value over the determined useful life. These useful lives have been determined for the financial perspective as per Table 2.2.

While there are these suggested useful lives, they are not exhaustive nor are they accurate for all situations and circumstances. It is strongly advised that these factors be reviewed as the adopted life can have a drastic effect on the annual depreciation and thus the reported sustainability of the Local Government Organisation.

Table 2.2: Accounting Practice Guidelines Suggested Asset Useful Lives

Sourced: Local Government Code of Accounting Practice and Financial Reporting (Guidelines)

Asset	Useful Life	Asset	Useful Life
Office Equipment	5-10 years	Pumps and telemetry	15-20 years
Office Furniture	10-20 years	Drains	80-100 years
Vehicles and road making equipment	5-8 years	Culverts	50-80 years
Other plant and equipment	5-15 years	Flood control structures	80-100 years
Buildings - Masonry	50-100 years	Sealed Road - Surface	20 years
Buildings - Other	20-40 years	Sealed Road - Structure	50 years
Playground Equipment	5-15 years	Unsealed Roads	20 years
Benches, seats etc	10-20 years	Bridge - Concrete	100 years
Dams and reservoirs	80-100 years	Bridge - Other	50 years
Bores	20-40 years	Bulk Earthworks	Infinite
Reticulation pipes - PVC	70-80 years		
Reticulation pipes - Other	25-75 years		

The reported value of an asset over its useful life can be depicted as per figure 2.1. The total asset value is determined by the Current Replacement Cost, which is then depreciated over the useful life of the asset. It is noted that while this figure shows Residual Value, it was determined during the 2014/15 Road Revaluation that Residual Value is no longer accepted (see Appendix B).

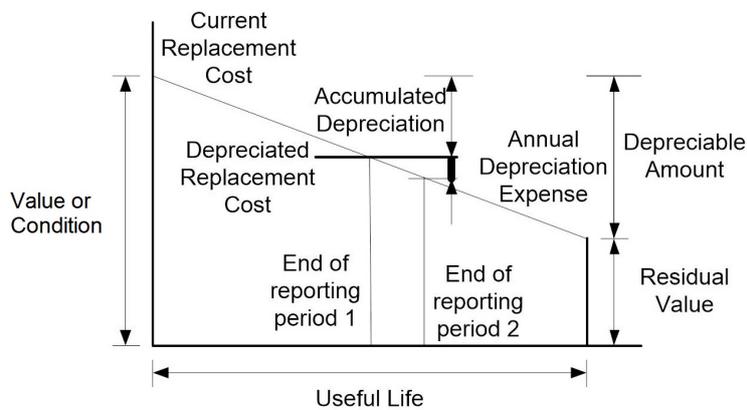


Figure 2.1: Relationship of Financial Terms over an Assets Useful Life

The remainder of the code is a summary of relevant accounting standards (the relevant sections of which are discussed in Section 2.3.2) with some Department of Local Gov-

ernment comments and sample accounting sheets for the clarity of financial reporting requirements and formatting.

2.2.4 NSW Integrated Planning and Reporting

Section 6.4 of the Integrated Planning and Reporting Manual (Premier and Cabinet 2013) defines the asset reporting requirements of local government. In addition to the aforementioned acts, codes and regulations regarding reporting, there are some specific reports that are required to be generated. These reports are completed in financial terms (i.e. dollars) to normalise the tracking of assets across the state. These required reports are known as Special Schedule 7 and include:

- The condition of assets.
- An estimate of current values to bring the assets to satisfactory standard.
- An estimate of the annual expense of maintaining the works at that standard.

Satisfactory standard is defined as "*satisfying expectations or needs, leaving no room for complaint, causing satisfaction, adequate... the level of satisfactory standard for public works should be good (level 2).*" (Premier and Cabinet 2013). See Table 2.3 for the different condition assessment levels and their associated descriptions.

While this is the level set by the Integrated Planning and Reporting Manual's satisfactory standard of condition, it is noted that the "Profile and Performance of the NSW Local Government Sector" (OLG 2015*b*) report by the Department of Local Government indicates that community consultation can allow a local government agency to modify these levels in accordance with their financial capacity:

*Councils are encouraged to continue to undertake community consultation in setting the level of service required for each class of asset when determining their budget. (OLG 2015*b*).*

By monitoring Special Schedule 7 over a series of years, it is possible to gain a detailed understanding of the financial sustainability of a Local Government Organisation through observing the trend in asset conditions and achieved maintenance and renewal expenditure.

2.3 Standards on Asset Management

The two key Standards an asset management framework need to adhere to are the International Organisation for Standardisation ISO 55000 (ISO 2014*c*) series and the Australian Accounting Standards (AASB 2014*b*).

2.3.1 ISO 55000 Series

The ISO 55000 series is comprised of three parts:

- ISO 55000: Asset Management - Overview, principles and terminology
- ISO 55001: Asset Management - Management systems - requirements
- ISO 55002: Asset Management - Management systems - Guidelines for the application of AS ISO 55001

The first of these standards, ISO 55000, defines what asset management is and where it fits within the organisation. It succinctly states the primary benefit of asset management as follows:

”Asset management supports the realization of value while balancing financial, environmental and social costs, risk, quality of service and performance related to assets.”
(ISO 2014*c*)

ISO 55000 also lists some of the benefits as being inclusive of but not limited to:

- improved financial performance
- informed asset investment decisions
- managed risk
- improved services and outputs
- demonstrated social responsibility
- demonstrated compliance

- enhanced reputation
- improved organisational sustainability
- improved efficiency and effectiveness

This definition and these identified benefits are significant to not only the management of the infrastructure, but also a Local Government Organisations ability to deliver the services that the community requires. This will impact on how each internal department operates and as such requires high tiered management support to be effective. Clause 2.4.1 of ISO55000 specifies that planning, control and monitoring activities should be implemented to exploit opportunities and reduce risk; these activities need to be employed by high level management to ensure that the opportunities and risk identified meet the communities expectations.

ISO 55000 defines the fundamentals of an asset management system as Value, Alignment, Leadership, and Assurance. These are defined as follows:

Value: The value of an asset is not the cost of the asset itself, but rather the benefit that asset can contribute to the organisation. The value is closely linked to the organisational objectives and can change over time as the organisational requirements evolve and technology improves; for example, where once long distance two-way radios were essential to communicate between depots and work sites mobile phones and internet have made them largely redundant outside of a work site itself, significantly lowering their value to the organisation.

Alignment: Asset management systems develop strategies and guide decisions made on technical, financial and operational matters to ensure that the assets facilitate the organisation in meeting their objectives.

Leadership: "Leadership and workplace culture are determinants of realization of value." (ISO 2014*c*). While the first two fundamentals are benefits realised from the asset management system, leadership is required to generate the culture for a successful asset management system. When the organisation's high level managers endorse the asset management system, there are defined roles that need to occur to ensure the system is kept current. This generates the need for clearly defined roles, responsibilities and delegated authority. ISO 55001 furthers this definition by requiring top level management to ensure an

asset management policy is developed that is appropriate to the organisation, provides a framework for setting asset management objectives, commits to satisfying applicable requirements and includes a commitment to continual improvement of the system.

Assurance: With the comprehensive understanding and alignment of the asset portfolio with the organisation objectives comes a confidence that the current assets can fulfil their required purpose. Where there is a lack in service provision or value, strategies can be developed to assure that those deficiencies will either be addressed within a defined time frame or not addressed on account of a lack of value in that provision.

ISO 55000 recommends that these four fundamental principles are practically achieved through a set of interrelated and interacting elements of policies, plans, business processes and information systems. Their context within the organisation is depicted as per Figure 2.2.

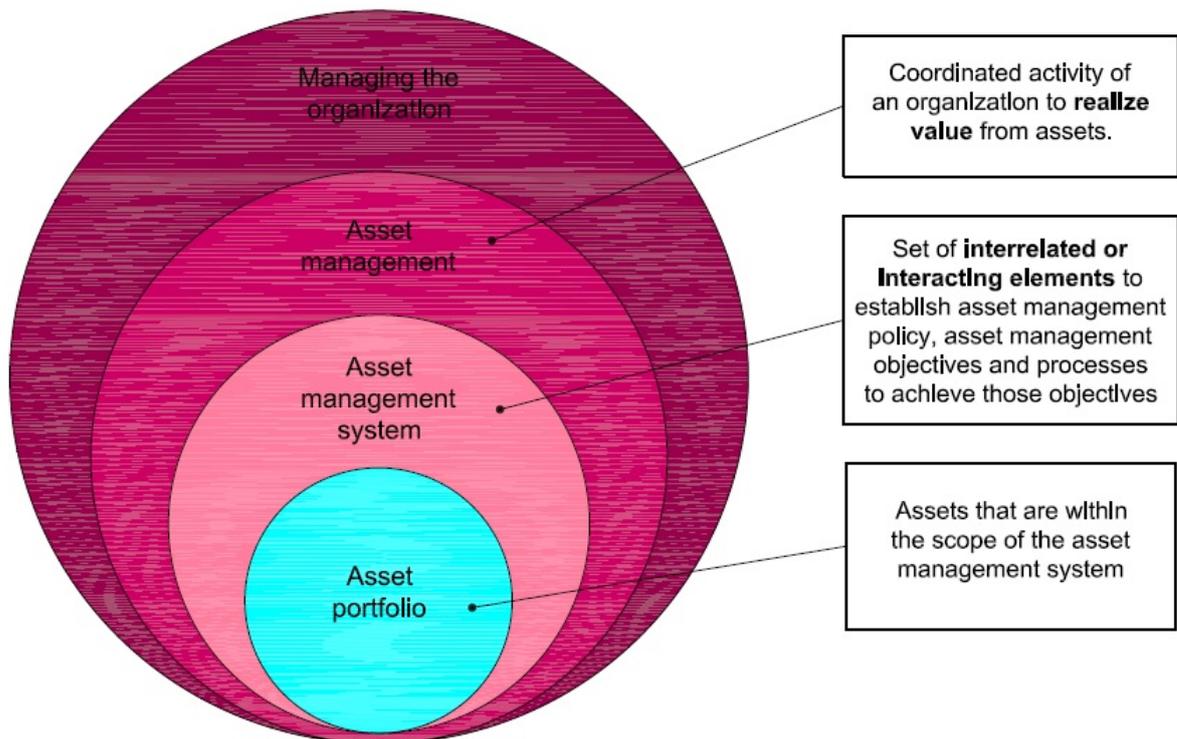


Figure 2.2: ISO Asset Management Organisational Context

Sourced: ISO 55000, p. 4

ISO 55001 and ISO 55002 continue to further define the intricacies of each of these fundamental principles and what is required to practically achieve them. There is a lack of detail in this due to the generic application of this documentation as it is intended for both the public and private sectors of the international environment. It consequently

does not specifically mention the requirements for a local government organisation within Australia.

2.3.2 Australian Accounting Standards

The AASB 27 - Financial Reporting by Local Governments (AASB 1996) defines the standard form and scope of the general purpose financial reports of local governments. Clause 27 states that: *"The statement of financial position shall disclose the assets, liabilities and equity of the local government as at the reporting date."*

Clause 33 defines what is considered an asset as follows: *"An asset of the local government shall be recognised in the statement of financial position when, and only when:*

1. *it is probable that the future economic benefits embodied in the asset will eventuate;*
and
2. *the asset possesses a cost or other value that can be measured reliably."*

This definition is in alignment with the ISO 55000 definition of an asset on account of the cost and value, thus any item that falls within the Asset Management System will be valued as per this clause of AASB 27. The method of the valuation is defined in AASB 13 - Fair Value Measurement. Fair value is defined as the current replacement cost less straight line depreciation of the asset (refer to Figure 2.1). To calculate this, the organisation needs a detailed understanding of the useful life and expended life of the asset.

The Local Government Code of Accounting Practice and Financial Reporting outlines further reporting requirements. Special Schedule 7 is one element of this reporting which focuses on the condition and value of the infrastructure assets. The method utilised in the reporting is condition rating each asset on a scale from 1-5 then determining the percentage of the assets that fall within each condition level from the written down value. The conditions are defined on page 90 of IP&R (Premier and Cabinet 2013) as per Table 2.3.

Section 2.2.3 outlines the Australian Accounting Standards Board Standard 116 definition of useful life. It can be observed from this definition and the condition descriptions in

Table 2.3: Infrastructure Condition Assessment

Level	Condition	Description
1	Excellent	No work required (normal maintenance)
2	Good	Only minor maintenance work required
3	Average	Maintenance work required
4	Poor	Renewal required
5	Very Poor	Urgent renewal/upgrading required

Table 2.3 that the useful life is the time taken for an asset to deteriorate from condition 1 to condition 5. These conditions do not rate the usability of an asset, but rather the asset's condition and capacity to meet the '*satisfactory standard*' (see section 2.2.4) level of service.

2.4 Other Australian States Asset Management Approaches

Victoria is believed to be leading the way in asset management and sustainability practices (Kellick 2010). Western Australia, South Australia and Queensland all have strong systems while the other states are less developed. This review is limited to the aforementioned states systems to assess and extract any planning benefits not present in the current New South Wales model.

2.4.1 Victoria

In December 2000 the Victorian State Government released the 'Sustaining Our Assets' policy statement (Victorian Treasury and Finance/DAIS 2000). This policy was designed to be proactive about maintaining the portfolio of assets to enable efficient service delivery. It placed specific emphasis on four key areas:

1. Service Delivery - particularly the social, environmental and economic needs of residents.
2. Life Cycle Approach - looking at the holistic context of an asset when making decisions on operation, maintenance, replacement or retirement.

3. Integration of all asset management and service delivery between government departments and agencies.
4. Accountability for asset investment.

With the focus on service delivery rather than the assets themselves, Victorian local governments are able to critically review each asset in its holistic context of service provision and critically examine the viability of keeping the asset in the long term. This can then lead to a more efficient network as redundant assets are disposed of. To this end the policy states that: *"A better service, not a better asset, is a key indication of successful asset management."* (Vic Gov, 2000). This policy and standards are currently under review and are reported to be updated in 2013-14. This date has passed without further comment.

The policy has 6 key objectives of asset management:

1. To provide the services required by Victorians
2. To optimise the service potential of assets
3. To maximise the value for money
4. To contribute to economic growth
5. To assign responsibility and accountability
6. To promote balance between development and sustainability

The policy being service delivery focused can be shown as per Figure 2.3. Of particular interest in this figure is the sustainability element exploring non-asset alternatives to service delivery, encouraging Local Government Organisations to focus on what they are trying to achieve rather than simply maintaining what they have or responding to localised community demands. The holistic government approach is also worth mentioning; each Local Government Organisation has similar requirements placed upon them by the communities they provide services for, with minor variance due to geographical, population or demographic factors. Consequently the approaches taken to meet these requirements will be similar. This could create duplication between Local Government Organisations if each sought to develop a model, framework, policy, procedure or infrastructure asset to

deliver that service individually rather than approaching the issue on a regional or whole of government level.



Figure 2.3: Victorian Government Service Delivery

Sourced: Victorian Asset Management Framework

The Victorian policy outlines that assets that meet the service delivery requirements can be considered to have a four stage life cycle: Planning, Acquisition, Operation and Disposal. These four stages are interlinked and the Victorian Government displays this as per Figure 2.4.

To clarify the policy objectives, the Victorian Government also released a 3 part series on Asset Management. The first part of this series outlines the key activities of asset management as:

- needs analysis



Figure 2.4: Victorian Government Asset Life Cycle

Sourced: Victorian Asset Management Framework

- economic appraisal
- planning
- budgeting
- pricing
- acquisition and disposal
- recording
- valuation
- reporting
- management in use

The second part of the Victorian Governments 3 part series is an in depth discussion of the practical aspects of asset management and shows the links between each element of the asset management system with the policy statements, external references and contacts. This in depth analysis provides a central location to understand all the requirements of an asset management system within the Victorian Government environment. Finally, the third part of the series details the state policies that apply to the different asset classes, such as the heritage policy for buildings. Again, this provides a central location for locating relevant policies to an asset class.

In addition to the detailed analysis, requirements and key points, Victoria has also developed an overarching approach called the Integrated Asset Management Approach (Victorian Treasury and Finance/DAIS 2000). This is represented in Figure 2.5.

