





Drainage Asset Management Plan

2019

Lifestyle Capital of Victoria



Document Control		 			
Asset Management Plan					
Document ID : NAMS>PLUS Concise Asset Management Plan Template v 3.116					
Rev No	Date	Revision Details	Author	Reviewer	Approver
V1.0	16/08/2019	Draft Development – Internal	M. Vorster	L. Ure	L. Ure
V1.1	22/08/2019	Feedback Revision – Asset Inspector, M Foley	M. Vorster	M. Vorster	
V1.2	27/08/2019	Feedback Revision – City Works Maintenance Engineer W Jackson	M. Vorster	M. Vorster	
V1.3	29/08/2019	Feedback Revision – Coordinator Asset Planning, R. Jayarathne	M. Vorster	M. Vorster	
V1.4	09/09/2019	Feedback revision – Asset Planning Engineer, Jack Ellis	M. Vorster	M. Vorster	
V1.5	04/09/2019	Final review and revision	M. Vorster	R. Jayarathne	
V1.6	18/11/2019	Feedback Revision - Asset Planning Engineer, Jack Ellis	M. Vorster	R. Jayarathne	
V1.7	17/11/2019	Final adopted version	M. Vorster	R. Jayarathne	L. Ure

NAMS.PLUS Asset Management Plan Templates

NAMS.Plus offers two Asset Management Plan templates – ‘Concise’ and ‘Comprehensive’.

The Concise template is appropriate for those entities who wish to present their data and information clearly and in as few words as possible whilst complying with the ISO 55000 Standards approach and guidance contained in the International Infrastructure Management Manual.

The Comprehensive template is appropriate for those entities who wish to present their asset management plan and information in a more detailed manner.

The entity can choose either template to write/update their plan regardless of their level of asset management maturity and in some cases may even choose to use only the Executive Summary.

The illustrated content is suggested only and users should feel free to omit content as preferred (e.g. where info not currently available).

The concise Asset Management Plan may be used as a supporting document to inform an overarching Strategic Asset Management Plan.

This is the **Concise** Asset Management Plan template.

© Copyright 2017 – All rights reserved.
 The Institute of Public Works Engineering Australasia.
www.ipwea.org/namsplus

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
	1.1 The Purpose of the Plan.....	1
	1.2 Asset Description	1
	1.3 Levels of Service.....	1
	1.4 Future Demand	2
	1.5 Lifecycle Management Plan	2
	1.6 Financial Summary.....	2
	1.7 Asset Management Practices.....	3
	1.8 Monitoring and Improvement Program	3
2.	INTRODUCTION.....	4
	2.1 Background.....	4
	2.2 Goals and Objectives of Asset Ownership.....	6
	2.3 Core and Advanced Asset Management	6
3.	LEVELS OF SERVICE	7
	3.1 Customer Research and Expectations.....	7
	3.2 Strategic and Corporate Goals	8
	3.3 Legislative Requirements	10
	3.4 Customer Levels of Service.....	11
	3.5 Technical Levels of Service	14
4.	FUTURE DEMAND	19
	4.1 Demand Drivers.....	19
	4.2 Demand Forecasts.....	21
	4.3 Demand Impact on Assets.....	21
	4.4 Demand Management Plan.....	21
	4.5 Asset Programs to meet Demand.....	22
5.	LIFECYCLE MANAGEMENT PLAN.....	24
	5.1 Background Data	24
	5.2 Operations and Maintenance Plan.....	29
	5.3 Renewal/Replacement Plan	31
	5.4 Creation/Acquisition/Upgrade Plan	32
	5.5 Disposal Plan	37
6.	RISK MANAGEMENT PLAN	38
	6.1 Critical Assets	38
	6.2 Risk Assessment	39
	6.3 Service and Risk Trade-Offs.....	44
7.	FINANCIAL SUMMARY	46
	7.1 Financial Statements and Projections	46
	7.2 Funding Strategy.....	48
	7.3 Valuation Forecasts	48
	7.4 Key Assumptions Made in Financial Forecasts.....	50
	7.5 Forecast Reliability and Confidence	50
8.	IMPROVEMENT AND MONITORING PLAN	52
	8.1 Status of Asset Management Practices	52
	8.2 Improvement Plan	52
	8.3 Monitoring and Review Procedures	53
	8.4 Performance Measures	54
9.	REFERENCES.....	55
10.	APPENDICES	55
	Appendix A Projected 10-year Capital Renewal Upgrade and New Works Program	56
	Appendix B Budgeted Expenditures Accommodated in LTFP.....	57
	Appendix C RMP Drainage Maintenance Activities	58
	Appendix D RMP Drainage Inspections	61
	Appendix E Background Documentation	62

This page is intentionally left blank

1 EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

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

Frankston City is situated approximately 40 kilometres south of Melbourne and covers an area of 130 square kilometres, with a foreshore area stretching 10 km along the eastern shores of Port Phillip Bay.

Storm water are largely generated within the municipality, with 85% of runoff draining towards Port Phillip Bay, whilst the balance drains towards Watsons Inlet within Western Port.

The Municipality consists of eight catchments based on topography and drainage alignment of the landscape. The catchments are listed below:

- Balcombe Creek (41ha)
- Boggy Creek (3340ha)
- Eastern Contour Drain (1776ha)
- Eel Race Drain (1566ha)
- Kackeraboite Creek (50ha)
- Kananook Creek (3361ha)
- Sweetwater Creek (862ha)
- Watson Inlet (1869ha)

This plan covers drainage infrastructure serving to collect, treat, retain, direct and discharge stormwater flows. Water flows are mainly collected via run-off from hard surfaced, impervious areas (roads, building roofs, paved areas, etc.) into overland table drains, pits, pipes and other designed features to retard and direct water flows, improve and manage water quality, store or discharge water.

This asset management plan contains detail of the infrastructure; maintenance and management activities; risk considerations and the funding requirements to continue providing the service in the most cost effective manner over the 10 year planning period.

The Flood Management Plan for City of Frankston and Melbourne Water 9 May 2019), details roles, responsibilities and key activities relating to waterways, drainage systems, current and future flood management risks. The document details progress with respect to flood modelling, mapping, as well as an assessment of Council flood data and information. Matters relating to flood management fall outside the scope of this document.

1.2 Asset Description

Council storm water infrastructure consist of the following elements:

- Pipes and open channels - 948 kilometres¹
- Pits and manholes – 40,413
- Retarding basins -25²
- Water sensitive urban design features and measures, including Gross Pollutant Traps (x19), Raingardens (x19) and Soakage Pits (x7)

Stormwater infrastructure assets have been valued at \$273,418,511 for the 2018/19 financial year, representing approximately 25% of Council total infrastructure portfolio.

Further to valuation totals, Council's asset registers contains detail of asset records in need of validation to an estimated total of \$ 12m. Further investigation is required before formal valuation can be performed for this selection of assets.

Improvements are also required to incorporate other stormwater asset categories into council asset register. Examples of this includes rain gardens, retarding basins and recycled water infrastructure network assets.

1.3 Levels of Service

Present funding levels are sufficient to continue providing existing services at current levels as defined under Council's Road Management Plan 2019 (RMP). The majority of infrastructure (66%) are located within road reserve and levels of service is managed according to the RMP-2019. Open space and easement infrastructure (33%) are being controlled through a catchment based inspection program, supplemented with scheduled quarterly inspections under the Specific Mitigation Systems (SMS) program.

Funding requirements have been developed and is included under both Council's Long Term Financial Plan as well as the Long Term Infrastructure Plan.

¹ Pipe_SPC Data Extract – 30/08/2019 (incl Pipe_SPC_TempWorking)

² Source: Frankston City Council Storm and Flood Emergency Plan – A Sub-Plan of the MEMPlan ver Public Nov 2017

Under a rate capped environment, consideration should be given where any reduction in council funding levels would impact on Council’s ability to maintain current levels of service and performance.

The main services consequences would result in:

- Reduced levels of service as defined under the RMP, leading to a decrease in overall performance and level of service.
- Reduced standard of maintenance and management of other asset not covered under RMP levels of service
- Increased risk of flooding and public liability exposure as a result of the decrease in levels of service.

1.4 Future Demand

The main drivers for the demand of new and upgrade of services are created by:

- Increased developments from population growth;
- Storm intensity and severity from Climate Change; and
- Regulation and legislative standards and requirements.
- Capacity deficit as a result of lesser / outdated design standards for older parts of the network.

Demand factors will be managed through a combination of techniques by: upgrading of existing assets, providing new assets to meet demand and other demand management techniques where non-asset solutions, managing failures and insuring against risks are used in combination to ensure the best practical outcome. Consideration are given to:

- Cost effective management of repairs and remedial works
- Targeted upgrade and renewal of infrastructure to align with Council Strategic direction and focus and address areas where capacity issues have been identified.

1.5 Lifecycle Management Plan

What does it Cost?

The projected expenditure required to provide the services covered by this Asset Management Plan, including operations, maintenance, renewal, upgrade and new assets over the 10-year planning period is \$ 53,7M or \$5.3M on average per year.

1.6 Financial Summary

What we will do

Budgeted funding available for this period is on average \$5,7M per year according to Council’s Long Term Financial and Infrastructure Plans. This represents 108% of the cost to sustain current levels of service at the lowest lifecycle cost. The projected over allocation of funds follows a period where historically only 26% of average annual asset consumption (AAAC) was spent toward renewal. Capital works project phasing also dictates budgeted amounts slightly miss-aligned with average annual costs and renewal projections.

The emphasis of the Asset Management Plan is to communicate the consequence any potential reduction in funding will have on the service provided, risks and liability, to enable informed decision making.

The allocated funding is sufficient to continue to provide the services in the AM Plan compared with planned expenditure currently included in the Long Term Financial Plan. This is reflected in Figure 1.

Figure 1: Projected Operating and Capital Expenditure

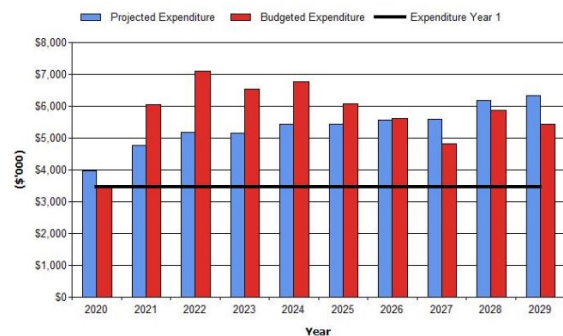


Figure Values are in current (real) dollars.

We plan to provide storm water services for the following:

- Operation, maintenance, renewal and upgrade of the drainage assets listed in section 1.2 to meet community needs with available funding per Council’s Annual Budget.
- Major works within the 10 year planning period follows on from the Frankston South Drainage Strategy and involves specific projects for Jasper Terrace, Warringa Road, Murawa and Williams Street and Cooina Court sub catchment areas.

Managing the Risks

Our present funding levels are sufficient to continue to manage risks in the medium term, at current levels of service.

If funding levels cannot be maintained at the level contained within this Plan, the main consequences will result in:

- a drop in the maintenance and operation standards,
- adverse influence on customer satisfaction levels
- increased risk and liability exposure resulting from flooding

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

- Undertaking comprehensive service planning and develop agreed and costed levels of service to ensure Council resource are efficiently allocated at lowest lifecycle cost.
- Enhancements and development of asset information and the integration with other systems to facilitate accurate tracking and recording of lifecycle costs and considerations.
- Undertake a four yearly review of this Asset Management Plan to ensure alignment with Council's strategic planning cycle.

