Drainage Asset Management Plan 2016

Adopted 19 June 2017

Latrobe City
a new energy

Drainage Asset Management Plan (DAMP) 2016

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1 EXECUTIVE SUMMARY

1.1 Context

Latrobe City is located approximately 150 kms east of Melbourne and is one of Victoria's four major regional cities with a population of over 75,000 residents. Latrobe City is made up of four central townships: Churchill, Moe-Newborough, Morwell and Traralgon. The smaller rural townships of Boolarra, Glengarry, Toongabbie, Tyers, Traralgon-South, Yallourn North and Yinnar are situated within the surrounding rural communities within the municipality.

Council owns, operates and maintains an underground urban pipe network that provides drainage and stormwater control services to the community. The assets that make up the stormwater drainage network have a 'Brownfields' replacement value of **$214,472,000.**

Drainage infrastructure is provided to enable the community to go about their business without hindrance from uncontrolled stormwater. The drainage system serves to reduce the risk of inundation of both public and private property.

The purpose of this Drainage Asset Management Plan (DAMP) is to assist with decision-making about Council's existing urban drainage infrastructure, to present asset information, and to predict the financial requirements of long-term renewal of these drainage assets.

The community desire is generally for increased and improved services, be that safer roads, better parks, modern buildings or lower levels of stormwater inundation. Unfortunately, the funding available to meet these demands is not increasing at the same rate as this desire for increased services. Good Asset Management Practice enables a more efficient approach to maintaining assets. By doing more with less, through knowing what assets we have, what the services are that we need to provide, what condition our assets are in and by monitoring the effect that our actions are having on the useful life and serviceability of our assets targeted expenditure can be made to sustain service delivery. Good Practice Asset Management requires a proactive approach to asset maintenance and planning to identify works before costly and dangerous asset failures occurring.

Much of Latrobe City's physical infrastructure, particularly drains and roads, were constructed from the 1950s through to the late 1980s. As an organisation using Asset Management practices, the community expects Council to know which assets are in need of replacement and when. As a Council, responsible for community funds, we acknowledge that we need to evaluate the impact of different funding scenarios and different management practices on the useful lifespan of our drainage assets and to demonstrate effective use of funds. Our most recent Council Plan 2015 states the requirements of Latrobe's 2026 vision of sustainability.

1.2 The Drainage Assets Service

The Latrobe City Council urban stormwater drainage network is primarily comprised of piped systems and the following assets:

- 18,076 Pits (generally Grated Pits, Side Entry Pits and Junction Pits)
- 17,964 Pipe segments (generally reinforced concrete); and
- 24 Gross Pollutant Traps – GPTs (designed to improve stormwater quality by intercepting litter)

1.3 What does it Cost?

The projected outlays necessary to provide the drainage and stormwater control services covered by this DAMP which includes operations, maintenance, renewal and the upgrade of existing assets over the next 10 year planning period is on average **$2,968,000** per year.

The funding allocated for this period is on average **$3,998,000** per year which includes capital expenditure for new and upgrade projects, maintenance, operations and an allowance for renewal based on the financial depreciation of the drainage assets.

This is a funding over-allocation of **$1,029,000** per year. The basis of current renewal expenditure requirement is based upon the annual depreciation rate (straight line) which does not reflect the current renewal expenditure required for an asset with a 100 year expected useful life where the oldest assets are approximately 66 years of age.

Latrobe City Council's drainage assets have an assumed 100 year life, and thus renewal of the first assets installed in approximately 1950 is not technically required until 2050. However, experience and evidence show that because the life of the assets is an estimated average, some assets will deteriorate faster than others and will require renewal sooner than that suggested by their expected useful life. Council will, and does, fund critical projects and renewal as required. Projected expenditure required to provide stormwater control and drainage services in the DAMP compared with planned expenditure are shown in Figure 1.1 below and are currently included in the Long Term Financial Plan.

Figure 1.1 - Projected & Planned Expenditure

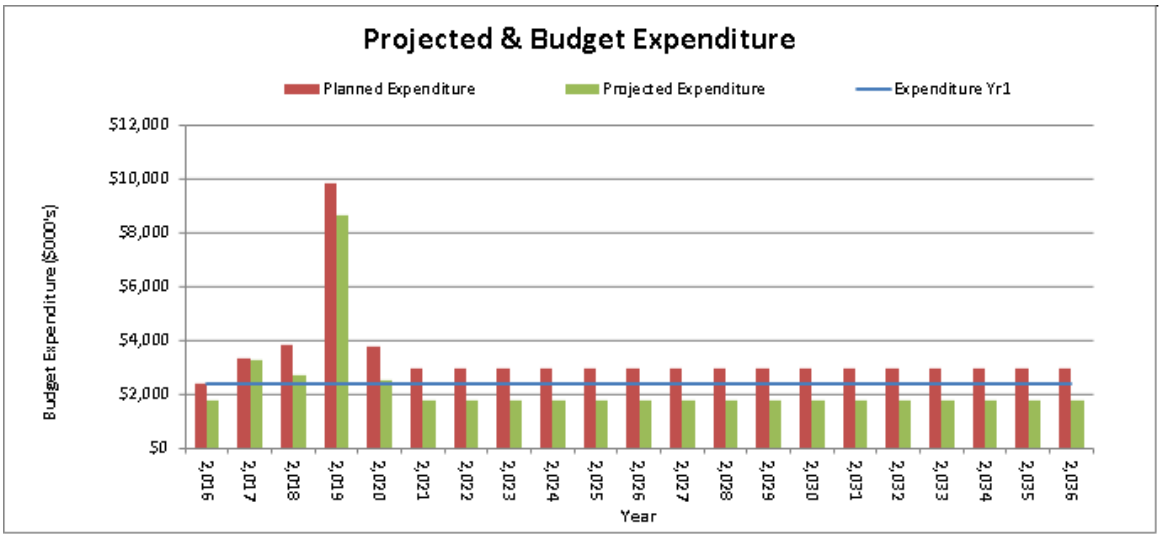
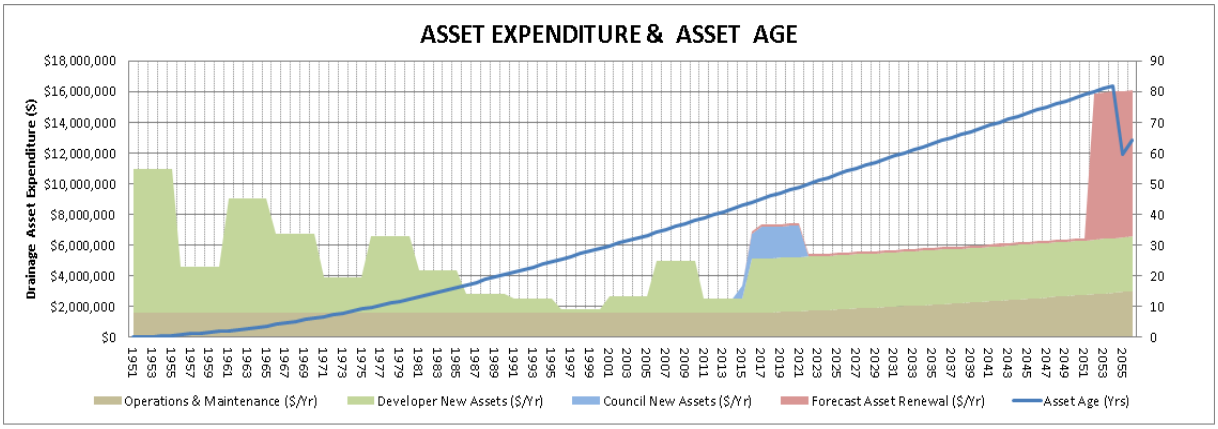


Figure 1.2, outlines the history of investment in drainage assets. The creation of assets began in the early 1950s. Most assets were generated as part of residential development, gifted to Council through development. The figure shows the steady increase in asset age and the minor renewal task starting in 2017 and ramping up significantly in 2050.

Figure 1.2 - Drainage Investment History and Asset Age



1.4 What we will do

Council plans to provide stormwater control and drainage services for the following:

- Operation, maintenance, and renewal and of pits, pipes and GPTs to meet the current service.
- Undertake upgrade of the stormwater network where capacity shortfalls have been identified in the existing system.
- Maintain critical drainage assets as a high priority.

1.5 What we cannot do

Council is not responsible for creeks or flood protection. Some creek flood protection is undertaken where there is evidence Council has permitted development without obliging the developer to protect against riverine flooding.

Works and services that cannot be provided under present funding levels are:

- Provision of protection from inundation by stormwater to all properties in significant rain events,
- Monitoring of water quality, and treatment of all stormwater being discharged, in respect of meeting EPA water quality standards,
- Protection against inundation where the cause is due to factors outside the control of Council such as:
    - Riverine flooding,
    - Poor home owner maintenance, and
    - Poor building practices and/or site design and building location, and
- Prevention of overland water flow in reserves where planned drainage flow paths exist even though a reserve may have a secondary use for recreation,

This plan currently does not include drainage assets such as:

- open drains/channels including major contour drains,
- head-walls and end-walls,

- outfall structures, and
- Stormwater Quality Improvement Devices (SQUID's).

These asset types are planned to be progressively included in future revisions of the DAMP as data is collected.

Also excluded are drainage assets associated with Latrobe Regional Airport, caravan parks at Hazelwood, Moe, and Lake Narracan as well as the Hyland Highway Landfill. These assets will be collected as part of the data improvement project however are under the care and control of the management of these business units.

1.6 Managing the Risks

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

- Incomplete/inaccurate asset data which potentially leads to poor decision-making and lack of funding for maintenance and renewals.
- No resource dedicated to the direct management of drainage assets

We will endeavour to manage these risks, within funding constraints, by:

- Conducting regular condition audits and site inspections to determine the remaining useful life of assets and maintenance requirements. This includes adherence to Australian Standards,
- Continued effort to rationalise collected data and improved processes to ensure data completeness and accuracy,
- Improved training and education of staff to increase awareness and adherence with associated standards, and
- Request funding for renewals as required and monitor trends of maintenance requirements.

1.7 Confidence Levels

This DAMP is based on datasets in which there is a **low** to **moderate** level of confidence, primarily as the database was developed incrementally over some 25 years, and the current data set has been created from a variety of sources with varying degrees of accuracy. To date the data has not been tested to provide a measure of completeness and accuracy.

There is greater confidence in the calculation of the financial information; however the results are based on asset quantities with **moderate to high** confidence and asset age with **low to moderate** confidence. This plan has not incorporated asset condition but has used age as predictor of remaining useful life, reducing the overall confidence level.

1.8 The Next Steps

The actions resulting from this asset management plan are to:

- Continue to improve asset data,
- Increase staff awareness surrounding the importance of maintaining an up to date and accurate DAMP, and
- Implement DAMP improvement plan as time and resources allow.

1.9 Key Issues:

The specific drainage and stormwater issues within Latrobe City are:

- The threats to stormwater quality on account of litter from commercial and industrial areas and the implementation of the proposed strategies to counter these threats. Refer to Council's Stormwater Management Plan 2002,
- Aging elements of the drainage network,
- Some historical design, construction and inspection standards have left a legacy of assets that may not perform as expected nor last their design life,
- Tree root invasion, from nature strip and private trees, blocks our drains which reduces functionality,
- Some of the debris that blocks our drains is the result of building and development works by building contractors. The effective policing of these processes, including the recommendation of CCTV after construction works, is critical,
- Some overland flow paths pass through private property,
- Not all properties discharge to a piped network which leads to a higher level of nuisance flows than would be expected in some urban areas,
- Low public awareness of the nature of stormwater management, the requirement for keeping easements and pits accessible and the importance of appropriate building/site design.
- Ground movement, particularly near open cut mines, may be a contributing factor to pipe separation, and
- Trees over/near pipes cause issues – solution is not necessarily to remove the tree/s but to actively manage the situation.

2 INTRODUCTION

2.1 Background

This DAMP aids responsive management of assets (and services the provided from assets), compliance with regulatory requirements, and to communicate funding needs to provide the required levels of service over the forward planning period.

Council does not have a specific legislated duty to provide drainage infrastructure. However, having supported development of land there is a duty of care to ensure reasonable enjoyment of the properties. In addition, the management of drainage greatly enhances the life and performance of other infrastructure. Further, there is a duty to mitigate disasters and a well-functioning drainage system is an appropriate method. The DAMP follows the format recommended in Section 4.2.6 of the International Infrastructure Management Manual[1].

The DAMP is to be read with Latrobe City Council's Asset Management Policy, Asset Management Strategy and the following associated planning documents:

- Long Term Financial Plan,
- Annual Business Plan,
- Risk Management Policy, and
- Subdivision Design Guidelines.

At the time of preparing this plan there remain several categories of assets for which Council does not have complete data. Where Council Officers have an estimate, this is included, as are indicative level of confidence scores for the data on which this plan is based. Council continues to increase the accuracy of the data to improve the projections of costs. Key stakeholders in the preparation and implementation of this asset management plan are: Shown in Table 2.1.1.

Table 2.1.1 – Internal Key Stakeholders

Internal Key Stakeholder	*Role in Asset Management Plan*
Councillors	Represent the needs of community/stakeholders, Allocate resources to meet the organisation's objectives in providing services while managing risks, Ensure organisation is financially sustainable.
CEO/General Manager	Overall stewardship and responsibility to provide the support structure and resources to allow adequate management of the drainage assets.
Manager Infrastructure Development	Manage strategic planning, construction of new, and renewal of existing assets.
Co-ordinator Infrastructure Planning	Provide support and undertake strategic asset planning.
Team Leader Asset Strategy	Coordinate Strategic Planning activities.
Asset Assessment Officers	Data collection, condition reporting and spatial location of assets.

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

Manager Operations and Waste	Manage reactive and planned asset maintenance.
Co-ordinator Roads, Drains	Provide support and guidance to reactive and programmed routine maintenance.
Team Leader Drainage	Respond to reactive maintenance requests and undertake routine maintenance.
Drainage Crews	Respond to reactive maintenance requests and undertake routine maintenance.
Council Business Units –	Responsible for operational delivery, local laws enforcement and land use / development planning.

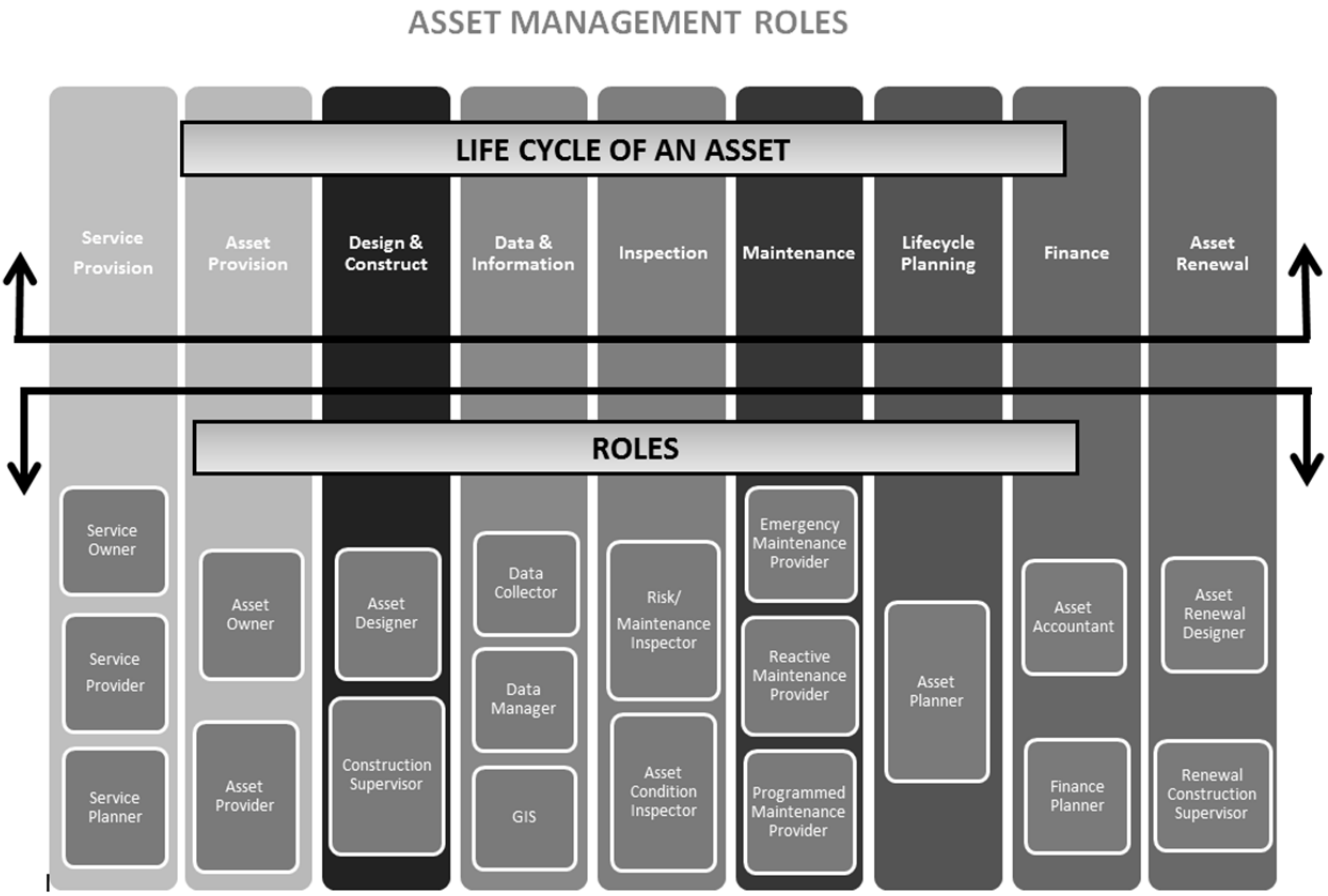
Table 2.1.2 – External Key Stakeholders

External Key Stakeholder
Community and general users
Local Businesses
West Gippsland Catchment Management Group
Recreational users and sporting groups – as users of open spaces subjected to inundation
Tourists and visitors – as occasional users
Management Committees of the Environment
Mines and other private entities whose properties serve as outfalls
VicRoads
Developers
Council's Insurer
State and Federal Government

Our organisational structure for service delivery from infrastructure assets is detailed below:

Figure 3: Organisational Structure/Roles

Our organisational structure for service delivery from infrastructure assets is detailed below. The functions that have been identified in the Asset Management Strategy are not fully reflected in the organisational structure. This is a matter that has been included in the improvement plan but it should be appreciated that the organisational structure is unlikely to fully reflect the functions of asset management due to a range of organisational objectives and priorities.