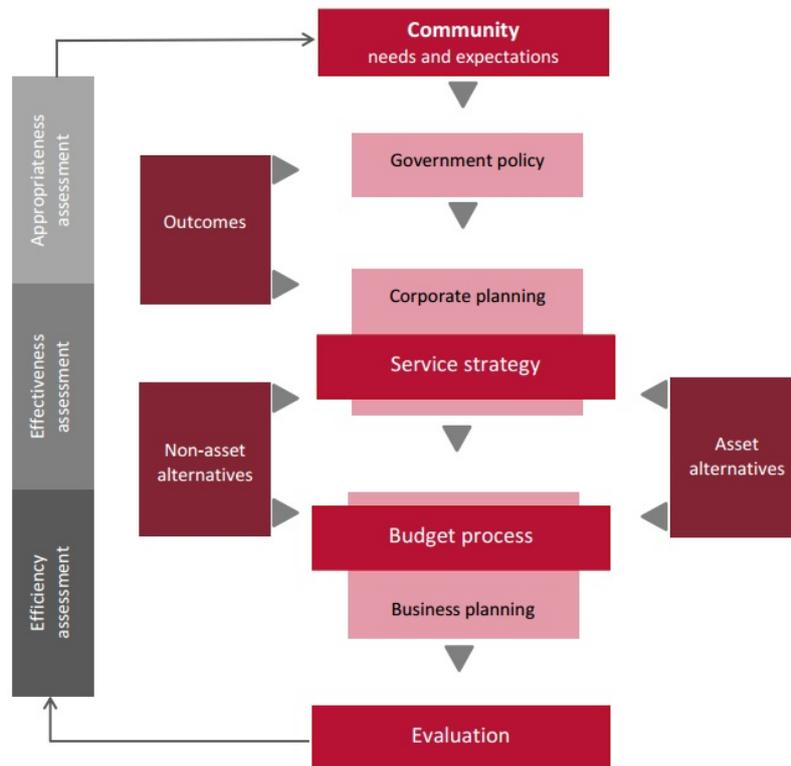


Figure 2.5: Victorian Government Integrated Asset Management Approach

Overall, the Victorian government approach allows for a detailed and consistent methodology of Asset Management to be adopted throughout the local government environment, with a solid and detailed framework. The drawback with the level of complexity is that it does require substantial study to understand and meet the requirements. To simplify this management landscape, Victoria has developed the *Local Government Better Practice Guide 2014 - Planning and Reporting* (Department of Transport, Planning and Local Infrastructure 2000). A far more simplified version of the *NSW Integrated Planning and Reporting Manual* for the Victorian Local Government Act, this document outlines the Planning and Reporting requirements for local government under the Victorian Government. It is most effectively summarised in Figure 2.6.

Figure 2.6 highlights a fundamental difference in the requirements by the New South Wales and Victorian governments. New South Wales requires longer planning periods at a higher level of detail; the New South Wales Community Plan must have a 10 year

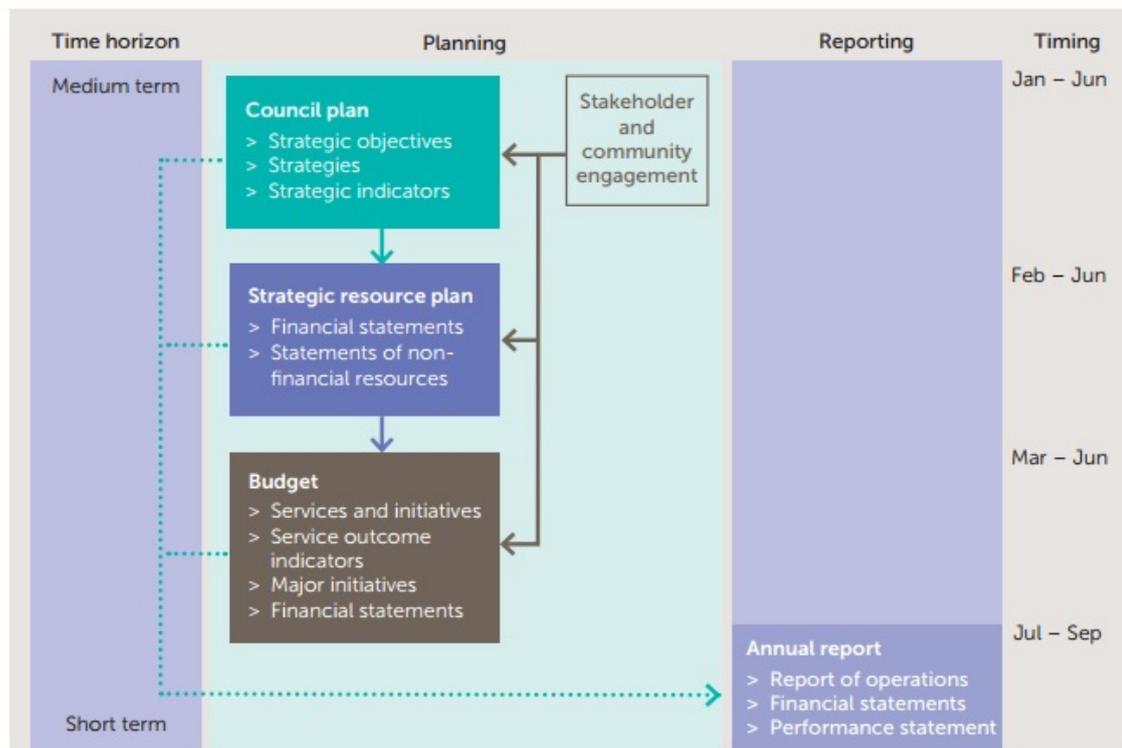


Figure 2.6: Victorian Planning and Accountability Framework

forecast, while the Victorian Council plan is required only to have a four year forecast.

2.4.2 Western Australia

The Western Australian approach to standardising asset management principles throughout the state has been developed as part of the Western Australian Government's Local Government Reform Program. The goals and recommendations from this can be found in the May 2011 document 'Asset Management - Framework and Guidelines' (DLG 2011) and the October 2010 'Integrated Planning and Reporting Framework and Guidelines' (DLG 2010). The reform recommendations have been developed with input from the Institute of Public Works Engineering Australia, the Western Australia Local Government Association and the Local Government Managers Association WA and seeks to align Western Australia to the national standard. The national standard referenced is that of the Council of Australian Governments Local Government Planning Ministers Council, but investigation into this body does not yield any reports, policies or documents on asset management at a Local Government level.

The Western Australia Department of Local Government Asset Management Framework

(DLG 2011) requires that each local government:

1. Develop an Asset Management Policy.
2. Develop an Asset Management Strategy including:
 - Asset Management Plans for major asset classes
 - Processes that link Asset Management Plans to Long Term Financial Plans
 - Defined levels of service and affordability
 - Governance and management arrangements
 - Data and systems to support asset management.
 - Improvement of skills and processes
3. Develop a process for evaluating Asset Management Plans, processes and asset sustainability.
4. Link Asset Management to the Annual Report.

The Western Australian Asset Management - Framework and Guidelines have been presented as per Figure 2.7.

The objectives for each of the Asset Management requirements are explained at a high level, giving the Local Government Organisation clear direction as to what is the minimum standard is to be included in each element of the framework.

Like the New South Wales requirements, the Western Australia requirements specify that the minimum period of planning in the Strategic Community Plan must be 10 years.

In addition to the policies and plans outlined in the ISO 55000 series and the key steps in the frameworks as listed above, the WA DLG have required the undertaking of some addition tasks. These include:

- **Defining levels of service:** determining the desired service quality against which service performance can be measured. This is to be determined in accordance with Community Consultation and Council's professionals input.
- **Developing Governance and Management Arrangements:** the Local Government Organisation determining the internal governance and management re-

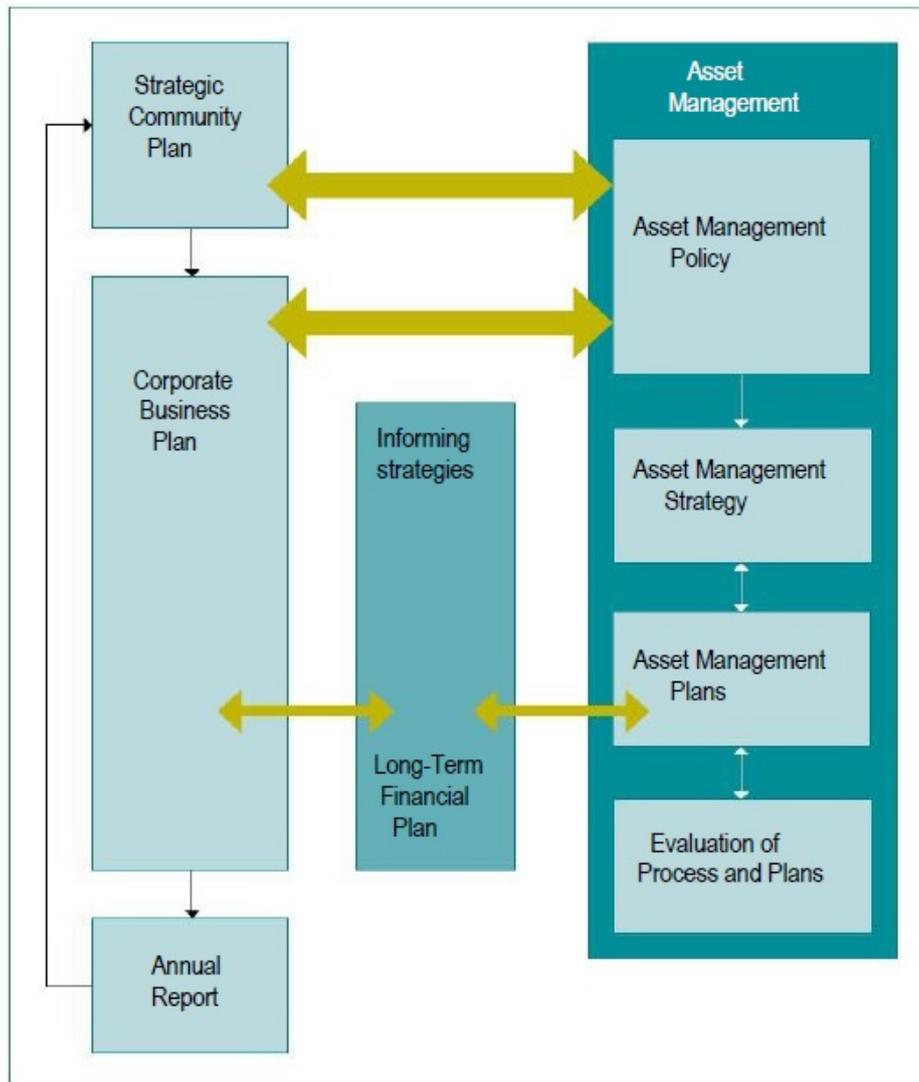


Figure 2.7: Western Australia Department of Local Government Framework

Sourced: Western Australia Asset Management - Framework and Guidelines p. 8

requirements. This determination also requires the implementation of an annual review process.

- **Establishing Data and Information Systems:** this step involves the Local Government Organisation determining the information systems that will be utilised to collect and analyse the asset management data. This system will also be used to identify infrastructure gaps and ensure minimum reporting requirements prescribed under legislation are achieved.
- **Developing Skills and Processes:** the Local Government Organisation is required to adopt a 'whole-of-organisation' culture focused on the continuous improvement of asset management practices.

- **Evaluating Process:** Asset management programs should include evaluation mechanisms to measure their effectiveness against the targets and outcomes in the Asset Management Strategy and Plans. The mechanisms chosen should meet accounting standards and be independently audited.

The Western Australian approach designates what is required and summarises briefly how it all links together, then identifies specific additional criteria that is recommended in developing a comprehensive and sustainable model. What is interesting about this approach is that it has been developed with reference to the New South Wales and Queensland approaches, contributing to a standardisation across the nation but indicating that the aforementioned states are more advanced in this regard.

2.4.3 South Australia

The South Australian Strategic Asset Management Framework was first issued in 1996 then revised in 1999. Despite the age of this document, it is still referenced on the policy and guidelines section of the South Australian Department of Planning and Transport Infrastructure (SA Department of Planning, Transport and Infrastructure 2014). This Framework was designed to assist authorities in adopting best practices for asset management.

The framework delineates that an asset needs to be included in the framework if it has a capital value in excess of \$10,000 at the time of acquisition and is under the control of the authority; ownership is not required. The framework defines three 'dimensions' as follows:

1. Management Levels
2. Life-cycle functions
3. Organisation Requirements

The framework outlines that authorities manage assets within these three dimensions in each stage of its life; from planning and identifying the need to own an asset through to its disposal. The plans and strategies required include:

- Asset management plans
- Demand management strategies
- Risk management
- Life-cycle costing
- Agency asset registers/Data bases
- Reporting

This policy also has some limited reference to other government policies. The guidance is somewhat basic, but does outline elements to allow the end user to conduct their own further research. Of interest is the South Australian Government's support of specific information; research into their asset management framework and reporting requirements yielded the aforementioned documents, but also a variety of very specific documents for an asset class. One example of this is property management and the policies that influence the sale or maintenance of such assets (Government of South Australia 2015).

2.4.4 Queensland

The Queensland Government's framework for asset management is currently under development. The current process involves a Total Asset Management Plan Framework that is currently being trialled in six nominated government departments in the 2014-15 financial year. The outcome from these six departments will be reviewed at the conclusion of the financial year at which point the state government will seek improvements before rolling it out to the whole of Queensland local governments. Due to the early stage of this process, policy documents outlining the processes and details are currently unavailable for revision. The previous version is deemed unsuitable for this study as it is being replaced, however the developed version will be of benefit to be reviewed once publicly available.

2.5 New South Wales State Government Asset Management Approach

As per Section 2.2.1 and Section 2.2.4, New South Wales is guided by the legislation surrounding the Community Strategic Plan, Delivery Program and Operation Plan. Rather than have a specific policy and framework for asset management itself, New South Wales has included it in the Integrated Planning and Reporting (Premier and Cabinet 2013).

2.5.1 Integrated Planning and Reporting

Introduced in 2009, Integrated Planning and Reporting is a holistic approach to reporting and management requirements for local government. The assets required to be managed are the physical assets, but recommendation to consider 'soft' assets such as intellectual or natural assets is advised. The Integrated Planning and Reporting Manual recommends that assets should be managed with a service delivery focus by providing those that are necessary to meet the needs of the community as identified by the community. These asset classes include roads, water and sewerage assets, drains, bridges, footpaths, public buildings, recreational facilities and parks and gardens.

The NSW State Department of Local Government (Premier and Cabinet 2013) advises that a Local Government Organisations asset management require the support of three key documents:

Asset Management Policy: detailing the broad framework for undertaking asset management in a structured way.

Asset Management Strategy: showing how the asset portfolio will support the service delivery needs of the community.

Asset Management Plan per class of asset: detailing the specific management approach of that class of assets.

The relationship of these documents to the Community Strategic Plan, Delivery Program and Operational Plan can be depicted as per Figure 2.8.

In addition to these documents, the Department of Local Government requires a Local

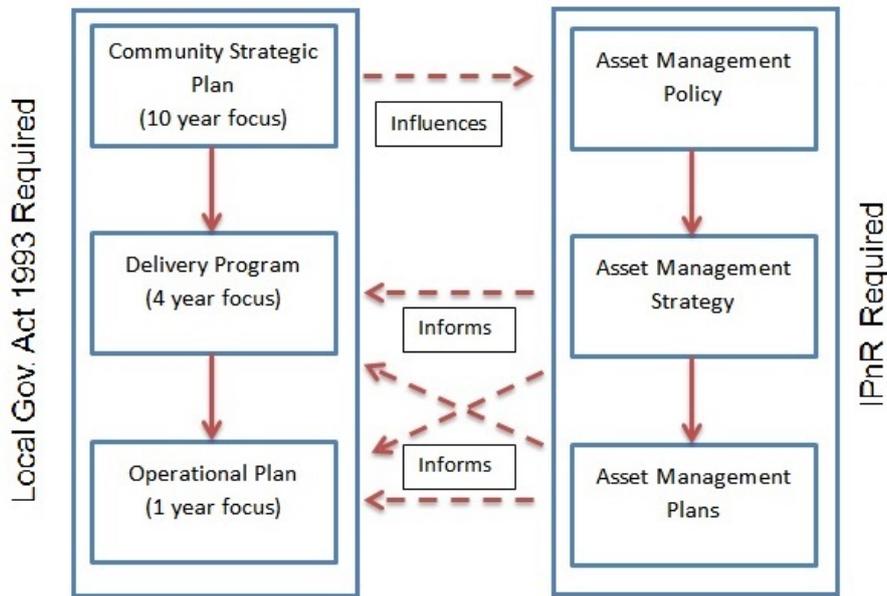


Figure 2.8: Linkage of Plans and Policies

Government Organisation to review their assets and ensure they are fit for purpose by ensuring they link to the Delivery Program and the community goals and outcomes as identified in the Community Strategic Plan. This relationship can be depicted as per Figure 2.9.

This model is primarily community centric - the Community Strategic Plan should identify and reflect the priorities and aspirations of the community the Local Government Organisation delivers services to. It is also iterative, which introduces quality control and accountability to the system. If the local government does not fulfil their promises to the community, they are then held responsible to the community on the next cycle.

Sustainability is not explicitly mentioned as a planning or reporting requirement, however this planning environment naturally requires sustainable practices.

Section 3 of the Integrated Planning and Reporting Manual (2013) is dedicated to the definition and requirements of asset management systems. Section 3.4 defines the following as key components of such a system:

- Asset registers
- Asset condition assessments
- Asset maintenance and management systems



Figure 2.9: NSW Integrated Planning and Reporting Elements

Sourced: Integrated Planning and Reporting p. 9

- Strategic planning capabilities
- Predictive modelling
- Deterioration modelling
- Risk analysis
- Lifecycle costing

This allows informed decision making, evaluation of alternative means of service provision and performance measurement and monitoring. This in turn will lead to the planning of a 10-20 year forecast, 4 year delivery program and annual plan implemented through the operational plan. These plans will need to be iterated appropriate to their respective planning periods to ensure that progress is monitored, measured and that the plans are adjusted as required. These three plans allow for a level of stability and continuity between the elected Council’s 4 year term of service.