1.7 Asset Management Practices

Our systems to manage assets include:

- INFOR Public Sector Asset management System (FAMIS)
- KERN Enterprise Mobility Solution
- MAPINFO Geographical Information System
- IntraMaps 9 Geographical Information System
- INFOR Pathway Public Sector (property and customer request management)
- TECHNOLOGYONE Enterprise Suite (financial system)

Assets requiring renewal/replacement have been identified from external modelling performed in Moloney Financial Modelling Software.

1.8 Monitoring and Improvement Program

The next steps resulting from this Asset Management Plan aims to improve asset management practices. Improvement actions will be addressed within the broader stakeholder group to coordinate actions.

The Integrated Water Management (IWM) Asset Working Group was convened on 7 August 2019. The group will build on the existing drainage asset management group, but increase the scope to include Water Sensitive Urban Design (WSUD) and IWM assets. The IWM focus will expand attention to include e.g. recycled water infrastructure. This group presents an opportunity to implement and monitor improvement actions.

Improvements have been identified in the following areas:

- Integrity and reliability of asset information.
- Asset system enhancements.
- Process and procedural improvement.

Further detail of specific improvement actions are available under Section 8 of this document.

2. INTRODUCTION

2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 10-year planning period.

The asset management plan is to be read with Council’s Asset Management Policy, Asset Management Strategy in conjunction with the documents detailed under Appendix F.

The infrastructure assets covered by this asset management plan are shown in Table 1. These assets are used to provide storm water drainage services to minimise the impact of flooding on processions, property and land within the municipality.

Table 1: Assets covered by this Plan

Stormwater Drainage Assets	Asset Type	Size	Quantity	Gross Replacement Value (2019)
Pits and Manholes	Surface and kerb inlet structures: Side Entry Pit (SEP) Junction Pit Grated Pit Manholes, Access/Gatic Pits	Typically 600mm x 900mm or 900mm x 900mm	Valuation 2019 – 36,473 (qty) Unverified Data – 3,940 (qty) Estimated Quantity – 40,413 (qty)	\$ 95,423,163 <u>\$ 10,308,098</u> <u>\$ 105,731,262</u>
Underground Pipelines (including culverts)	Closed conduits consisting of concrete, pvc and clay pipes	Diameters ranging from 150mm to 3300mm	Valuation 2019 – 936,036 (m) Unverified Data – 12,172 (m) Estimated Length – 948,208 (m)	\$ 177,995,349 <u>\$ 2,314,644</u> <u>\$ 180,309,993</u>
Formed open channel and overland flow paths channels	Formed (earth or concrete) open channels	Various	Unknown	Unknown
Water Sensitive Urban Design Features	Gross pollutant trap, soakage pit, rain gardens and other rain water harvesting assets, retarding basins, soakage pit, recycled water infrastructure networks,	Various	GPT – 19 Soakage Pits - 20 Recycled Water Schemes – 7 Rain Water Harvesting Systems – 30 Rain Gardens – 70 Bore water assets – 6	\$ 97,037 (GPT & Soakage pits only, value included with Pit & Manhole valuation)
			Estimated Total Value:	\$ 286,041,254

Key stakeholder groups in the preparation and implementation of this plan are shown in Table 2.

Table 2: Asset Management Key Stakeholders Responsibility Matrix

Stakeholder	Roles	Responsibility
INTERNAL:		
Councillors	Act as custodians and stewards of community assets. Be aware of best practice asset management principles. Ensure commitment to sustainable asset management principles is incorporated in the Council Plan. Ensure that legal and statutory compliance obligations are met. Approve Council’s Asset Management Policy, Strategy and Plans. Approve the alteration and/or rationalization of under-utilized or surplus	Adoption of Asset Management Policy, Asset Management Strategy and Asset Management Plans. Approval of budget allocations that ensure appropriate non-discretionary funding provision for renewal, maintenance and operation of Council assets in the Long Term Financial Plan (LTFP) and Long Term Infrastructure Plan (LTIP).

Stakeholder	Roles	Responsibility
	<p>Council assets.</p> <p>Ensure appropriate financial resources for non-discretionary asset management activities are maintained in accordance with funding strategies of the LTFF & LTIP.</p>	
CEO and Executive Management Team	<p>Act as custodians and stewards of community assets.</p> <p>Be aware of best practice asset management principles.</p> <p>Ensure that legal and statutory compliance obligations are met.</p> <p>Oversee the implementation of Council's Asset Management Policy, Strategy and Plans with agreed resources.</p> <p>Facilitate the effective operation of Council's Strategic Asset Management Group (SAMT).</p> <p>Supports asset management requirements in relevant staff position descriptions and performance plans, and provide asset management learning and development programs.</p> <p>Ensure that accurate and reliable information is presented to Council for decision-making.</p> <p>Ensure that Councillors and staff are adequately trained and skilled in sustainable financial, environmental and asset management practices.</p>	<p>Responsible for key business issues associated with asset management including approving budgetary strategies, oversight of key risks and provides strategic direction.</p> <p>Provide advice to Council on initiatives requiring Council endorsement.</p> <p>Guide Council's decision making with respect to Life Cycle Costing, the Long Term Infrastructure Plan, Long Term Financial Plan and Service Plans</p> <p>Ensure Council's asset management practices and decision making aligns with the Council Vision and Asset Management Policy.</p>
Audit and Risk Committee ³	<p>Ensures municipal assets are compliant with relevant legislation and regulations;</p> <p>Supports Council to be responsive to changes in legislation and regulations and provide appropriate funding to ensure compliance occurs in a timely manner;</p> <p>Oversees the maintenance of road related assets to ensure ongoing compliance with the Road Management Plan.</p> <p>Ensures the valuation of Council assets will be in accordance with the accounting standards applicable for local governments within the State of Victoria.</p> <p>Monitors compliance with insurance obligations and ensures information regarding asset valuations and insurance replacement values are linked to the asset register</p>	<p>Monitors strategic asset management risks and treatment plans identified in Asset Management Plans</p> <p>Ensures Council's exposure to risk is minimised in regard to asset failures, property risk exposure, damage and loss</p> <p>Oversees the maintenance of road related assets to ensure ongoing compliance with the Road Management Plan.</p> <p>Monitors compliant asset accounting and valuations in accordance with applicable Australian accounting standards.</p> <p>Ensures Council assets comply with insurance, legislative and regulatory requirements.</p>
Strategic Asset Management Leadership Team	<p>Have a broad understanding of asset management issues and the continuous improvement approach being adopted;</p> <p>Support the delivery of the Asset Management Policy, Strategy and Plans;</p> <p>Monitor, evaluate and assist in the delivery of asset management improvement projects/ actions;</p> <p>Review and implement, where possible, external audit recommendations relating to asset management;</p> <p>Raises awareness throughout the organisation of the benefits of committing to a strategic asset management approach;</p> <p>Identify opportunities and support development for improvement in relation to the planning, development and management of assets;</p> <p>Advocate for improved strategic asset management outcomes.</p> <p>Recommends budget allocations for renewal expenditure as per Council's LTFF & LTIP.</p> <p>Approves forward schedule of asset audits and AM Plan reviews.</p>	<p>Provide strategic direction, knowledge sharing and monitor the progress of the Asset Management Strategy Improvement Plan</p> <p>Supports and monitors the implementation progress of the Asset Management Strategy and performance.</p> <p>Facilitates the rollout of the Frankston Asset Management Information System and ongoing enhancements.</p> <p>Increase awareness of the importance of integrated service planning and asset management across all levels of the organisation and Council's Risk & Audit Committee.</p> <p>Oversee Council assets are proactively inspected to monitor condition, levels of service and ensure Council assets are fit for purpose.</p>
Manager Sustainable Assets	<p>Ensure that the Asset Management Plan aligns with the Asset Management Policy, Strategy and relevant Service Plan for appropriate implementation.</p> <p>Communicate the long term financial requirements of the assets to EMT, CEO and Council for strategic and financial planning purposes.</p> <p>Management of this Asset Management Plan including periodic updates and revisions to maintain its relevance with internal and external changes and ensure alignment with the relevant Service Plan.</p> <p>Ensures the strategic management of stormwater assets, condition monitoring, asset management system, renewal programming.</p> <p>Drive Best Practice Asset Management within the organisation and provide guidance and advice to key internal stakeholders.</p>	<p>Sustainable asset management and planning (including asset systems, asset data and information management).</p> <p>Renewal modelling and program development.</p>
Manager Engineering Services	<p>Conduct network level planning and investigations to facilitate development of upgrade and new programs.</p> <p>Participate in the review and update of the Service Plan and Asset Management Plan and the development of Key Performance Indicators.</p>	<p>Planning and investigation to develop New, Upgrade, Expansion programs.</p> <p>Ensure compliance with design and construction standards.</p> <p>Develop, monitor and review the Service Plan including service performance indicators.</p>

³ Strategic Asset Management – Governance Structure – August 2018_V1.0. (A3692185)

Stakeholder	Roles	Responsibility
Manager Capital Works Delivery	Responsible for scheduling and delivery of the capital works program for the asset class.	Asset delivery according to the annual capital works program.
Manager Operations	Responsible for provision of the agreed maintenance and operational levels and standards for the assets in consideration of long term sustainability. Participate in the review and update of the Service Plan and Asset Management Plan and the development of Key Performance Indicators to measure performance.	Asset maintenance, inspection and repairs. Develop and deliver asset maintenance plans.
Manager Finance	Ensure financial resourcing is available to deliver Council Plan, Strategic Resource Plan, and Community Plan. Prepare and deliver Council annual budget and reporting outlining Council performance against Council Plan and Budget.	Prepares and deliver annual budget and reporting of Council Performance. Maintain Council financial reporting system (TechnologyOne)
EXTERNAL:		
Community members	Beneficiaries of services provided by drainage infrastructure. Provide input and dictate the levels of service expected from drainage infrastructure.	The community votes in Council elections to choose councillors who will represent their voice.
Melbourne Water Corporation and VicRoads	External groups or agencies who manages and protect major water resources and also contribute to the provision of stormwater services and infrastructure in capacity of the statutory water or roads authority. Co-owner of drainage infrastructure within municipal boundaries.	
State and Federal Government Departments	Provide information, support, guidance and occasional funding to assist with provision and management of open space assets. Appoint the Committee of Management (COM) for Crown Lands, such as significant areas of foreshore.	

2.2 Goals and Objectives of Asset Ownership

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 the benefit of present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- Maintain linkage with Council Long Term Financial and Infrastructure Plans to manage and deliver strategic drainage infrastructure within available budget and directing how funding are to be allocated.

Other references to the benefits, fundamentals principles and objectives of asset management are:

- International Infrastructure Management Manual 2015 ⁴
- ISO 55000⁵

2.3 Core and Advanced Asset Management

This asset management plan is prepared as a ‘core’ asset management plan over a 10 year planning period in accordance with the International Infrastructure Management Manual⁶. It is prepared to meet minimum legislative and user requirements for sustainable service delivery and long term financial planning and reporting. Core asset management is a ‘top down’ approach where analysis is applied at the system or network level.

Future revisions of this asset management plan will move towards ‘advanced’ asset management using a ‘bottom up’ approach for gathering detailed asset information to provide for activities and programs to meet agreed service levels in a financially sustainable manner at an individual asset level.

⁴ Based on IPWEA 2015 IIMM, Sec 4.2.1, p 4| 22

⁵ ISO 55000 Overview, principles and terminology

⁶ IPWEA, 2015, IIMM.