The following table represents the Latrobe City Council positions implementing asset management throughout the asset life cycle.

Service & Asset Function	Division	Department	Position	Formalised in Organisational Structure
Service Owner	IR	IR	GM IR	No
Service Provider	IR	Infra Dev	Mgr Infra Dev	No
Service Planner	IR	IR	Not allocated to position	No
Asset Owner	IR	Infra Dev	Mgr Infra Dev	No
Asset Provider	IR	Infra Dev	Mgr Infra Dev	Yes
Asset Designer	IR	Infra Dev	Co-ord Infra Design	Yes
Construction Supervisor	IR	Infra Dev	Co-ord Civil Works Projects Civil Engineers Team Leader Development Co-ord Major Projects TO Civil Works	Yes Yes Yes Yes Yes
Data Collector	IR	Infra Dev	Asset Assessment Officer	Yes
Data Manager	IR	Infra Dev	Team Leader Asset Strategy	Yes
GIS	IR	Infra Dev	Asset Assessment Officer	Yes
Risk Inspector	IR	Infra Ops	Not allocated to position	No
Asset Condition Inspector	IR	Infra Dev	Asset Assessment Officer	Yes
Emergency Maintenance	IR	Infra Dev	Team Leader Drainage	Yes
Reactive Maintenance	IR	Infra Dev	Team Leader Drainage	Yes
Programmed Maintenance Provider	IR	Infra Ops	Not Allocated to position	No
Asset Planner	IR	Infra Dev	Co-ord Infrastructure Planning	Yes
Financial Planner	Corp Services	Finance	Mgr Finance	No
Asset Accountant	Corp Services	Finance	Mgr Finance	No
Asset Renewal Designer	IR	Infra Dev	Co-ord Infra Design	Yes
Asset Renewal Construction Supervisor	IR	Infra Dev	Co-ord Civil Works Projects Civil Engineers Team Leader Development Co-ord Major Projects TO Civil Works	Yes

2.2 Goals and Objectives of Asset Management

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

Our goal in managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future users.

The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment.
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Managing risks associated with asset failures,
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed, and
- Continuing improvement in asset management practices.

2.3 Plan Framework

Key elements of the plan are:

- Future demand and how this will impact on future service delivery, and how this is to be met,
- Specifying the Stormwater Control Service Provision (where we would install pipes) the organisation will provide and Functional levels of service (when they will be cleaned).
- Lifecycle management that outlines how Council will manage its existing and future assets to provide the defined levels of service,
- Financial summary of what funds are required to provide the defined services,
- Monitoring of the plan to ensure it is meeting organisation's objectives, and an
- Asset management improvement plan.

2.4 Core and Advanced Asset Management

This DAMP is prepared as a 'core' asset management plan in accordance with the International Infrastructure Management Manual[2]. It is prepared to meet minimum legislative and organisational requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is essentially where the level of service is not analysed against community expectations or Council's ability to fund different service delivery strategies.

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

2.5 Community Consultation

Future revisions of the DAMP will incorporate community consultation on service levels and costs of providing the service. This will assist the Council and the community in matching the level of service needed by the community, service risks and consequences with the community's ability and willingness to pay for the service.

To elaborate, the 'core' AMP does not attempt to:

- Optimise decision making, or to
- Balance community expectation of service provision and levels of service to Council's ability to fund.

[2] IPWEA, 2011, IIMM.

3 LEVELS OF SERVICE

3.1 Customer Research and Expectations

The organisation has not carried out any research on customer expectations. This will be investigated for future updates of the DAMP.

The levels of service developed for this plan are based on current adopted technical levels of service that have been the experience of Council in delivering the service and responding to community requests and complaints.

3.2 Strategic and Corporate Goals

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

Our vision is:

In 2026, Latrobe *Valley benefits from a well-planned built environment that is complementary to its surroundings and which provides for a connected and inclusive community.*

Our mission is:

To provide the best possible facilities, services, advocacy and leadership for Latrobe City, one of Victoria's four major regional cities.

Relevant organisational goals and objectives and how these are addressed in the DAMP are included in Table 3.2.

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

Goal	Objective	Strategic Directions	How Goal and Objectives are addressed in AM Plan
APPROPRIATE, AFFORDABLE & SUSTAINABLE FACILITIES, SERVICES & RECREATION	To provide facilities and services that are accessible and meet the needs of our diverse community.	Develop and maintain community infrastructure that meets the needs of our community.	To document how Latrobe City Council will provide the stormwater drainage service provision and level of service.
EFFICIENT, EFFECTIVE & ACCOUNTABLE GOVERNANCE OBJECTIVES 2013 – 2017	Work to minimise rate increases for our community.	Ensure Latrobe City Council's infrastructure and assets are maintained and managed sustainably.	To analyse existing services and lifecycle management plans that will optimise the service delivery.

The organisation will exercise its duty of care to ensure public safety is accordance with Council's risk management policies. Management of infrastructure risks is covered in Section 5.2.

3.3 Legislative Requirements

The organisation will meet legislative requirements including Australian and State legislation and regulations. These include:

Table 3.3.1: Legislative Requirements

Legislation	Requirement
Local Government Act 1989	Sets out role, purpose, responsibilities and powers of local governments.
Road Management Act 2004	Relates to management of the drainage system where it lies within a public road reserve.
Water Act 1989	Applies to the management of the use of water resources including conservation, protection and quality of discharges into waterways
Subdivision Act 1988 and Subdivision Regulations (Procedures) 1989	Applies to works for drainage to connect the subdivision to the system serving properties outside it.
Building Act 1993, Building Regulations 2006 and Plumbing Regulations 2008	Provides for regulation of plumbing work and plumbing standards as it impacts discharge of water into the stormwater drainage system from private buildings.
ResCode	In relation to stormwater management, ResCode applies to the construction of new residential subdivisions to ensure environmentally sustainable residential development. This includes stormwater discharges from subdivision development.
Environment Protection Act 1970	Relates discharge, emission or deposit of any substance that may pollute any segment or element of the environment – in this instance, by its introduction into discharge waters of the stormwater drainage system.
Emergency Management Act 1986	Requires a council to have a Municipal Emergency Management Plan to address local emergency risks. This may include hazards arising from storm flows in the drainage system and associated infrastructure.
Health and Wellbeing Act 2008	Allows the issue of a prohibition notice for the conducting of an activity that may damage public health - in this instance being illegal discharges into the stormwater drainage system.
Occupational Health and Safety Act 2004	Applicable to working on stormwater infrastructure.
Melbourne Water Standards	Used in conjunction with Council's Standards to determine standards for road construction and maintenance for stormwater drainage systems.

3.4 Community Levels of Service

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

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

The organisation's current and expected community service levels are detailed in Tables 3.4 and 3.5. Table 3.4 shows the agreed expected community levels of service based on resource levels in the current long-term financial plan and community consultation/engagement.

Table 3.4.1: Community Level of Service

COMMUNITY OUTCOMES				
The impact of rainfall events on their property and personal safety arising from stormwater from Council's pipes and roads is minimal except in severe events.				
COMMUNITY LEVELS OF SERVICE				
Service Attribute	**Service Objective**	**Current Performance Measure**	**Current Performance**	**Future Performance**
Quality and Function	Provide well maintained stormwater facilities that collect and convey rainwater to natural watercourses.	Measurement is informally measured by officers based on feedback after rainfall events.	Not currently measured.	Modification of Pathways to record nuisance and other inundation action requests. This will be reviewed as part of the AMP process.
Safety	No significant Occupational, Health and Safety hazards.	Requests for safety enhancements are noted but not formally recorded.	Not currently measured.	Hazards are identified and mitigated. Safety issues are addressed in a timely manner appropriate to the risk.

3.5 Technical Levels of Service

Supporting the community service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities that the organisation undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Technical service measures are linked to annual budgets covering:

- Operations – the regular activities to provide services such as opening hours, cleansing, mowing grass, utilities, inspections, etc,
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition (e.g. cleaning of refuse/rubble, removing tree roots, replacing cracked pit lids),
- Renewal – the activities that return the service capability of an asset to its original status (e.g. frequency and cost of pipeline replacement),
- Upgrade – the activities to provide a higher level of service (eg replacing a pipeline with a larger size) or a new service that did not exist previously (drainage augmentation projects),
- New – the activities to provide a new asset which in turn provides a new service, and
- Expansion – the activities that result in an asset providing an expanded level of service,

Service and asset managers plan, implement and control technical service levels to reflect and meet the customer service levels.[3]

Table 3.5 shows the technical level of service expected to be provided under this AM Plan. The agreed sustainable position in the table documents the assumed current position of Council based on existing and past practice. Further development of this Plan will include/consider community consultation and trade-off of service levels performance, costs and risk within resources available in the long-term financial plan.

[3] IPWEA, 2011, IIMM, p 2.22

Table 3.5: Technical Levels of Service

TECHNICAL LEVELS OF SERVICE					
Service Attribute	**Service Objective**	**Performance measure**	**Target Performance**	**Current Performance**	**Future actions**
System capacity	Capacity to convey stormwater to protect properties from overland flow.	Frequency of non-nuisance overland flow that impacts a) Private property b) Major roads c) Minor roads d) Passive open space	On average: a) <1 event every 2 years b) <1 event every 5 years c) <1 event every 2 years d) <2 events every year	Some under-capacity drains identified by investigation following resident reports.	Addressing under capacity drains as resources allow.
System condition to meet capacity	Routine maintenance maintains existing system to allow the asset to meet capacity objectives.	a) Defect/Safety inspection frequency. b) Responsiveness.	a) Programmed inspections as per schedule. b) Attend issues identified following a questionnaire as "High Urgency" within 4 hours and other issues within 5 days.	a) Few inspections are programmed. b) High urgency issues are assessed within the timeframes. Non urgent issues are assessed within the timeframe.	Increase targeted programmed inspections.

4 FUTURE DEMAND

4.1 Demand Drivers

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

Latrobe City Council has minimal infill densification of its urban areas, and in rural areas the increased impervious area is still generally managed on the properties themselves. This is not projected to change in the next 10 years without significant societal attitude change.

The primary growth areas projected for the next 10 years that will result a significant increase in impervious area (new housing) are to the north and northeast of Traralgon, and north of Moe (Narracan). Less significant growth is occurring west of Morwell. These developments are providing their own infrastructure including detention basins to reduce the impact on receiving waters from increased stormwater flow resulting from increased impervious area.

The increased drainage flows are generally managed by developers and so have a minor requirement for infrastructure upgrades. The effect of this growth however, is to increase future renewal requirements when the assets wear out or are "consumed", and also to increase maintenance requirements in the near term. Care is taken as much as the legislation allows to ensure the new works are low maintenance, do not represent hazards to the community or the environment, and there are no or few highly critical assets.

4.2 Demand Forecast

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets are documented in Table 4.2.

Table 4.2 – Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Increased infill development within urban areas	Minimal increase in impervious area	To remain steady for the next 10 years	Negligible
Traralgon Growth Area including northeast and southwest developments	Significant increase in impervious area in the area	Existing developed lots to be built on gradually over the next 10 years but the level of new development to moderate	Negligible requirement for new or upgraded infrastructure but a projected increase in maintenance works
Moe North and Morwell North West	Significant increase in impervious area in the area	Existing developments to be brought on gradually over the next 10 years with little further projected increase	Negligible requirement for new or upgraded infrastructure but a projected increase in maintenance works
Increased awareness of environmental impact on waterways of changes to impervious area	Council is obliging developers to implement retention and detention into their designs to manage the impact.	To gradually increase in expectation. Council already has a good awareness and resources this aspect of creek health	With the increase in wetland style retention basins, usually with detention to manage increased water flow, there will be an increase in this maintenance/renewal requirement
Increase in rural living and an increase in the population of small towns	Expectation of a increased level of service of drainage management in small towns and rural residential developments	As the population increases so will the pressure to provide increased drainage services	An increase in services equates to an increase in maintenance and renewal costs. Also as the issues are well removed from depots, a pressure to meet service response times
Increase in expectations in environmental management	As the residents' awareness of drainage's impact on the environment increases, so will the management strategy/funding be expected to increase	Council already has a responsible approach to environmental management of drainage	No impact is projected if Council continues to be "on the front foot" of this issue

4.3 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[4]. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another community area or public toilets provided in commercial premises.

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

Table 4.3 – Demand Management Plan Summary

Demand Driver	Impact on Services	Demand Management Plan
Infill development increasing impervious area	The increased sudden flow from the increased impervious area will result in the current infrastructure being under capacity resulting in minor flooding and nuisance overland flow	Monitor the amount of infill and manage through installing detention basins in the current infrastructure and obliging home builders to include detention on-site as part of their construction
Increased development and impervious area increasing the amount of stormwater infrastructure and resulting in increasing maintenance effort	Increased maintenance effort due to the additional infrastructure	Ensure designs use 'best practice' principles out to minimise maintenance – such as additional pits for inspection, well thought out overland flow paths, easy access to new wetlands, community groups maintaining wetland vegetation, etc.

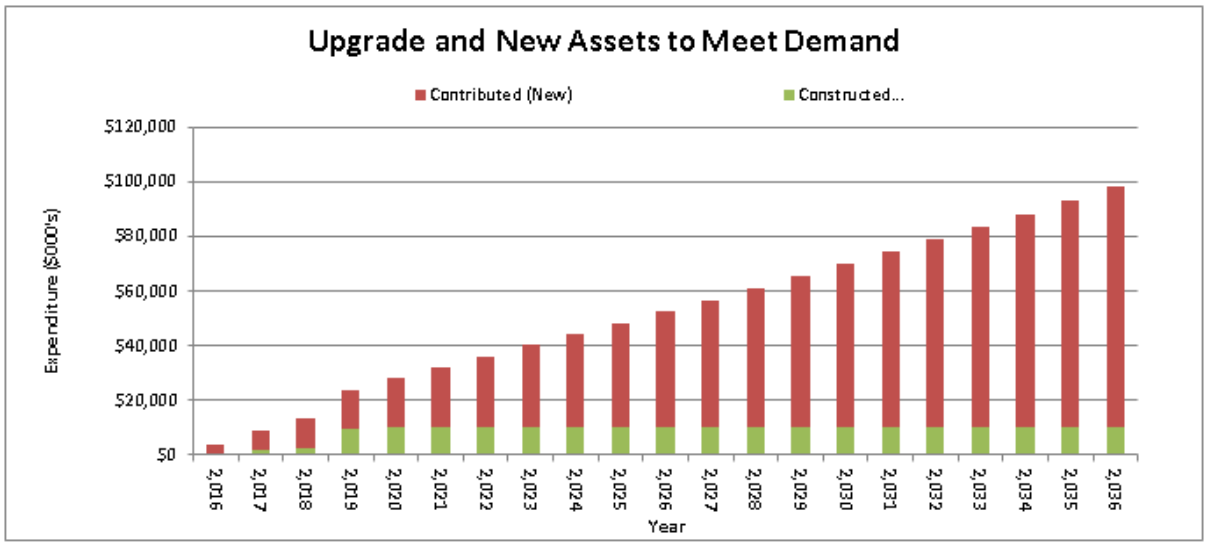
4.4 Asset Programs To Meet Demand

The new assets required to meet growth will be acquired free of cost (gifted) from land developments and constructed/acquired by Council.

New assets constructed/acquired by Council are shown below in Figure 4.4 The cumulative value of new contributed and constructed assets will be further refined in future editions of this plan.

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

Figure 4.4: Upgrade and New Assets to meet demand (Cumulative)



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

5 LIFECYCLE MANAGEMENT PLAN

5.1 Data and assets

This section relates to long term management and operation at agreed levels of service (defined in Section 3) while optimising life cycle costs.

In order to estimate operational expenditure and focus planned maintenance activities, a quantitative desktop analysis has been conducted of available data including the current Geographical Information System (GIS) and Asset Management System (AMS) datasets. To properly prioritise actions and mitigate operational risks, drainage assets have also been ranked and categorised in a hierarchical structure, and rated for relative risk by examining a number of key factors.

A complete picture of the drainage network is not yet known, and it is estimated by Council Officers that the information held has an accuracy level as shown in Table 5.1. Improving this accuracy is one of the key objectives of the DAMP improvement plan.

5.1.1 Physical parameters

The assets covered by the DAMP are shown in Table 5.1:

Table 5.1a: Assets covered by this Plan (as at 30 June 2015)

Category	Total	Category Breakdown	Measure	% of Category	Level of confidence in Data %
Pipes	**17,964 segments 597,400 m**	Collector: Pipes 0 mm-.<300 mm	344,099 m	57.6%	80
		Local Main: Pipes >375 mm - <575 mm	135,032 m	22.6%	80
		Main: Pipes >600 mm-<1150 mm	90,420 m	15.1%	90
		Trunk Main: Pipes >1200 mm	27,958 m	4.7%	75
Pits	**18,076 Pits**	Side Entry Pit – Normal, Double, and Haunched (SEP, 2SEP, HSEP, 2HSEP)	9,992	55.28%	75
		Junction Pit - Normal, Double, and Haunched (JP, HJP, 2JP)	7,540	41.71%	80
		Collector Pit (CP)	281	1.55%	80
		Other: Inspection Openings/Endwalls/Outfall	236	1.45%	80
Gross Pollutant Traps	**24 units**	GPT	24	100%	100

Due to a lack of information of suitable accuracy, this plan currently does not include stormwater assets listed in the table below. Future iterations of this plan will be expanded to include these assets.