The NSW approach is easily accessible, easy to understand and provides a model that is focused on keeping the Local Government Organisation accountable to the local community. To ensure the local governments responsibilities are met, each section is also summarised in a series of 'Essential Elements' to provide a check list for local government staff.

Of interest in the NSW Integrated Planning and Reporting manual is a list of 11 Local Government Organisations that are deemed to have shown good practice in the development of asset management planning (Premier and Cabinet 2013). This list is valuable in a Local Government Organisation seeking additional aid in developing, implementing or advancing their asset management procedures.

2.6 Professional Approaches Already Developed

The professional approaches that are already developed are wide and diverse, with many companies offering support and development of a Local Government Organisations asset management system.

The tool provided by the Institute of Public Works Engineers Australia (IPWEA) for Local Government as well as commercial company use is the IPWEA National Asset Management System Plus 3 (IPWEA NAMS.PLUS3). This is recommended to be used in conjunction with the International Infrastructure Management Manual. This manual has been developed by a collaboration of IPWEA, NAMS and AECOM with input from a variety of other international professional asset management companies, the manual represents the best modern practice around the globe. The manuals foreword states that:

"... the International Management Manual... provides practitioners with the necessary tools, resources and case studies to demonstrate how to apply and put into practice the elements of good asset management as proposed by the [International] Standards." (IPWEA et al. 2011)

2.6.1 National Asset Management System (NAMS) Plus 3

The third version of the system, the NAMS.PLUS system seeks to provide its members with the practical tools to effectively manage their assets. The IPWEA summarise the purpose of the NAMS.PLUS system as follows:

"IPWEA has developed NAMS.PLUS to assist organisations write and keep their Asset Management Plans up to date as demands on organisation change frequently." (IPWEA 2014)

The system has a training course that can be run via a series of online sessions or two two-day workshops. This course goes through the fundamentals of asset management, levels of service, risk management, allowing for future demand, life-cycle planning and the long term financial planning. Throughout each of these elements is a focus on iteration.

The adoption of this system has led to suppliers of asset management programs noting the compatibility with the NAMS.PLUS3 required file formats and formatting. Cabonne Council undertook a tender process for the supply and install of such a program in the last quarter of 2015 and noted this during the demonstration phase of the short listed programs.

As this system is for the asset management planning specifically, rather than the asset management framework overall, it will not be reviewed further within this thesis.

2.6.2 International Infrastructure Management Manual

The International Infrastructure Management Manual was first published in 2000, and has since seen three revisions. The most recent version (2011) is currently under review and is scheduled for re-release in 2015.

The International Infrastructure Management Manual addresses specific issues within the countries the contributors practice including Australia, Canada, New Zealand, South Africa, United Kingdom and the United States of America. This diversity of nations removes the ability for this manual to specifically address the New South Wales Local Government environment, but it does show best practice on an international level. The manual lists the benefits of asset management as:

- better value for money
- stronger governance and accountability
- improved customer service
- reduced risk exposure
- sustainable decision making

The IIMM summarises its information and the steps in the Infrastructure Asset Management Process as per Figure 2.10

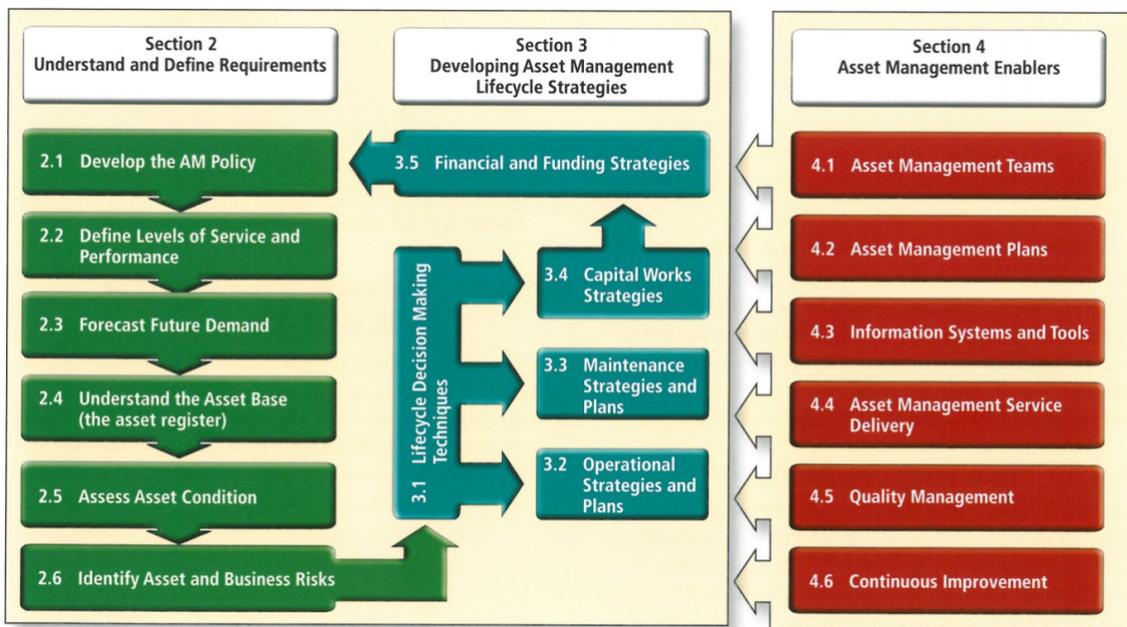


Figure 2.10: International Infrastructure Management Manual Summary - The Asset Management Process

Sourced: International Infrastructure Management Manual 2011 p. 1/9

To illustrate these benefits and principles, the International Infrastructure Management Manual uses a series of case studies on a variety of organisations. To show the scalability of the process, this ranges from the US Department of Defence, which manages 577,000 facilities with a value of US\$712 billion, through to small Local Government Organisations.

Review of the manual reveals that the previously investigated State Government requirements are based on the same principles as the International Infrastructure Management Manual; the NSW Integrated Planning and Reporting Manual cites the manual multiple times. The manual outlines the recommended planning framework as the same as the var-

ious Australian State Government's requirements of their respective Local Government Organisations, but at a more macro level. This can be seen in Figure 2.11.



Figure 2.11: International Infrastructure Management Manual Summary - The Asset Management Process

Sourced: International Infrastructure Management Manual 2011 p. 1/8

The manual also states that while there is ample information on how to undertake asset management, it is up to the asset managers to assess whether the value gained from each level of maturity is worth the cost of achieving that level. This is as more advanced methods of undertaking asset management yield a better result at the cost of additional resources, which for some applications may outweigh the benefit gained.

Section 2 and Section 3 of the manual discuss the requirements and life cycle strategies of asset management. These are quite detailed on the specifics of undertaking the asset management, and address such questions as how to practically link the asset management activities to the organisational strategic objectives. Given the relationships already discussed in Section 2.5.1, the New South Wales model already has these relationships established.

Section 4 of the manual discusses Asset Management Enablers and emphasises the importance of the clear definition of roles and responsibilities within the organisation. These roles can be broadly categorised as per Figure 2.12. It is noted in this figure that the

Asset Manager is responsible for determining the what, where and when; funding the works is not a part of this role.



Figure 2.12: International Infrastructure Management Manual Asset Owner, Manager, Provider Model

Sourced: International Infrastructure Management Manual 2011 p. 4/3

Regardless of how the organisation is structured, asset management requires clear and effective communication between departments. Asset management is not solely an engineering task as it has financial elements, but one must ensure that the financial elements do not override accurate engineering practice. Incorrect useful lives will affect the depreciation of an asset to make a Local Government Organisation appear sustainable, however this will be proved inaccurate as time progresses.

Chapter 3

Methodology

3.1 Methodology Outline

The methodology employed in this study has three key stages:

1. Research state government requirements for local government reporting and professional studies already undertaken.
2. Undertake case studies of organisations within the government environment that have strong asset management systems.
3. Develop a framework in accordance with reporting requirements, standards, best practice and the aforementioned case studies.

Undertaking research into government reporting requirements was appropriate to develop a framework that will be able to achieve the desired results. This was done through researching standards and reporting requirements through both publicly and commercially available documents. These were accessed through the USQ library, the various State Government websites and web portals for Local Government Organisations and documentation purchased by Cabonne Council. By undertaking this step first, the case studies were targeted towards understanding not only the processes of the frameworks that have been employed but also the underwriting aims of those processes. The familiarity with reporting requirements and best practice frameworks also allowed for an efficient use of time; where a framework had been employed that was already understood, more

time was utilised understanding how that framework has been adopted to the government environment it is used in. Further, this facilitated discussions regarding a more complex understanding of the frameworks strengths and weaknesses.

The second stage in the research profile was to contact leaders in this field of specialisation. In this case the IPWEA NAMS.PLUS3 model is the most advanced and as such contact was made to identify any recommended manuals, guidelines or requirements overlooked in the first stage of research and request the suggestion of some locations to undertake case studies that have successfully implemented their model. The suggested documents were the International Infrastructure Management Manual, ISO55000 series and guidance towards reports by John Comrie. Review of John Comrie's reports yielded in depth analysis of the challenges and opportunities facing Local Government Organisations, however this was not relevant to the context of this study.

Visiting and performing case studies on government organisations that have established asset management frameworks brought a practical element to this study. Where some ideas work well in theory, the practical application of those ideas can be challenging. This is particularly true of complex elements that involve multiple people; simple is often better. A framework such as this one will require a variety of personnel to be involved once implemented, and thus a framework that is an amalgamation of a variety of iterated elements from other organisations will provide a stronger starting position. Further iteration will be required to fit the framework to the specific government organisation utilising the system.

Finally, the methodology involved the construction of the asset management framework through the integration of what is learnt from the research with what is observed from the case studies. This was done through the prioritisation of the elements that are simple, effective, practical and adaptable to the diverse government authorities.

3.2 Limitations of Study

This study sought to determine the requirements of the framework for effective and sustainable asset management within the Local Government environment. This study did not investigate commercial solutions such as business models nor software packages to complete this task. This study has not recommended changes to the Local Government

Asset Management Environment, but rather has explored how to operate within that environment.

Chapter 4

Case Studies

4.1 Roads and Maritime Services

4.1.1 Introduction

The Roads and Maritime Services is the State Government Organisation responsible for implementing strategy and delivering essential services on the road, harbour and waterway network within New South Wales. The Roads and Maritime Services is part of Transport for NSW and was established on 1 November 2011 under the Transport Legislation Amendment Act 2011 (Roads and Maritime Services 2015). They were chosen to be included as a case study as they are managing infrastructure assets, are a State Government Organisation and thus should be employing the practices that the State Government expects Local Government Agencies to employ. This study specifically focuses on the asset management practices employed within the Western Region of the Roads and Maritime Services.

4.1.2 Network

The Roads and Maritime Services are responsible for the management and maintenance of 18,036 of the estimated 184,859 kilometres of road network within New South Wales. Clause 7 of the Roads Act 1993 (NSW Government 2015*d*) states that the Roads and Maritime Services is the roads authority for all freeways and any other public road as

specified by the regulations within NSW. To manage this effectively, the Roads and Maritime Services is split into six regions as follows:

- Northern NSW
- Hunter and Central Coast
- Sydney
- Southern NSW and ACT
- South West NSW
- Western NSW

These regions are shown in Figure 4.1.

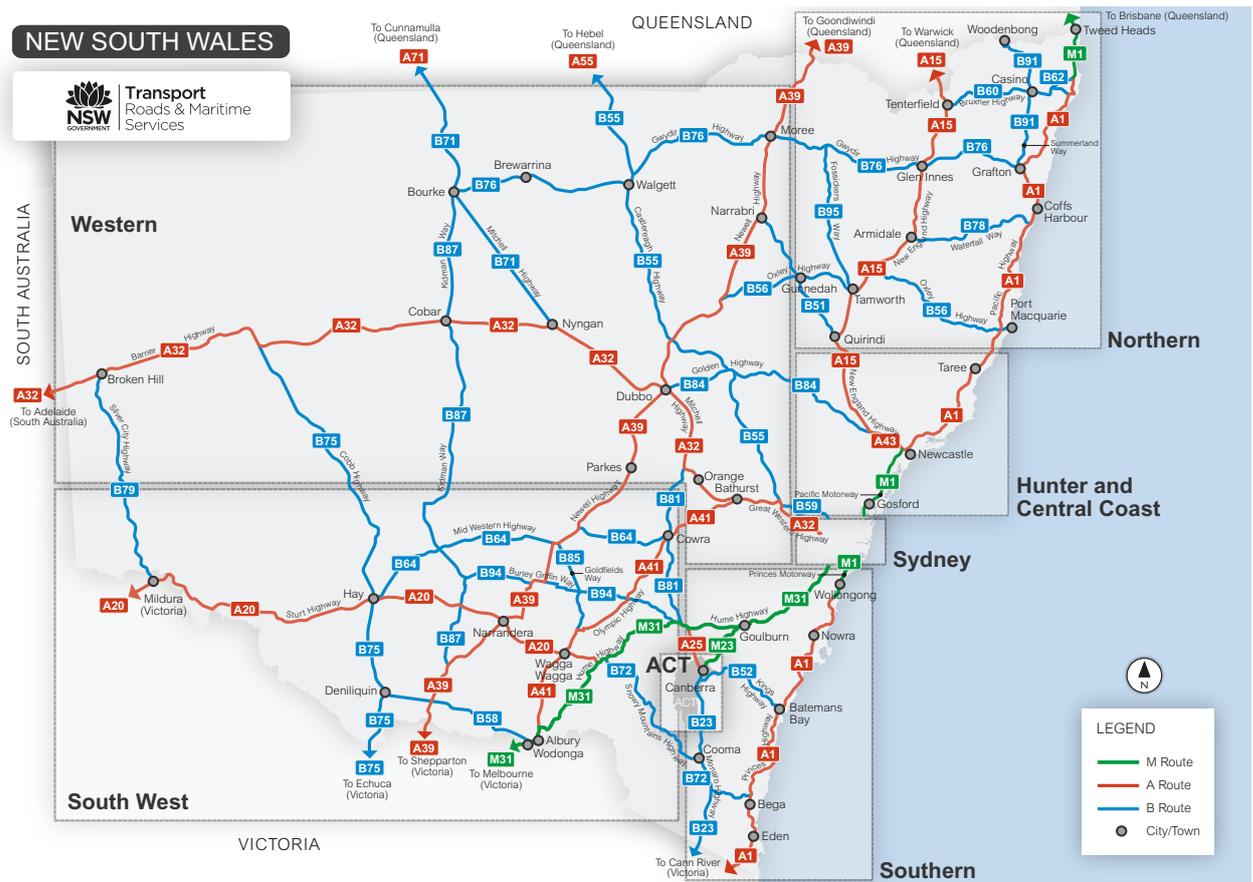


Figure 4.1: RMS Regions

This case study has been undertaken through discussions with the Western Region of the Roads and Maritime Services, the region most similar to rural councils and specifically

Cabonne Council due to dispersed population and the large quantity of Transport Assets. The Western Region:

- oversees 54% of the NSW State area but has just 5% of the states population
- covers 28 Local Government Areas
- manages 6314 km of State Roads and 2978 km of regional/local roads.

4.1.3 Corporate Structure

The corporate structure of the Roads and Maritime Services is different to a Local Government Organisation. Rather than make the case study irrelevant, this differing structure helps to delineate the specific breakdown of roles identified within the State Body and the responsibilities associated with each role. This will help clarify the roles that a Local Government Organisation needs to consider when developing or advancing their structure.

A high level overview of the corporate structure can be seen in Figure 4.2.