3. LEVELS OF SERVICE

3.1 Customer Research and Expectations

Frankston City Council participates in the state-wide Local Government Community Satisfaction Survey conducted by an independent firm on an annual basis. The primary objective of the survey is to assess the performance of the organisation across a range of measures to gain insight into ways to improve service delivery and efficiency for the community. This telephone survey polls a sample of 400 residents on their level of satisfaction with Council's services.

Although the survey does not specifically assess Council's performance with regard to storm water and drainage, this element is considered an integral component of the Sealed Local Roads assessment and is used here to gauge Council performance in respect of storm water services.

Table 3 outlines the community's overall satisfaction with several service measures relevant to the storm water drainage network managed by Council. Council uses this information in developing its Strategic Plan as well as in the allocation of budget resources.

Table 3: Community Satisfaction Survey Levels

Performance Measure	Satisfaction Level Index Score (Out of 100)									
	2012	2013	2014	2015	2016	2017	2018	FCC Average	Metro Councils 2018	7 Year Trend
Overall Performance	62	66	63	62	61	56	55	61	65	↓
Liveability	80	79	82	92	90	87	91	86	N/A	↑
Safety	52	55	57	57	58	48	51	54	N/A	↓
Condition of local streets and footpaths ⁷	61	62	65	64	63	59	64	63	68	↑

Community satisfaction is further evaluated from analysis of the following:

- Recorded customer service requests over the previous five years;
- Analysis of VICSES request for assistance data for a five year period from 2011 to 2016⁸.

Overall satisfaction or dissatisfaction is interpreted from annual increase or decrease in storm water related customer service requests to Council directly as well as those directly to VICSES. Further to these measures, the change in the annual number of requests resolved on-time.

The overall downwards trend in requests for the above measures are reflected below in Figure 2 and Figure 3. The graphs also depicts the strong relationship between recorded rainfall and the number of requests received and gives some insights to network performance and capacity to cope with the intensity of significant weather events.

⁷ 'Condition of local streets and footpaths' performance measure was changed in 2015 to 'Condition of sealed local roads in your area'

⁸ Based on data extracted from: "Frankston City Council Storm and Flood Emergency Plan, Version – Public November 2017"

Figure 2: Frankston Customer Service Requests – Drainage

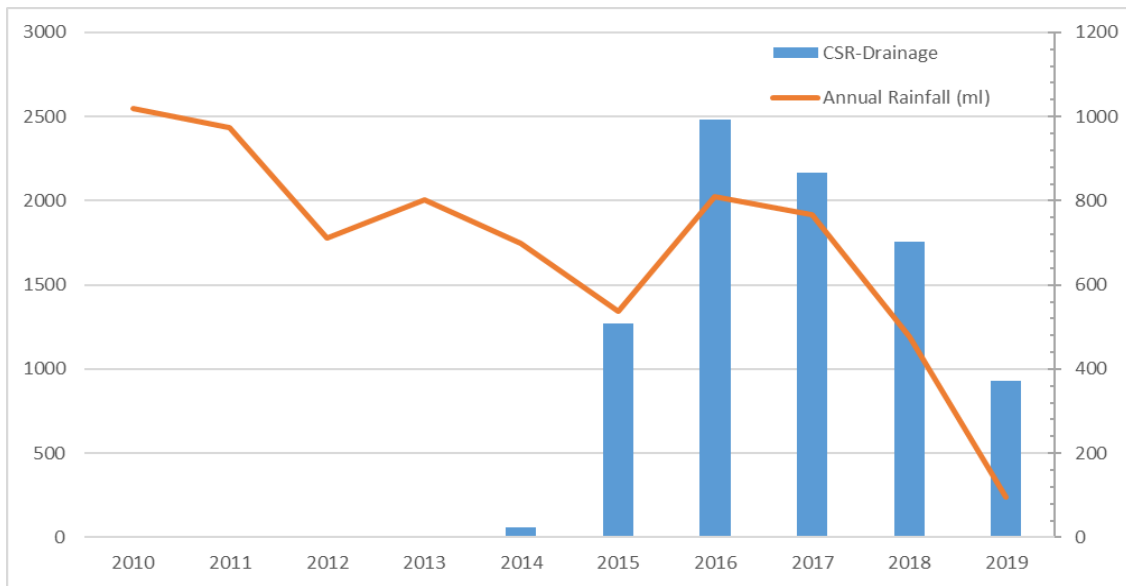
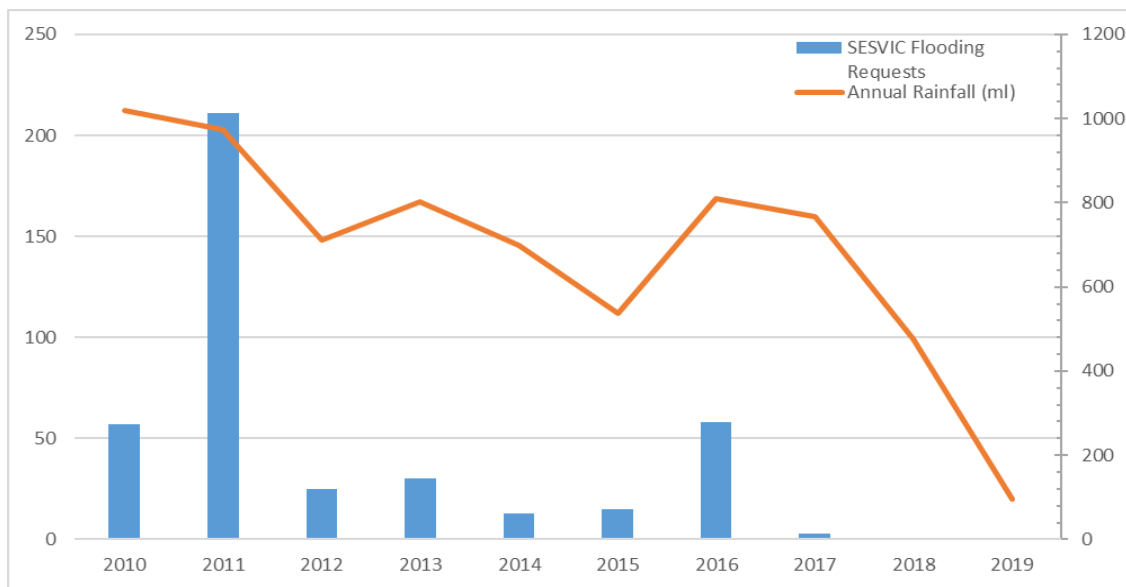


Figure 3: Victorian State Emergency Services – Requests for Assistance



Future revisions of the asset management plan will incorporate community consultation on service levels and costs for provision of this service. This will assist Council and stakeholders to match the level of service required, acceptable level of service risks and consequences with the community’s ability and willingness to pay for the service.

3.2 Strategic and Corporate Goals

This asset management plan is prepared under the direction of Frankston City Council’s vision, mission, goals and objectives.

Our vision: *“Lifestyle Capital of Victoria”*

Our mission: *“We are driven by the privilege of serving our community, and providing leadership and visionary thinking to ensure Frankston City is recognised as the Lifestyle Capital of Victoria”*

The Frankston City Council Plan 2017 – 2021 outlines long term priorities and strategies to set the direction of the organisation over a four year period.

The Council Plan defines four Long Term Community Outcomes for Frankston City which are supported by specific themes, strategic indicators and corresponding four year priorities.

The Long Term Community Outcome themes and priority actions applicable to this Plan are detailed in below:

Table 4: Goals and how these are addressed in this Plan

Theme	Priority Action	How goals and objectives are addressed in this AM Plan
1. A Planned City		
1.1 Community Infrastructure	1.1.6 Ensure community infrastructure and services match community needs	<ul style="list-style-type: none"> Identify current technical and community levels of service for drainage. Provide guidance into future service requirements based on the organisations current delivery framework and financial position. Documentation of the future improvement actions specific to integrated water management service delivery. Highlights the need for service planning to guide future decision making and funding allocation. Highlights the need for improved community consultation to determine community needs and establish agreed levels of service.
2. A Liveable City		
2.2 Vibrant and Engaged	2.2.3 Engage and support Frankston City's local areas and diverse communities to optimise facility usage and enhance equitable access to services	<ul style="list-style-type: none"> Detail Council's road asset management approach (incorporating storm water) to enhance decision making and achieve better outcomes for current and future users. Identify asset maintenance requirements to continue to provide current levels of service and maintain safe infrastructure. Identify service deficiencies from internal and external consultation to guide the development of the Improvement Plan. Align with Council's strategic documents to work towards achieving the organisational vision and mission.
	2.2.5 Improve the presentation and cleanliness of Frankston City	<ul style="list-style-type: none"> Highlights the importance of reviewing service standards and asset intervention levels to govern maintenance and renewal planning. Identifies poor condition, aged and unserviceable assets requiring renewal or disposal to be included within Council's Long Term Infrastructure Plan or assets requiring maintenance.
2.3 Health and Wellbeing	2.3.3 Enhance equitable access to sport and leisure opportunities	<ul style="list-style-type: none"> Ensure the suitable provision of drainage at sporting facilities to permit year round access for recreation activities. Highlights any gaps in the current drainage network that can be enhanced to provide improved accessibility to key sporting and recreational facilities within the municipality.
4. A Well Managed City		
4.1 Services	4.1.1 Identify service assets and service levels required to meet future community needs	<ul style="list-style-type: none"> Investigate service demands to determine drainage upgrades necessary to meet future community needs. Utilise asset condition modelling to determine renewal funding requirements and optimal service delivery scenario.
	4.1.2 Implement a rolling service review program	<ul style="list-style-type: none"> Identifies the need to review this Plan following the completion of an asset condition audit every 4 to 5 years as per Council's AM Strategy.

Theme	Priority Action	How goals and objectives are addressed in this AM Plan
4.2 Systems	4.2.3 Facilitate informed decision making through improved reporting and data management	<ul style="list-style-type: none"> • Develop an understanding of current asset condition through the collation of recent audit data. • Highlight potential risks and consequences to Council from the improper management of key drainage assets. • Document an Improvement Plan to address gaps in service delivery. • Informs Council's Long Term Financial Plan and Long Term Infrastructure Plan.
4.3 Resources	4.3.2 Undertake an ongoing review of Council's assets to ensure they meet community needs	<ul style="list-style-type: none"> • Document and analyse results from the drainage asset condition audits and CCTV assessments every 4 to 5 years in line with Council's Asset Management Strategy. • Highlights the need to undertake asset useful life assessments. • Highlights the need to continue to invest in Council's Asset Management Information System and asset management practices. • Identifies the importance of service planning and ensuring Council's integrated water management services meet community needs.

Frankston City Council will exercise its duty of care to ensure public safety in accordance with the infrastructure risk management plan prepared in conjunction with this AM Plan. Management of infrastructure risks is covered in Section 6.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Key requirements are listed in Table 5.

Table 5: Legislative Requirements

Legislation	Requirement
Crown Land (Reserves) Act 1978	Provide for the reservation of Crown Lands for certain purposes including the management of such reserves and their purposes.
Environment Protection Act 1970	A framework for the protection of the environment in Victoria, in accordance with the principals of environmental protection. Includes the establishment of environmental objectives and programs to prevent pollution and environmental damage. Applicable to roadside conservation areas.
Frankston Planning Scheme & Municipal Strategic Statement (MSS)	Provides a framework in which decisions about the use and development of land in Frankston City, and allows for the implementation of State, regional and local policies affecting land use.
Local Government Act 1989	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Planning and Environment Act 1987	Establish a framework for planning the use, development and protection of land in Victoria in the present and long-term interests of all Victorians.
Public Health and Wellbeing Act 2008	Enact a new legislative scheme which promotes and protects public health and wellbeing in Victoria.