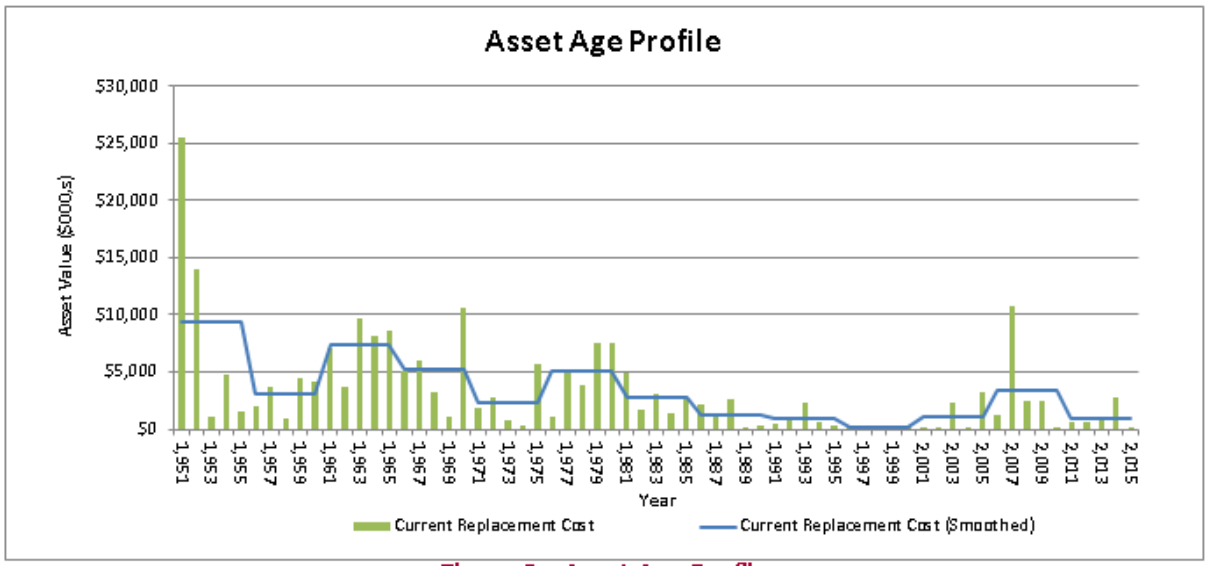
Table 5.1b: Assets not covered by this Plan (as at 30 June 2015)

Asset Type	Status
• Open drains/channels including major contour drains	Limited asset inventory
• Headwalls/endwalls/outfall structures	Data collection underway
• Stormwater Quality Improvement Devices (SQUID's)	Limited asset Inventory
• Hazelwood, Moe and Lake Narracan Caravan Parks	Business Unit planning
• Latrobe Valley Airport	Business Unit planning
• Hyland Highway Landfill	Business Unit planning

The age profile of the assets include in the DAMP is shown in Figure 2. Age profile information has been estimated based on the apparent age of the neighbourhoods where the assets are located or where a clear linkage can be established the age of adjacent road segments. This is considered adequate for the purposes of the plan as developing more accurate profiles for management purposes would be better based on condition than age. Condition is a better predictor of performance and renewal requirements than age.

The graph in Figure 4 shows the total value of the assets for the year acquired or last renewed in each year. All values are current values.

Figure 4: Asset Age Profile



Due to the size and the spread nature of drainage assets they are only practically viewable on Council's GIS system. For convenience of reference only, generalised snapshots of each major township are provided in Appendix G - *Drainage System*.

5.1.2 Asset capacity and performance

The organisation's services are generally provided to meet design standards where these are available. Without undertaking a catchment analysis, calculating the expected volumes, then modelling the drain system capacity, determining the capacity of the drainage system is estimated based on historical data and local knowledge.

Officers are not aware of significant capacity issues of the underground pipe network such that there is systemic and frequent flooding. Deficiencies are assumed to be restricted to localised nuisance flooding hotspots and assumptions about the infrastructure condition (not necessarily performance or capacity). Most situations where flooding of residents' yards occurs is due to maintenance issues – either Council's asset maintenance or the residents'.

Riverine flooding from creeks and rivers is the responsibility of the West Gippsland Catchment Management Authority.

At the time of preparing this plan, locations where deficiencies in service performance are known were not recorded. A future development of this plan will include at least suspected deficient locations. Table 5.1.2 merely defines the situation at this time.

The locations identified as critical risk locations and included in Appendix H - Identified Critical Risk Locations are not known deficiencies, rather locations where a failure would have higher than acceptable consequences.

Table 5.1.2: Known Service Performance Deficiencies

Location	*Service Deficiency*
Localised nuisance flooding issue - Pipes	Localised minor flooding when pits surcharge. Capacity issue related to pipes
Localised nuisance flooding issue - Pits	Localised minor flooding when pits surcharge. Capacity issue related to size of pit openings or other reason such that water is not able to get into the underground system quickly enough

5.1.3 Asset condition

Condition is known for a small minority of drainage assets. The sheer volume of the pipes and pits and the inaccessibility of the pipes in particular preclude a cost-effective data collection for every asset.

Therefore condition data collected to date has been only where maintenance or repairs has been required. This is not only skewed to poor condition pipes, but is insufficient to predict the condition of the overall network.

However, officers have compiled the issues contained in Table 5.1.3a, which includes issues other than just condition.

Table 5.1.3a: Known asset condition and other issues

Location	Service Deficiency
All towns	Lack of infrastructure due to stormwater asset construction not being a requirement pre-1960s
All towns	Brick drainage pits/pipes in easements in private property, earthenware pipes, concrete with no reinforcing
Concentrated in Traralgon	Poor construction standards/practices pre-2000
Traralgon, Moe/Newborough Morwell	Planning Scheme rezoning – lack of review of changed infrastructure needs
All areas	Unmaintained concrete or earth drains
All areas	Private buildings/structures constructed, covered over top of infrastructure
Traralgon, Morwell, Moe/Newborough and Churchill	Utility companies and communication providers compromising capacity and serviceability of drainage network e.g. utility conduits driven through pipes
Urban roads within Traralgon, Morwell, Moe/Newborough and Churchill	Pit inaccessibility – asphalted, heavy or buried pits lids

The condition profile of Council's assets is not available with a good degree of confidence. Instead the age profile provided in Figure 4 can be used to estimate the condition profile. Developing better condition-related information is a key element of the improvement program.

Figure 5.1.3b shows the condition profile of the asset category using the IIMM 1(very good) – 5 (very poor) condition. The graph shows the total value of assets for each condition grading. A zero value represents asset that are new. All values are current values. The average condition (based on the IIMM criteria) is **2.2**.

Figure 5.1.3b : Age Based Asset Condition Profile (Average Condition 2.2)

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

Table 5.1.3: Simple Condition Grading Model

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

5.1.4 Asset valuations

Asset valuations are of two types, depending on their application. 'Greenfields' based valuation is based on the cost to construct an asset in an undeveloped area and is required for Asset Valuation Reporting purposes. 'Brownfields' based valuation is based on the costs for construction in a developed situation and better reflects the actual cost to replace established assets and is used to determine the replacement costs for asset planning purposes. Care has been taken to note which figure is used in this plan.

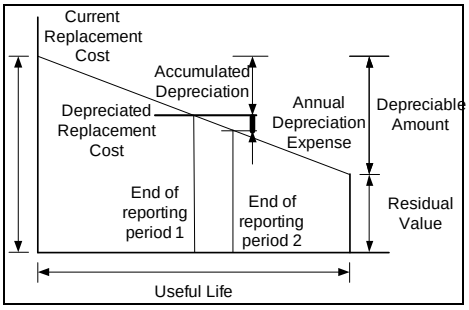
Assets were last revalued at 30 June 2015. Assets are valued at Fair Value in accordance with AASB13 Fair Value Measurement. The values listed below are 'Greenfields' values with the associated "Brownfield" values presented for comparison.

Table 5.1.1 – Greenfield Financial Asset Reporting values

Criteria	Greenfield value	Brownfields value *(15% allowance for in-situ construction)*
Current Replacement Cost	**$191,002,776**	**$219,676,192.40**
Accumulated Depreciation	**$80,917,995**	**$93,055,694.25**
Depreciated Replacement Cost[6]	**$110,084,781**	**$126,597,498.15**
Annual Depreciation Expense	**$1,510,152**	**$1,736,674.80**

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

Figure 5.1.1 – Asset Financial reporting value explanation



Useful lives were independently reviewed in June 2015 by Assetic Pty Ltd as part of the independent advice for the asset valuation.

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

Criteria	*Brownfields value*
Rate of Annual Asset Consumption (*Depreciation/Depreciable Amount*)	**0.96%**
Rate of Annual Asset Renewal *(Capital renewal exp/Depreciable Amount*) I	**0.55%**

On a long life asset, the rate of Annual Asset Consumption and rate of Annual Asset Renewal can misrepresent the immediate financial position by reflecting constant renewal when renewal demand does not occur until asset reach their useful life.

Council plans to renew assets at **57.3%** of the rate they are being consumed and will be increasing its asset stock by **1.8%** in each year.

5.2 Infrastructure Risk Management Plan

An assessment of risks associated with service delivery from infrastructure assets has identified some of the critical risks. The typical risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Stormwater assets play an important role in protecting the community from primarily property damage. Therefore, a failure of the assets will cause potential property and injury risks, as a result of inundation (under capacity / inappropriate design / structural failure / blockage) or soil effects (void generation, subsidence, erosion). Two less obvious risks are failure of wetlands vegetation resulting unexpected costs to maintain or replace, as well as damaging Council's reputation, and failure of the detention component of wetland/detention basins resulting in creek or drain erosion.

In order to assess these risks, each stormwater asset is assigned a Risk Rating derived from Table 5.2.

Table 5.2. - Risk Rating likelihood and consequence criteria and weighting

		Likelihood of Failure				
		Improbable	Remote	Occasional	Probable	Frequent
Consequence of Failure	Negligible	Acceptable	Acceptable	Acceptable	Moderate	Moderate
	Low	Acceptable	Moderate	Moderate	High	High
	Moderate	Acceptable	Moderate	High	High	Very High
	Significant	Moderate	High	High	Extreme	Extreme
	Catastrophic	Moderate	High	Very High	Extreme	Extreme

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

5.2.1 Risk of pit and pipe failure

Tables 5.2.1a and 5.2.1b are derived from the tables in Appendix I and represent a calculation-based assessment of individual pipes and pits.

Table 5.2.1a: Pipes Risk Assessment Results

Risk Text	Risk Rating	Pipes	Length (m)	% (Total)	% (Length)
Acceptable	1	16.00	48	0%	0%
Moderate	2	13,695.00	394,924	77%	67%
High	3	4,141.00	192,426	23%	33%
Very High	4	8.00	1,479	0%	0%
Extreme	5	-	-	0%	0%
Total		17,860.00	588,878		

Table 5.2.1b: Pits Risk Assessment Results

Risk	Risk Rating	Pits	% (Total)
Acceptable	1	1,474	8%
Moderate	2	13,516	76%
High	3	2,814	16%
Very High	4	0	0%
Extreme	5	0	0%
Total		17,804	

Tables 5.2.1a and 5.2.1b provide a rating for individual pipes and pits. Considering the location of the pipe or a small network of pipes, and the consequence of failure, Council officers have also identified key locations as contained in Appendix H - Identified Critical Risk Locations.

This Appendix identifies small sub-systems where engineering judgement or local knowledge indicates a significant consequence should a failure occur. The list will be enhanced and expanded as time and resources allow, and as locations are brought to Council's attention.

The factors used in identifying the consequences in Appendix H - Identified Critical Risk Locations are contained in Table 5.2.1c. Engineering judgement is used to apply a consequence weighting using Table 5.2.

Causes of the system failure and the likelihood of each mechanism will vary depending on the asset's configuration, the parameters of the immediate area and upstream.

The proposed actions have yet to be formally included in routine maintenance activities.

Table 5.2.1c – Generic risk categories

ID	*Risk*	*Consequence*
1	Flooding of several residential properties (more than nuisance flows)	Damage to buildings and erosion of land
2	Flooding of industrial, commercial and retail properties	Damage to buildings and stock. Potential loss of revenue
3	Severing a no through road	Temporary loss of access for a period of time to a small number of properties
4	Severing a road	Temporary inconvenience to a number of properties during detour
5	Floodwaters disrupting utilities	Loss of service to broader community

5.2.2 Insurance

Council has a process to report any incidents regarding drainage when they occur.

5.3 Routine Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. cleansing, street sweeping, grass mowing and street lighting electricity and operations costs. For drainage there are few operational costs and those identified do not appear to apply in Latrobe City. Drainage operational activities may include activities such as pumping stations, monitoring stations, Bureau of Meteorology notifications.

Maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. Maintenance excludes rehabilitation or renewal.

Maintenance Management activities include inspection, assessing the condition against failure/breakdown experience, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Maintenance may be classified into Reactive, Planned and Specific maintenance work activities.

- Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.
- Planned maintenance is repair work that is identified and managed through a maintenance management system (MMS).
- Specific maintenance is replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacing air conditioning units, etc. This work falls below the capital/maintenance threshold but may require a specific budget allocation.

Table 5.3.1: Staffing levels

Position	*Effective Full Time*	*2015/16 Actuals*
Co-ordinator Operations	0.15	$23,000
Supervisor Drainage	0.15	$20,000
Team Leader Drainage	1.0	
3 Full Time workers	3.0	$333,041
2 Casuals	1.0	
Litter Trap Administration	0.15	$16,000
Street Sweeping Administration	0.30	$15000
Total	**5.75 EFT**	**$407,041**

5.3.1 Operations and Maintenance Plan

Actual past operational and maintenance expenditure of the following services: road street sweeping, drainage maintenance and GPT cleaning services is shown in Table 5.3.1.

Table 5.3.2: Maintenance Expenditure Trends

Year	*Maintenance Expenditure*			
	Operations	**Administration**	**Vehicles**	**Total**
2013/14	$1,041,360	$170,845	$83,966	$1,296,171
2014/15	$1,073,567	$174,067	$86,563	$1,334,196
2015/16	$1,106,770	$179,450	$89,240	$1,375,460
Draft 2016/2017	$1,141,000	$185,000	$92,000	$1,418,000

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

Council is advised to allocate annual operations funding to the following projects in Table 5.3.2.

Table 5.3.3: Projected Maintenance Additions

Project	*Annual Allocation*
Outfall Maintenance	$30,000
Open Drain Maintenance	$30,000
Gross Pollutant Trap Maintenance	$20,000
Annual Total	**$80,000**

These estimates have been reflected in projected maintenance figures of this plan.

5.3.2 Asset Hierarchy

An asset hierarchy provides a framework for structuring data in an information system to assist in collection of data, reporting information and making decisions. The hierarchy includes the asset class and component used for asset planning and financial reporting and service level hierarchy used for service planning and delivery.

Drainage systems have been designed to aggregate flows from many small sub catchment areas, with increasing hydraulic capacity as more flows are combined on their route to the closest outfall location. In the majority of cases, the larger the carrying capacity of the drain, the more area, and properties are serviced. This directly correlates with a greater need to maintain consistent service delivery, and a greater consequence should the asset fail.

With this in mind, the primary criteria for assigning to a hierarchical category is hydraulic capacity, however drains may be assigned to a category of greater importance based on number of properties/area serviced, context and function.

To assist in monitoring service delivery and calculating risk, the organisation's service hierarchy is shown in Table 5.3.2.

Table 5.3.2: Drainage Hierarchy

Service Hierarchy		***Asset Description***
Pipe - Trunk	Trunk Main	• Where multiple sub-catchments share the same outfall, main drains are aggregated into trunk mains destined for outfall. • Primary Criteria – Pipes 1200 mm diameter and greater.
Pipe - Trunk	Main	• The main drain will carry the aggregated runoff from a large geographic area to outfall. • Primary Criteria – Pipes 600 mm -> 1150 mm diameter.
Pipe – Non Trunk	Local Main	• These pipes aggregate collector pipes and provide path to the main drain. • Primary Criteria – Pipes 375 mm -> 575 mm diameter
Pipe – Non Trunk	Collector	• These pipes service a small area/number of properties. They are close to the start of line of a drainage line, and are typically shallow (< 2 m deep) • Primary Criteria - Pipes up to 300 mm diameter
Pit	JP simple	• Pit less than 900 mm a single inlet and single outlet only
Pit	JP complex	• Pits over 900 mm or with more than single inlet and single outlets
Pit	Standard Side Entry Pit (SEP) or Catch pit	• Simple SEP on a run with no or little impact should it fail
Pit	Critical Side Entry Pit (SEP) or Catch pit	• An SEP on a sag point or low point or where failure has greater than normal consequences

5.3.3 Operations and Maintenance Strategies

The organisation will operate and maintain assets to provide the defined level of service to approved budgets in the most cost-efficient manner. This is being developed as part of a maintenance management system and the following proposed/identified activities will be modified as that plan/system develops.

The operation and maintenance activities include:

- Scheduling operations activities to deliver the defined level of service in the most efficient manner,
- Undertaking maintenance activities through a planned maintenance system to reduce maintenance costs and improve maintenance outcomes. Undertake cost-benefit analysis to determine the most cost-effective split between planned and unplanned maintenance activities (50 – 70% planned maintenance desirable as measured by cost),
- Maintain a current infrastructure risk register for assets and present service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council/Board,
- Review current and required skills base and implement workforce training and development to meet required operations and maintenance needs,
- Review asset utilisation to identify underutilised assets and appropriate remedies, and over utilised assets and customer demand management options,
- Maintain a current hierarchy of critical assets and required operations and maintenance activities,
- Develop and regularly review appropriate emergency response capability,
- Review management of operations and maintenance activities to ensure Council is obtaining best value for resources used.

5.3.3.1 Maintenance and operation of Critical Assets

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

Operations and maintenances activities may be targeted to mitigate critical assets failure and maintain service levels. These activities may include increased inspection frequency, higher maintenance intervention levels, etc. Critical asset locations are listed in Appendix H - Identified Critical Risk Locations.

At present a specific program of inspection has not been developed or costed. This will be developed in conjunction with the stakeholders as time and resources allow.

5.3.3.2 Standards and specifications

Maintenance work is carried out in accordance with the following Standards and Specifications.