The notable differences between this structure and a Local Government Organisations is:

- **Finances:** Local Government income is primarily from rates and thus they have a level of control over the quantity of that income. Further, local government deliver a range of services outside of infrastructure maintenance and construction and thus need to balance expenditure between the various activities. Conversely, the Roads and Maritime Services have a specific budget that is handed down by NSW Treasury; the corporate planners determine the breakup of this funding between the various delivery programs and advise each region of their allocation. Should one region overspend or underspend, there is potential for funds to be reallocated between the regions as the financial year progresses.
- **Reporting Requirements:** The NSW Integrated Planning and Reporting Manual and the Local Government Act specifically detail the reporting requirements of Local Government Organisations; State government authorities do not need to meet these criteria. This allows for a significantly different working environment for the asset managers within the Roads and Maritime Services as the State Government

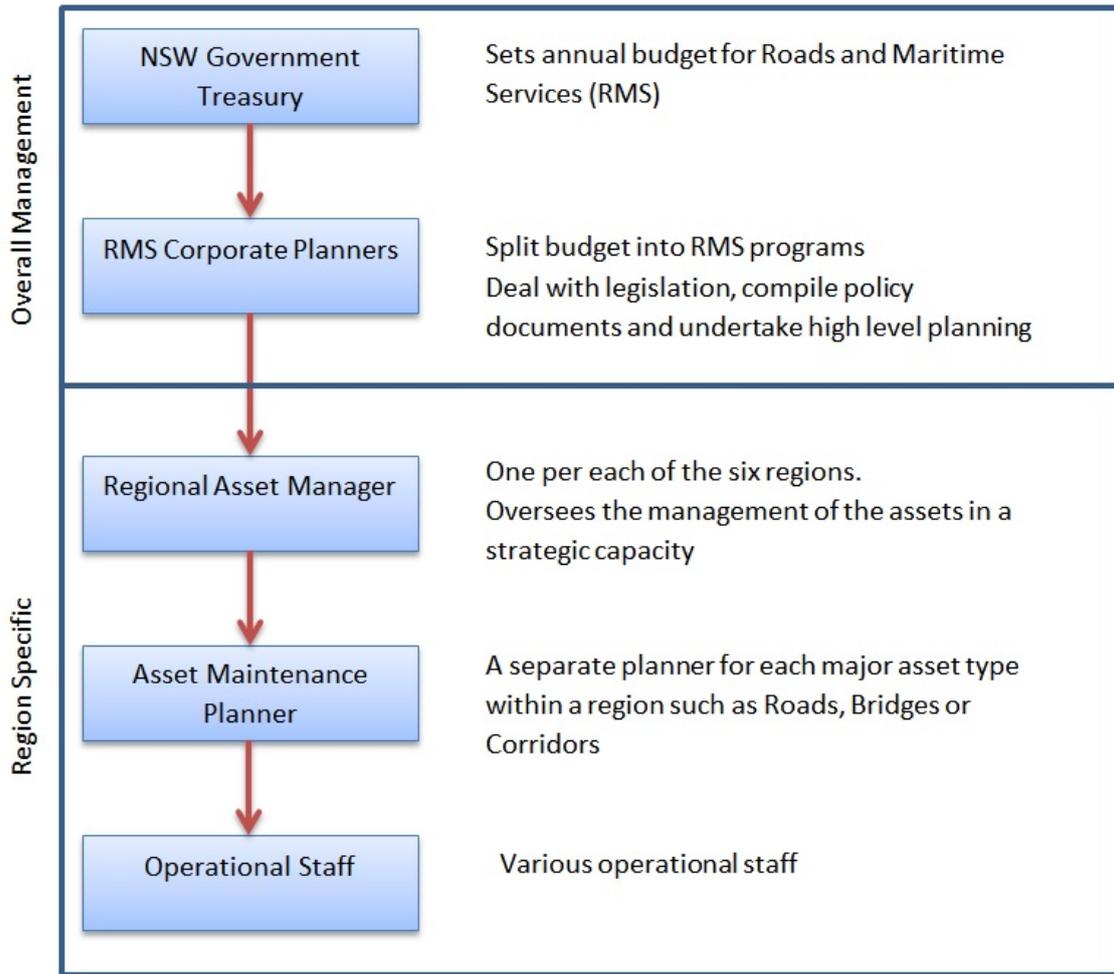


Figure 4.2: RMS Corporate Structure

managers are focused on the assets condition, their useful life and how best to allocate the budgets they are advised they have. Their asset management system, known as RAMS, does not actually have a financial component thus any financial reports generated on any assets is done via exporting the data set and conducting external analysis. The asset department dealt with during this case study have had minimal contact with their financial department about this reporting or valuation.

- Policy:** Local Government Organisations have the requirement to meet the Integrated Planning and Reporting requirements, but are required to develop their own policy for asset management to achieve this. The Roads and Maritime Services regional asset managers are provided these policy documents from the corporate office and thus need to comply with these external measures. This allows for an environment where more focus is on the asset and the accurate management of it without the requirement or opportunity to develop the policy on how it is managed.

4.1.4 Staff Responsibilities

Where local governments are required to develop a strategic plan, delivery program and operational plan, the Roads and Maritime Services have assigned these roles and processes directly to staff. Figure 4.3 outlines the positions, their associated planning periods and how works listing are passed between the various planners and managers.



Figure 4.3: RMS Asset Management Planning and Delivery Process

The Asset Maintenance Planner has a similar responsibility to the local government Community Strategic Plan. The Strategic Plan however requires the input of community consultation to identify the community's priorities and goals over the period of planning, whereas the Asset Maintenance Planner utilises engineering data and condition assessments to inform the long term planning.

The Area Maintenance Manager has a similar responsibility to the local government Delivery Plan. The Delivery Plan is determined between high level local government management, such as the General Manager and Directors, and the elected councillors. This provides a series of deliverables that the Local Government Organisation can be assessed on over the four year period. The Area Maintenance manager is provided such a set of deliverables by the Road Maintenance Planner, and is then able to best determine how to deliver these projects. One such method to facilitate the delivery of this is the '*Joint Planning and Assessment*' (*JPA*) process (see Section 4.1.5). The primary considerations in the delivery is the available funds, the required works per local government area and the allocation of work to a Local Government Organisation over a series of years.

The Contract Managers have a similar role to the local government Operational Plan; that is, ensuring that the works that are programmed to be completed in a set year occur. This is managed through the use of both Local Government Organisations and the regional maintenance delivery arm of the Roads and Maritime Services.

As with any government agency, political influences can have a significant impact upon the

planned asset maintenance or construction delivery and can alter the plans developed by the aforementioned staff. As the Roads and Maritime Services manages higher profile asset classes than local government, and thus have the attention of more influential politicians, this is more likely to have a higher level of impact.

In addition to these roles, the Roads and Maritime Services also have a series of Asset Officers. Their roles is to ensure that data from works undertaken is captured in the asset management system and condition assessment reports that inform the Road Maintenance Planner, Area Maintenance Manager and Contract Manager. This information is often collected from the reports that are generated by Local Government Organisations at the completion of contracted works or from asset inspections by local government under contract. The Asset Officers also utilise the roadloc system in conjunction with Gypsi-Cam footage. The roadloc system is a method of breaking the roads up into specific sections of up to a maximum of 10km stretches, which then have chainages applied. This allows accurate tracking of the location that works have been undertaken. To confirm the reports or to provide additional information, Gypsi-Cam footage is utilised. This footage is generated from a vehicle driving the network at a set time frequency and recording photos at a set interval, and generates a system much like Google Earth with the additional roadloc data associated. This footage allows the asset officers to focus on the network data without requiring the time of travel to specific job sites.

4.1.5 Network Management

To manage the network, fundamental asset management principles are used; asset components are given useful lives that accurately represent the period that the asset will be suitable for from an engineering perspective and at the end of that period they are assessed and programmed for works. The programming is done from a purely engineering perspective; works that are on a high risk or high traffic volume road are prioritised over low risk or traffic volume road, and works that are likely to mitigate damage to surrounding infrastructure are preferred over works that won't. Vehicle types are also considered in this process as heavy or restricted access vehicles place a higher demand on the infrastructure. This focus allows for an effective management of their asset base.

To identify and prioritise works, it is important for the staff members to be familiar with the infrastructure network. The Road Maintenance Planner (see Figure 4.3) is required

to drive the entire network at a minimum of once every two years, and high volume roads a minimum of twice a year. The Roads and Maritime Services also use a Joint Planning Agreement (JPA) process. This involves meeting with a Local Government Organisation regarding the Roads and Maritime Services assets within their Local Government Area to review the programmed work for the next 2-3 years, drive the network and inspect the said locations to identify scope of works and priority of works. This allows for the movement of more urgent projects forward and less urgent projects back. The urgency can be defined either by risk to the public utilising the asset or risk to other components of the asset that would be damaged should the failing asset not be addressed in a suitable period of time. Finally, the JPA process allows for the identification of additional works that do not fall under asset renewal that a Local Government Organisation have identified. The Roads and Maritime Services Asset Management team can then identify how best to organise and deliver those network upgrades.

The collection, storage and utilisation of the Asset information can be depicted as per Figure 4.4. Not identified in this system is the utilisation of engineering judgement and infrastructure knowledge, which is used to verify the output from the system.

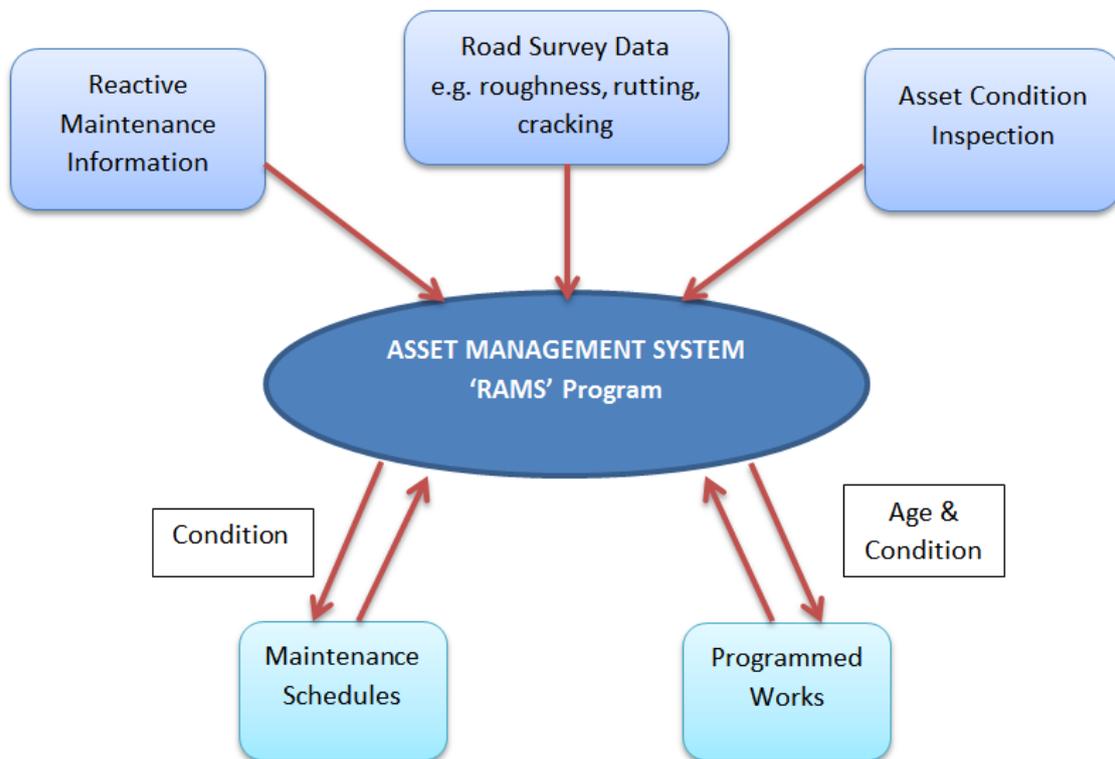


Figure 4.4: RMS Asset Management System Elements

As identified in Section 4.1.4, reporting on the assets is undertaken by the financial

department exporting the required information from the asset management system and performing their analysis separately from the asset management program and processes.

Of interest in the Roads and Maritime Services network management practice is the lack of service level identification. Customers, that is road users, are not consulted on the level of standard they expect from the road network. Rather than have a community driven service level model, the Roads and Maritime Services utilise a funding driven model. This involves identifying the incoming funding levels as advised by the NSW Treasury and determining the most efficient use of those funds. Additional funding can be secured through Federal Government funding sources where applicable and necessary.

4.1.6 Works Delivery

The Roads and Maritime Services utilise two key methods to ensure the delivery of works. These are Roads Maintenance Council Contracts (RMCC) or the Regional Maintenance Delivery Arm of the Roads and Maritime Services. The majority of works are delivered through the RMCC and are both maintenance and reconstruction in nature, despite the delivery mechanism's name. The Roads and Maritime Services Assets Division consider the capacity for a Local Government Organisation to deliver works when they are allocating their works program for a given year. This means that some years the most urgent works may be focused within a Local Government Area, but will be allocated over a period of years to ensure that there is not excessive demand on the Local Government Organisation. This ensures that the resources of the Local Government can be consistently allocated over each works program and allows for consistent delivery of works. While not the same as the Resourcing Strategy required of Local Government Organisations, the principles behind this process are the same.

4.2 Bathurst Regional Council

4.2.1 Introduction

Bathurst Regional Council is a Local Government Area located in Central West New South Wales which covers 3820 square kilometres and has a population of 38,519 people (Bureau of Statistics 2011). It was created in May 2004 from the dissolved Bathurst City and Evans Shire Council's and was initially overseen by an Administrator. It was not until March 2005 that the first election of nine Councillors was completed and the Council returned to normal operation.

The boundary of Bathurst Regional Council is shown in Figure 4.5. As can be seen from this figure, Bathurst Regional Council shares its western boundary border with Cabonne Council (refer to Figure 1.1).

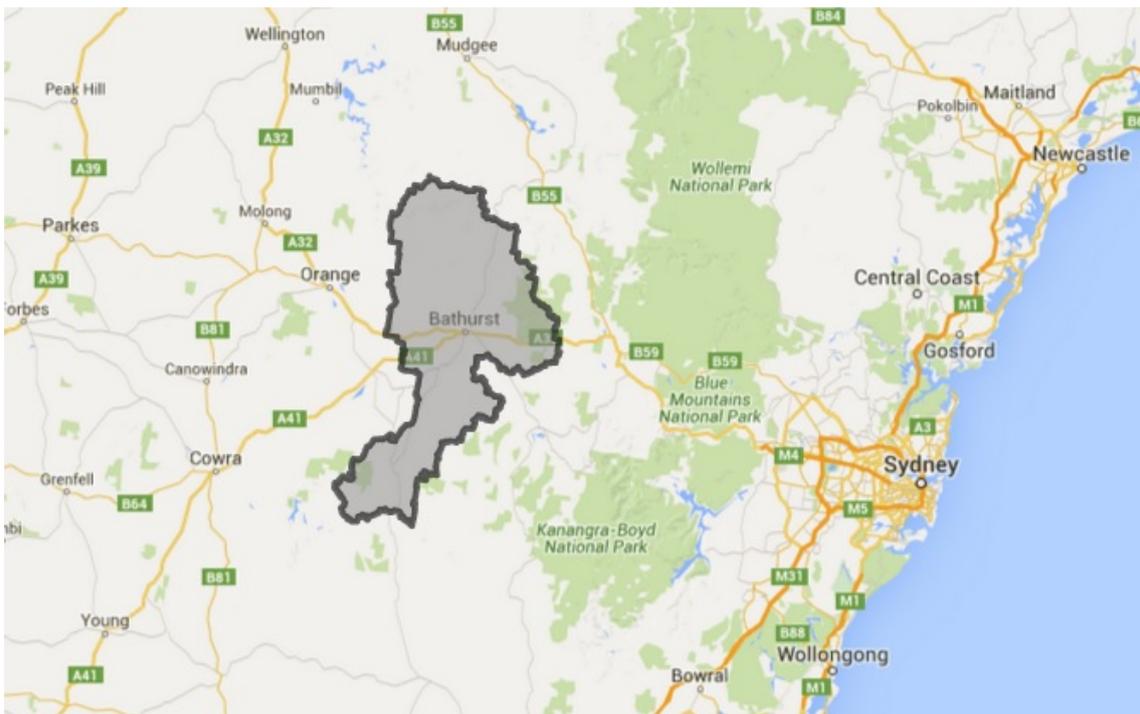


Figure 4.5: Bathurst Local Government Area

Office of Local Government, <http://www.olg.nsw.gov.au/>

4.2.2 Asset Portfolio

The Asset department at Bathurst Regional Council is responsible for the management of all asset classes except for buildings, which have been assessed by the finance department due to the need for an external valuation as per the NSW Local Government Code of Accounting Practice (OLG 2015a). The office arrangements, and physical location of the assets team within Bathurst Regional Council, have fostered the strongest link between assets and the section responsible for Transport Infrastructure. The current focus of the assets department is continuing to strengthen the connections between the assets team and the other operational divisions.

To manage their assets, Bathurst Regional Council utilises the Pitney Bowes *Confirm* Asset Management Solution which they first implemented in 2006. This system utilises a link between the Global Information System (GIS) program *MapInfo* and the captured asset data to allow for both a location based and data based representation of their asset portfolio. By having such a long history with one system, the workplace processes and data capture methodology are well established and continue to develop through an ongoing continued improvement process. This process is cultural within the asset management team; should one member notice a new or renewed asset when undertaking a site inspection, it will be mentioned to other team members to ensure that they are aware of the works that have been undertaken and can capture that for the system.

4.2.3 Corporate Structure

In order to fulfil the responsibilities set out in the Local Government Act (NSW Government 2015c), Bathurst Regional Council have elected to adopt the corporate structure as shown in Figure 4.6.