Legislation	Requirement
Road Management Act 2004	<p>Purpose is to establish a coordinated management system for public roads that will promote safe and efficient State and local public road networks and the responsible use of road reserves for other legitimate purposes, such as the provision of utility services and drainage. Defines the responsible authorities for all roads within the state. It makes Council the controlling authority for Public Local Roads, Boundary Roads and parts of Declared Roads within the municipal area and it is therefore responsible for managing the infrastructure assets within them.</p> <p>Establishes a statutory framework for the management of the road network which facilitates the coordination of the various uses of road reserves for roadways, pathways, drainage and infrastructure, including the construction, inspection, maintenance and repair of public roads. Sets Council's framework for the awarding of damages for economic loss and for issues relating to civil liability.</p> <p>Facilitated the making of Road Management Plans which intend to establish a management system for the road management functions of a road authority and to set relevant standards in relation to the performance of those road management functions.</p>
Water Act 1989 and the Water Act Amendments Act 2007	Provides the legal context for the management of Victoria's water resources to promote equity, and responsible management of water resources. The Act further identifies roles, responsibilities and liabilities of authorities and other parties to the Water Act to prevent pollution and damage to water catchments and supply systems.
Water Bill 2014	Clarify and extend the statutory liability, roles and responsibilities for the injury, damage and economic loss resulting from the unreasonable flow of water.
Road Safety Act 1986 & Road Safety (Road Rules) Regulations 1999	Establishes safety requirements and general obligations of road users relating to responsible road use to provide for safe, efficient and equitable road use.
Transport Act 1983	Relates to the operation of the road network and regulation or prohibition of drainage discharge onto any road.
VicRoads Standards	Used in conjunction with Council's Standards to determine minimum standards for road construction and maintenance including drainage, basins
Wrongs Act 1958	The Act imposes several thresholds for the recovery of damages for economic and non-economic loss from personal injury and death in Victoria, as a result of negligence or fault. It defines Duty of Care and establishes the principles for determining negligence.
Applicable Australian Standards and Codes of Practice	Such as Codes of Practice relating to Road Management Act and other relevant legislation
All Local Laws and relevant policies of the Organisation	Construction standards, Maintenance contracts, etc.

3.4 Customer Levels of Service

Service levels are specifically defined criteria in terms of two categories:

- Customer levels of service; and

- Technical levels of service.

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided. Customer levels of service measures used in the asset management plan are:

Quality How good is the service ... *what is the condition or quality of the service?*

Function Is it suitable for its intended purpose *Is it the right service?*

Capacity/Use Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in Tables 6 and 7. Table 6 shows the expected levels of service based on resource levels in the current long-term financial plan.

Organisational measures are measures of fact related to the service delivery outcome e.g. number of occasions when service is not available, condition %'s of Very Poor, Poor/Average/Good, Very good. Organisational measures provide a balance in comparison to the customer perception that may be more subjective. Customer levels of service is shown in Table 6.

Council have developed a catalogue of services during 2018 and have aligned service cost with these services. This has resulted in development of a robust Service Planning Framework and a service planning template in preparation for the service areas consultation, asset data input, analysis and community engagement. Service Plans are now being developed for each service and will include relevant indicators and measures to monitor performance against community expectations. The process is being driven under guidance of the Service Planning Project Control Group and is expected to be completed by October 2019 in time for the consideration during Council's annual budgeting cycle.

Table 6: Customer Level of Service

	Level of Service Objective	Performance Measure Used	Current Performance	Expected Position in 10 Years based on the current budget.
Service Objectives: Provide a functional drainage network which meets the community's needs.				
Quality	Residents are satisfied with drainage services provided.	Number of customer service requests relating to service quality i.e. blocked drains, requesting maintenance of the existing drainage network. Number of requests for assistance to The Victorian State Emergency Services.	Per annum customer service requests have been trending down over the three years since 2016. Refer to Figures 2 and 3 for current performance.	It is desirable to have a decline in the number of complaints received over the 10-year planning period. Further community consultation is required.
	Provide a quality drainage network of appropriate standard and sound overall condition.	Condition profile of Council's drainage network.	Network Condition based on sample inspection (1% of 932km) Condition 1 (very good) - 40% Condition 2 - 13% Condition 3 - 14% Condition 4 - 10% Condition 5 (very poor) - 24%	Declining percentage of assets reported in condition state 4 & 5. Continuous progress with implementation of recommendations from strategic catchment modelling and analysis.
	Confidence levels		Medium	Medium
Function	Drainage areas are appropriately serviced.	Number of customer service requests relating to service functionality i.e. flooding of property and maintenance related requests.	Further analysis is required to analyse density of customer service requests per catchment.	Further work is required to establish key performance indicators.
		Functionality assessment of Council's drainage network	A benchmark assessment audit for representative sample of the network was conducted in 2018 and will serve as the basis for comparing future performance. Current performance is shown below: Condition 1 (very good) - 29% Condition 2 - 12% Condition 3 - 25% Condition 4 - 9% Condition 5 (very poor) - 26%	Per annum increase in achievement of defined level of functionality and service.
	Confidence levels		Low	Low
Capacity and Use	Drainage network has appropriate capacity to cater for storm events	Number of customer service requests relating to service functionality i.e. flooding of property.	Included within Function measure.	
		Number of Council stormwater pipes and pits deemed to be undersized to cope with storm events.	Number of pipes smaller than 300mm diameter in size = 19%	Subject to sub-catchment requirements, reducing percentage of pipes represented by diameter smaller than 300mm in size

3.5 Technical Levels of Service

Technical Levels of Service - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best provide a functional drainage network which meets the community's needs.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. defect surveys, condition assessments, CCTV surveys, routine inspections, etc.)
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. clearing debris, jetting pipes, root cutting, structural repairs etc.),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Pit rebuild, pit lid replacement, pipe replacement etc.),
- Upgrade/New – the activities to provide a higher level of service (increasing pipe or pit size, construction of new drainage assets etc.)

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.⁹

Table 7 shows the technical levels of service expected to be provided under this AM Plan. The 'Desired' position in the table documents the position being recommended in this AM Plan.

⁹ IPWEA, 2015, IIMM, p 2 | 28.

Table 7: Technical Levels of Service

<i>Service Attribute</i>	<i>Service Activity Objective</i>	<i>Activity Measure Process</i>	<i>Current Performance *</i>	<i>Desired for Optimum Lifecycle Cost **</i>
TECHNICAL LEVELS OF SERVICE				
Operations & Maintenance	Drainage network is functional, serviceable and meets the needs of the community.	Routine defect inspections	<p>Internal and External Drainage Defect Inspections as per Council’s Road Management Plan 2019, table E.2.6.</p> <p>Drainage inspectors will often clean and clear pits where possible during the inspection.</p> <p>Quarterly inspections of identified problem areas known as Specific Mitigation Systems (SMS). Additional inspections may be required in response to specific circumstances i.e. extraordinary increase in urban development, storm events etc.</p> <p>Pits within open space reserves and easements (i.e. not within road reserve) are being inspected, cleaned and raised through a catchment based inspection program which is assessed to be approximately one third complete. Estimated to have inspected the whole municipal network (excluding drainage within the road reserve) by 2029.</p>	To be determined following further analysis and consultation of Council’s inspection regime.
		Routine maintenance	<p>Refer to the Road Management Plan 2019, table E.4.2 for Council’s routine maintenance activities completed under the RMP.</p> <p>Drainage pits will be cleared and cleaned at the time of routine inspection where possible.</p>	To be determined following further analysis and consultation of Council’s maintenance regime.

<i>Service Attribute</i>	<i>Service Activity Objective</i>	<i>Activity Measure Process</i>	<i>Current Performance *</i>	<i>Desired for Optimum Lifecycle Cost **</i>																																																						
Operations & Maintenance	Drainage network is functional, serviceable and meets the needs of the community	Reactive Inspections & Maintenance	Drainage is inspected reactively following customer request through Council's PCS.	To be determined following further analysis and consultation of Council's RMP inspections and activities.																																																						
			Refer to Road Management Plan 2019, Table E.4.1 for Council's reactive maintenance activities completed under the RMP and captured in FAMIS.																																																							
			% of RMP reactive work orders relating to drainage in FAMIS and have been completed on time are shown below:																																																							
			<table border="1"> <thead> <tr> <th>Activity</th> <th>2015</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Clear Blocked Drainage Pits (x4896)</td> <td>99%</td> <td>91%</td> <td>91%</td> <td>91%</td> <td>98%</td> </tr> <tr> <td>Drainage Pit Lit Maintenance (x1980)</td> <td>81%</td> <td>74%</td> <td>77%</td> <td>89%</td> <td>96%</td> </tr> <tr> <td>Drainage Pit Surrounds Maintenance (x893)</td> <td>100%</td> <td>92%</td> <td>99%</td> <td>97%</td> <td>96%</td> </tr> <tr> <td>Drainage Pit Structure Maintenance (x681)</td> <td>100%</td> <td>97%</td> <td>85%</td> <td>94%</td> <td>100%</td> </tr> <tr> <td>Clear Blocked Drainage Pipes & Culverts (x164)</td> <td>100%</td> <td>67%</td> <td>67%</td> <td>58%</td> <td>100%</td> </tr> <tr> <td>Bridge Major Culvert Maintenance (x38)</td> <td>100%</td> <td>100%</td> <td>100%</td> <td>75%</td> <td>75%</td> </tr> <tr> <td>Open Drain Maintenance (x17)</td> <td>100%</td> <td>50%</td> <td>100%</td> <td>100%</td> <td>100%</td> </tr> <tr> <td>Average:</td> <td>97%</td> <td>82%</td> <td>88%</td> <td>86%</td> <td>95%</td> </tr> </tbody> </table>		Activity	2015	2016	2017	2018	2019	Clear Blocked Drainage Pits (x4896)	99%	91%	91%	91%	98%	Drainage Pit Lit Maintenance (x1980)	81%	74%	77%	89%	96%	Drainage Pit Surrounds Maintenance (x893)	100%	92%	99%	97%	96%	Drainage Pit Structure Maintenance (x681)	100%	97%	85%	94%	100%	Clear Blocked Drainage Pipes & Culverts (x164)	100%	67%	67%	58%	100%	Bridge Major Culvert Maintenance (x38)	100%	100%	100%	75%	75%	Open Drain Maintenance (x17)	100%	50%	100%	100%	100%	Average:	97%	82%	88%	86%	95%
			Activity		2015	2016	2017	2018	2019																																																	
			Clear Blocked Drainage Pits (x4896)		99%	91%	91%	91%	98%																																																	
			Drainage Pit Lit Maintenance (x1980)		81%	74%	77%	89%	96%																																																	
			Drainage Pit Surrounds Maintenance (x893)		100%	92%	99%	97%	96%																																																	
			Drainage Pit Structure Maintenance (x681)		100%	97%	85%	94%	100%																																																	
			Clear Blocked Drainage Pipes & Culverts (x164)		100%	67%	67%	58%	100%																																																	
Bridge Major Culvert Maintenance (x38)	100%	100%	100%	75%	75%																																																					
Open Drain Maintenance (x17)	100%	50%	100%	100%	100%																																																					
Average:	97%	82%	88%	86%	95%																																																					
	Condition assessments of Council's drainage network.	<p>A sample condition inspection was completed during 2017/18 for 10.2 km (1%) of the pipe network. Recurrent / ongoing inspections have not been scheduled for the remainder of the network.</p> <p>Following results from the 2017/18 audit, further CCTV inspections have been prioritised to provide specific information for capital work projects. No ongoing condition inspections are programmed for remainder of the network assets.</p>	To be determined following further analysis and consultation of Council's audit regime.																																																							