Australian Standards

- AS 3725 Loads on Buried Concrete Pipes
- AS 3600 Concrete Structures

- AS 1726 Geotechnical Site Investigations
- AS 2280 D.I.C.L. Pressure Pipes and Fittings
- AS 1477 PVC Pipes and Fittings for Pressure Applications
- AS 1379 Specification and Supply of Concrete
- AS 4058 Precast Concrete Pipes (pressure and non-pressure)
- AS 1289 Methods of Testing Soils for Engineering Purposes
- AS 1260 PVCU Pipes and Fittings for drain, waste and vent applications
- AS 1254 PVC Pipes and Fittings for Storm and Surface Water Applications
- AS 1012 Methods of Testing Concrete

Standard Drawings

- LCC 101 Kerb and Channel Profiles
- LCC 202 Pit Covers
- LCC 203 Lintels
- LCC 204 Pipe Installation on Steep Slopes
- LCC 205 Side Entry Pit(PDF, 44KB)
- LCC 206 Grated Side Entry Pit
- LCC 207 Grated Pit for a footpath drain
- LCC 208 Junction Pit(PDF, 40KB)
- LCC 209 Property Connections
- LCC 210 Double Side Entry(PDF, 36KB)
- LCC 211 Inlet Catch Pit
- LCC 212 Culvert Installation
- LCC 215 Grated Junction Pits
- LCC 216 Side Entry Pit with Flared Entry
- LCC 219 Drainage Chute
- LCC 220 Traffic Grated Pit
- LCC 301 Subsurface Drainage
- LCC 306 Vehicle Crossing at Culvert
- LCC 307 Vehicle Crossing at Kerb
- LCC 310 Rural Access Track
- LCC 401 Pedestrian Path
- LCC 402 Ramped Path Crossing at Kerb
- LCC 403 Ramped path Crossing at kerb with TGSI
- LCC 411 CBD Concrete Paving
- LCC 412 Joints in Concrete Pavements
- LCC 501 Guide Posts
- LCC 505 Guard Fence Ground Beam
- LCC 901 Trenched Service Installation

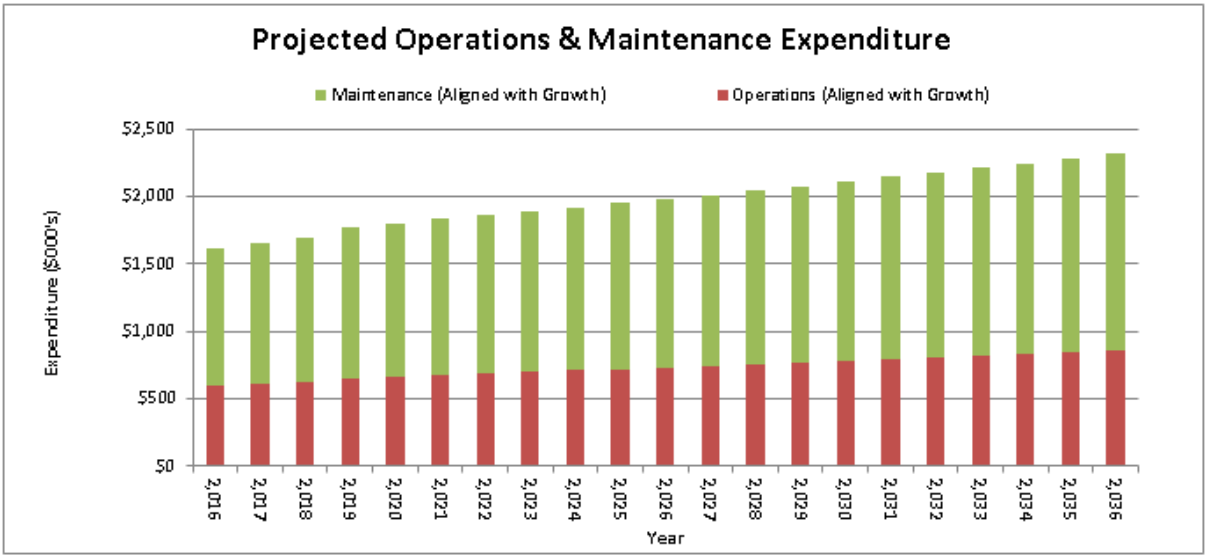
Standard sections

- Section 02 Grubbing
- Section 03 Earthworks
- Section 04 Drainage
- Section 06 Kerb and Channel
- Section 08 Road Pavement

5.3.4 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 4. Note that all costs are shown in 2016 dollar values (i.e. current values).

Figure 5.3.3: Projected Operations and Maintenance Expenditure



Deferred maintenance are works that are identified for maintenance and unable to be funded and are to be included in future risk assessment and analysis.

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

5.4 Renewal/Replacement Plan

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

5.4.1 Renewal Plan

The data from the asset register has been used to project the renewal costs using acquisition year and useful life to determine the renewal year. Condition Assessment to determine renewal is proposed to be used in future iterations of this Plan.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1. Asset useful lives which were last reviewed on June 30, 2015[7]

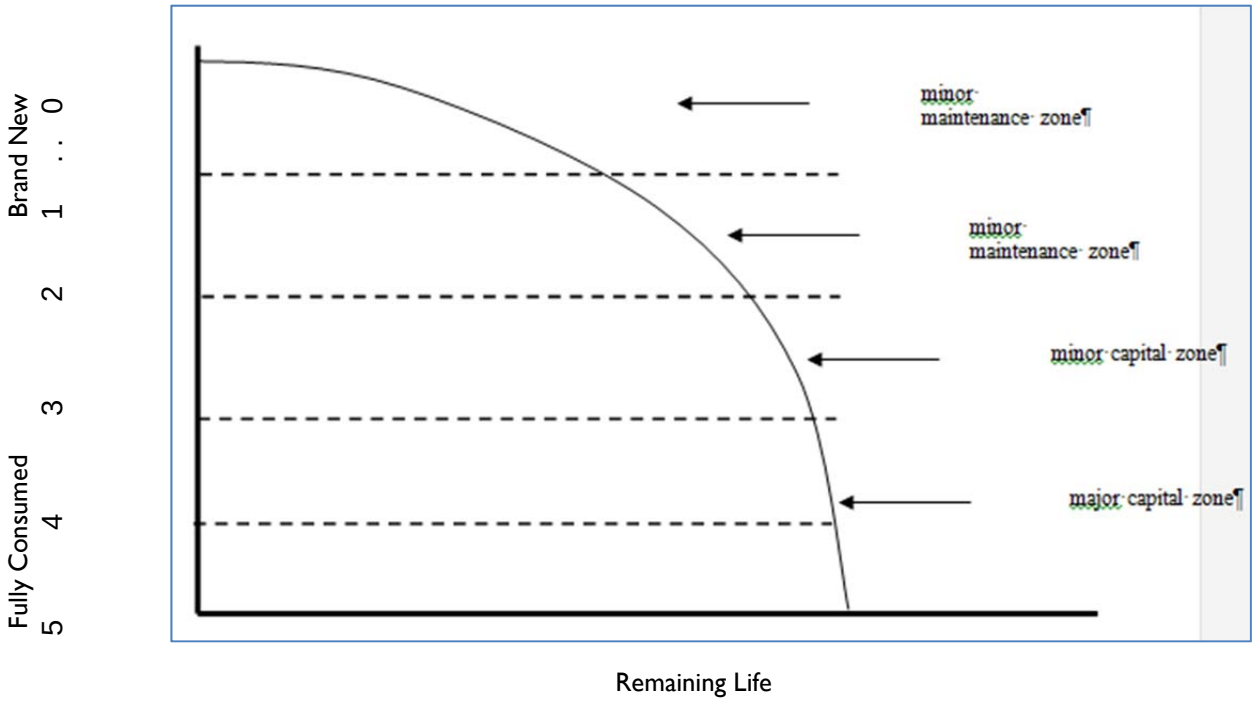
Table 5.4.1: Useful Lives of Assets

Asset Category	*Useful life*
Stormwater Pipes	100 years
Stormwater Pits	100 years
Gross Pollutant Traps	100 years

5.4.2 Renewal and Replacement Strategies

- The organisation will plan capital renewal and replacement projects to meet level of service objectives and minimise infrastructure service risks by:
- Planning and scheduling renewal projects to deliver the defined level of service in the most efficient manner,
- Undertaking project scoping for all capital renewal and replacement projects to identify:
    - the service delivery 'deficiency', present risk and optimum time for renewal/replacement,
    - the project objectives to rectify the deficiency,
    - the range of options, estimated capital and lifecycle costs for each options that could address the service deficiency,
    - and evaluate the options against evaluation criteria adopted by the organisation, and
    - select the best option to be included in capital renewal programs,
- Using 'low cost' renewal methods (cost of renewal is less than replacement) wherever possible,
- Maintain a current infrastructure risk register for assets and service risks associated with providing services from infrastructure assets and reporting Very High and High risks and residual risks after treatment to management and Council/Board,
- Review current and required skills base and implement workforce training and development to meet required construction and renewal needs,
- Maintain a current hierarchy of critical assets and capital renewal treatments and timings required ,
- Review management of capital renewal and replacement activities to ensure Council is obtaining best value for resources used.

Figure 5.4.2 Condition and its relationship to intervention



5.4.3 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (eg replacing a bridge that has a 5 t load limit with a bridge with a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (eg roughness of a road).[8]

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

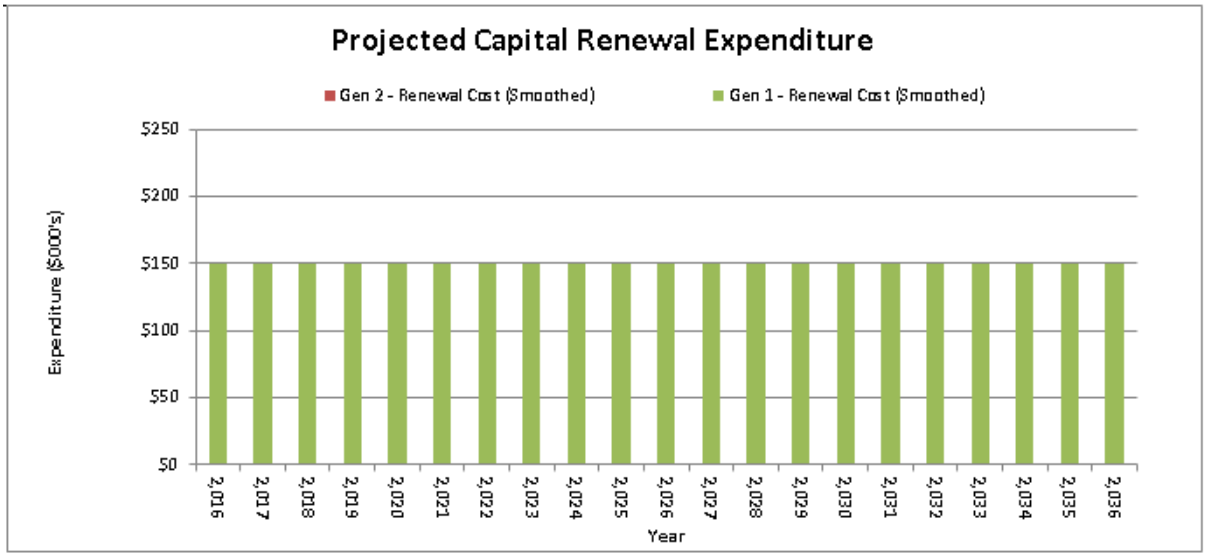
- Have a high consequence of failure (criticality – see Appendices),
- Have a high utilisation and subsequent impact on users would be greatest,
- The total value represents the greatest net value to the organisation,
- Have the highest average age relative to their expected lives,
- Are identified in the DAMP as key cost factors,
- Have high operational or maintenance costs, and
- Where replacement with modern equivalent assets would yield material savings.[9]

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

5.4.4 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases from growth. There is some capital renewal expenditure for the foreseeable future. This forecast incorporates a contingency amount of $150,000 per annum in the absence of the preferred method of condition based assessment. Council's first recorded drainage assets date back to approximately 1950 which at the adopted 100 year useful life, will not be due for replacement until 2050. The current planning horizon does not encompass the renewal of significant quantities of drainage assets.

Fig 5.4.3: Projected Capital Renewal and Replacement Expenditure



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

5.5 Creation/Acquisition/Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost to the organisation from land development. These assets from growth are considered in Section 4.4.

5.5.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as Councillor or community requests, proposals identified by strategic plans or partnerships with other organisations. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes. The priority ranking criteria is detailed below.

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

Table 5.5.1: New Assets Priority Ranking Criteria

Criteria	*Weighting*
Reducing community risk profile	50
Reduce maintenance activity	30
Improve environmental outcomes	15
Promote economic benefits	5
Total	100%

5.5.2 Capital Investment Strategies

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

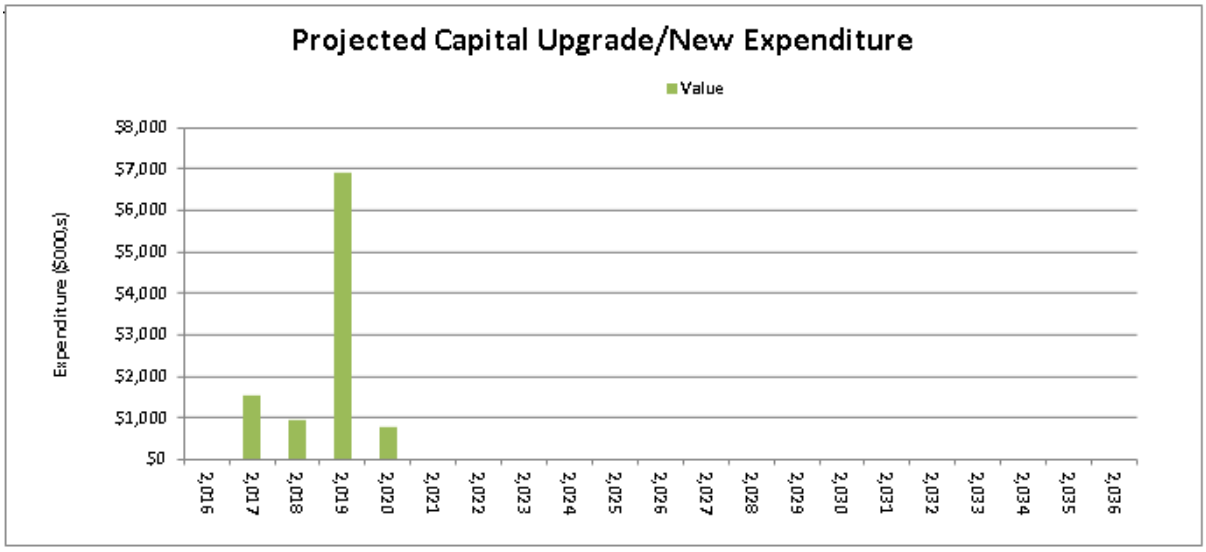
- Planning and scheduling capital upgrade and new projects to deliver the defined level of service in the most efficient manner,
- Undertake project scoping for all capital upgrade/new projects to identify:
    - the service delivery 'deficiency', present risk and required timeline for delivery of the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

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

5.5.3 Summary of future upgrade/new assets expenditure

Council is not funding an expansion of the network to attract new development at this time. There are projections for development contribution plan construction that would eventually be cost neutral to the existing community.

Figure 6 Projected Capital Upgrade/New Asset Expenditure



Five (5) major upgrade projects are planned to address hot spots and drainage inefficiencies and this will result in new assets or an upgrade of existing assets at the current rate. The projected upgrade/new capital works program is shown in Appendix C.

Where upgrade/new projects have been identified, they will be funded as part of the current capital budget process.

Projected upgrade/new asset expenditures are summarised in Fig 6. All amounts are shown in net real values (No inflation).

Expenditure on new assets and services in the organisation's capital works program will be accommodated in the long term financial plan. This is further discussed in Section 6.2.

5.6 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate service delivery, if any.

The revenue projected is not sufficient to be included in Council's long term financial plan. Currently there are no disposals identified. There is limited market for used pipes etc. however where possible storage and reuse in low risk areas will be considered where appropriate – this opportunity is limited.

6 FINANCIAL SUMMARY

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

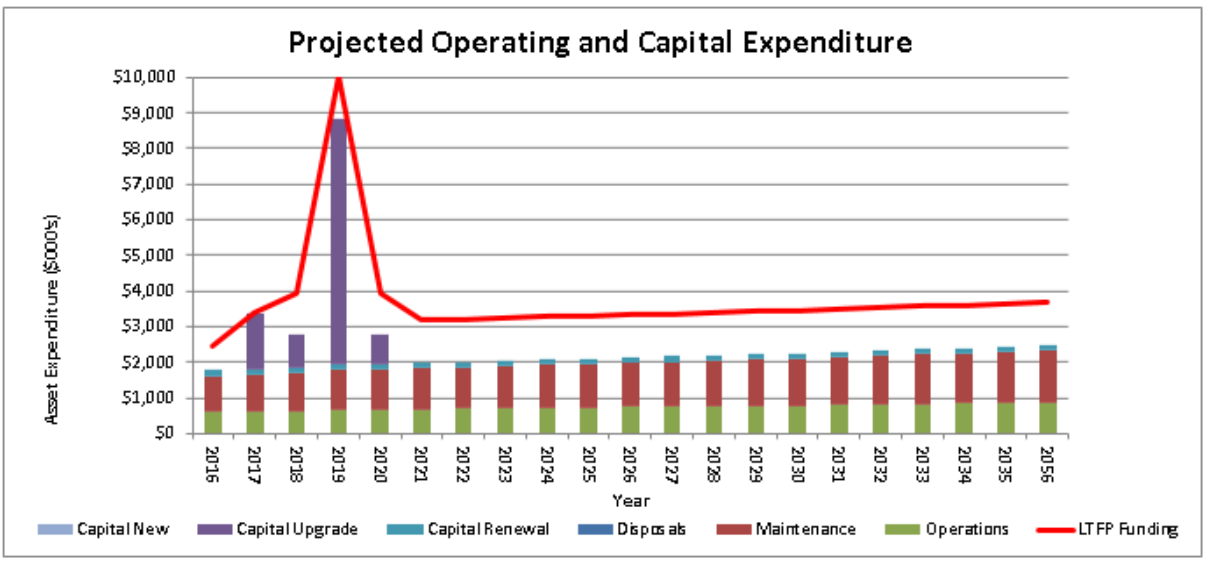
Table 6.1 : Financial Classification "Drainage Works"

Financial Sub-Class	*Valuation Input*	*Valuation Technique*	*June 2015 Replacement Valuation*
Stormwater Pits	Level 3	Cost Approach	$162,876,913
Stormwater Pipes	Level 3	Cost Approach	$26,624,903
Gross Pollutant Traps	Level 3	Cost Approach	$1,500,960
		Total Greenfields Valuation	$191,002,776

6.1 Financial Statements and Projections

The financial projections are shown in Fig 7 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). All amounts are shown in net real values (No inflation).

Fig 7: Projected Operating and Capital Expenditure



The spike in capital upgrade in 2019 relates to capital expenditure required to support the development of the drainage system for the Morwell north west precinct. The requirement for that expenditure is known but the timing of that expenditure will depend upon the rate and spatial distribution of development within the precinct. It is likely that that expenditure will distributed over the years beyond 2019, but this is unable to be accurately predicted at this time.