Bathurst Regional Council's Assets Department falls under the Engineering Services directorate and is composed of a five member team. This team is the primary department responsible for the collection, storage and modelling of Bathurst's asset data. All but one member of the team works from a central location in close proximity to the other team members; the one member not in this location fulfils a dual role of asset management and road operations procurement management from the works depot. The structure of this is shown in Figure 4.7, with the Administrative Engineer reporting directly to the Director

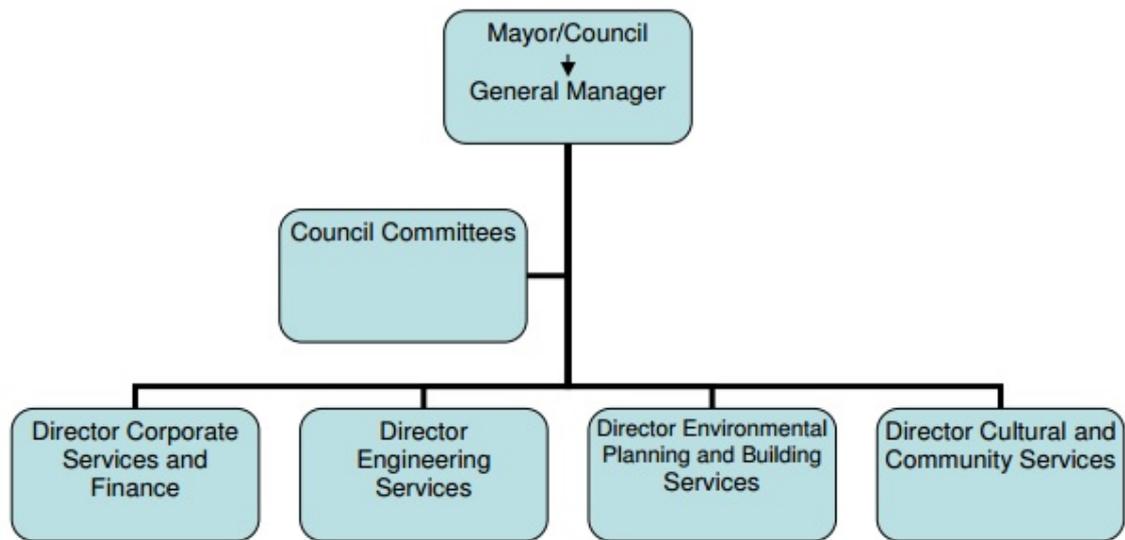


Figure 4.6: Bathurst Regional Council Upper Management

Sourced: <https://www.bathurst.nsw.gov.au>

of Engineering Services.

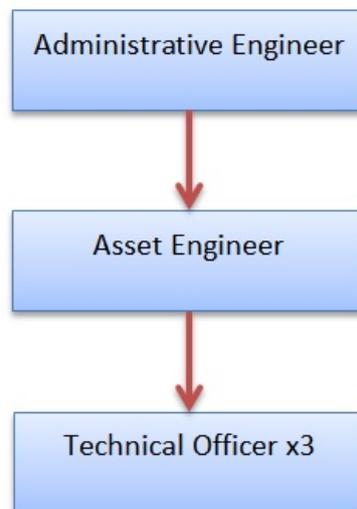


Figure 4.7: Bathurst Regional Council Asset Staff Structure

For the asset portfolio required to be managed by Bathurst Regional Council, this team is reported to be well resourced and able to effectively track and manage assets in an ongoing fashion rather than an annual or revaluation motivated data collection period. The staff report that they have confidence that 95% of all their assets have been accurately captured within the asset management system and they are now refining and advancing their data rather than undertaking large scale data collection.

The roles of these staff in the Asset Management Process are as follows:

- **Administrative Engineer:** Oversees the asset management process and is ultimately responsible for the asset management requirements.
- **Asset Engineer:** Undertakes the practical asset management procedures. This includes overseeing the software and systems, the generation of reports such as Special Schedule 7, the development and maintenance of Asset Management Plans, annual works programs and the organising of asset inspections.
- **Technical Officer 1:** Responsible for maintaining the Global Information System (GIS) and Asset Management Software for the input or updating of asset locations or properties. This position also undertakes Traffic Counters and the condition inspection of assets.
- **Technical Officer 2:** Fulfilling a somewhat operational role, this position manages the resheeting program and maintenance grading program. As these works are completed, the asset management system are updated to reflect the works undertaken.
- **Technical Officer 3:** Primarily fulfilling an Asset Inspection role, this position condition assesses the remaining assets as defined by their respective asset inspection frequencies.

Of interest in the corporate structure was the way in which the various annual revaluations were completed (Refer to Table 2.1). Rather than undertaking an extensive data collection and revision phase, the revaluations were completed by utilising the data within the system, documenting a review process to give confidence that this data was a complete representation of all physical assets then revising the unit rates for the respective asset components. This was undertaken by the Administrative Engineer and Asset Engineer, turning what could have been an expensive and demanding project into one that could be completed in-house primarily utilising desktop assessments fit into existing staff workloads.

4.2.4 Planning Responsibility

To achieve the Integrated Planning and Reporting Requirements (Premier and Cabinet 2013), Bathurst Regional Council have delegated the responsibilities as follows:

Community Strategic Plan: The primary responsibility for this plan currently falls

with the Strategic Planning Officer within the Environmental Planning and Building Services Directorate. This document is generated with consultation from the General Manager and Councillors along with community consultation. Due to the location within Bathurst Regional Council that the responsibility lies, the current version of the Community Strategic Plan has a strong and developed approach for community expectations and measurable long term goals, but lacks the engineering input for what the overarching expected level of service is for each asset.

Delivery Program: The primary responsibility for the program currently falls with the finance department within the Corporate Services and Finance Directorate. Budget limitations are the primary input for the determination of the program.

Operational Plans: Again, the primary responsibility for the plan currently falls with the finance department within the Corporate Services and Finance Directorate. Other departments submit their proposed budget as determined by the required asset management data, but long term costs are not prioritised over balancing the current budget and thus assets pass the optimal point of renewal. This is identified as a weakness and is currently under review.

Asset Management Policy: This policy is managed as per all policies within Bathurst Regional Council; that is, by the Corporate Services Manager within the Corporate Services and Finance directorate.

Asset Management Strategy: During a recent maturity assessment by Jeff Roorda and Associates (JRA), it was identified that the point of weakness within the Bathurst Regional Councils asset management framework was their asset management strategy. As such, this has been identified as requiring update and development and will become the responsibility of the Asset Engineer within the Engineering Services Directorate.

Asset Management Plans: The various asset management plans are the responsibility of the Asset Engineer within the Engineering Services Directorate and are compiled with input from the asset management team and the respective operational staff.

4.2.5 Network Management

The collection, storage and utilisation of the Asset information can be depicted as per Figure 4.8. Not identified in this system is the utilisation of engineering judgement and infrastructure knowledge, which is used to verify the output from the system and adjust work programs to suit available resources. This figure also does not highlight the limit of budgets on the identified required renewal projects.

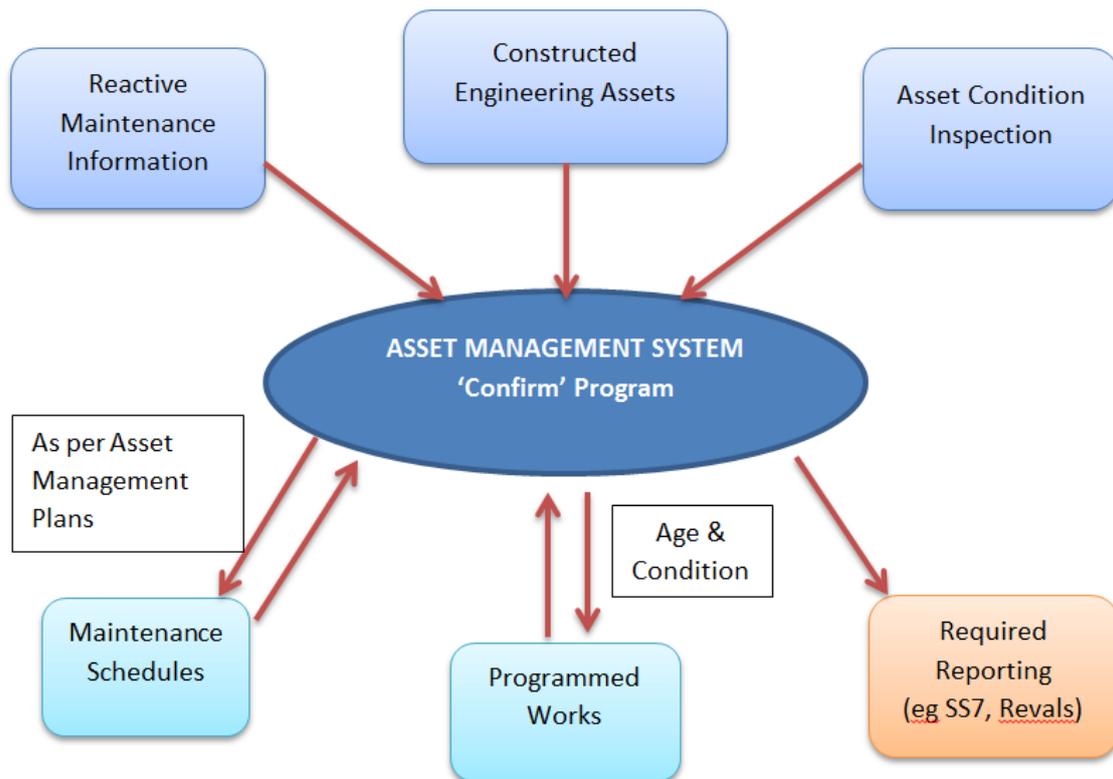


Figure 4.8: RMS Asset Management Process

Bathurst Regional Council have developed an effective works capture system for their resealing program which is conducted as per Figure 4.9. This process has proved to be robust and accurate, however the procurement process for the resealing contractor is undertaken by a Technical Officer within the Assets Department and thus the process is able to be controlled from an asset management perspective.

4.2.6 Identified Improvement Strategy

Bathurst Regional Council have a solid system that has a history of ongoing development and utilisation behind it that makes it thorough and robust. As with any system, however,

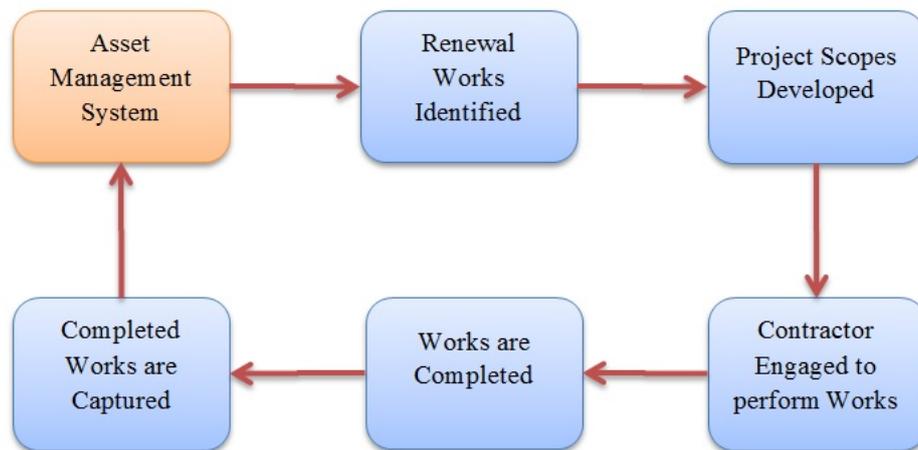


Figure 4.9: Road Reseal Asset Management Process

there is room for improvement in processes and function in an attempt to continue to improve efficiencies and effective utilisation of the system.

As per section 2.3.1, the ISO55000 series discusses the fundamentals of an asset management system as Value, Alignment, Leadership and Assurance. As asset management in the New South Wales Local Government Environment is a relatively recent development, more experienced engineers that hold positions of influence are less familiar with the benefits of long term asset management planning and why a transition to a more formal asset management methodology is required. To this end, Bathurst Regional Council is in the process of advancing the organisation wide adoption of the ISO55000 principle of Leadership, with secondary focus on Alignment and Assurance. This will allow the council to transition from a historical based budgeting process, where the identified renewal works fit into the previous expenditure plus Consumer Price Index (CPI), to a system where the required renewal works determine the budget that is required.

The paper by Mahmood et al entitled *Managing knowledge for asset management: Shifting from process to relational frames* (Wiewiora, Brown, Dhakal & Mahmood 2012) reviews the knowledge management processes within asset management applications, examines the explicit knowledge and tacit knowledge approaches and proposes a transition to relational knowledge management. To this end, Bathurst Regional Council are transitioning from their asset management planning documents being compiled solely by the asset management department to an inclusive process where the respective operational staff are invited to impart their tacit knowledge. Interestingly, this has been identified by experience within the Council without citing the aforementioned paper. This will continue

to advance the link between the planning and operational arms of Council and allow Council to deliver services even more effectively.

Bathurst Regional Council are also assessing the long term benefit of the generation of individual asset management plans for specific high value assets rather than including them in a holistic asset class document. Specifically mentioned was building assets such as the Council office or the library and art gallery; both structures are complex, have specific applications and require different components and types of maintenance to meet their desired service levels.

4.3 Blue Mountains City Council

4.3.1 Introduction

Blue Mountains City Council is a Local Government Area located in the Blue Mountains that covers 1433 square kilometres, has 26 townships and a population of 76,000 (Blue Mountains City Council 2015). The Blue Mountains Region is reported to be one of three top tourist destinations within Australia, attracting millions of visitors per year.

The boundary of the Blue Mountains City Council is shown in Figure 4.10. Blue Mountains City Council shares its eastern boundary with Penrith City Council and its western boundary with Lithgow City Council, placing it in a transition zone from a city to rural area.

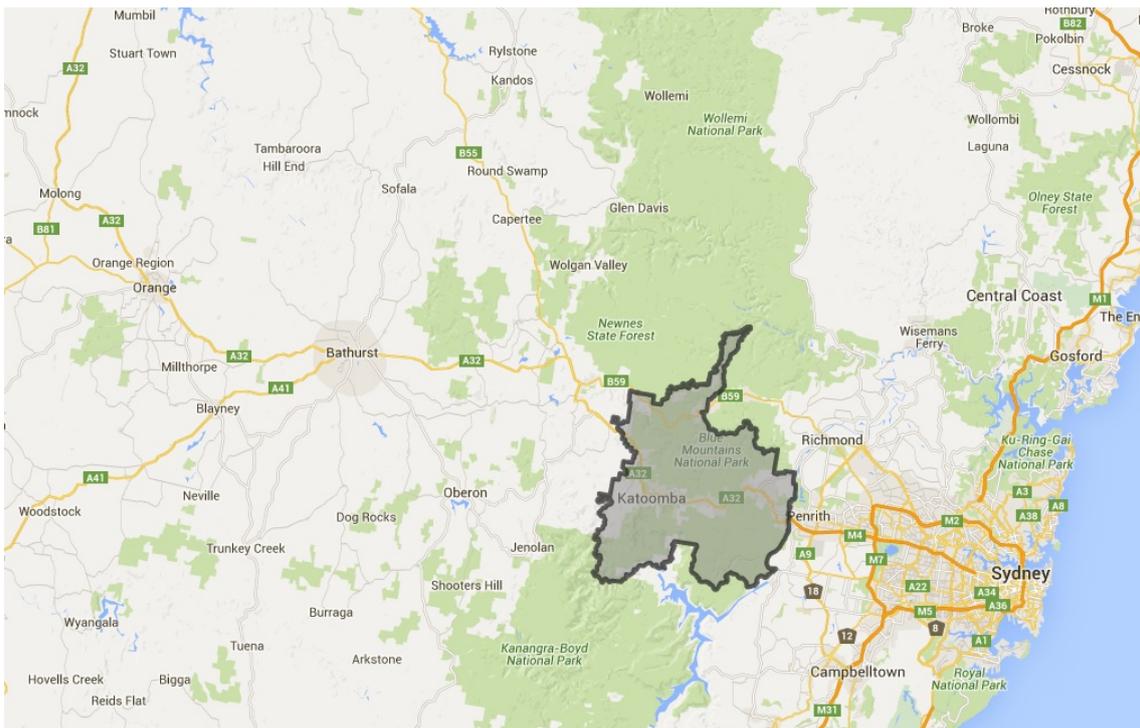


Figure 4.10: Blue Mountains Local Government Area

Office of Local Government, <http://www.olg.nsw.gov.au/>

4.3.2 Asset Management Environment

Blue Mountains City Council is one of many government public service providers in their local government area. The other service providers and their respective services include:

- **Sydney Trains:** Provides public transport options from Lithgow through to Sydney, with various stops throughout the Blue Mountains. This provides transport options for both local residents and tourists and introduces challenges in service provision around the rail infrastructure.
- **Roads and Maritime Services:** Provides road transport options through the mountains, which has resulted in ongoing road construction projects as the quality and capacity of the highways are improved. Both the Great Western Highway and Bells Line of Road fall under their jurisdiction.
- **Sydney Water:** Provides water supply and sewerage services, removing two significant asset classes that other local government organisations maintain.

A further consideration is the national park areas within the Local Government Area, as depicted in Figure 4.11. This focuses population into the town centres, results in 'ribbon-like' development and thus requires a level of decentralised service provision of assets, such as buildings and recreational grounds. National Parks also require some infrastructure such as amenities, signage, walking trails and fire trails all constructed and maintained at Blue Mountain City Council's expense. This creates a somewhat unique environment when compared with the other case studies undertaken in this report.

4.3.3 Corporate Structure and Staff Responsibility

Blue Mountains City Council has recently restructured their organisation to better deliver the services promised during the Special Rate Variation process (Blue Mountains City Council 2013). The adopted structure can be seen in Figure 4.12.