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance *	Desired for Optimum Lifecycle Cost **
			<p>Ad hoc CCTV inspection as conducted and managed by Operations Centre staff as required.</p> <p>Two yearly VicRoads Level 2 bridge inspections, includes inspection of major culverts under roads.</p> <p>Level 3 bridge & pedestrian structures assessments are completed on an as needed basis following Level 2 assessment.</p>	
		Budget	The 10 year average annual maintenance and operational budget totals \$2.7M per year.	Subject to any changes in levels of service, budget requirements should remain steady over the next ten years.
Renewal	Sustain drainage infrastructure to a suitable level and minimise risk of failure.	Percentage of drainage assets renewed or replaced to the required standard each year.	Historic capital renewal expenditure on drainage between 2014/15 and 2017/18 (4 years) average \$995K per year. This represents approximately 0.4% of the drainage network per year (58% of current average annual renewal requirement).	Based on current condition, renewal modelling predicts an average annual requirement of \$1.7M over the next 10 years. Average Annual Asset Consumption total \$3.4M (1.25%)
		Percentage of drainage assets in condition 4 or 5.	<p>Based of result from the sample inspection conducted in 2018:</p> <ul style="list-style-type: none"> • Projected percentage of asset in condition state 4 – 10% • Projected percentage of asset in condition state 5 – 24% 	Reducing percentage of assets in condition state 4 and 5
		Budget	The 10 year average annual renewal budget totals \$2.2M per year.	The current renewal over-budget includes renewals identified as component of upgrade projects to address identified capacity issues.
Upgrade & New	Drainage network has sufficient capacity to cater for storm events and meets design standards.	Percentage of drainage network identified as being under capacity.	<ul style="list-style-type: none"> • Continued catchment analysis to assess performance and future upgrade/new requirements (area where modelling completed) • Kilometres of pipes in diameters <300mm: 350km of 946km (38%) • 34% of the sample inspection in 2017/18 was rated as being in state 4 or 5 (failed) in terms of hydraulic performance. 	<ul style="list-style-type: none"> • Increasing area of the network modelled. • Reducing number of pipes in diameter size below 300mm.

<i>Service Attribute</i>	<i>Service Activity Objective</i>	<i>Activity Measure Process</i>	<i>Current Performance *</i>	<i>Desired for Optimum Lifecycle Cost **</i>
			<ul style="list-style-type: none"> Based on population forecasting additional investment of between \$1M and \$2M will be required of the next 25 years. 	<ul style="list-style-type: none"> Improving functionality assessment.
		New drainage infrastructure caters for 1% AEP (Annual Exceedance Probability) or 100 year storm event.	New developments, gifted assets, overland flow paths and major drainage systems must be designed to minimum capacity to control flows for a 1% AEP storm event ¹⁰ . Average capital new and upgrade expenditure on drainage between 2014/15 and 2017/18 (4 years) is \$258K.	To be determined following further analysis and consultation.
		Budget	The 10 year average annual upgrade and new budget totals \$930K per year.	Comprehensive demand analysis have not been done. Current funding levels is based on modelling results from catchment analysis.

Note: * Current activities and costs (currently funded).

** Desired activities and costs to sustain current service levels and achieve minimum life cycle costs (not currently funded)

It is important to regularly monitor performance against these service levels for periodic changes. Performance is influenced by work efficiencies, technology and customer priorities. These change over time and needs to be monitored. Review and establishment of the agreed position which achieves the best balance between service, risk and cost is essential in realising efficiencies.

¹⁰ Refer to Frankston City Council Guidelines for Subdivisional, Multi-Dwelling & Industrial Developments (A1542221) for further information.

4. FUTURE DEMAND

4.1 Demand Drivers

The main drivers affecting demand include demographic changes in population; environmental factors influencing infrastructure capacity and design requirements; and technological change and improvements in maintenance and management of infrastructure. The main influences on demand are discussed in this section.

Population Growth

The population for Frankston City is expected to increase by 17% from 139,496 to 163,610 over the period 2016 to 2041 (25 years). Population growth drives demand for housing and development and leads to loss of total permeable areas. This negatively impacts on stormwater volumes, run-off rates and concentration of stormwater flows.

The Frankston Community Plan, Council Plan and the Health and Wellbeing Plans for the period 2017-2021, as well as the Housing Strategy 2018 all emphasize the importance and focal points for future housing, dwellings and developments. Infrastructure in many of these areas were constructed to lesser standards and pre-dates any allowance considered for the impact of climate change. The application of current design standards and requirements may very well expose deficiency in the ability of many roads and overland flow paths to deal with future rainfall events. Existing infrastructure capacity ranges should be tested to ensure surplus capacity exist to accommodate additional demand created by population growth, urbanisation and climate change.

Demographic forecasting predicts an increase of 12,738 (22%) in new dwellings and developments over the 25 year period from 2016 to 2041¹¹, while on the other hand the Frankston Housing Strategy - 2018 estimates a requirement of approximately 8,450 new dwellings and developments will be required. This difference in prediction represents almost 50% compared with the lower estimate. In view of Melbourne's population having outstripped population growth projections and reaching key milestones early than predicted, this document assumes the mid-point between the two estimates as grounds for projecting future demand requirements for storm water infrastructure. The result is a revised growth estimate of 10,639 or 18.6% new dwellings and developments required by the year 2041.

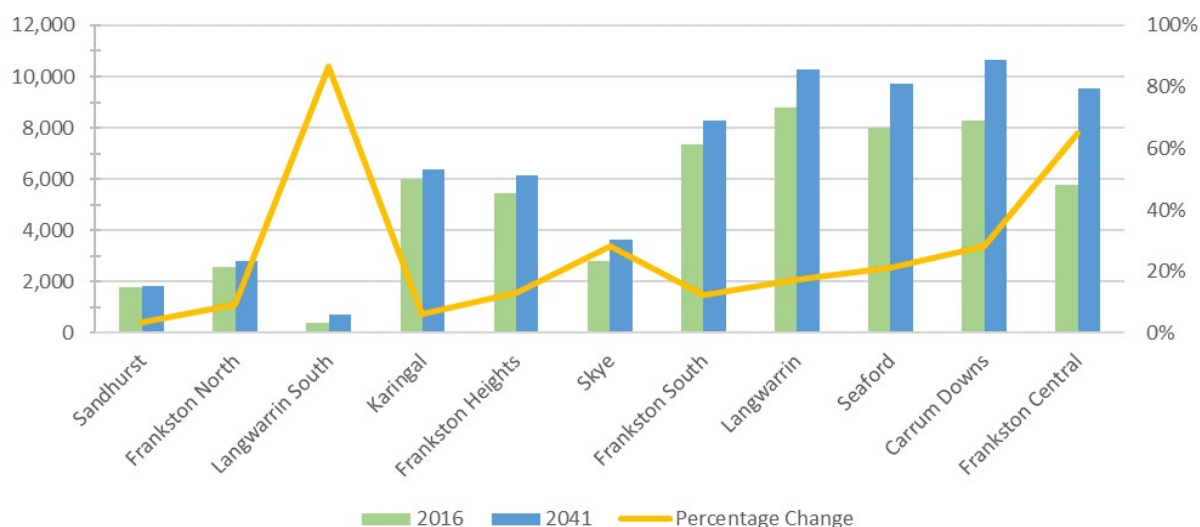
A contradictory trend with both these estimates is noted with regards to residential building approvals where annual change have been coming down from relatively high levels since the early 2000 (1100 p/a), to around 517 for the year 2017/18. Dwellings and development forecasting predicts an increasing requirement of around 1,160 on average per annum.

For the period 2005 to 2011, Broad hectare development accounted for the largest percentage growth in new housing. The availability of this type of land is now almost exhausted, future growth will see other development types providing an increasing proportion of projected housing requirements. This is reflected in the trend since 2011 to date where higher density type developments have been responsible for a greater contribution to total new dwellings and developments. A noteworthy trend emerging from Council demographics highlights the exceptional growth in medium density housing developments over the last 25 years. The average for neighbouring local government areas is shown as 5% per annum, while Frankston has experienced grown at an average of 7% per annum for this classification of dwelling structure.

To assist with demand projections, dwellings and developments data for the municipality have been compared with Council's historic data for rateable residential properties. Both sets of data are similar in number of property, versus dwellings and developments. The two set also exhibit similar trend in growth over recent years. For purposes of this plan, dwellings and developments are assumed to be equal to total properties numbers to enable prediction of growth specific to catchment areas.

¹¹ Population and household forecast, 2016 to 2041, prepared by .id, the population experts, September 2018; <https://home.id.com.au>

Figure 4: Estimated growth in Dwellings and Developments (2016 – 2041)



Climate Change

Climate change influence demand for drainage infrastructure via changes in rainfall volumes and intensity. Research conducted with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), indicates that Frankston City is significantly exposed to climate extremes and natural hazards such as storm surges and coastal inundation, floods, bushfires and extreme temperatures¹². Council’s Climate Change Impacts and Adaptation Plan estimates that by 2030, the mean annual rainfall volume is likely to decrease by up to 8% while the intensity of extreme rainfall events is likely to increase by up to 1.6%, causing increased occurrence and effects of flash flooding¹³.

Design Requirements

Changes in regulatory and legislative requirements are another major factor influencing demand; changes in design standards for material and construction of stormwater assets has led to increased life expectancy and a reduction in early failure of stormwater assets. Similarly the application and implementation of minimum planning and development standards both results in future proofing recent renewal, upgrade and expansion of the network, while also exposing older part of the network for lacking in capacity and coverage.

Technological Developments and Change

Technological developments influence demand indirectly by creating opportunity for increased efficiency in management, maintenance and operations of stormwater assets. Improvements in technology and the application of technology leads to greater accuracy in modelling outcomes and predictions for climate change holistically, but also more specific for Council and stakeholder catchment analysis. The introduction and implementation of water quality and other treatment options further improve the ability and capacity of onsite systems and features to reduce the impact of stormwater flows on Council infrastructure.

The elements driving demand also influence infrastructure by creating pressure on the level of service provided via the cost of providing the service. Demand forecasting and the resulting impact on budget requirements over the long term is critical in the pursuit of strategic asset management.

¹² Source: Climate Change Impacts and Adaptation Plan, Frankston City Council, 2011.

¹³ Source: Integrated Water Action Plan 2016 2026 – Frankston City Council, Section 4.5, Page 17,18

4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets are identified and documented in Table 8.

4.3 Demand Impact on Assets

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 8.

Table 8: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population growth and development densification	Higher growth in medium density developments compared with neighbouring LGAs	Further analysis is required to understand current maximum capacity and problem areas within the network and the effects of growth in population.	Projected increase in total hard surface / impervious areas affecting run-off rates, size and concentration of flows.
Effect of climate change on storm frequency and intensity	Tidal and storm surge are impacting on ability of drainage in coastal and low lying areas to cope with stormwater flow.	Increase in storm intensity: 1.6% (in 2030) Decrease in annual rainfall totals of up to 8%.	Increased frequency and associated water flow further reduce ability of network to cope with demand
Regulatory, legislative, compliance and design requirements	Number of developments and properties not designed to 1% AEP (100 year ARI)	Further analysis is required to understand current maximum capacity and potential problem areas within the network and the effects of growth in development through population growth.	Sections of the storm water network does not comply with design requirements and will not be able to cope with magnitude of rainfall events.
Technological developments and changes	Flood modelling completed for high priority sub-catchments. Further analysis required.	Further analysis is required.	Developments in this area usually results in a reduction in the cost to operate, maintain and renewal infrastructure.