6.1.1 Sustainability of service delivery

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

6.1.1.1 Asset Renewal Funding Ratio

Asset Renewal Funding Ratio[10] **783%**

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 20 years, Council is forecasting that it will have 783% of the funds required for the optimal renewal and replacement of its assets. This is due to the long life of the drainage asset and that based age driven forecast, that technically no asset is required for renewal. However, due to evidence of minor failures requiring renewal an amount of renewal based on engineering experience has been factored in to represent this known required expenditure. It is expected that there will be an adjustment in the allocation of renewal funding for the renewal of drainage assets, therefore reducing the Drainage renewal Funding Ratio to 100%.

6.1.1.2 Long term - Lifecycle Cost

Lifecycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the asset life cycle. Lifecycle costs include operations and maintenance expenditure and asset consumption (depreciation expense). The lifecycle cost for the services covered in this asset management plan is **$1,655,000** per year (average operations and maintenance expenditure plus depreciation expense projected over 20 years).

Lifecycle costs can be compared to life cycle expenditure to give an initial indicator of affordability of projected service levels when considered with age profiles. Life cycle expenditure includes operations, maintenance and capital renewal expenditure. Lifecycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure over the 20 year planning period is **$2,711,000** per year (average operations and maintenance plus capital renewal budgeted expenditure in LTFP over 20 years).

A gap between life cycle cost and life cycle expenditure is the life cycle gap. The life cycle gap for services covered by this asset management plan is +ve **$1,056,000** per year (-ve = gap, +ve = surplus).

Life cycle expenditure is **164%** of life cycle costs.

It is expected that the surplus funding will either be placed in reserve or allocated to another asset renewal programs that are in deficit. Such an adjustment will bring the Life Cycle expenditure to 100% of the Life Cycle Costs.

The life cycle costs and life cycle expenditure comparison highlights any difference between present outlays and the average cost of providing the service over the long term. If the life cycle expenditure is less than that life cycle cost, it is most likely that outlays will need to be increased or cuts in services made in the future.

Knowing the extent and timing of any required increase in outlays and the service consequences if funding is not available will assist organisations in providing services to their communities in a financially sustainable manner. This is the purpose of the asset management plans and long term financial plan.

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

6.1.1.3 *Medium term – 10 year financial planning period*

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

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

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is **$1,741,000** on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is **$2,770,000** on average per year giving a 10 year funding over-allocation of **$1,029,000** per year. This indicates that Council expects to have **159%** of the projected expenditures needed to provide the services documented in the DAMP.

6.1.1.4 *Medium Term – five year financial planning period*

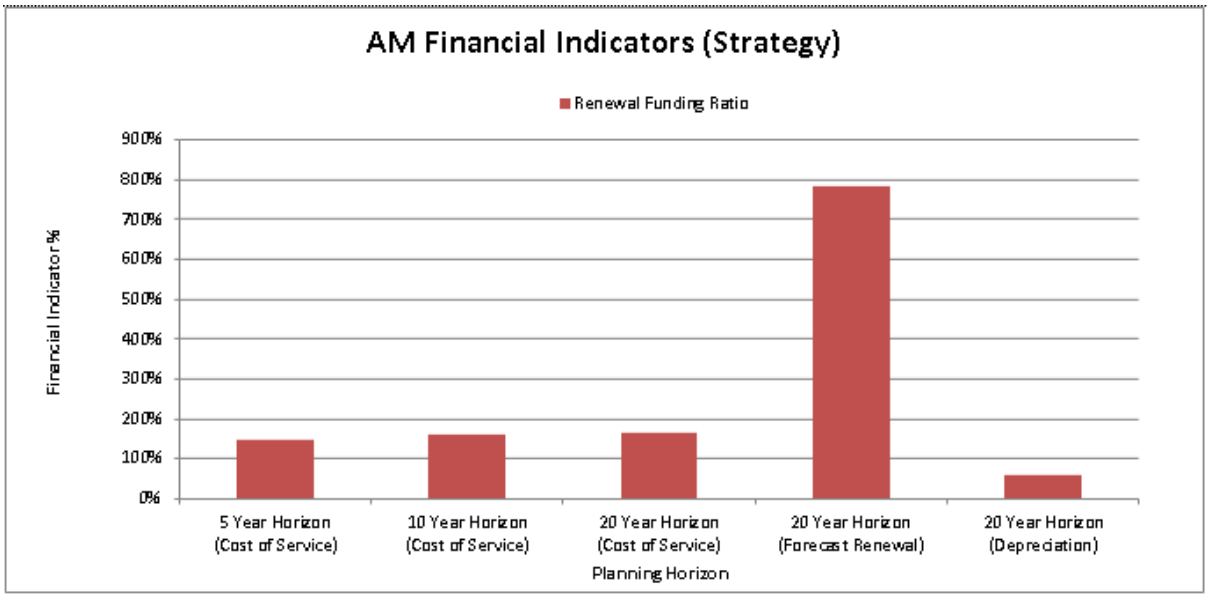
The projected operations, maintenance and capital renewal expenditure required over the first five years of the planning period is **$1,740,000** on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is **$2,594,000** on average per year giving a 5 year funding over-allocation of **$854,000**. This indicates that Council expects to have **149%** of projected expenditures required to provide the services shown in the DAMP.

6.1.1.5 *Asset management financial indicators*

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

Figure 7A: Asset Management Financial Indicators



Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 100% for the first years of the DAMP and ideally over the 10 year life of the Long Term Financial Plan.

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

Figure 8: Projected and LTFP Budgeted Renewal Expenditure

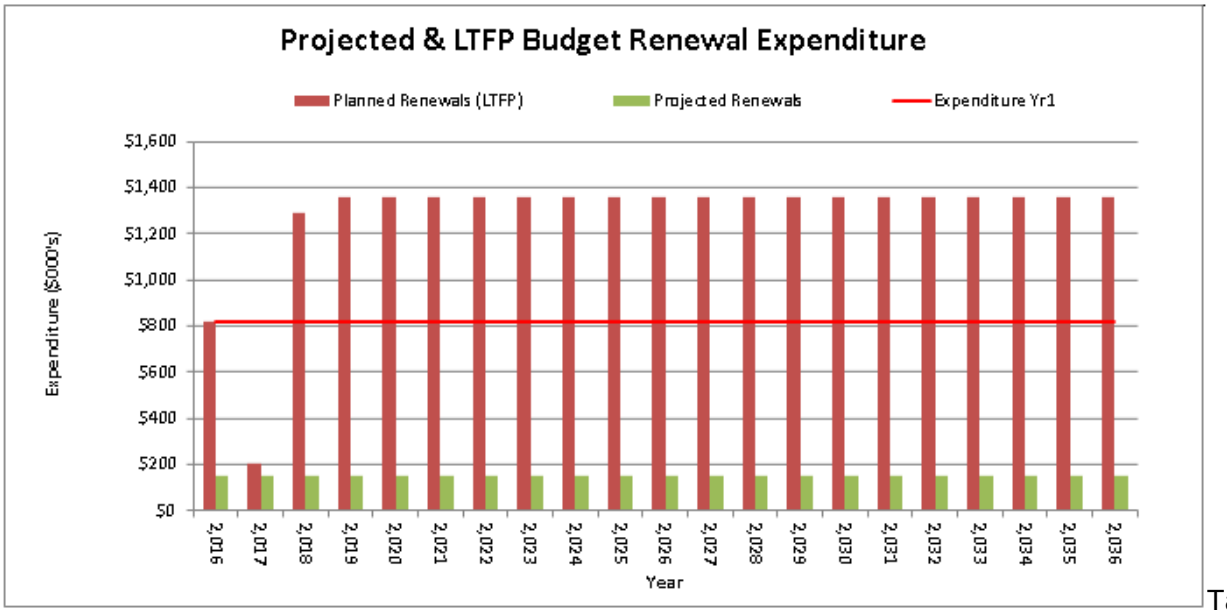


Table 6.1.1 shows the over-allocation between projected renewal and replacement expenditures and expenditure accommodated in long term financial plan. Budget expenditures accommodated in the long-term financial plan or extrapolated. It is this over-allocation that is expected to be allocated to the renewal of other asset categories.

Table 6.1.1: Projected and LTFP Budgeted Renewals and Financing Variances

Year End Jun-30	Projected Renewals ($'000)	LTFP Renewal Budget ($'000)	Renewal Financing Variance (- gap, + surplus) ($'000)	Cumulative Variance (- gap, + surplus) ($'000)
2016	$150	$821	$671	$671
2017	$150	$200	$50	$721
2018	$150	$1,287	$1,137	$1,858
2019	$150	$1,356	$1,206	$3,064
2020	$150	$1,356	$1,206	$4,270
2021	$150	$1,356	$1,206	$5,476
2022	$152	$1,356	$1,204	$6,680
2023	$152	$1,356	$1,204	$7,884
2024	$152	$1,356	$1,204	$9,088
2025	$152	$1,356	$1,204	$10,293
2026	$152	$1,356	$1,204	$11,497
2027	$152	$1,356	$1,204	$12,701
2028	$152	$1,356	$1,204	$13,905
2029	$152	$1,356	$1,204	$15,109
2030	$152	$1,356	$1,204	$16,313
2031	$152	$1,356	$1,204	$17,517
2032	$152	$1,356	$1,204	$18,720
2033	$152	$1,356	$1,204	$19,924
2034	$152	$1,356	$1,204	$21,128
2035	$152	$1,356	$1,204	$22,332
2036	$152	$1,356	$1,204	$23,536

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

6.1.2 Projected expenditures for long term financial plan

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

Expenditure projections are in 2016 real values.

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

Latrobe Pathways (M1)_S1_V5					
Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade/New	Disposals
2,016	$598	$1,019	$150	$0	$0
2,017	$612	$1,043	$150	$1,550	$0
2,018	$624	$1,065	$150	$950	$0
2,019	$654	$1,114	$150	$6,900	$0
2,020	$666	$1,136	$150	$800	$0
2,021	$677	$1,154	$150	$0	$0
2,022	$687	$1,172	$152	$0	$0
2,023	$698	$1,190	$152	$0	$0
2,024	$709	$1,209	$152	$0	$0
2,025	$721	$1,228	$152	$0	$0
2,026	$732	$1,248	$152	$0	$0
2,027	$744	$1,268	$152	$0	$0
2,028	$755	$1,288	$152	$0	$0
2,029	$767	$1,308	$152	$0	$0
2,030	$780	$1,329	$152	$0	$0
2,031	$792	$1,350	$152	$0	$0
2,032	$805	$1,372	$152	$0	$0
2,033	$817	$1,394	$152	$0	$0
2,034	$830	$1,416	$152	$0	$0
2,035	$844	$1,438	$152	$0	$0
2,036	$857	$1,461	$152	$0	$0
All dollar values are in ($'000)'s					

6.2 Funding Strategy

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

Figure 9: LTFP Expenditure Projections

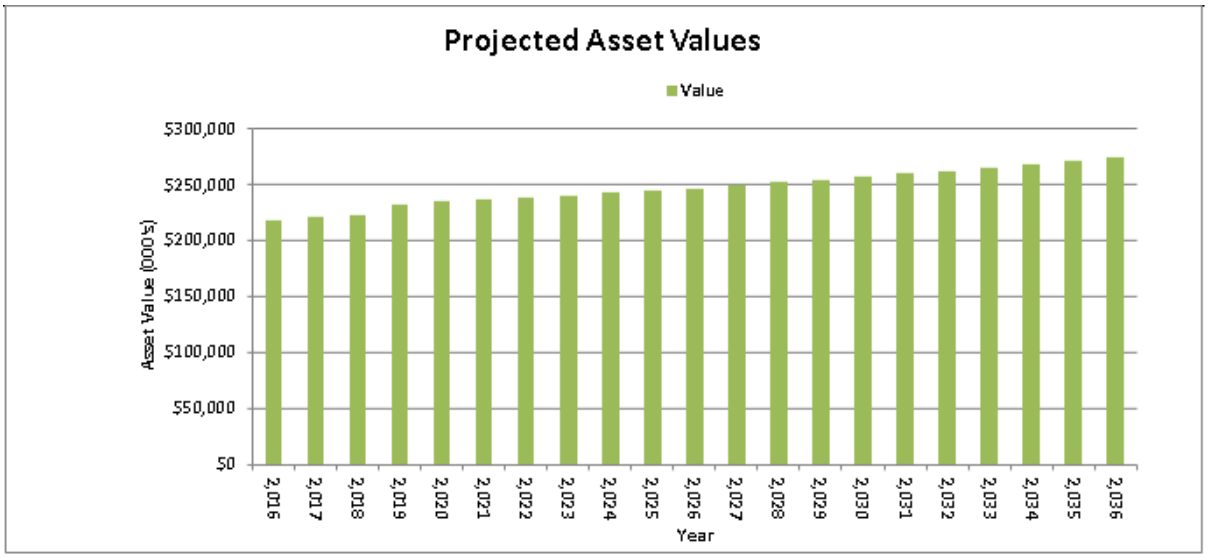
Projected Expenditure ($000,s)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cap Ex Renewal/Replacement of existing assets	$150	$150	$150	$150	$150	$150	$152	$152	$152	$152
Cap Ex Upgrade/New assets	$0	$1,550	$950	$6,900	$800	$0	$0	$0	$0	$0
Operational cost of existing assets	$588	$588	$588	$588	$588	$588	$588	$588	$588	$588
Maintenance cost of existing assets	$1,002	$1,002	$1,002	$1,002	$1,002	$1,002	$1,002	$1,002	$1,002	$1,002
Operational cost of New assets	$10	$24	$36	$66	$78	$89	$99	$110	$121	$133
Maintenance cost of New assets	$17	$41	$62	$112	$133	$151	$169	$188	$207	$226
Disposal of Surplus assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Maintenance and Operations figures for new assets are included, these costs increase in line with the growth in assets due to developer contributions and new and upgrade projects.

6.3 Valuation Forecasts

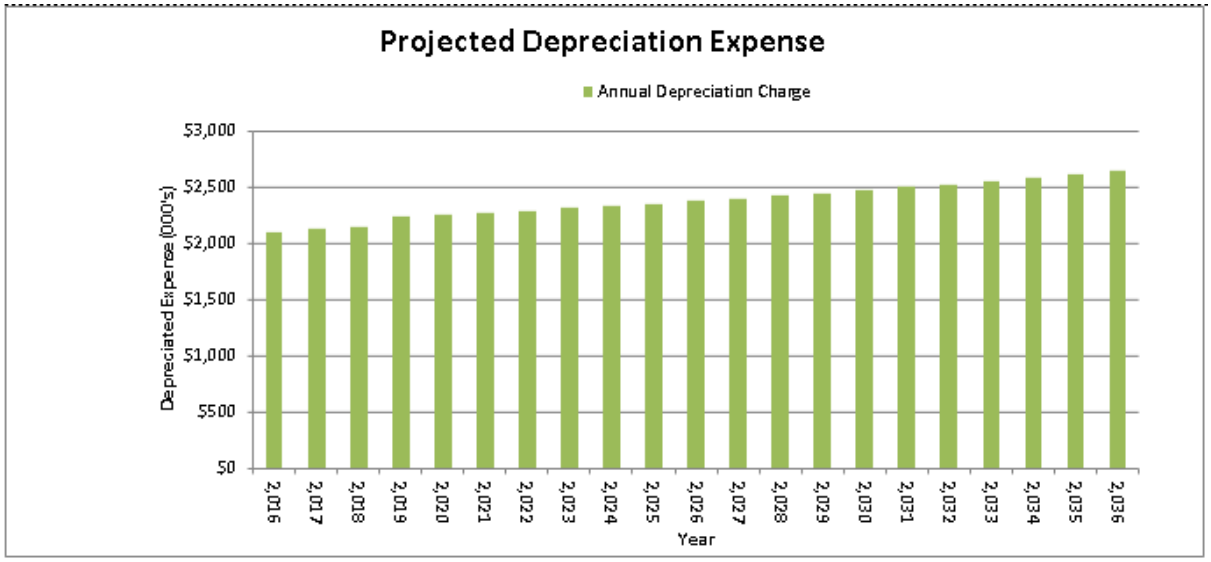
Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated (gifted) to Council. Figure 10 shows the projected (gross) replacement cost asset values over the planning period in real values.

Figure 10: Projected Asset Values



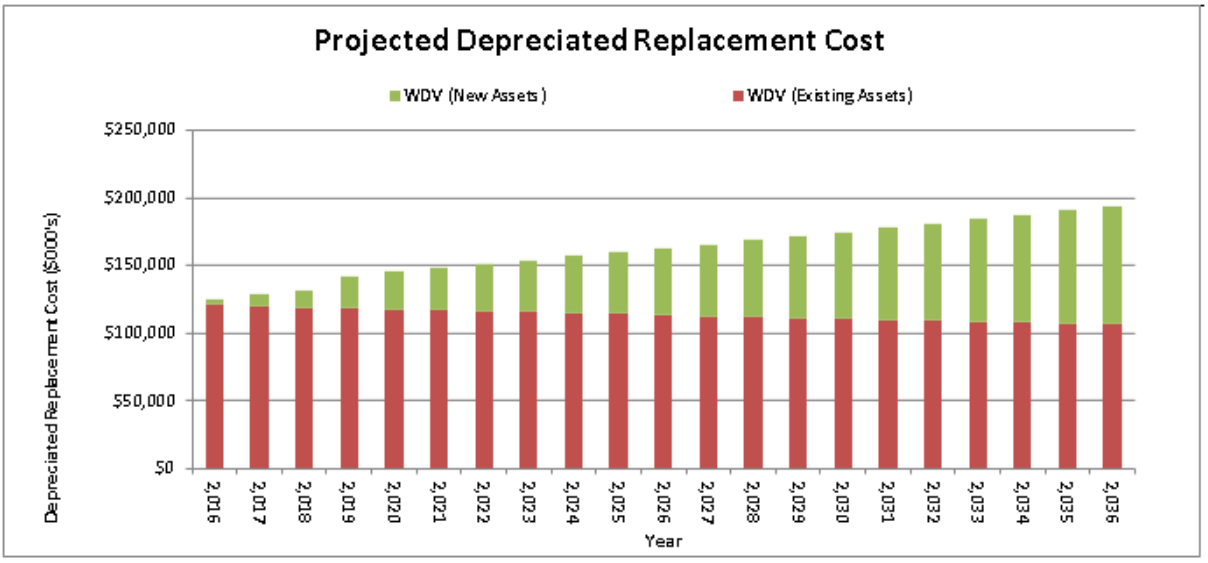
Depreciation expense values are forecast in line with asset values as shown in Figure 11.