The approach taken in the management of assets within this structure is of particular interest; rather than having a centralised asset management department, the asset management tasks are split into three distinct areas as follows:

- **Strategic:** Completed at an organisational wide level, this area is responsible for taking the Community Strategic Plan and Delivery Program and developing a strategic approach to the management of assets within that framework and generating the associated plans and policies. These documents identify the stakeholders and their associated level of service requirements per asset class, identifies the

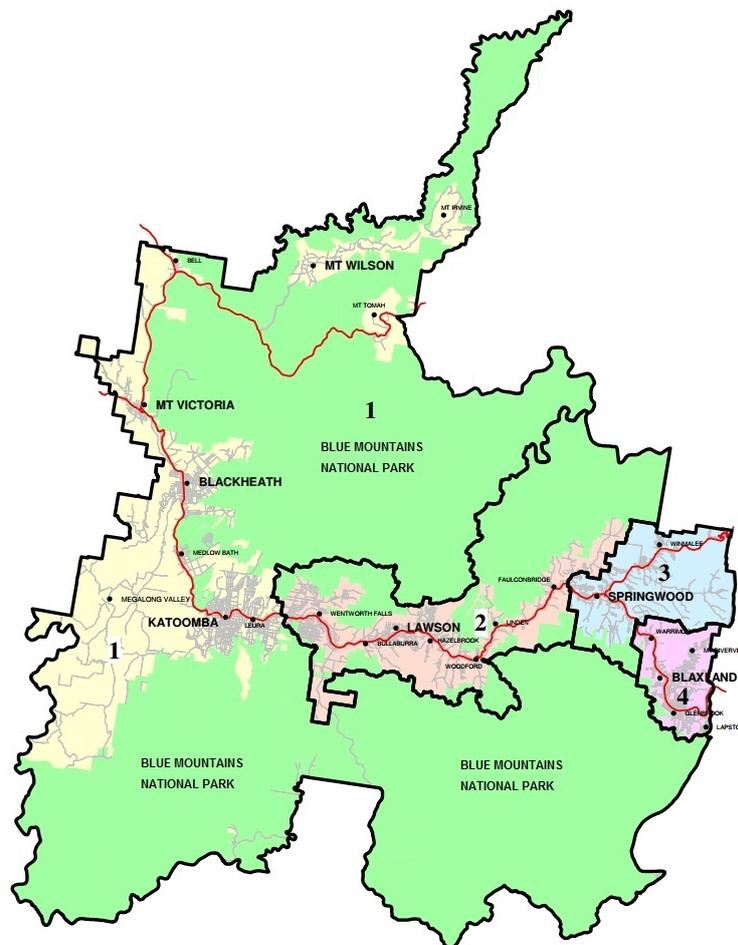


Figure 4.11: Blue Mountains City Council National Parks

deficiencies in the assets ability to deliver those services and proposes high level remediation works. The most common example of a strategic plan in this context is the Pedestrian Access and Mobility Plan.

- Planning:** Completed at an individual asset class level, this area is responsible for taking the strategic plans and utilising the asset data to identify and program both renewal and capital works. This includes scoping project requirements, requisitioning design and ensuring that all planning requirements are met prior to commencement of construction. Generation of the Asset Management Plans also falls within this section, as advised by the other asset management task areas.
- Operational:** Also completed at an individual asset class level, this area is responsible for determining the required levels of maintenance to achieve the desired service levels, programming those works then ensuring they are undertaken. This also includes undertaking the asset inspections and updating the asset condition rating data.

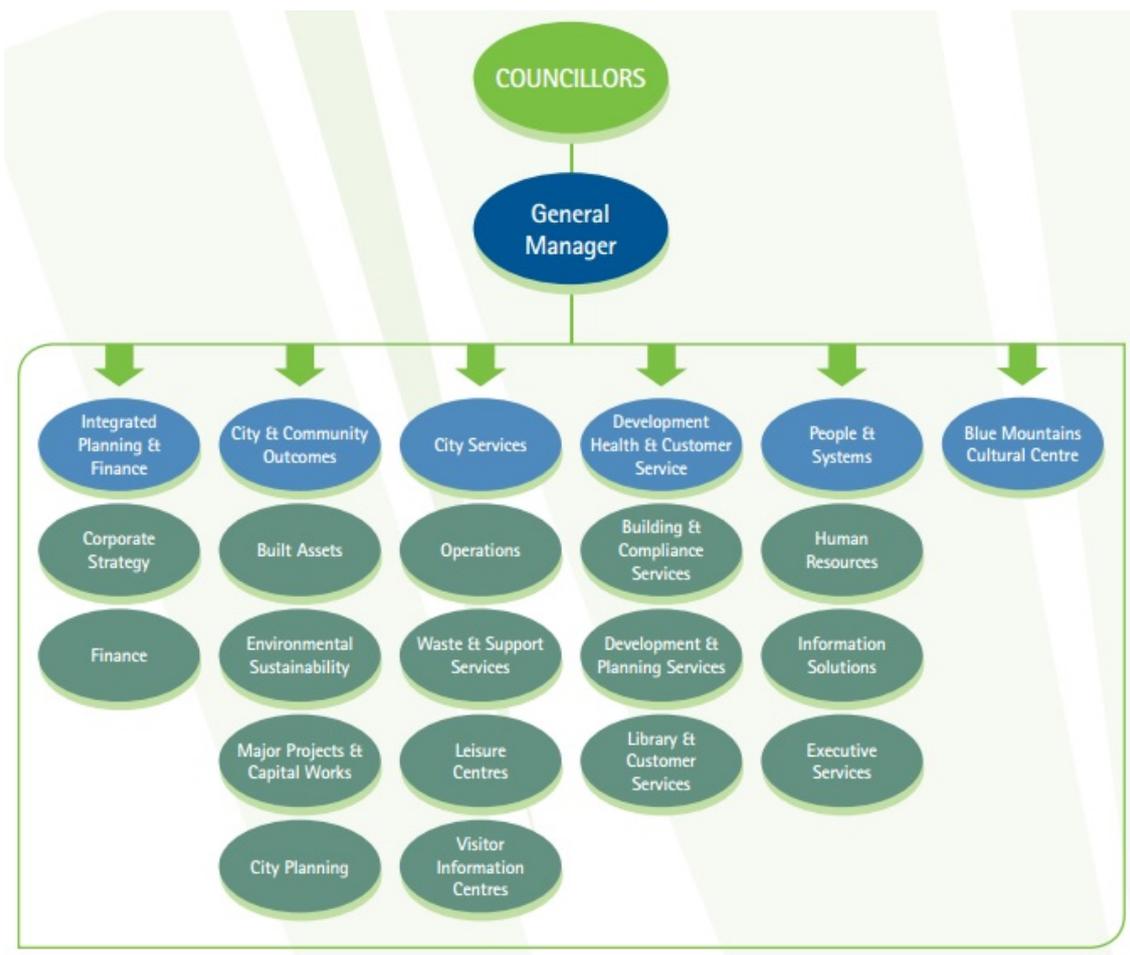


Figure 4.12: Blue Mountains City Council Corporate Structure

These tasks are then allocated to staff throughout the organisation; Strategic asset management tasks occur as part of the City and Community Outcomes Directorate, while Planning and Operational asset management tasks occur as part of the City Services Directorate under each operational manager. This decentralised asset management model allows for an increased level of integration of asset management with the respective operational departments at the cost of some coordination and standardisation between asset management practices. To minimise this cost, Blue Mountains City Council has developed panels and committees to oversee the asset management process. One such panel is the Civil Assets Standards Review Panel, who's objective is *"to provide a forum for the review and approval of standard civil asset types for the construction and renewal of civil assets during road development, maintenance and capital programs"* (Blue Mountains City Council 2014). By utilising these panels and committees, it is possible to standardise practice and data collection as well as involve various levels of management in the process. This allows for upper management support of the ongoing asset management process as set out in ISO55000, particularly in reference to leadership (refer to Section 2.3.1).

Given the recent adoption of the organisational restructure, detailed and iterated processes in completing the variety of required tasks are currently being constructed and tested. Organisational wide communication through committees and groups has developed a culture conducive to asset management practices, however how this practically looks will not be readily apparent until the planning framework is fully constructed and operational.

4.3.4 Planning Framework

To meet the requirements of Integrated Planning and Reporting (refer to Section 2.2.4), Blue Mountains City Council have developed a five tiered series of planning documents. These are defined as follows:

- **Community Strategic Plan:** Identifies the communities main priorities, needs and expectations. The current document is named Sustainable Blue Mountains 2025.
- **Strategic Plans:** Divides the Community Strategic Plan into deliverable elements and priorities for specific applications. Examples include the Pedestrian Access and Mobility Plan and the various Town Centre Masterplans.
- **Service Plans:** Identifies the hierarchy of assets within an asset class, defines what the service practically looks like and defines the desired outcome for that service level.
- **Asset Management Plans:** Defines what assets and specific asset related activities are required to deliver on the Service Plans.
- **Service Level Specifications:** Schedules the specific actions to be undertaken, the frequency of those actions and what is required in reporting against them.

Reviewing this structure in reference to the Integrated Planning and Reporting structure (refer to Figure 2.8), it becomes apparent that the various elements required are included here at a greater level of detail. The Strategic Plans form the specific actions of the Delivery Program broken down to an asset class level, significantly expanding on the Delivery Program documentation and thus practicality. The Service Plans, Asset Management

Plans and Service Level Specifications are more specific and targeted versions of the Asset Management Plans and Operational Plans. By utilising this framework over that shown in Figure 2.8, Blue Mountains City Council are able to effectively implement the structure and tasks as identified in Section 4.3.3 and have discrete levels of responsibility for each team member. It also clarifies service delivery in an environment of multiple government service providers and allows for representation on local issues in a targeted and strategic manner, improving efficiencies and effectiveness.

Of note in the support mechanism of the asset planning framework is the Asset Management Improvement Project Group and the Best Value Steering Group. These groups included a variety of staff from across directorates in the Local Government Organisation, are chaired by Directors and have significant input into both the implementation and maintenance of the infrastructure and the asset framework behind it. This ensures a holistic asset process in which all the Local Government Organisation sections are included and their requirements considered.

4.3.5 Reporting Framework

Blue Mountains City Council has clearly defined areas for undertaking their reporting requirements. Special Schedule 7 and Annual Reporting requirements (see Section 2.3.2) are the responsibility of the Finance team as these reports are audited on a financial basis. The data required has traditionally been stored within the finance department with collected data, such as the externally required valuation of buildings, not conforming to the data utilised by the asset department. Standardising data is a current focus of Blue Mountains City Council and will be the primary role of the strategic asset staff and finance team to ensure that each departments requirements can be met from the finalised data source.

An additional level of reporting is required within Blue Mountains City Council in order to provide accountability given their successful application for a Special Rate Variation. Some aspects of this increase reporting are addressed within the revised structure of the asset management planning framework. Undertaking the planning process will provide further clarity on the benefits of the process and if the extra demand in developing the documentation will provide the intended level of benefit. It is noted that the Blue Mountain City Council's successful application for a Special Rate Variation was dependant on a

variety of deliverables including this higher level of asset planning and thus this planning will be undertaken during the following 10 years regardless.

4.3.6 Identified Improvement Strategy

Given the recent adoption of this planning framework, Blue Mountains City Council are still in the process of fully implementing the system. While the framework's elements are clearly defined, having the plans generated and clearly linked is an intensive process that is currently under way. The first priority is the development of comprehensive service plans, specifically the service levels and hierarchies. To complete these, a better quality asset dataset is required and thus asset collection is an ongoing process. A specific issue identified is the final storage medium; Blue Mountains City Council currently has seven programs that could either store or benefit from the asset data and thus one source of absolute truth is required to be determined and adopted. This leads to complications as the various systems have particular focuses and user groups such as finance, customer service, document management or global information systems (GIS). This process will be challenging and require significant stakeholder engagement to be successfully implemented.

Chapter 5

Results

5.1 Overview

The asset management environment imposed on NSW Local Governments by State Government Legislation utilises a mix of enticements and punishments to encourage Local Government Organisations to adopt practices that are deemed to be in alignment with leading industry practice. The enticements are provided through outlining the benefits of good asset management while the punishments are through demanding specific auditable reports with failure to comply potentially meaning a loss of financial independence. It is thus critical for local government employees in middle management or higher to have a thorough understanding of the Asset Management Framework within their Local Government Organisation and how that fits into best practice and State Government Requirements. There are multiple ways to implement this framework as observed by the different applications in the case studies; this section adopts various elements from the Literature Review and each case study to propose an ideal framework for rural application given the information collected, then discusses some considerations that need to be made throughout the process.

It is noted that the Integrated Planning and Reporting Requirements Manual (Premier and Cabinet 2013) makes reference to the International Infrastructure Management Manual (IPWEA et al. 2011) and the ISO55000 series (ISO 2014*c*). Due to this alignment between the leading publications on Asset Management, there have not been any identified issues that require further analysis. The information collected during the literature re-

view then tested during the case studies has provided sufficient understanding to propose a framework that meets the purpose of this dissertation.

5.2 Local Government Organisation Requirements

As per Section 2.2.1, the Local Government Act 1993 (NSW Government 2015c) requires that Local Government Organisations have a 10+ Year Community Strategic Plan, 4 Year Delivery Program and 1 Year Operational Plan. As per Section 2.2.4, the Integrated Planning and Reporting Requirements (Premier and Cabinet 2013) requires that Local Government Organisations have Asset Management Policy, Asset Management Strategy and Asset Management Plan per asset class. As per Section 2.3.2, the Accounting Standards (OLG 2015a) require that this information all be provided in the Annual Reports, Planning Reports and Special Schedule 7 Reports.

As per Section 2.3.1, the ISO55000 series (ISO 2014c) outlines the need for the Asset Management context to have the attributes of Value, Alignment, Leadership and Assurance. Alignment and Assurance is implicit in the strategic planning process and must be considered there, while Value is addressed through the Level of Service discussion and the determination of the acceptable level of service being a condition level two (refer Section 2.2.4), or as determined through community consultation. As such the remaining key attribute is Leadership, which is recommended to be considered and implemented within the Local Government Framework.

The interrelationship of these requirements and key attributes can be depicted as per Figure 5.1. Given the required content of each plan, program, policy or strategy the ultimate responsibility is recommended to be allocated as shown in this figure. It is recommended that the development of each document within this framework is undertaken in alignment with the Victorian model of Service Delivery as discussed in Section 2.4.1.

The **Community Strategic Plan** is required to address civic leadership, social, environmental and economic issues and thus draws on a variety of sources to provide the information. This plan is completed as a matter of priority once a Council is elected and influences the direction of the Local Government Organisation over the planning period as defined by community goals within the available resources. As such it should be primarily completed by the Councillors through extensive community consultation with the

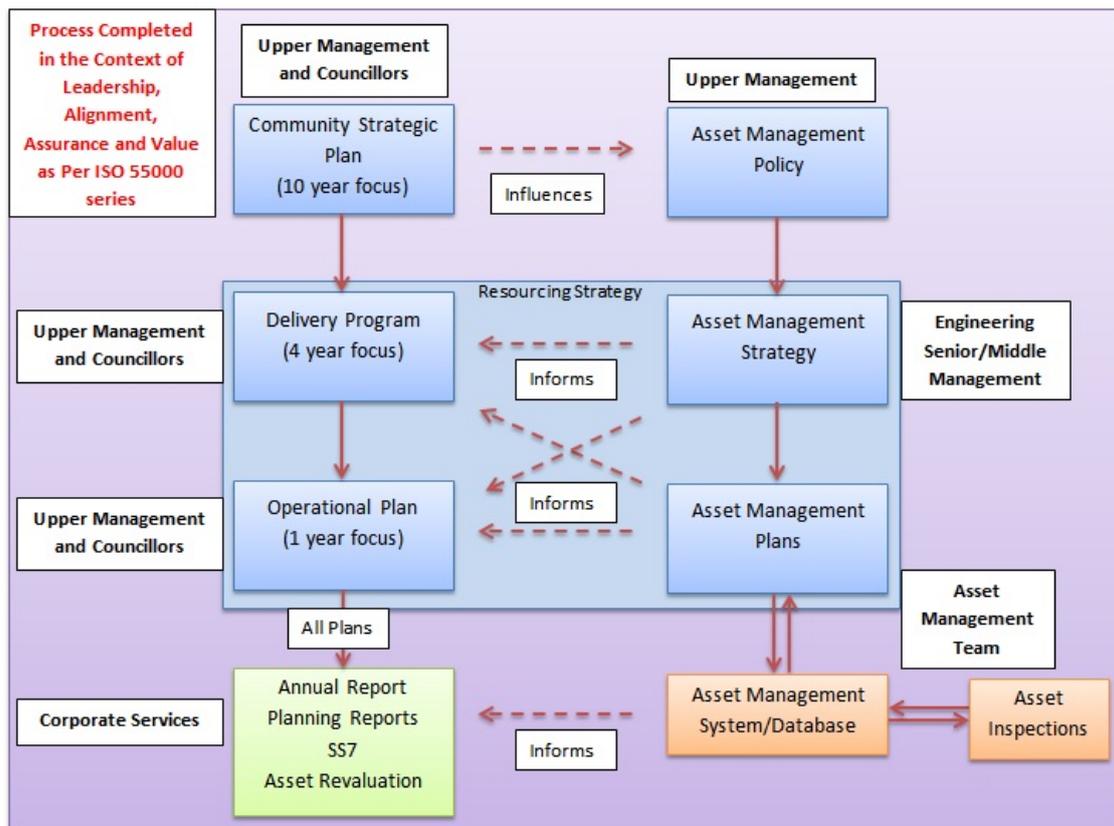


Figure 5.1: Proposed Linkage of Policies to Plans and Responsible Officers

close involvement of the General Manager. Upper management will also have considerable input as their respective departments will be aware of the available resources and can temper the community expectations with what is realistically achievable.