4.4 Demand Management Plan

Demand for new services will be managed through a combination of renewals, upgrading of existing assets and constructing new assets to meet and manage the projected increase in and manage of demand. Management practices in this respect consists of a mixture of non-asset solutions, insuring against risks and managing failures.

- Monitor and maintain operational efficiency of existing network;
- Monitor and implement improvements in network maintenance and management approach, technologies and strategies. (pipe relining, trenchless pipe replacement);
- Foster and enhance partnership with stakeholder groups to develop and refine a catchment based approach to maximise benefit & results from research, developments and modelling projects;
- Restricting water discharge per development area to match existing capacity;
- Encourage and apply standards and guidelines relating to on-site stormwater retention to reduce peak loading on infrastructure and flooding of property; and
- Consolidate and implement improvement actions developed within other key strategic documents (Integrated Water Management Plan; Flood Risk Management; Water Sensitive Urban Design Principles)

Further opportunities will be developed in future revisions of this asset management plan.

4.5 Asset Programs to meet Demand

Population and demographic forecasting for the period to 2041 projects an increase in dwellings and development. Based on the correlation identified between development density and Council drainage infrastructure per hectare, additional investment will be required to ensure sufficient capacity exist to deal with greater demand on the network. The nature of the relationship is reflected in Figure 5 below.

The actual size of investment will depend on the mix and magnitude experienced for the various development types (urban renewal, infill, high density infill, etc.). Initial estimates based on the correlation shown below, points to an investment requirement of approximately \$1.6M per year over the forecasted period. Further work will be required to determine the exact nature and impact of population projections on the demand for drainage infrastructure.

Development of future infrastructure programs in this document is largely based on network modelling and analysis with the aims to address current capacity issues. Consideration of other demand factors will enhance efficiencies in delivery of Council strategic direction and focus for future growth areas.

Figure 5: Infrastructure Required per Hectare



The new assets required to meet demand can be acquired, donated or constructed. Additional assets are discussed in Section 5.5. The summary of the cumulative value of additional asset is shown in Figure 6¹⁴.

¹⁴ Long Term Infrastructure Plan – 2019 (30/05/2019)

Figure 6: Upgrade and New Assets to meet Demand

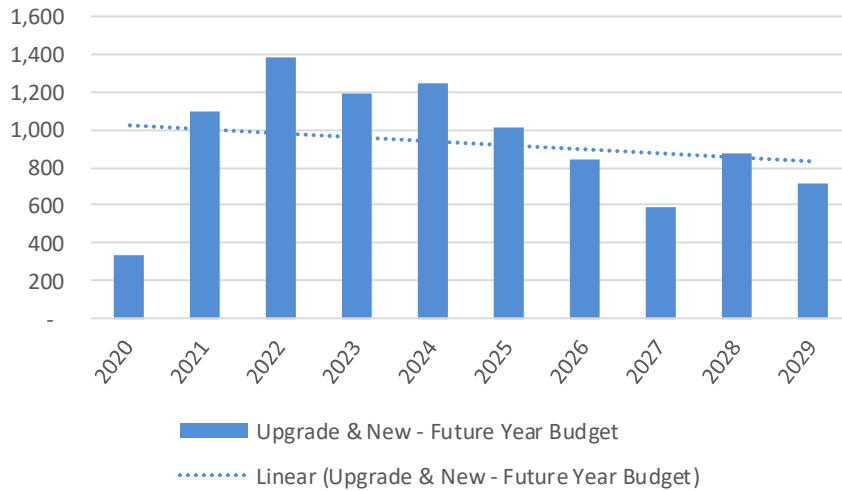


Figure Values are in current (real) dollars.

Expenditure on new assets and services in the capital works program have been accommodated in Council’s Long Term Infrastructure and Financial Plans. The acquisition of new assets via the discretionary Capital Works Program will have lifecycle cost implications. The organisation will need to commit to the funding of ongoing operations, maintenance and renewal costs for the useful life of the asset. Current budgeting procedures for operating and maintenance funding does not adjust directly with the increase in the asset base resulting from new, gifted and upgrade activities.

In recent discussions between the Sandhurst Club and Council, the prospect has been raised for Council to take over ownership and management of nominated infrastructure such as roads, footpaths, drainage, kerb and channel, bridges, street lights and signs. The Sandhurst development was established around 2002, with the infrastructure age assumed to be approximately 15- years on average. Based on initial estimates, the gross replacement value of these assets totals \$ 31 million, with the drainage component totalling \$ 10.7 million. Following assessment of condition and lifecycle modelling, the financial impact on the drainage infrastructure class is estimated as follows¹⁵

- Increase in asset class gross replacement value of \$ 10.7 million (4%)
- Increased annual depreciation of \$ 134,906 p/a (4%)
- Additional maintenance requirement of \$ 83,165 p/a (8%)
- Additional average renewal requirement of \$ 112,595 p/a (8%)

Changes to provision for accumulated depreciation is estimated at around \$ 1.7 million (1.4%). Budgeting requirements for operations, upgrade and new have not been factored into projections. The financial impact above assume the same level of service will be applicable as averaged for Council’s current infrastructure portfolio for stormwater.

Acquiring these new assets will commit ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required. These future costs are identified and considered in developing forecasts of future operations, maintenance and renewal costs for inclusion in the Long Term Financial Plan under Section 5 of this document.

¹⁵ Council Briefing; 11 February 2019; Executive Summary; Item 4.4

5. LIFECYCLE MANAGEMENT PLAN

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

5.1 Background Data

5.1.1 Physical parameters

Constructed drainage within the municipality consist of approximately 1050km of pipe and open channel networks. Council manages approximately 945 km (90%) with Melbourne Water, VicRoads and others responsible for approximately 105km of drainage.

Stormwater asset are distributed across different property types in the municipality as shown in Table 9:

Table 9: Distribution in term of land usage

<i>Location Type</i>	<i>Location Code</i>	<i>Frankston Quantity</i>	<i>Pipe Length</i>	<i>Percentage</i>
Road Reserve	RDRES	23,957	504,131	65.84%
Private Property	PRVPROP	11,019	393,574	30.28%
Open Space	OPNSPACE	1,229	41,656	3.38%
Facility Land	FACLAND	132	3,462	0.36%
Unknown	Unknown	52	1,373	0.14%
		36,389	944,196	

A significant proportion (51%) of Council drainage was constructed before the nineteen eighties and design standards did not require consideration of overland flow paths in the event of large storms. Design and construction standards at the time generally only considered storm events with 20% to 10% Annual Exceedance Probability (5 or 10 year ARI) storm events.

The major causes of flooding and inundation can be summarized into the following categories:

- Poor surface gradient with higher areas and regions draining to flat regions;
- Buried/drowned drain outlets below sea level or adversely impacted by tidal and storm surges;
- Under capacity drainage with insufficient capacity to cope with stormwater volumes;
- Locational factors demanding higher frequency inspection and maintenance than currently scheduled.

The Frankston South Drainage Modelling report – 2014 has identified several hotspots within the municipality, and resulted in a number of programs developed to address specific issues detailed in the Mitigation and Priority Report in 2018. This body of work along with the initiatives as per documentation below, forms the basis of the upgrade and new programs taken up into Council’s Long Term Infrastructure Plan – 2019.

Further detail regarding the management, control and quality of stormwater and flooding issues are available in the following documents:

- The Integrated Water Action Plan – June 2018
- Flood Management Plan for the City of Frankston and Melbourne Water – May 2019
- Frankston City Council Storm and Flood Management Plan – November 2017

In addition to the above, a significant proportion of pipe lengths have been constructed in diameters 225mm and 150mm. Analyses of condition results from the 2017/18 inspections identified capacity constraints as major contributor to localised flooding events. After further investigation the majority of pipe sizes in these smaller diameters have been selected for upgrade in accordance with micro-catchment characteristics for the area. Similar results are expected for other priority areas identified during 2017/18 inspections.

Pipe diameter distribution is shown below in Table 10.

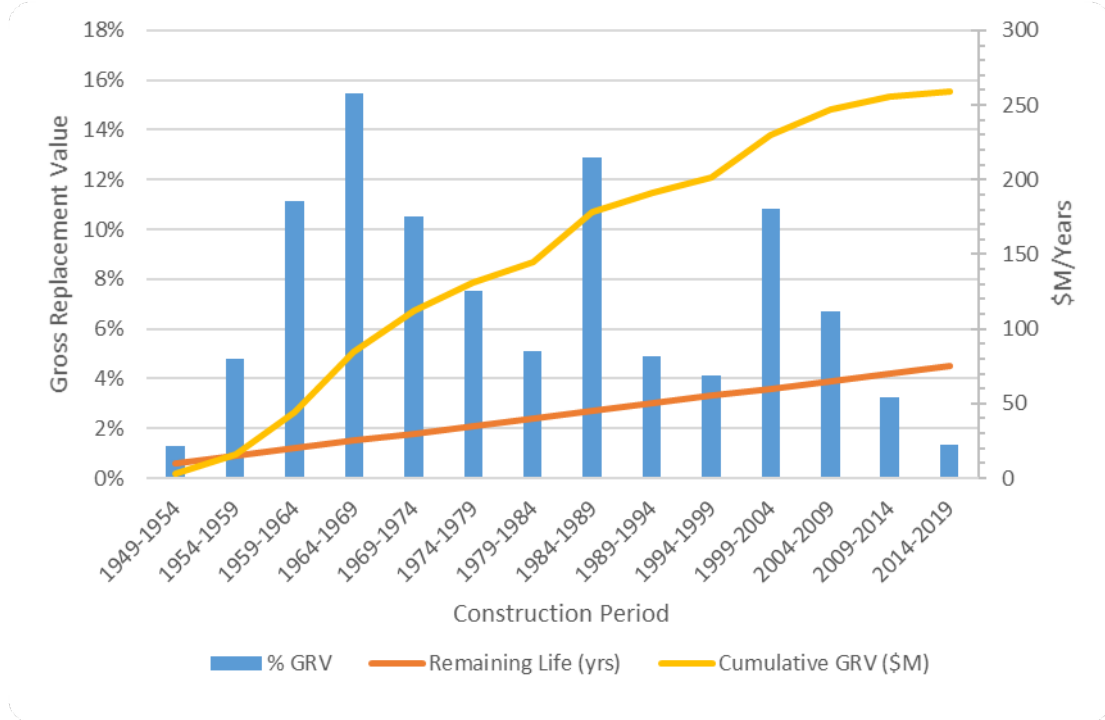
Table 10: Pipe Diameter Distribution Summary

Pipe Diameter (mm)	Number of Pipes per Diameter	Pipe Length per Diameter (m)	Percentage of Total Length
150	3,533	92,608	9.81%
225	10,491	266,498	28.22%
300	12,687	281,585	29.82%
375	3,168	89,097	9.44%
450	2,129	64,227	6.80%
Other	4,381	150,180	15.91%
	36,389	944,196	100%

Note: Pipe Diameter “Other” contains approximately 10 Kilometres of open channels.

The age profile of the assets included in this AM Plan are shown in Figure 7. Values are shown in current (real) dollars and based on the Gross Replacement Value (GRV) represented by the number of asset within each interval.

Figure 7: Asset Age Profile



Based on age, the renewal requirement for the next 15 years is estimated at approximately \$ 3.3M, (construction years 1945-1954) with a significantly higher requirement of \$ 41.3M predicted for the years between 2035 and 2045. However due to the network characteristics and other demand factors (climate change etc.), the main driver in development of the forward capital works programs stems from service performance deficiencies. This result in upgrading of existing infrastructure, usually before end of useful life (80 years) have been reached.