Figure 111: Projected Depreciation Expense



The depreciated replacement cost will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Forecast of the assets' depreciated replacement cost is shown in Figure 12. The depreciated replacement cost of contributed and new assets is shown in the darker colour and in the lighter colour for existing assets.

Figure 12: Projected Depreciated Replacement Cost



6.4 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan and in preparing forecasts of required operating and capital expenditure and asset values, depreciation expense and carrying amount estimates. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in the DAMP and risks that these may change are shown in Table 6.4.

Table 6.4: Key Assumptions made in the DAMP

Key Assumptions
Additional maintenance funds will be made available to continue current services as Council's asset base grows from assets handed over from developers and asset upgrades.
Impact of rate capping will not affect maintenance and renewal funding.
Forecasted financial plans are in today's dollars (Net Present Value)
Current maintenance levels of service will remain the status quo.
The funds raised via a Development Contribution Plan for the provision of new drainage or upgrade (particularly in established areas) have not been taken into consideration for this iteration of the DAMP as further investigation is required.
Renewal is based on replacement like for like for financial purposes.
Upgrade or increased capacity projects beyond those identified in this plan are subject to separate capital bids.

6.4.1.1 Inferred and reported condition

Based on current industry knowledge, Latrobe City Council has adopted 100 years as the life expectancy for reinforced concrete pipes.

Condition, and remaining life will be inferred by a degradation curve for long life concrete assets using the asset's construction date.

It is noted, however, that in Australia, work relating to age deterioration models is still in its infancy, and lifecycles can vary widely due to construction practices and external conditions such as acid sulphate soils. As condition information is added, and the network is calibrated to local conditions, a revised figure for asset consumption will be evaluated.

6.4.1.2 Current Conditions

It can be seen by examining available construction age data, there were three periods of intense construction activity – the mid 1950s and 1960s driven by residential support for the State Electricity Commission, in the mid 1970s and a steady decline in late 1980s until a recent increase in residential development. With this in mind, it is anticipated that significant renewals will occur between 2065 and 2090, and therefore a funding strategy needs to be developed with a 50 year vision from present.

It is known that reinforced concrete pipes installed under good conditions may last longer than the current accounting lifespan. Therefore, improving drainage knowledge via the improvement plan, and moving to an evidence based condition system has the potential to save residents significant long term expenditure.

Until significant field data is obtained, age must be used to plan for failures, and estimate renewal expenses.

Table 6.4a: Data Confidence Grading System

Construction Year	Remaining Life (Years)	Consumption	Assets	% (by numbers)	Length (m)	% (by length)
Unknown	50	50%	103	1%	4450	1%
1940	24	76%	52	0%	1035	0%
1950	34	66%	380	2%	10599	2%
1960	44	56%	475	3%	11613	2%
1965	**49**	**51%**	**6050**	**34%**	**203767**	**35%**
1970	54	46%	467	3%	14548	2%
1975	**59**	**41%**	**4755**	**27%**	**162822**	**28%**
1980	64	36%	495	3%	15622	3%
1990	**74**	**26%**	**3282**	**18%**	**110852**	**19%**
2000	84	16%	1110	6%	34651	6%
2001	85	15%	38	0%	1320	0%
2002	86	14%	82	0%	2911	0%
2003	87	13%	50	0%	1756	0%
2005	89	11%	19	0%	340	0%
2012	96	4%	88	0%	2661	0%
2013	97	3%	233	1%	6177	1%
2014	98	2%	139	1%	3255	1%

Asset Condition, both inferred and evidence-based, will be measured and interpreted according to Section 9 contained in the IPWEA Practice Notes 5 – Condition Assessment and Asset Performance Guidelines V2 2015.

6.4.2 Technical Design Criteria

– Table 6.4b: Design for Storm Frequency

Area	***Designed to Accommodate Storm Frequency of:*** ***AEP (Annual Exceedance Probability)***	***LCC Design Guidelines for Subdivision Development*** ***ARI (Average Recurrence Interval)***
Residential	**18.1% AEP**	1 in 5 year ARI
Commercial & Industrial – 10 shops or less/industrial areas	**9.5% AEP**	1 in 10 year ARI
Commercial - 10 shops or more	**4.9% AEP**	1 in 20 year ARI
Car parks	Measure designed in accordance with location	Measure designed in accordance with location
Overland Flow Paths inc. road reserves, Drainage Reserves,	Overland Flow Path of **1% AEP** minus pipe capacity	-

Australian Rainfall and Runoff – A Guide to Flood Estimation Edition 3 – 1987 – The Institution of Engineers, Australia 1987.
AEP - Average Exceedance Probability is the chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage.

Provision is also to be made to ensure that the runoff resulting from a storm having a 100 year recurrence interval has an overland flow route along streets and reserves where practical.

6.5 Forecast Reliability and Confidence

The expenditure and valuations projections in the DAMP are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a five level scale[11] in accordance with Table 6.5.

Table 6.5: Data Confidence Grading System

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

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

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

Table 6.5.1: Data Confidence Assessment for Data used in the DAMP

Data	*Confidence Assessment*	*Comment*
Demand drivers	Uncertain	
Growth projections	Reliable	
Operations expenditures	Reliable	Obtained from Finance Department
Maintenance expenditures	Reliable	Obtained from Finance Department
Projected Renewal exps. - Asset values	Reliable	
- Asset residual values	Reliable	
- Asset useful lives	Reliable	Benchmarked against like Councils and reviewed in 2015
- Condition modelling	Very Uncertain	refer DAMP Improvement Plan
- Defect repairs	Very Uncertain	
Upgrade/New expenditures	Reliable	

Over all data sources the data confidence is assessed as **Reliable** confidence level for data used in the preparation of the DAMP.

7 PLAN IMPROVEMENT AND MONITORING

7.1 Status of Asset Management Practices

7.1.1 Accounting and financial systems

Council uses FinanceOne from TechnologyOne as the finance system.

7.1.1.1 Accounting standards and regulations

The applicable accounting standards are AASB116 "Property, Plant, and Equipment" , AASB13 "Fair Value Measurement" and AASB138 "Intangible Assets"

7.1.1.2 Capital/maintenance threshold

Council has set a value of $10,000 in maintenance expenditure before it is considered to be capitalised –the costs captured as renewal or upgrade as opposed to maintenance.

7.1.1.3 Required changes to accounting financial systems arising from the DAMP

No specific changes have been identified however with advances in Maintenance Management processes, the Finance system may be modified to better capture maintenance effort against the assets (as opposed to generally). This increased detail will assist in identifying maintenance and renewal needs.

7.1.2 Asset Management System

Council uses MyData Asset Management System from Assetic Pty Ltd. It is a sophisticated database system that allows detailed management of the data. A partner to this is MyPredictor Asset Modelling System also from Assetic that will, once implemented with the data and necessary algorithms, allow Council to model the deterioration of assets and improve the science of lifecycle costing.

Asset registers

The asset register relevant to the DAMP held in MyData include:

Stormwater Pits	*Stormwater Pipes*	*Gross Pollutant Traps*

Linkage from asset management to financial system

This is currently a manual process through Microsoft Excel spreadsheets. There is no integration between financial and asset management systems.

Accountabilities for asset management system and data maintenance

Team Leader Asset Strategy and Co-ordinator Infrastructure Planning

Required changes to asset management system arising from the DAMP

The AMS used is sophisticated and very capable. No changes are required to the system. Changes proposed are related to the data and information that reside in the system. This is discussed in Appendix J – DAMP Improvement Plan.

7.1.3 Geographic Information System (GIS)

Council's drainage spatial data is contained and updated within separate GIS layers and can be viewed via the internal GIS viewer, Intramaps.

7.2 Monitoring and Review Procedures

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

The DAMP will be updated to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the organisation's long term financial plan.

The financial model of this DAMP should be reviewed annually to adjust for changes to the network, and DAMP should be reviewed every 4 years at a minimum to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values consistent with the organisation's long term financial plan .

7.3 Performance Measures

The effectiveness of the DAMP can be measured in the following ways:

- The degree to which the required projected expenditures identified in the DAMP are incorporated into Council's long term financial plan;
- The degree to which one to five year detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the DAMP;
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Council's Strategic Plan and associated plans, and;
- The Asset Renewal Funding Ratio achieving the target of 1.0.

8 REFERENCES

Documents referenced by the DAMP include:

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

IPWEA, 2011, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.

IPWEA, 2011, 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMG.

Latrobe City Council Plan 2013-2017

Professional Advice from Kirk Bloomfield, Managing Director of Geospatial Data Systems.

9 APPENDICES

Appendices attached to the DAMP include:

- Appendix A *Proposed Maintenance Response Service Level Agreement*
- Appendix B *Projected Upgrade/New Expenditure 10 year Capital Works Program*
- Appendix C *Projected Upgrade/New Expenditure 10 year Capital Works Program*
- Appendix D *Budgeted Expenditures Accommodated in LTFP*
- Appendix E *Abbreviations*
- Appendix F *Glossary*
- Appendix G *Drainage System Plans*
- Appendix H *Identified Critical Risk Locations*
- Appendix I - *Likelihood and Consequence Tables*
- Appendix J - *DAMP Improvement Plan*

9.1 Appendix A - *Proposed Maintenance Response Service Level Agreement*

Until a new Service Level Agreement is developed in conjunction with the Operations and Waste Department the current operational approach and standards will be maintained.

Part of the development of the new Service Level Agreement will be refining inspection and resulting maintenance using the criticality of pipes as and pits as per the risk categorisation model of Appendix I that determines each pipe and pit's criticality.

Appendix B - *Projected 10 year Capital Renewal and Replacement Works Program*

Renewal and replacement projects incorporated in the DAMP include:

PROJECT NAME	PROGRAM/PROJECT	PROGRAM CATEGORY	LOCATION	Year 1 2016/17	Year 2 2017/18	Year 3 2018/19	Year 4 2019/20	Non Program
Allowance for Drainage Renewal	Program	Renewal	Various	-	-	$1,037,000	$1,106,000	-
Minor Pipe Systems Repairs	Program - new	Renewal	Various	$158,000	$150,000	$200,000	$200,000	-
Stormwater Management/Outfall Repair Program	Program - new	Renewal	Various	$63,000	$50,000	$50,000	$50,000	-
Allowance for future major drainage works Transfer to Reserve	Project	Transfer to Reserve	Various	$600,000	-	-	-	-
			Renewal	$821,000	$200,000	$1,287,000	$1,356,000	$0

9.2 Appendix C - *Projected Upgrade/New Expenditure 10 year Capital Works Program*

Upgrade and new projects incorporated in the DAMP plan include:

PROJECT NAME	PROGRAM/PROJECT	PROGRAM CATEGORY	LOCATION	Year 1 2016/17	Year 2 2017/18	Year 3 2018/19	Year 4 2019/20	Non Program
Argyle Street South Service Rd Drainage Augmentation (C0679)	Project	Upgrade	Traralgon	-		$500,000	$500,000	$500,000
Drainage augmentation to Furlonger St - Nixon Ct Precinct in Traralgon (C0680)	Project	Upgrade	Traralgon	-	$500,000	-		
Latrobe Regional Hospital Precinct Drainage Augmentation	Project	Upgrade	Morwell	-	$50,000	$150,000		
Drainage augmentation to Liddiard/Howitt/Glenview Precinct	Project	Upgrade	Traralgon	-	$1,000,000	$300,000	$400,000	$300,000
Morwell Northwest Precinct Trunk Drainage Scheme	Project	New	Morwell	-			$6,000,000	
			Expansion	$0	$1,550,000	$950,000	$6,900,000	$800,000

9.3 Appendix D - *Budgeted Expenditures Accommodated in LTFP*

Expenditure currently incorporated into annual budgets and the LTFP include:

		2017	2018	2019	2020	2021
Operations	Management Overhead **budget**	$105,000	$105,000	$105,000	$105,000	$105,000
	Asset Management **budget**	$80,000	$80,000	$80,000	$80,000	$80,000
	Operations **budget**	$403,000	$403,000	$403,000	$403,000	$403,000
	OPERATIONS BUDGET	**$588,000**	**$588,000**	**$588,000**	**$588,000**	**$588,000**
Maintenance	Reactive maintenance **budget**	$847,496	$847,496	$847,496	$847,496	$847,496
	Planned maintenance **budget**	$155,000	$155,000	$155,000	$155,000	$155,000
	Specific maintenance items **budget**	$0	$0	$0	$0	$0
	MAINTENANCE BUDGET	**$1,002,496**	**$1,002,496**	**$1,002,496**	**$1,002,496**	**$1,002,496**
Capital	Planned Rrenewal (LTFP) **budget**	$200,000	$1,287,000	$1,356,000	$1,356,000	$1,356,000
	Planned upgrade/expansion **budget**	$1,550,000	$950,000	$6,900,000	$800,000	$0
	Planned new **budget**	$0	$0	$0	$0	$0
	Planned Asset Disposal **budget**	$0	$0	$0	$0	$0
	CAPITAL EXPENDITURE BUDGET	**$1,750,000**	**$2,237,000**	**$8,256,000**	**$2,156,000**	**$1,356,000**
	TOTAL EXPENDITURE (LTFP)-Ops, Main, Capex	**$3,340,496**	**$3,827,496**	**$9,846,496**	**$3,746,496**	**$2,946,496**
	TOTAL EXPENDITURE (FORECAST)-Ops, Main, Capex	**$3,290,496**	**$2,690,496**	**$8,640,496**	**$2,540,496**	**$1,740,496**

		2022	2023	2024	2025	2026
Operations	Management Overhead **budget**	$105,000	$105,000	$105,000	$105,000	$105,000
	Asset Management **budget**	$80,000	$80,000	$80,000	$80,000	$80,000
	Operations **budget**	$403,000	$403,000	$403,000	$403,000	$403,000
	OPERATIONS BUDGET	**$588,000**	**$588,000**	**$588,000**	**$588,000**	**$588,000**
Maintenance	Reactive maintenance **budget**	$847,496	$847,496	$847,496	$847,496	$847,496
	Planned maintenance **budget**	$155,000	$155,000	$155,000	$155,000	$155,000
	Specific maintenance items **budget**	$0	$0	$0	$0	$0
	MAINTENANCE BUDGET	**$1,002,496**	**$1,002,496**	**$1,002,496**	**$1,002,496**	**$1,002,496**
Capital	Planned Rrenewal (LTFP) **budget**	$1,356,000	$1,356,000	$1,356,000	$1,356,000	$1,356,000
	Planned upgrade/expansion **budget**	$0	$0	$0	$0	$0
	Planned new **budget**	$0	$0	$0	$0	$0
	Planned Asset Disposal **budget**	$0	$0	$0	$0	$0
	CAPITAL EXPENDITURE BUDGET	**$1,356,000**	**$1,356,000**	**$1,356,000**	**$1,356,000**	**$1,356,000**
	TOTAL EXPENDITURE (LTFP)-Ops, Main, Capex	**$2,946,496**	**$2,946,496**	**$2,946,496**	**$2,946,496**	**$2,946,496**
	TOTAL EXPENDITURE (FORECAST)-Ops, Main, Capex	**$1,742,347**	**$1,742,347**	**$1,742,347**	**$1,742,347**	**$1,742,347**

9.4 Appendix E - *Abbreviations*

Abbreviations used in the DAMP include:

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

9.5 Appendix F-Glossary

Annual service cost (ASC)

a) 1) Reporting actual cost

The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.

b) 2) For investment analysis and budgeting

An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/opportunity and disposal costs, less revenue.

Asset

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

Asset category

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

Asset class

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

Asset condition assessment

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

Asset hierarchy

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

Asset management (AM)

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

Asset renewal funding ratio

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

Average annual asset consumption (AAAC)*

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

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has

insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided.

Brownfields Valuation
Valuation method where the initial recognition and subsequent recognition of assets involves expensing those costs that are considered to be 'sunk' one-off costs for components that are expected to have an unlimited life such as earthworks and formation for roadworks and capitalising only those costs associated with ongoing renewal of the asset.

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

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

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

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

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

Capital funding
Funding to pay for capital expenditure.

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

Capital investment expenditure
See capital expenditure definition

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

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

Class of assets
See asset class definition.

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

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

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

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

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

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

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

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

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

Economic life
See useful life definition.

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

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

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

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

Greenfields valuation
Valuation method where the initial recognition and subsequent revaluation of assets involves the capitalisation of all costs including those for components that are expected to have an unlimited life (such as earthworks and formation for roadwork).

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

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

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

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

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance indicators commonly relate to statutory limits, safety,

responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

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

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

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

Loans / borrowings
See borrowings.

Maintenance
All actions necessary for retaining an asset as near as practicable to an appropriate service condition, including regular ongoing day-to-day work necessary to keep assets operating, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

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

- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.

- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.

- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

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

Renewal
See capital renewal expenditure definition above.

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

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

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

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

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

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

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

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

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

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or

(b) the number of production or similar units expected to be obtained from the asset by the entity.