The **Delivery Program** defines what the Elected Council desires to achieve during their term. It should be completed by the Councillors and informed by the General Manager with input from upper management. This program should identify specific strategic works to be completed within the elected term and measuring mechanisms against those works. To ensure that the program is realistic, achievable and addresses key concerns and identified strategic objectives, it requires input from asset management data, financial capacity and professional engineering judgement.

The **Operational Plan** turns the Community Strategic Plan and Delivery Programs into a specific Works Program for a given year. This is primarily completed at a practical level by each departments upper manager with input from their department, revised by the General Manager and provided to the Elected Council for their review, modification and adoption. Maintenance and renewal works should be driven by the Asset Management

Plans and associated data, while capital works are identified in the Delivery Program. As this is the practical implementation of the aforementioned plans, it requires a collaborative approach to compile.

The **Resourcing Strategy** reviews the works scheduled to occur over the following planning period and ensures that resources are available to achieve those works. These resources could include plant, skills and qualifications, finances or staffing numbers to name but a few. The Resourcing Strategy should also be completed by Upper Management of the Local Government Organisation; as it is more of an operational function to meet the objectives defined by the Community Plan and Delivery Strategy the Elected Councillors input should be limited to ensuring it meets those objectives.

The **Asset Management Policy** is the Local Government Organisations response to the Elected Council's Community Strategic Plan and should define the asset management approach that shall be taken over the following 10 year period to conform to that plan. This should be completed by Upper Management as informed by the Community Strategic Plan. Cross department influence is essential to ensure that engineering, financial and human resourcing implications are considered.

The **Asset Management Strategy** is how the Local Government Organisation will implement the Asset Management Policy; in particular, how the gaps in the current system will be addressed to bring it into alignment with the policy. As this is a more specialised knowledge area and requires detailed understanding of the current asset data, systems and processes middle management is essential in this process. It is recommended to generate strategic documents per asset class for inclusion or reference in the Asset Management Strategy with linkages to the Community Strategic Plan.

The **Asset Management Plans** then detail the practical approaches that will be taken to meet the objectives of the Community Strategic Plan as defined in the Asset Management Policy and Asset Management Strategy. These plans will be far more operational than any of the other plans here save the Operational Plan, and thus need to be completed with upper management guidance at a middle management level. Once completed and endorsed by Council, these plans will define renewal work intervals, maintenance levels and acceptable levels of service.

Finally, the reporting requirements are recommended to be included in the same depart-

ment responsible for all other reporting to ensure consistency, accuracy and a single point of contact. As the asset related reports form part of the financial reports and are audited as such it is recommended all reporting comes from the financial department. To complete these reports, information will be required to be provided by the asset managers regarding condition, cost and required maintenance to meet the objectives of the respective plans.

The revaluations are worth special mention in this process; when first introduced, the revaluation requirements demanded a Local Government Organisation collect substantial data to populate an asset database. It is recommended that a Local Government Organisation stores this information somewhere readily accessible and adds information as assets are constructed as this can be used as a base to satisfy the revaluation. The revaluation process can then be a revision of the asset database, confirmation that the data is a fair representation of the physical infrastructure and the verification of unit rates (see Section 4.2.3) rather than an expensive, time consuming process. Local Government Organisations should communicate with their auditors about what is specifically expected in such a case to submit an acceptable revaluation.

5.3 Timelines

Given the requirements and allowable time periods in Section 5.2, it is possible to construct an indicative deliverable timeline for asset planning over the four year term of Council. When utilised in conjunction with Figure 5.1, it allows for an effective overview of the workloads and requirements a Local Government Organisation is expected to achieve with their Council. This timeline can be depicted as per Figure 5.2.

The first year shown is the year in which Council elections are held. The Electoral Commission states that Council elections are to be held on the second September every four years (NSW 2015). Once the elections have been undertaken and the new Council appointed, they must adopt a Community Strategic Plan and Delivery Program before the end of the financial year (refer to Section 2.2.1). These plans require a public exhibition period of a minimum of 28 days (Premier and Cabinet 2013), thus they should be the first priority upon election. It is also noted that the Operational Plan requires 28 days public exhibition. Given this, it is recommended that the Community Strategic Plan and Delivery Program are exhibited simultaneously, the Asset Management Documents (refer

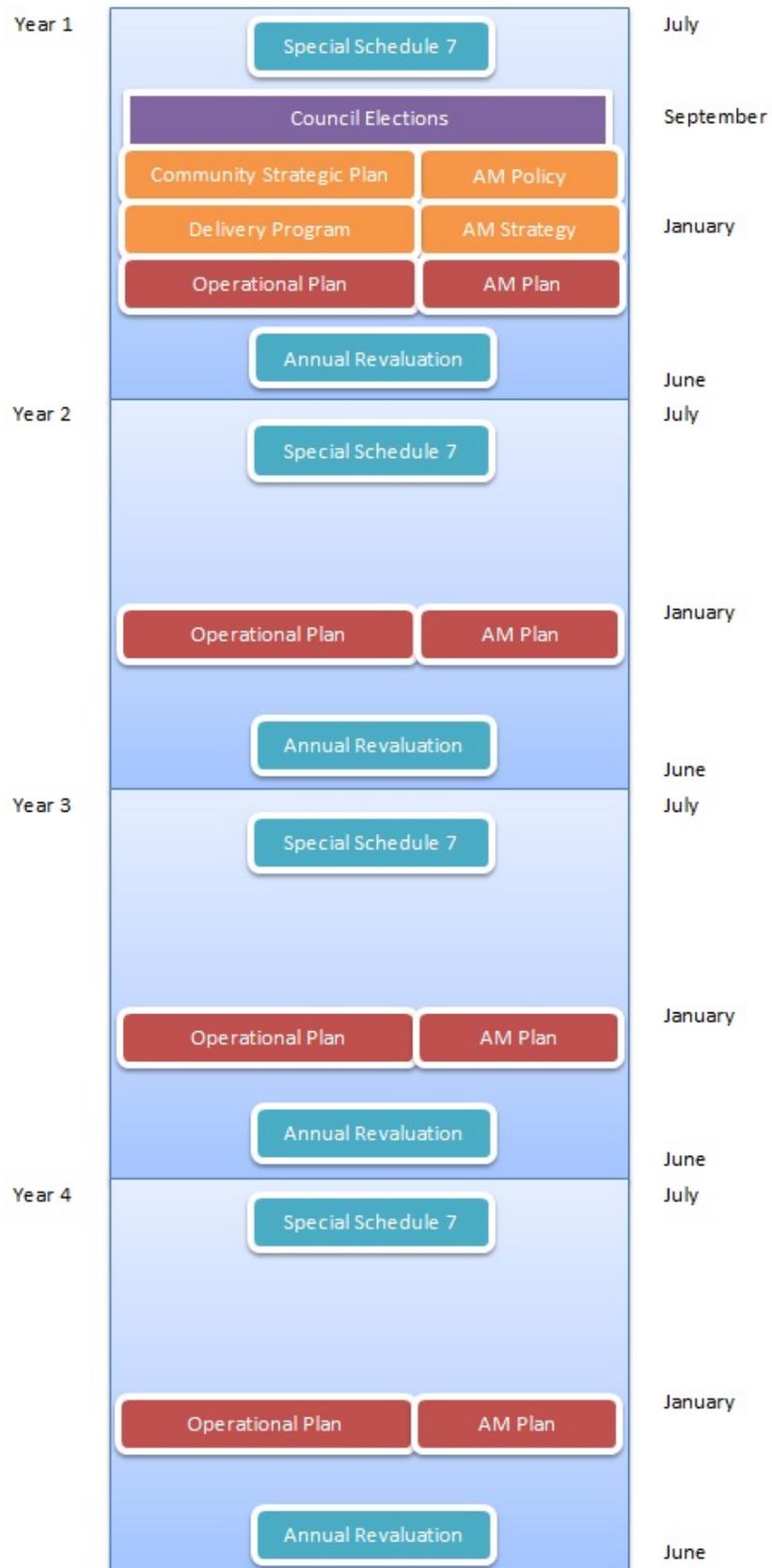


Figure 5.2: Asset Management Planning Cycle

Section 5.2) are updated and then the Operational Plan compiled and exhibited. This can be depicted as per Figure 5.3.

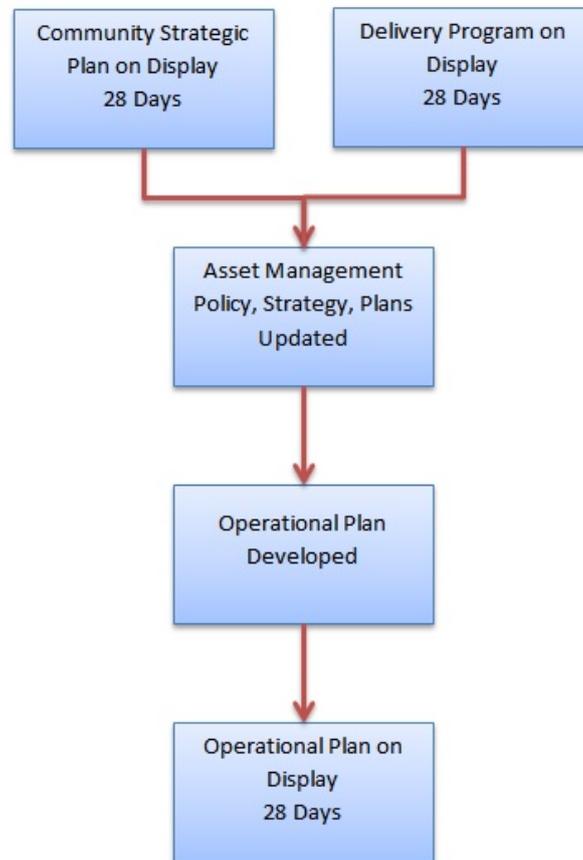


Figure 5.3: Council Election Year Planning Process

Following years between Council Elections are somewhat more straightforward, requiring that the Asset Management Plans are updated to reflect asset additions and condition changes; additions can occur through capital works or locating previously unreported assets while condition changes occur as maintenance and renewal works are undertaken and assets degrade. The Operational Plan is then generated to reflect the change in Asset Management Plans aligned with the Delivery Program. This requires that only the Operational Plan is placed on public exhibition for 28 days.

5.4 Asset Management Process Cycle

While not explicitly required, it is recommended that an internal framework is developed around the Operational Plan to facilitate the Asset Management Process and planning cycles. This framework should define how works are identified, undertaken and then cap-

tured back into the system. The wider planning environment should also be considered, with a practical link back to the Community Strategic Plan and Delivery Program being included so that operational staff understand the context of their work. Development of this framework needs to occur on both the structural and cultural level; organisation wide adoption will ensure that all works are captured and reflected in the system, creating an accurate planning environment that has the works identified being as realistic of the physical environment as possible. This involves the inclusion of the ISO55000 series (ISO 2014c) concept of Leadership (see Section 2.3.1).

As discussed in Section 4.2.3 and Section 5.2, having a robust framework will also simplify the revaluation process by significantly reducing the workload involved in meeting the revaluation requirements. This framework will be a solid basis to providing confidence during the audit process that the asset management system accurately portrays the physical environment. Utilising the processes of the Roads and Maritime Services (refer to Section 4.1.5) and Bathurst Regional Council (refer to Section 4.2.5), the key steps this framework is recommended to include can be depicted as per Figure 5.4.

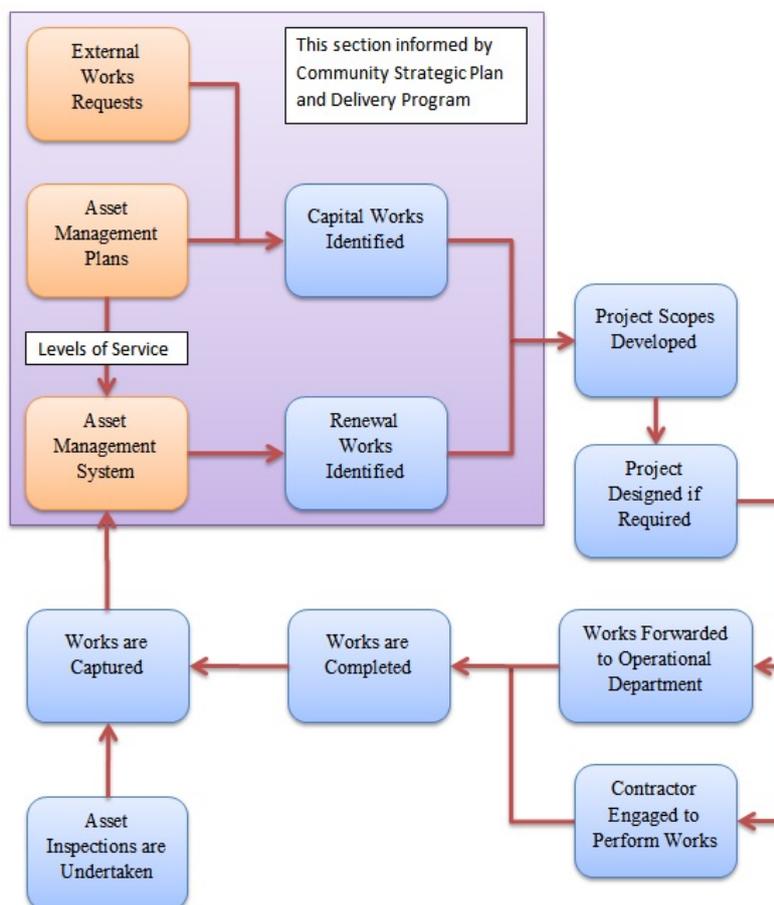


Figure 5.4: Operational Plan Life Cycle

The **External Works** can be determined from identified issues, Councillor recommendations, customer service requests or industrial development that requires specific assets to address industry concerns. These works will then either be identified in or fit with the Community Strategic Plan and Delivery Program. The **Asset Management Plans** will identify additional works required to deliver the desired level of service which contributes to the identified capital works, or define the acceptable level of service and maintenance required on existing assets which, in conjunction with the **Asset Management System**, defines the maintenance and renewal works required. Both types of works then require **Project Scopes** to be developed identifying where the works fit within the Planning Framework and what specifically needs to be done. By undertaking project scopes at this stage, sustainability is ensured through clear deliverables and minimised project creep, validating the projections and future modelling that the asset management system facilitates. These project scopes are then sent for **Design**, if required, then programmed for construction with project scopes and design plans provided. The works can be performed internally or externally as skills and resources demand. Once **Completed**, the works need to be captured back into the system. Ideally this would be done through the return of project scopes and design plans with work as executed details where relevant for input back into the system. Alternatively, the asset management team could capture the required data upon notification of the completion of works. Further, as **Asset Inspections** are undertaken new or renewed assets may be identified and captured into the system by the asset management team. This then completes the process, allowing for an iterative asset management approach that facilitates constant data update and advancement.

5.5 Asset Management Section Structure

During the course of this study case studies have been performed on three government organisations, each of which had a different approach to how the asset management section was structured. The Roads and Maritime Services (refer Section 4.1) had their operations and asset management divisions together, with works supervisors reporting to asset managers and contracted works reporting to the asset management team through a variety of mechanisms. Bathurst Regional Council (refer Section 4.2) had a separate assets division within the engineering department who worked with the various operational managers and organised the capture of asset data themselves. Blue Mountains City Council (refer to Section 4.3) had asset officers and asset tasks within each operational area and a cen-

tral strategic asset manager that coordinates all the asset staff. Each of these structures have their own strengths and weaknesses and can be summarised into two structures; one being asset management centric, the other operational centric.

5.5.1 Asset Management Centric

More commonly known as the asset owner/service provider relationship, this proposed structure is similar to the Bathurst Regional Council and Roads and Maritime Services structures and involves having a central asset management team within the engineering department. The team size can vary depending on the quantity and complexity of assets across the organisation, and the team works with the various operations managers to perform the asset management functions required. The strength of this model is that there is a central location for asset management and asset reporting, there is strong cohesion between each operational areas planning and data capture processes are consistent with the same asset team members undertaking all works. The weakness of this model is the disconnect, however small, from the operational divisions and the daily works that are being undertaken. This would be negligible in a smaller Local Government Organisation as the relatively low staffing numbers allow for connection throughout the organisation and facilitates an ease of communication, however it does require active effort to ensure that the communication is open and ongoing.

5.5.2 Operational Centric

This proposed structure is similar to the Blue Mountains City Council structure and involves having a dispersed asset management team. Team members are allocated to each operational division and work closely with the ongoing works within that division. This requires a team that is at least as many in number as the number of divisions and members are required to specialise in their respective operational area. A central asset manager is required to coordinate the dispersed team and ensure that the asset management functions are performed. The strength of this model is the close relationship with the various operations departments, ensuring ongoing data capture and alignment of the planning environment with the practical works environment. The weakness in this model is from the dispersion of the asset management team, potentially disconnecting the practices of each asset team members approach and resulting in varying asset management

procedures. As per the Blue Mountains City Council model, this can be mitigated by having working groups and committees that standardise the asset management functions. This places increased demand on the central asset manager to coordinate the team and to direct enquiries relating to the management and reporting on the assets. The benefits of this model would be best achieved in a larger Local Government Organisation with a higher complexity and quantity of assets where a focused asset team member would be fully utilised by the demands of a single asset class.