5.1.2 Asset capacity and performance

Infrastructure assets are generally provided to meet design standards where these are available. Deficient areas in service performance has been identified in numerous hydraulic modelling and mapping reports. Prioritised areas are included in Council’s Long Term Infrastructure Plan as developed in 2019.

Locations are listed below in Table 11.

Table 11: Known Service Performance Deficiencies

<i>Location</i>	<i>Service Deficiency</i>	<i>Estimated Cost</i>
Frankston South Drainage Strategy - Drainage Upgrade - Esplanade: Williams Catchment Stage 1	Frankston South Drainage Strategy - Drainage Upgrade - Esplanade	1,632,000
Frankston South Drainage Strategy - Drainage Upgrade 11-13 Reid Street Frankston - Murawa Street Catchment Stage 2	Cambridge / Reid Streets via Foot Street to George Pentland Botanic Gardens pipe upgrade, including initial George Pentland Botanic Gardens Flood Storage and Mitigation works.	2,000,000
Frankston South Drainage Strategy - Drainage Upgrade - Cooina Catchment Stage 2	Montague Park retarding basin upgrade	1,109,000
Frankston South Drainage Strategy - Drainage Upgrade - Cooina Catchment Stage 3	Jasper Terrace , The Crest, Cooina Court catchment drainage upgrade	1,181,000
Frankston South Drainage Strategy - Drainage Upgrade - Murawa Street Catchment Stage 3b	George Pentland Botanic Gardens pipe upgrades Foot St	2,623,000
Frankston South Drainage Strategy - Drainage Upgrade - 2-8 Warringa Road Frankston	More isolated but significant localised flooding and ponding issues within roadway and overland flows affecting a number of properties on both sides of Warringa Road.	1,032,000
Frankston South Drainage Strategy - Drainage Upgrade - Warringa Rd catchment Stage 1	Violet Street and Kars Street drainage upgrade	693,000
Frankston South Drainage Strategy - Drainage Upgrade - Murawa Street Catchment Stage 1	George Pentland Botanic Gardens Flood Storage and Mitigation works, Ultimate Design and Construction.	830,000
Frankston South Drainage Strategy - Drainage Upgrade - 13-21 Jasper Terrace Frankston South	Significant overland flows affecting a number of properties on the west side of Jasper Terrace extending from The Crest through to Woodlands Grove.	511,000
Frankston South Drainage Strategy - Drainage Upgrade - 15 Kars Street Frankston	Significant overland flows affecting a number of properties immediately downstream of Victoria Park. Flow path also extends upstream of Victoria Park through properties on South side of William Street.	156,000
Dandenong Road East Drainage Strategy - Drainage Upgrade - Prevention of flows from Beach Street into Petrie and Lewis Streets	TuFlow modelling indicates break-out flows will enter into Petrie Street and Lewis Street from excessive overland flows in Beach Road. Barriers or diversions of surface flows may be necessary to limit the impact. Further investigation is necessary to assess this issue as it could exacerbate issues within the catchment	57,000
Dandenong Road East Drainage Strategy - Drainage Upgrade - David Street Stage 2 -	Drainage works at David Street to address localised flooding issues and overland flow paths. Pipe duplication works scheduled for 2019/20 as stage 2 of Dandenong road east Drainage Strategy.	2,144,000
Wangarra McMahons Road Catchment Strategy Planning	Engage consultant to review existing strategy and prioritise works for implementation	50,000

5.1.3 Asset condition

Condition inspections were conducted during 2018/19 according to procedures and guidelines prescribed under the Conduit Inspection Reporting Code of Australia; version WSA 05-2013 as produced by the Water Services Association of Australia and the IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 5 V2 2015.

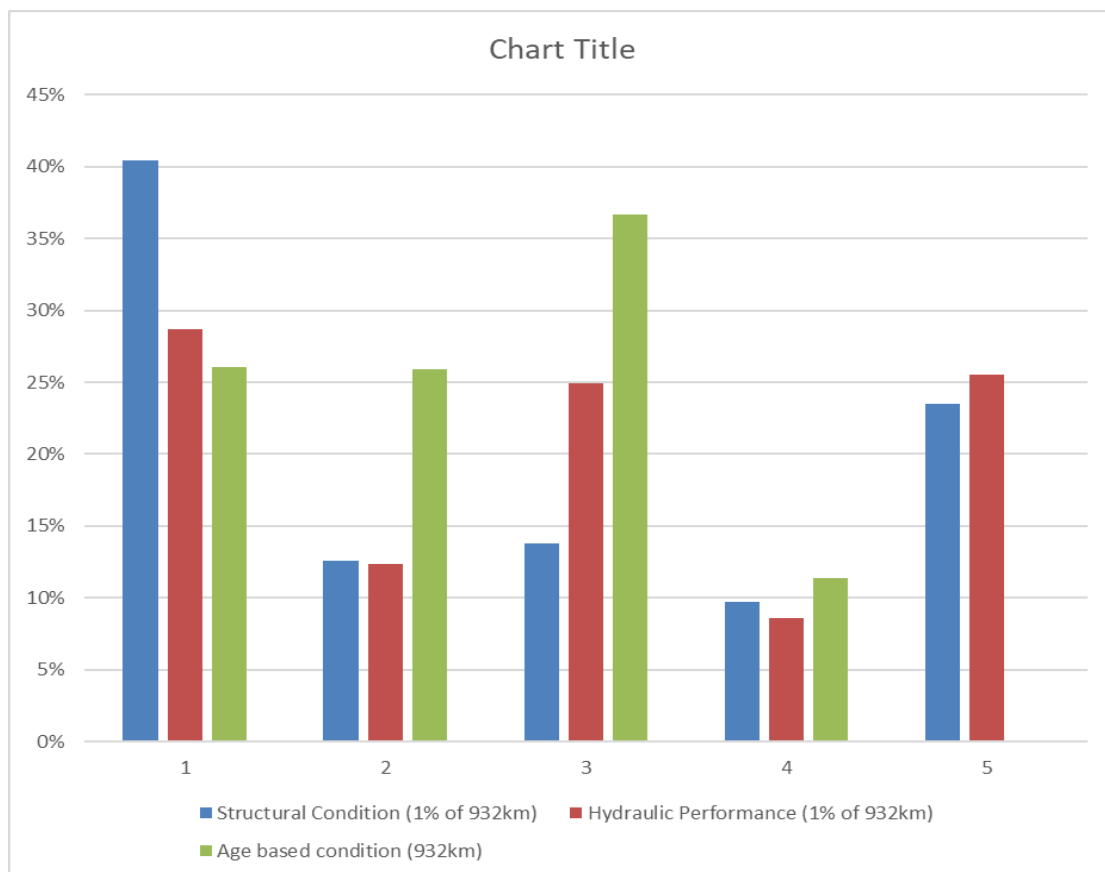
Because of the extensive nature of Council’s drainage networks, a stratified sample was selected based on the age profile of the network. The sample size represented 1% of the network (9.5 kilometres of 944 kilometres). Results from the inspection were used to project and model condition for the network and further assisted with information requirements to produce the drainage revaluation performed in the 2018/19 financial year.

Inspection findings have been analysed and resulted in additional inspections to develop detail remedial works for capital work purposes. Regular ongoing inspections, aside from those described in Council’s RMP, have not been programmed. Instead, audits will be arranged to align with Council catchment analysis and modelling.

The condition profile *for the sample set* of our assets is shown in Figure 8. Condition (structural and hydraulic) is shown against the calculated condition based on the actual age of the network of stormwater assets.

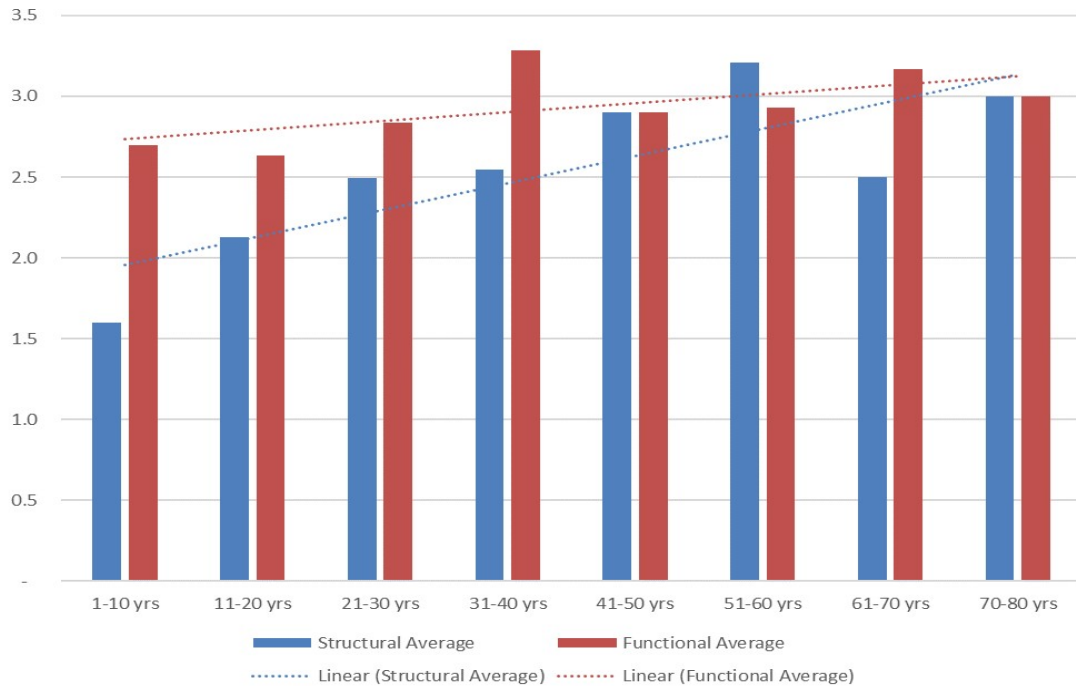
Interpreting result shows more assets are in condition state 1 than was to be expected based on age based condition calculation. Projecting results from to the network, indicates a greater percentage of the overall network are expected to be in condition 1 (excellent), when comparing against actual age of the network. Inspection results however also projects a greater percentage of assets are expected to be within condition state 5 in terms of structural condition and hydraulic performance. Future inspections results will used to validate and confirm if this indicator is accurate.

Figure 8: Asset Condition Profile



Time based analysis of the inspection results for structural and functional/hydraulic performance within age groups, shows a predictable trend of worsening asset condition as age increase. The trend is clearly defined for structural condition, but less so for asset performance and function. Refer to Figure 9 for detail. Further analysis within each age group shows little correlation between age and condition.

Figure 9: Condition vs Age Profile



Findings from the condition inspection with the highest frequency have been summarised in Table 12.