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

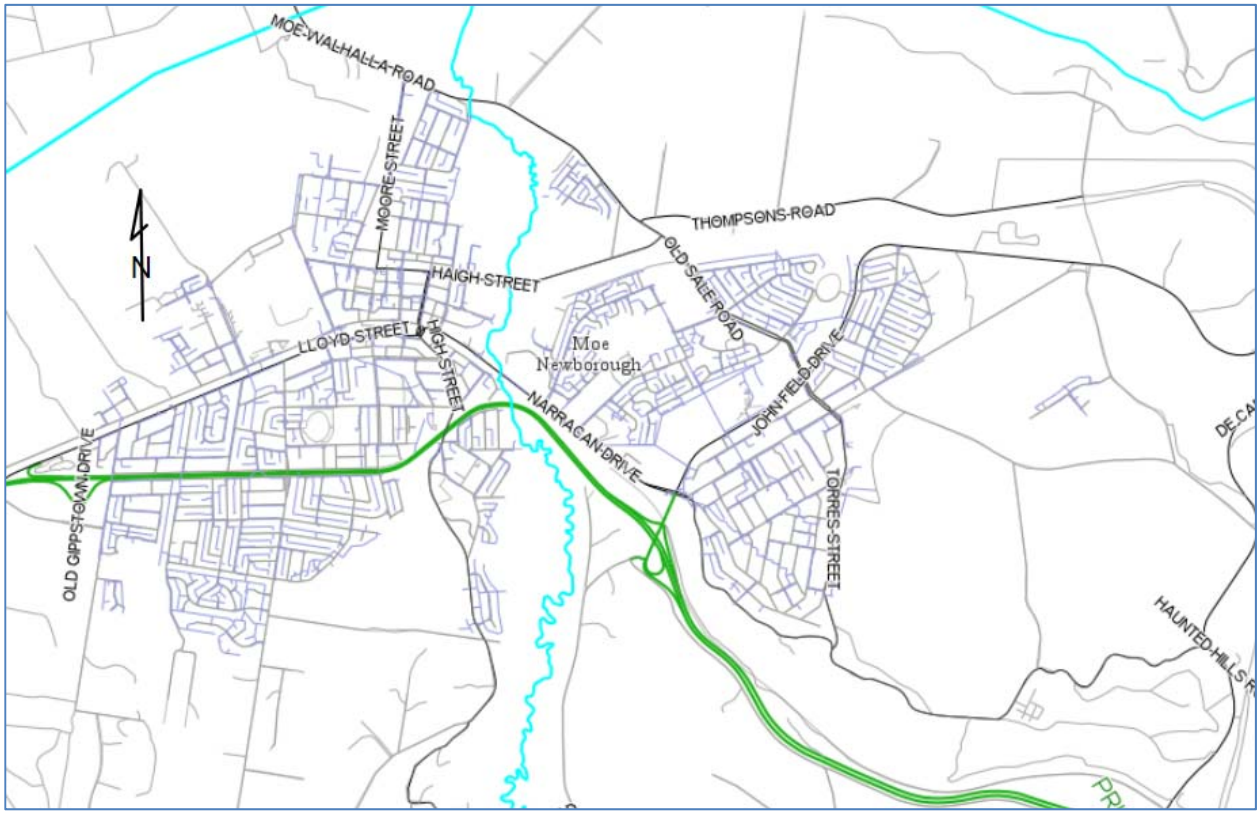
Value in use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where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

Source: IPWEA, 2009, Glossary

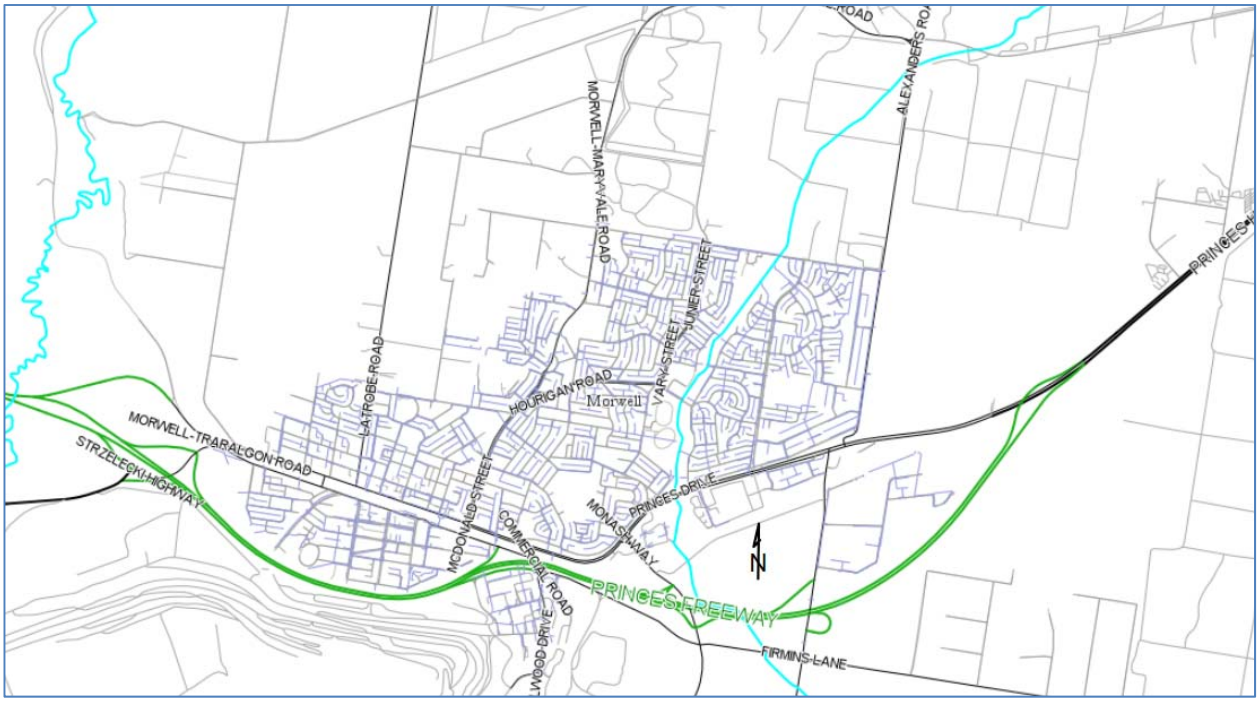
Additional and modified glossary items shown *

9.6 Appendix G - *Drainage System Plans*

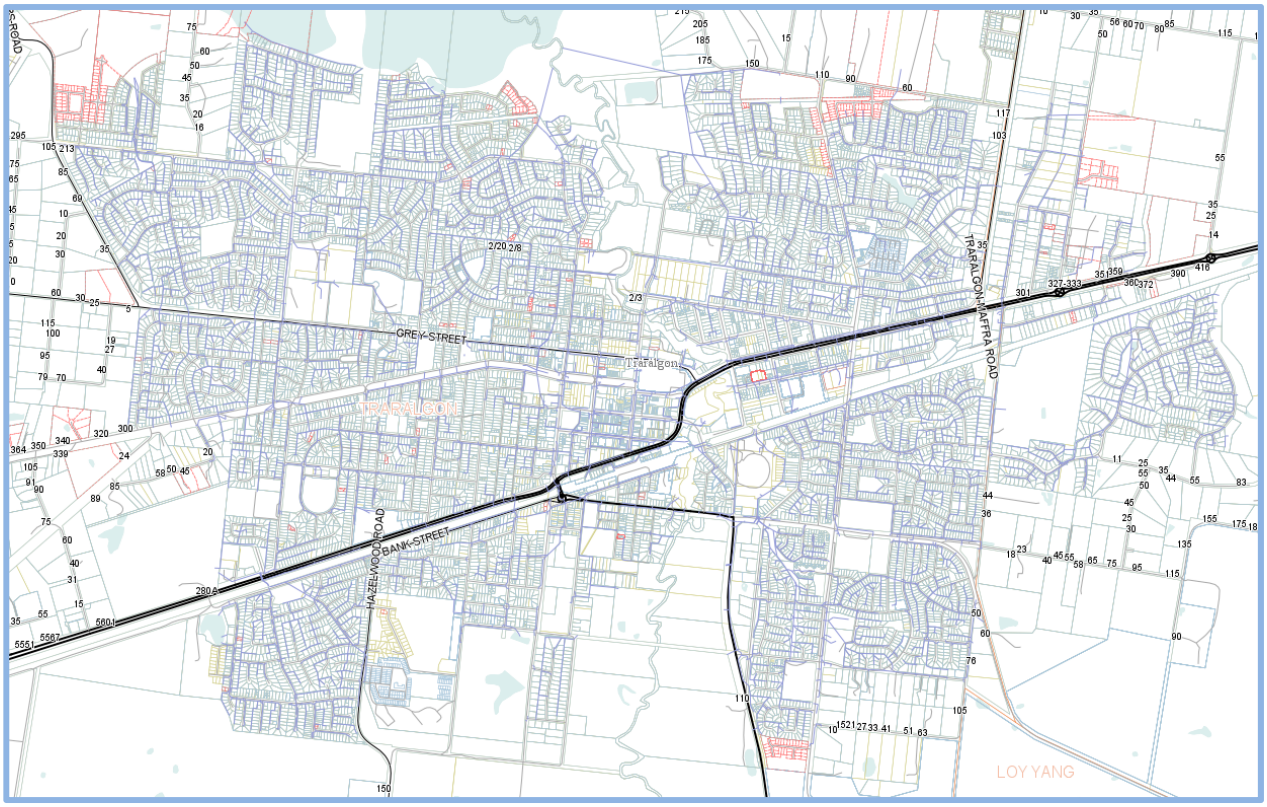
Moe/Newborough Drainage system



Morwell Drainage System

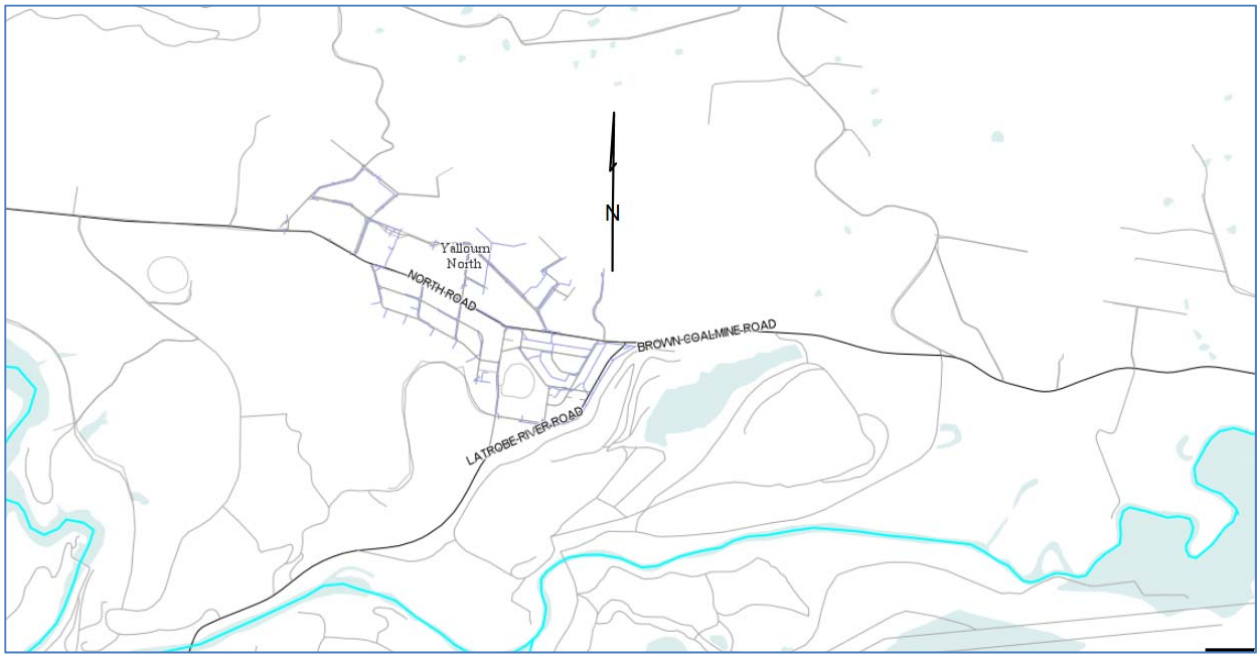


Traralgon Drainage System



Churchill Drainage System

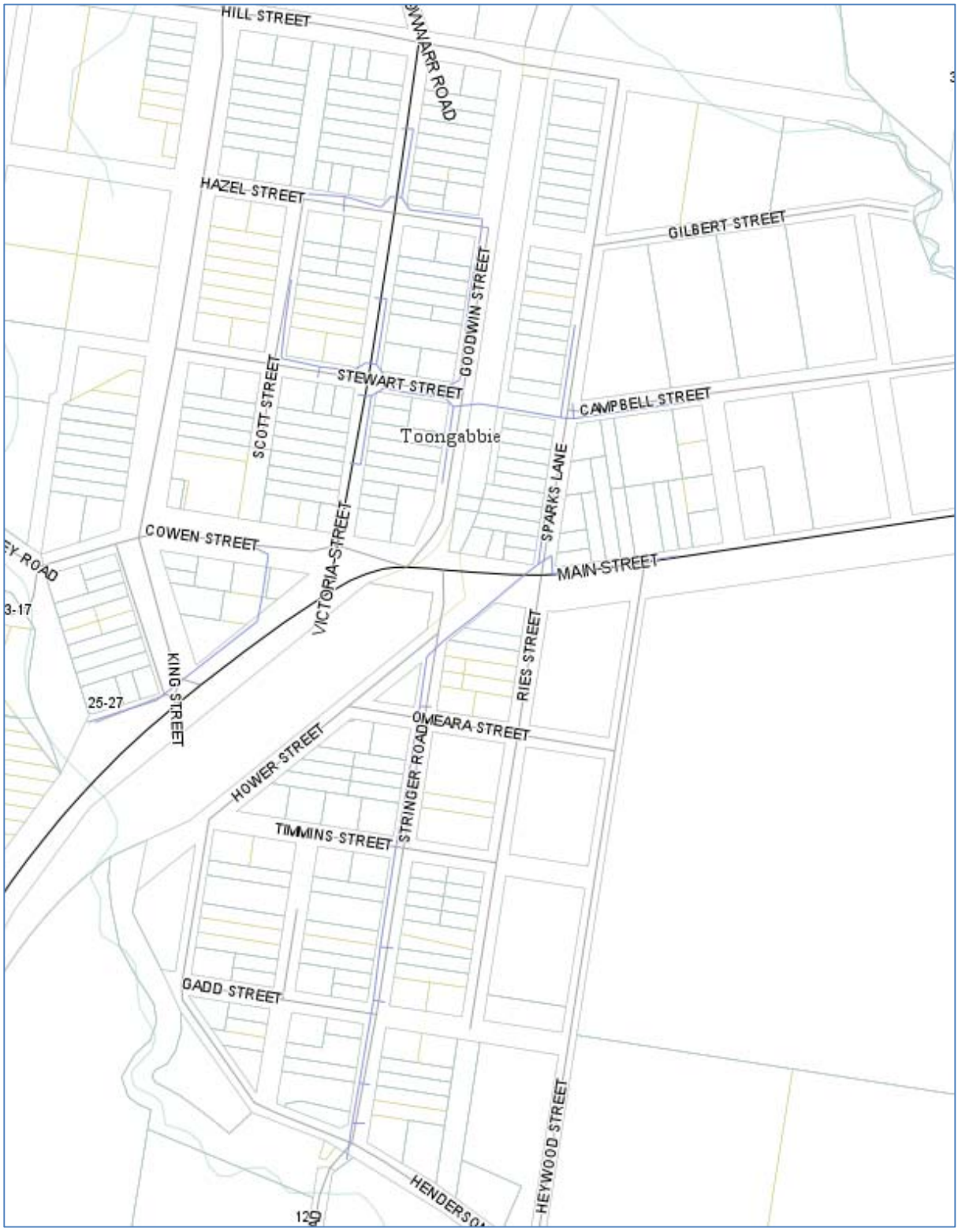
Yallourn North Drainage System



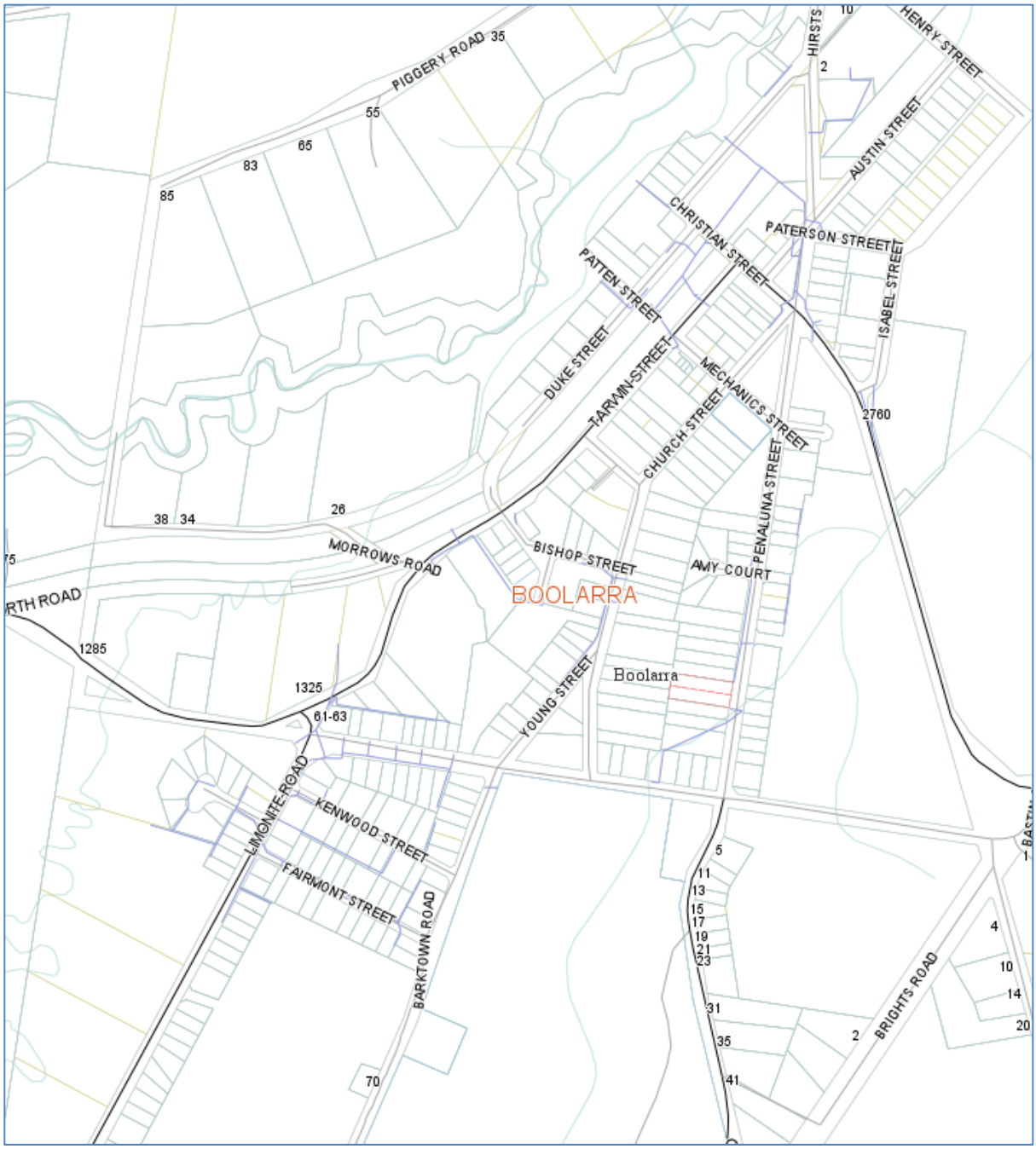
Yinnar Drainage System

Glengarry Drainage System

Toongabbie Drainage System



Boolarra Drainage System



9.7 Appendix H - Identified Critical Risk Locations

Area 1 – 160 Commercial Road, Morwell

Issue: Pipes under buildings at low spot in the road. Nearest overland flow is Hazelwood Road with a potential depth before flowing overland along the road is approximately 400mm. Shops at risk.