Chapter 6

Discussion

6.1 NSW System

Review of the Integrated Planning and Reporting Framework (Premier and Cabinet 2013), ISO55000 series (ISO 2014*c*) and Integrated Infrastructure Management Manual (IPWEA et al. 2011) reveals that the New South Wales State Government is eager to ensure that Local Government Organisations under their jurisdiction adopt best practice asset management methodology. This has the New South Wales system utilising more advanced methodology than any of the other reviewed state governments within Australia in an attempt to ensure sustainable and responsible management of public resources and infrastructure. This structure also ensures guidance for the Elected Councillors as there are specific deliverables in planning documentation that holds them accountable to their election promises. The Planning documents also ensure a level of continuity between elected Council terms due to the planning requirements spanning 10+ years; changing the previously elected councils direction involves community consultation and public exhibition of documents outlining the new planned direction, ensuring that the community has the opportunity to ensure that the elected council is representing them fairly.

6.2 General Recommendations

From the results of this study, the recommendation for general applications are as follows:

- Smaller Local Government Organisations adopt an Asset Management Centric model (refer to Section 5.5.1) due to the challenge of limited resources and a relatively simple asset environment.
- Larger Local Government Organisations adopt an Operational Centric model (refer to Section 5.5.2) to ensure that their more complex asset environments are effectively managed by utilising increased asset resources. This increased resourcing will generate savings throughout the networks efficient management, justifying the allocation of the additional resources.

For non-standard applications, Local Government Organisations should consider the ability of each of the proposed models to meet their needs given their specific asset portfolios and community requirements.

Regardless of the model adopted, the elements of Figure 5.1 need to be understood by staff involved in asset management be it from an engineering, financial or management perspective. Understanding this context that local government organisations operate in will allow for a united organisation wide approach to ensuring that not only are the legislated requirements met, but the maximum benefit is gained from that system. Doing this requires a cohesive approach of close working relationships between the asset, operational and financial departments with an understanding that the three departments operate with a different focus to deliver a service to the community. Clear definition of roles and expectations on deliverables is essential in this collaborative asset management approach, and one such way of undertaking this definition is the department responsible for the reporting requirements issuing project briefs at the start of each financial year with the information they will require during that year. This allows the other departments time to manage resources and workloads to ensure that the required information is provided in a timely manner. It also allows for the development of a department specific timeline much the same as Figure 5.2, further advancing efficiencies and management practices.

It is recommended the asset management team develop processes for asset data capture in consultation with the various operational departments to ensure that the asset management data accurately reflects the physical environment. Figure 5.4 provides a solid basis for this process and identifies the key steps and responsibilities that need to be assigned within the process. Having this process successfully implemented will introduce a natural iteration of the asset data, ensuring accuracy and instilling confidence in the system by

those outside of the asset management team.

6.3 Reporting Implications

It was observed during the literature review phase of this study that the focus of the various standards on the required legal framework and reporting requirements can easily distort the asset management process to one that is constructed primarily to meet the reporting requirements. It was not until the Roads and Maritime Services case study that perspective was returned to the study by reviewing processes that solely focused on the delivery of good asset management practices. This then creates a dynamic that asset management staff need to be aware of; while there are specific reporting requirements that the asset data needs to satisfy, the purpose of the reporting is to facilitate strong asset management practices and as such the focus of asset staff should be on the assets. Consideration needs to be had towards the reporting, but it should not be the driver for the systems and frameworks employed.

One disparity between the Integrated Planning and Reporting guidelines (Premier and Cabinet 2013), the International Infrastructure and Management Manual (IPWEA et al. 2011) and particularly Special Schedule 7 (refer to Section 2.3.2) is the level of advancement required. The planning documents advise having asset management plans at the required level of advancement for the asset class's complexity and value, while the Special Schedule 7 backlog calculations require a much more advanced level of data to be able to accurately determine the works required to ensure all assets are of an acceptable condition. To date, the Special Schedule 7 has not been auditable but this is due to change at the completion of the 2015/16 financial year (Premier and Cabinet 2015). As such, clarification is needed as to the level of detail, preferred methodology and level of advancement required in the completion of future reporting. Government Circular 15-29 (Premier and Cabinet 2015) indicates that additional information on requirements will be available as the 2015/16 financial year progresses, thus local government organisations will need to be aware of the development of this reporting requirement and may need to quickly advance multiple asset classes to comply.

6.4 Analysis

There exists an inherent difference in the methodologies required to model the condition or value of an asset over its useful life. The Accounting Standards (refer to Section 2.3.2) requires the use of straight line depreciation, while practical asset deterioration rarely behaves in this fashion. When a single assets deterioration is considered against straight line depreciation there is a large discrepancy, however when a whole asset class is considered, with the assets in a varying range of conditions, the trend of the annual depreciation of all the assets is closer to the straight line method recommended. This is further achieved by the idealised process of sustainability in the Asset Management Plans where renewal works are normalised between financial years rather than being focused on specific periods. Understanding this relationship gives credence to the required model and allows for consideration to be taken in the asset management practices. Given this relationship, it is then possible to expect that the annual expenditure on asset renewal should match the annual depreciation of those assets (refer to Figure 2.1). This requires accurate useful life information and appropriate levels of service being determined, as well as a disconnect between the condition and value of an asset. If condition and value are linked, one of two scenarios occur as per Figure 6.1.

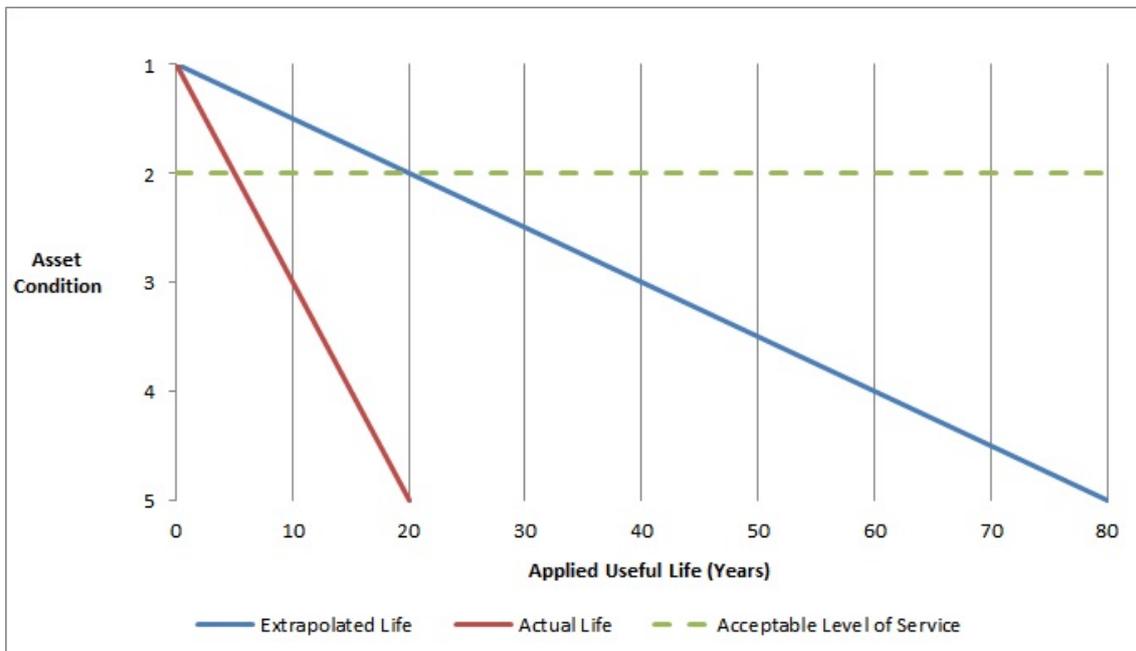


Figure 6.1: Implications of Linking Depreciation to Condition Rating

This graph adopts an acceptable level of service as condition level 2 for an asset that is expected to provide an acceptable level of service for 20 years. Two scenarios have been

modelled:

1. If the expected life is adopted as the useful life, condition is linked to depreciation and straight line depreciation is used the asset is considered to contribute towards backlog from year 5, or one quarter through its actual life.
2. If the asset is deemed to meet the satisfactory standard condition until year 20 at which point it is scheduled for renewal, and thus subsequent years without work would have the asset contribute to the asset backlog, the depreciation line is drawn from condition 1 when new to condition 2 at 20 years. This projects a useful life of 80 years for an asset that will realistically be in service for 20 years. This means that the depreciation will not match the asset renewal period, disconnecting the reporting from the actual asset cost and defeating the purpose of the system.

Further clarity from the State Government is required on this matter to clarify the methodology to be used in determining an assets useful life.

6.5 Cabonne Council Application

Given the information collected throughout this study, it is recommended that Cabonne Council adopt an Asset Management Centric structure (refer to Section 5.5.1). This is due to the low complexity of the asset portfolios required to provide the community's desired level of service. This model would allow for the asset management team to primarily focus on the effective management of road assets and have a secondary focus on other asset classes, yielding benefits to both service levels and financial efficiencies respective to the asset classes value. This ensures a consistency between processes and data collection across asset classes as well as an allocation of time appropriate to each class.

The responsibility for the planning requirements is recommended to be allocated as per Figure 5.1 and the associated discussion in Section 5.2. Doing this creates a clear, efficient structure that facilitates whole of organisation communication and understanding of the management process. With Cabonne having their Engineering and Technical Services department located in Cudal and their Corporate Services department located in Molong, this clear definition of roles and communal understanding is essential. This then allows

for consistent communication from the Local Government Organisation to the community as the organisation has the same understanding of their asset position.

It is recommended that the asset management planning process is developed to at least at a core level maturity (refer to Section 2.6.2). This practically looks like each asset class having every major asset broken into manageable components that can be assessed for useful life and current replacement cost. Some generalisations would need to be utilised, such as assuming a common material for like components to ensure that the system is not needlessly advanced. The primary driver for this in the lower value asset classes, such as buildings, is to ensure that sufficient data is available to satisfy the reporting requirements of Special Schedule 7 (refer to section 2.3.2). By doing this, the International Infrastructure Management Manual's recommendation to have the maturity of the asset management planning appropriate to the level of benefit received by that planning is somewhat ignored to ensure the Local Government Organisations reporting requirements can be easily and efficiently satisfied.

Timelines are recommended to be adopted as per Figure 5.2. Having clear deliverables with identified deadlines and delegated responsibility as per Figure 5.1 ensures that the organisation functions efficiently to meet these requirements. Scheduling in these activities will ensure proper planning and resource allocation, allowing time for reports to be compiled that meet each planning and reporting requirement. The consideration of all contributing factors would be able to be addressed as this would minimise last minute efforts, translating to higher quality planning documents and greater realisation of efficiency gains.

Finally, the adoption of Figure 5.4 and the associated discussion in Section 5.4 would provide an effective model of incorporating data management into the works life cycle. This would ensure that there is a process in place for data collection after inspection/maintenance/renewal/capital works are undertaken that iterates the asset management system, providing an implicit continual improvement process. This model requires communication between the planning and operational departments to ensure that each elements content and necessity is understood and the long term implications for non-compliance is comprehended.

Once such a framework is incorporated into business practice Cabonne Council should be in a strong position to provide effective services to their community, prove best practice

methodology and ensure that reporting requirements are satisfied.

Chapter 7

Conclusion

7.1 Conclusion

The Asset Management requirements within the New South Wales Local Government environment are extensive, but once the interrelationship is understood it is a logical process. This system is the State Governments attempt to ensure best practice asset management is utilised and to ensure community expectations are met. This study set out to develop a closed asset management system model for transport infrastructure in Local Government Organisations and concluded with a focus on the asset management environment and the holistic framework surrounding the management of assets. While the general model has been addressed, it became apparent as the study progressed that understanding the environment and the context the closed model operated within was essential to ensuring that the model could be successfully implemented. It is thus important that all members of the asset management process within a Local Government Organisation have an appreciation for the role they fulfil in the organisation and undertakes that role to ensure that the system is effective.

Through observation of the upcoming increase in requirements such as the audit of Special Schedule 7, it is anticipated that the New South Wales State Government will continue to develop and iterate upon the Integrated Planning and Reporting Requirements (Premier and Cabinet 2013). This will be with the intention of generating a more robust model, but have the implication of increasing complexity that will require organisation wide contribution and understanding to effectively achieve the desired results.

7.2 Further work

This study has presented opportunity for further study of the local government asset management environment in multiple directions. Some of these are:

1. Determining the appropriate level of advancement in asset management practices for local government organisations. Is there a threshold at which point advanced level asset management practices are no longer beneficial, does that vary by asset class and, if so, to what level of advancement should asset management be undertaken?
2. Determining the recommended level of componentisation of infrastructure assets within a local government organisation. Special Schedule 7 requires the reporting of assets within a specific structure and the determination of backlogged works, while operational functions or delegations do not necessarily align with these requirements. To what level should assets be componentised down to meet the requirements and is that the same as what is required for the effective operation of that asset?
3. How effective have the Integrated Planning and Reporting requirements been in advancing the asset management practices, sustainability and effectiveness of local government organisations since its implementation? Has there been a physical improvement in asset quality and service delivery across the state, or has the reporting been skewed to represent what local government organisations wish to present? Has there been an increased level of consistency between the elected council terms?
4. Does quality asset management frameworks, systems and staff provide a quantifiable benefit to an organisation? At what point after implementation does an organisation start to see return on the investment?
5. How appropriate is having the Australian Accounting Standards Board documents as the measure and requirements of Local Government Organisations. These standards are designed for general industry application by for-profit companies; does this affect their relevance to Local Government?

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Appendix A

Project Specification

PART A

Full Name: Michael Hugh Butler

Student Number: 0050072918

Program: BEng (Honours)

Proposed study mode for your project work: EXT

Major: Bachelor of Engineering (Honours) Civil

PART C (OWN PROJECT PROPOSAL ONLY)

NOTE: refer to Sections 3.3 & 3.4 of the ENG4111/2 Project Reference Book:

Provisional Title (be brief): "Asset Management Systems for NSW Local Government"

Project Origin (e.g. own idea / employer suggestion / etc.): This project is based on my own ideas from seeing opportunities and legal requirements within and around my workplace.

Objectives: To develop a closed asset management system model for transport infrastructure in Local Governments, including the interaction with other departments within Council.

Problem Description: asset management and local government sustainability is increasing becoming an area of focus for councils. I understand that there are legislative requirements to have asset management systems in place and there are significant sustainability and efficiency gains to be gained from a properly constructed system.

Aim: create a closed asset management system model for Cabonne Council with the capacity to be employed in NSW local government.

This focuses on the collection -> assessment -> prioritization -> design & construction --> collection of constructed information loop. It will also investigate the requirements of the system such as road revaluation and schedule 7 reporting.

Might not cover each stage in detail, but should include the essential requirements and criteria at each step.

Methods:

1. Undertake literature review of asset management processes and systems.
2. Review asset management legal requirements, including sustainability, in NSW.
3. Determine the internal requirements of an asset management system
4. Identify issues and develop a research methodology to address them.
5. Visit the RMS and 2 Councils in NSW to determine the system and framework they are using
6. Develop a suggested model for use in NSW local governments
7. Construct a model - focusing on internal systems and asset data updates after inspection/maintenance/renewal/capital works
8. Write and submit dissertation in required format

If time permits:

9. Trial the model - for a basic asset renewal/capital works

Proposed Supervising Staff (if known through prior negotiations, or leave blank):

David Thorpe

Appendix B

APPENDIX B

Michael Butler

From: John O'Malley <john.omalley@intentus.com.au>
Sent: Thursday, 19 March 2015 11:56 AM
To: Michael Butler
Subject: FW: Outcome of meeting with AASB regarding residual values

Hi Michael,

As per my previous message...

From: John O'Malley
Sent: Thursday, 19 March 2015 11:48 AM
Subject: Outcome of meeting with AASB regarding residual values

Good morning,

On Monday David Edgerton from APV valuers and I travelled to Melbourne to meet with the Chair of the Australian Accounting Standards Board (AASB), another Board member and two technical staff to discuss their "Tentative Agenda Decision" on the recognition of residual value for infrastructure assets.

It was an interesting meeting and lasted a couple of hours, but I won't delve into the side discussions just now.

It became apparent early on that the AASB will not be swayed from their view that unless a disposal is made to a third-party, then no residual can be recognised. **HOWEVER – AND THIS IS THE IMPORTANT PART FOR YOU...** it was agreed that where it can be demonstrated that recognising a residual value will not result in a material difference to the outcome achieved by further componentising the assets and extending the useful life of the "recyclable component" then it would be an acceptable argument that use of a residual was a proxy for that approach.

On that basis, the position adopted by our firm will be:

- We acknowledge the AASB view;
- Where it is adopted and applied by our clients, we will expect evidence for the increased useful life that will be applied to the "recyclable component" of infrastructure assets;
- Where it is not adopted and instead residual values are used as a proxy, we will expect evidence (as we have in the past) to support the residual value proportion applied; and
- In preparing the revaluations this year, where residual values have been used we will require council or your valuer to provide worked examples (at least one for each category of infrastructure asset) of how the use of a residual has resulted in a materially consistent outcome with what would have been achieved by further componentising the assets and extending the useful life of the "recyclable component".

Although it is disappointing that the AASB is not prepared to consider a more broad definition of residual value, hopefully this will bring some clarity to the topic and won't result in wholesale change to the approach you may have already applied.

As always, please contact me with any questions you may have.

Regards,

John O'Malley
Director