Action

Inspect and take necessary maintenance action every three months including in advance of winter and summer.

Where possible, inspect at least the key pits on Commercial Road in advance of known storm events. Continue regular street sweeping. Educate the traders in the area of the potential impact on the drain of their activities and the risk to them of failure.

Risk 2: Flooding of industrial, commercial and retail properties Commercial Road, Morwell		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Occasional	Moderate	Remote	Moderate

Area 2 – 165 Princes Drive, Morwell

Issue: Pipes under buildings at low spot in the road. Nearest overland flow is Latrobe Road or Collins Street. There are two pipes (redundancy) of large size for the catchment.

Action

Inspect the pits in front of and at the rear of the properties fronting Princes Drive and take necessary maintenance action annually.

Continue regular street sweeping. Educate the traders in the area of the potential impact on the drain of their activities and the risk to them of failure.

Risk 2: Flooding of industrial, commercial and retail properties Commercial Road, Morwell		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Occasional	Moderate	Remote	Moderate

Area 3 – 249 Princes Drive, Morwell

Issue: Pipes under the railway track collect water from a large portion of Buckley Street and Princes Drive. buildings at low spot in the road. Nearest overland flow is Hopetoun Avenue or across Princes Drive. There are two pipes (redundancy) of crossing Princes Drive and pits in the road reserve park on the south side that would likely flood before affecting properties north of Princes Drive.

Action

Inspect the pits on Princes Drive and in the road reserve park and ensure they are clear and that surcharging is possible. Inspect the pipes crossing the railway. Take necessary maintenance action annually.

Continue regular street sweeping.

Risk 2: Flooding of industrial, commercial and retail properties Princes Road, Morwell		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Remote	Moderate	Improbable	Acceptable

Area 4 – 291 Princes Drive, Morwell

Issue: Pipes under the railway track collect water from a moderate portion of Fairfield Street/Booth Street/Botany Street/Doherty Avenue/and perhaps Vindon Avenue.

There are buildings at the low spot in the road. The nearest overland flow is across Princes Drive. There are two pipes (redundancy) crossing Princes Drive and several pits on the north side of the road.

Action

Inspect the pits on Princes Drive and in the road reserve park and ensure they are clear and that surcharging is possible. Inspect the pipes crossing the railway. Take necessary maintenance action annually.

Continue regular street sweeping.

Risk 1/2: Flooding of one shop and residential properties Princes Road, Morwell		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Low	Remote	Low	Improbable	Acceptable

Area 5 – 96 Vary Street to Burnside Drive, Morwell

Issue: Pipes adjacent residential buildings conveying rainwater from a large catchment primarily Saviges Road and Robertson Street. A blockage at any of the pits or pipes in this run would cause flooding of the properties.

The pipe travels through a twisted path, accessed and able to surcharge to a road only at Fraser Street.

Action

Inspect the pits and the pipes ensure they are clear and if possible, that surcharging has an overland flow path away from buildings twice a year. Take necessary maintenance action as required. Advise residents of the potential for flooding, to take care not to block the pipes, and of the advantage of maintaining a clear overland flow path once every two years.

Risk 1/2: Flooding of one shop and residential properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Occasional	Moderate	Remote	Moderate

Area 6 – Blackwood Place, Morwell

Issue: Pipes run through private property adjacent residential buildings conveying rainwater from a large catchment primarily Susan Court, Peter Street, Gillie Crescent. A blockage at any of the pits or pipes in this run would cause flooding of the properties.

The pipe travels through private properties. The pipe is however, large, and there are alternate overflow possibilities at Ash Street and the rear of allotment drain through 1 Blackwood Place.

Action

Inspect the pits and the pipes ensure they are clear and if possible, that surcharging has an overland flow path away from buildings once a year. Take necessary maintenance action as required. Advise residents of the potential for flooding, to take care not to block the pipes, and of the advantage of maintaining a clear overland flow path once every two years.

Risk 1: Flooding of residential properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Occasional	Moderate	Remote	Moderate

Area 7 –Hotham Street at Franklin Street, Traralgon drain

Issue: A large (1.5m) pipe down Hotham collecting rainwater from a large catchment. A blockage below Franklin Street would surcharge on Hotham Street upstream of Franklin, where it is quite flat. There is the potential to flood shops before finding overland flow path.

There are other systems that would take some of the overland flow, mitigating the consequence and the pipe is quite large, reducing the likelihood of blockage.

Action

Inspect and take necessary maintenance action annually in advance of winter and summer.

Risk 2: Flooding of industrial, commercial and retail properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Remote	Moderate	Remote	Moderate

Area 8 – 37 Brock Street Moe and 13 Brock Street

Issue: For 37 Brock Street, pipes run through private property adjacent residential buildings conveying rainwater from a large catchment primarily Wurtich Street, Hennessey Street, and Bruce Street. A blockage at a pit or pipe in this run would cause flooding of the properties along Brock Street.

For 13 Brock Street, pipes run through private property adjacent residential buildings conveying rainwater from a moderate sized catchment primarily Alyn Court and part of Bliss Street and Hennessey Street.

The pipe travels through private properties. The pipe is however, large in both cases. The nearest overland flow is to the other Brock Street drain,

Action

Inspect the pits and the pipes ensure they are clear and if possible, that surcharging has an overland flow path away from buildings once a year. Take necessary maintenance action as required. Advise residents of the potential for flooding, to take care not to block the pipes, and of the advantage of maintaining a clear overland flow path once every two years.

Risk 1: Flooding of residential properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Occasional	Moderate	Remote	Moderate

Area 9 – 121 Lloyd Street, Moe drain

Issue: A large (1.5m) pipe through the reserve and crossing Hawker Street conveys rainwater from a large catchment including Caldwell Street and Phillip Street across the Freeway. A blockage at Lloyd Street would surcharge near Hawker St.. There is the potential to flood shops before finding overland flow path.

There are other systems that would take some of the overland flow, mitigating the consequence and the pipe is quite large, reducing the likelihood of blockage.

Action

Inspect and take necessary maintenance action annually in advance of winter and summer.

Risk 2: Flooding of industrial, commercial and retail properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Remote	Moderate	Remote	Moderate

Area 10 – 10 Northern Avenue

Pipes run through private property adjacent residential buildings conveying rainwater from a large catchment primarily Newark Avenue and roads uphill of Newark Avenue. A blockage at the pit to the rear of 8 Northern Avenue or of either of the two pipes leading to it would cause flooding of the adjacent properties.

The pipe travels through private properties. The pipes are however, *900mm and 600mm so would not be as prone to blockage as smaller pipes. As there are two pipes to the pit there is some redundancy.

Action

Inspect the pits and the pipes ensure they are clear and if possible, that surcharging has an overland flow path away from buildings once a year. Take necessary maintenance action as required. Advise residents of the potential for flooding, to take care not to block the pipes, and of the advantage of maintaining a clear overland flow path once every two years.

Risk 1: Flooding of residential properties		Action adopted: Regular Inspection		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Remote	Moderate	Remote	Moderate

Area 11 – Wallace Street Morwell

The Legal Points of Discharge drain to rear of the properties on the southern side of Wallace Street. The stormwater from the properties discharges into land that is managed by VicRoads as it is the road reserve for the Princes Freeway. There are community concerns about the drains within the road reserve such that water does not freely flow to the pits in VicRoads Road reserve.

Action:
Investigate to determine appropriate treatment/s to ensure the stormwater discharged to the rear of the properties freely flows to the existing stormwater system. This may involve solutions that are undertaken by VicRoads, solutions that are undertaken by council on VicRoads land with approval from VicRoads or treatments undertaken by Council within the bounds of the private properties. Such works maybe subject to a drainage scheme paid for either in part or completely by the relevant property owners.

Risk 1: Flooding of residential properties		Action adopted: Inspection, liaison with VicRoads to ensure maintenance		
Consequence	**Likelihood**	**Consequence**	**Likelihood**	**Residual Risk**
Moderate	Remote	Moderate	Remote	Moderate

9.8 Appendix I - Likelihood and Consequence Tables

The following tables represent the process to measure the criticality of individual pipes and pits. The results of this are Tables 5.3 and 5.4

9.9.1 - Pipes Likelihood Table

	Pipes		
Likelihood	**Score**	**Value**	**Notes**
Length	1	<=5m	Longer pipe has more scope for failure
	2	6 -> 30m	
	3	31 -> 70m	
	4	71 -> 100m	
	5	>= 101m	
Age	1	0 -20	If CCTV available reduce weighting to 0.3
	2	21 - 40	Age still factor, but condition overrides
	3	41 - 60, Unknown	
	4	61 - 80	
	5	> 81	
Construction	1	Reinforced Concrete	Revise if more materials found in system
	2	PVC, Unknown	
	3	n/a	
	4	n/a	
	5	n/a	
Condition	1	As per CCTV, or equal to age rating	
	2	"	
	3	"	
	4	"	
	5	"	
History	1	No Reports	
	2	"	
	3	"	
	4	"	
	5	"	
Notes:	Rating = Score * Weighting		
	Round up to next whole number (i.e. 2.3 = 3)		
	Overall rating = Average of all scores		
	Scores/Ratings may be adjusted at any time, additional crietera may be added to refine model		
	MyData condition data used. May not be accurate. No weighting adjustment has been applied		

9.9.2 – Pipes Consequence Tables

		Pipes	
Consequence	Score	Value	Notes
Hierarchy	1	Collector	Importance of function
	2	Local Main	
	3	Unknown	Rate middle ground until pipe verified
	4	Main	
	5	Trunk Main	
Size	1	< 300	Refine in future to encompas carrying capacity / max velocity
	2	300, 375	
	3	450 -> 675	
	4	750 -> 1050	
	5	> 1050	
Depth	1	< 1m	Deeper pipes should be more stable, but higher social, time and economic cost of repair.
	2	1 - 2m	
	3	2 - 3m, Unknown	
	4	3 - 5m	
	5	> 5m	
Road Hierarchy	1	Maintained by VicRoads, More than 50m from road center, Not Maintained, Private Road, Reserve Access Road	Relative disruption to people/property
	2	Sealed Access <= 60 km/hr, Limited Access, Minor Access	
	3	Sealed Access > 60 km/hr & all Unsealed Access	
	4	Collector, Link	
	5	Critical Area, Under Building	
Zone	1	Farm, Conservation Zone, Cemetary, Rural Activity Zone, Rural Conservation Zone, Special Use Zone 5 - Earth and Energy Rural, Urban Floodway	Relative disruption to people/property
	2	Industrial 3 (Buffer Zone), Low Density Residential, Parks and Recreation, Local Government, Rural Living Zone, Special Use Zone 2 - Old Gippstown Heritage Park	
	3	General Residential, Industrial 1, Industrial 2 (Large Remote), Mixed Use Zone, Neighbourhood Residential Zone, Other Public Use, Road 2, Residential Growth Zone, Special Use Zone 2 - Urban Gateway - Truck Stops at entry to town and series of car yards at edge of town, Township	
	4	Commercial 2 (Light), Road 1	
	5	Commerical 1 (Heavy), Services and Utility, Education, Health and Community, Transport, Special Use Zone 1 - Coal, Special Use Zone 4 - Telephone Exchange, Special Use Zone 6 - Airport	

9.9.3 – Pits Likelihood Table

		Pits	
Likelihood	**Score**	**Value**	**Notes**
Type	1	Non-Inlet	Inlet pits more likely to block
	2	Outlet, Unknown	
	3	Inlet	
	4	n/a	
	5	n/a	
Age	1	0 -20	If inspection available reduce weighting to 0.3
	2	21 - 40	Age still factor, but condition overrides
	3	41 - 60, Unknown	
	4	61 - 80	
	5	> 81	
Condition	1	As per inspection, or equal to age rating	
	2	"	
	3	"	
	4	"	
	5	"	
History	1	No Reports	
	2	"	
	3	"	
	4	"	
	5	"	
Notes:	Rating = Score * Weighting		
	Round up to next whole number (i.e. 2.3 = 3)		
	Overall rating = Average of all scores		
	Scores/Ratings may be adjusted at any time, additional crietera may be added to refine model		

9.9.4 – Pits Consequence Table

	Pits		
Consequence	**Score**	**Value**	**Notes**
Hierarchy	1	Collector	Importance of function
	2	Local Main	
	3	Unknown	
	4	Main	
	5	Trunk Main	
Type	1	Non-Inlet	Outlet must function for network to work. Inlet pits may surcharge.
	2	n/a	
	3	Inlet, Unknown	
	4	Outlet	
	5	n/a	
Depth	1	< 1m	
	2	1 - 2m, Unknown	
	3	2 - 3m	
	4	3 - 5m	
	5	> 5m	
Road Hierarchy	1	Maintained by VicRoads, More than 50m from road center, Not Maintained, Private Road, Reserve Access Road	
	2	Sealed Access <= 60 km/hr, Limited Access, Minor Access	
	3	Sealed Access > 60 km/hr & all Unsealed Access	
	4	Collector, Link	
	5	Critical Area, Under Building	
Zone	1	Farm, Conservation Zone, Cemetary, Rural Activity Zone, Rural Conservation Zone, Special Use Zone 5 - Earth and Energy Rural, Urban Floodway	
	2	Industrial 3 (Buffer Zone), Low Density Residential, Parks and Recreation, Local Government, Rural Living Zone, Special Use Zone 2 - Old Gippstown Heritage Park	
	3	General Residential, Industrial 1, Industrial 2 (Large Remote), Mixed Use Zone, Neighbourhood Residential Zone, Other Public Use, Road 2, Residential Growth Zone,	
	4	Commercial 2 (Light), Road 1	
	5	Commerical 1 (Heavy), Services and Utility, Education, Health and Community, Transport, Special Use Zone 1 - Coal, Special Use Zone 4 - Telephone Exchange, Special Use Zone 6 - Airport	

9.9 Appendix J - DAMP Improvement Plan

The asset management improvement plan is shown below

Category	*Item*	*Priority*	*Resources*
Data	Improve Asset Handover Procedures	Medium	Internal
Data	Data Improvement – Condition In order to better plan for renewal and maintenance there is a need for better condition data. Age can be used as a rough guide to condition and as collecting condition data on a network of this size is costly, it is proposed that a program of targeted condition assessment be undertaken on a sample and that be applied to the remainder of the network based on the estimated age. Action: Undertake a condition and performance assessment of 2% of the pits and pipes every four years for 12 years and translate that across the network.	High	$285,000
Data	Purchase a Portable CCTV Camera to assist teams quickly and safely determine the function of and in some cases the condition of an asset during maintenance activities.	High	$60,000
Data	Develop CCTV Procedure and Specification for external providers based on Wincan or Quikcam format	High	$5,000
Data / Renewal	Update the DAMP with condition assessment data from assessments and translate this into a renewal and maintenance regime.	High	Internal
MMS	Consider altering the maintenance regime to include a proactive routine drainage maintenance activity that could perhaps be provided through a Drainage Maintenance Contract	High	$7,500
MMS	Measure Performance – maintenance response times, average response times, costs – and reconfigure Pathways to capture customer requests related to performance.	High	Internal/ MMS
MMS	Develop a Maintenance Management System that includes retaining a maintenance history, retaining a link with previous failure codes.	High	Funded Project
MMS	Undertake a detailed analysis of customer service requests to ascertain the nature and details of complaints/requests received over the life of this plan to assist with future plan updates.	High	Performance and Innovation Team

Category	Item	Priority	Resources
Other	Provide Education material/website improvements – community facts sheets via web and for distribution by field workers. Help the community understand the importance of the drains to their wellbeing and the environment.	High	$7,500
Plan	Develop measurement process for technical levels of services	High	$2,500
Risk	Further develop Inspection Regime based on criticality	High	$1,000
Risk	Investigate and prioritise items in Appendix H and expand the list using known locations and customer requests.	High	$5,000
Data	Increase the asset management skills and capability of Council's agencies that have assets under their care and control	Low	Training Budget
Data	Improve the quality of as-constructed and A-Spec data from developers and capital works projects	Medium	$2,500
Data	Mandate that developers will collect and provide CCTV reports from new developments and ensure third party assessment of condition and recommended rectification before acceptance according to a set of agreed standards.	Medium	Internal
Data/Plan	Determine Levels of Service and confirm inventory for overland flow, open drains/channels, inlet/outlet/outfall structures	Medium	$5,000
Other	Provide training in drainage legislation, local laws and drainage easements, property boundaries and Local Government and the Water Act	Medium	Training Budget
Other	Develop a Community Engagement Framework for drainage assets	Medium	Internal
Other	Review location, maintenance standards and suitability of GPT locations	Medium	$5,000
Planning	Ensure full Life cycle asset reporting from creation, acquisition , design, maintenance to renewal/upgrades	Medium	Internal
Planning	Create improved links between Finance and Asset management through timely valuations	Medium	Internal
Planning	Develop Drainage Policy and Processes	Medium	$2,500
Planning	Configure MyPredictor to enable long term modelling of renewal and maintenance to occur for drainage assets	Medium	$20,000

Category	Item	Priority	Resources
Risk	Implement a strategy to identify, investigate, prioritise and/or rectify easement drainage assets (also known as Easement Drains)	Medium	Internal
Other	Agreements with West Gippsland Catchment Management Authority and coal mine operators for outfall management on their property	Medium	Property and Statutory Services
MMS	Investigate Street Sweeping Data to evaluate the effectiveness of keeping the drains clear and determine whether changes are required	Low	Operations
Planning / MMS	Develop Maintenance Plan and budget allocation for Council Stormwater Quality Improvement Devices	Low	Infra. Design
Risk	Develop a Risk Management Framework covering Strategic, operational and financial factors and update the Risk Register as required.	Low	Risk
Data	Data improvement: Location and quantity The data has been derived from a variety of sources with varying degrees of accuracy and completeness. There is a need to identify omitted data and improve information about the assets themselves including type; dimensions, criticality etc. Action: desktop analysis using existing plans and aerial photographs, interview depot officers and limited site visits.	Ongoing	Internal
Planning	Update Long Term Financial Plan based on remaining life on currently available data	Ongoing	Finance
	TOTAL EXTERNAL RESOURCES/FUNDING REQUIRED		**$408,500**