Table 12: Condition Inspection Defect Recommendations

Defect Description	Defect Type	Defect Code	Qty	%	Highest Occurrence in Age Group
Root Intrusion resulting in reduction in cross sectional area	Service	RF, RM, RRF	401	37%	2,4,5,6
Circumferential wall crack	Structural	CCW	344	30%	2, 3
Deposit of fine and coarse sediment, gravel and rubble	Service	DES, DER	277	26%	2,3,4,5,6
Joint displaced radially	Structural	JDR	196	17%	5,6
Coarse aggregate is visible	Structural	SAV	139	12%	4,5,6
Wall Staining is present on the surface of the conduit	Structural	SWS	82	7%	2
Longitudinal wall crack	Structural	CLW	59	5%	6

The top five cause of Condition State Five rating (failed) per recommendation is as follows;

Table 13: Condition Inspection - Causes of Failure

Defect Description	Defect Type	Defect Code	Qty	%	Highest Occurrence in Age Group
Reinforcement is exposed and corroded	Structural	SRC	48	4%	2,6
Soil visible through defect	Structural	SV	25	2%	5,6
Breaking, some pieces are missing	Structural	BM	22	2%	4,5,6
Void visible through defect	Structural	VV	13	1%	6
Steel reinforcement is visible with little or no corrosion evident	Structural	SRV	12	1%	2,6

Condition is measured using a 1 – 5 grading system¹⁶ as detailed in Table 14.

Table 14: Condition Grading Model

Condition Rating	Description	Action
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

5.2 Operations and Maintenance Plan

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. Minor pipe repairs, pit cover replacement, drainage protection works and pit and pipe clearing and cleaning.

Operations include regular activities to provide services such as public health, safety and amenity, e.g. Pit and pipe inspections as part of the Road Management Plan, material and labour costs, plant hire and other overhead expenses.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Maintenance expenditure is shown in Table 15.

Table 15: Maintenance Expenditure Trends

Year	Maintenance Expenditure (\$,000's)	Operational Expenditure (\$,000's)	Total Annual Expenditure (\$,000's)	Annual Budget (\$,000's)	Variance (\$,000's)
2012/13	\$745	\$988	\$1,733	\$1,705	-\$28
2013/14	\$816	\$1,086	\$1,902	\$1,891	-\$11
2014/15	\$793	\$1,137	\$1,930	\$1,882	-\$48
2015/16	\$872	\$1,159	\$2,031	\$2,100	\$69
2016/17	\$808	\$1,204	\$2,012	\$2,130	\$118
2017/18	\$763	\$1,233	\$1,996	\$2,223	\$227

The 2018/19 drainage maintenance budget is \$2.28M (including overheads).

Maintenance and operation expenditure have been classified as follows:

Table 16: Expenditure Classification

Maintenance Expenditure	Operational Expenditure
--------------------------------	--------------------------------

¹⁶ IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

CAA Drainage Disposal	Labour (incl. On-costs)
Drain Desilting	Materials
Drainage - Pit Covers	Overheads
Drainage Day Works	Plant Hire
Drainage Pit Cleaning	PPE, Uniforms, Tools, Equipment
Drainage Protection Works	Utilities
Easement Drainage	
Minor Drainage Works	
Pollution Traps	
Table Drain Clearing	

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

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 10. Note that all costs are shown in current 2018/19 dollar values (i.e. real values).

Figure 10: Projected Operations and Maintenance Expenditure

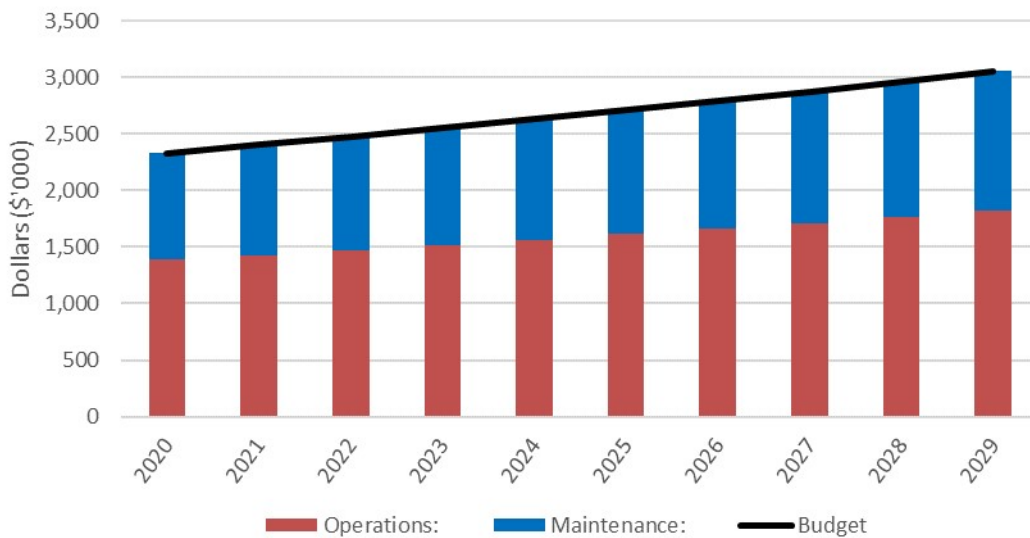


Figure Values are in current (real) dollars (\$000).

Findings from sample condition inspections have shown 42% of rateable observations will require maintenance related remedial works. Because of the nature of drainage, regular visual inspections performed under the Stormwater Drainage Management Plan – Operations, are unable to identify defects up or down stream without the use of CCTV or camera equipment. A review of the methodology and frequency of operational inspections have been included under Section 8; Plan Improvement Actions and Monitoring to improve efficiencies in this respect.

Future year budget amounts includes cost a cost escalation of 3.05% per annum, marginally above the predicted annual growth in asset base.

Maintenance is funded from the operating budget where available. No maintenance activities have been deferred to later years, Council funding allocation is considered sufficient to meet the current standards over the long term outlook. Maintenance activities are accessed and if the repair relates to replacement of certain components and the scale of work exceed asset recognition level of \$ 5,000, work are referred to the capital works program for delivery. This is further discussed in Section 7.

5.3 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 service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Future network renewal funding requirements are estimated and annually adjusted using the Moloney Modelling Software. Asset renewal priorities are typically identified from a combination of condition inspection findings, maintenance recommendation and catchment modelling and analysis.

The following assumptions have been adopted with modelling of renewal requirements:

- Total Design Life - 80 years
- Retreatment Intervention Condition Level – 8 (scale 0 – 10)
- Overall Network Condition – Average

5.3.1 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 (e.g. replacing a bridge that has a 5 t load limit), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. roughness of a road).¹⁷

A combination of the following elements are also considered where possible:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a savings.¹⁸

Further enhancements to Council asset management system will improve cost and condition tracking to assist with early identification of assets for renewal

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 17. Asset data have recently been migrated from a MapInfo environment into the corporate asset management system. Individual assets will be assessed in terms of the criteria below to re-establish the criteria specified.

Table 17: Renewal and Replacement Priority Ranking Criteria

Criteria	Weighting
Structural - Location	18%
Structural - Age	18%

¹⁷ IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

¹⁸ Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

Criteria	Weighting
Structural – Pipe Size	9%
Risk – Flood Prone Area	18%
Risk – Road Hierarchy	18%
Risk – Location	18%
Total	100%

5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure required is shown in Fig 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Appendix A.

Figure 11: Projected Capital Renewal and Replacement Expenditure

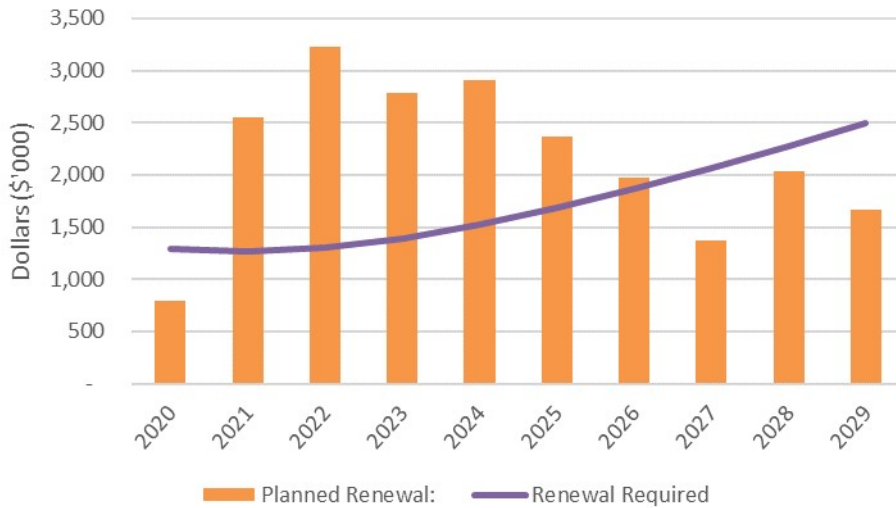


Figure Values are in current (real) dollars.

The application of the retreatment intervention level above, results in an effective useful life of 78 years. This factor along with the adopted network condition distribution, showing 2% of the asset base at the nominated intervention level, explain the difference in funding requirement when comparing the asset age profile with the modelled renewal requirement.

Renewals and replacement expenditure in the capital works program have been accommodated in the Long Term Financial Plan and is further discussed under Section 7. Due to the staging and phasing requirement of the forward capital work program, the alignment between the modelled requirement and actual budget allocation is difficult to achieve.

5.4 Creation/Acquisition/Upgrade Plan

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

5.4.1 Selection criteria

New, upgrade or expansion of existing assets are identified from various sources such as customer service requests, proposals identified by strategic plans, catchment modelling outputs and partnerships with other authorities.

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 objective of this program is to undertake flood mitigation works as identified through Council's Flood Management Plan, major drainage issues identified through Council's drainage inspection program and customer response system. This program also includes WSUD, Recycled Water and Water Harvesting initiatives.

Council's generic set of priority ranking criteria are detailed below¹⁹. Future project ranking and prioritisation will be governed by the Frankston City Council Capital Works Project Evaluation and Ranking Procedure. The document is currently in draft state, due to be adopted in 2019/20. Evaluation and ranking criteria adopts a method to evaluate and rank each project within a sub-program against criteria for achievement of a quadruple bottom-line outcome categorised by: Governance, Social, Economic and Environmental criteria.

Table 18: New Assets Priority Ranking Criteria

Governance (.25 weighting)		Score
Is the project a result of:	Council Plan Initiative	25
	Council Resolution	20
	Audit and Risk Committee Recommendation	18
	EMT Approved Business Case	16
	Nil or Unknown Approvals	0
Social (.25 weighting)		
Who will benefit from the project:	Disadvantaged or Marginalised Community Groups	25
	Greater than 20,000 Residents	25
	10,000 - 20,000 Residents	20
	1,000 - 19,999 Residents	18
	Less than 1,000 Residents	16
Economics (.25 weighting)		
How will the project be funded:	External funding sources	25
	Partnership with Council (>50% contribution from External Funding Sources)	20
	Partnership with Council (<50% contribution from External Funding Sources)	18
	Council Rates	16
Environmental (.25 weighting)		
How will the project benefit the environment:	Reduce Water and Energy Use, Waste Generation and Improve Biodiversity and Water Quality	25
	Reduce Waste Generation Only	20
	Reduce Water and Energy Use Only	20
	Improve Biodiversity and Water Quality Only	20
	Use of Recyclable Materials Only	18
Total		100

The criteria above are utilised to develop a shortlist of projects for consideration but because of the inter-related nature of stormwater networks, where works up-or-downstream has an impact on connected sub-systems within the

¹⁹ A3465902 Stormwater Management – CWP Ranking Criteria & Priority List – 2018-19 and; A3463774 CivInfra Draft_Appendix B Discretionary V0.3.

larger drainage network. Subsequently the staging and practicalities of delivering the various competing projects plays a significant role in determining the final order and budget requirements. This is required to ensure practical and sensible delivery of the stormwater capital works program (discretionary and non-discretionary). This function is performed within the context of the Stormwater Consultative Committee on an annual basis.

Further to the generic criteria listed above, a specific set of criteria has been developed for Stormwater networks to give consideration to the overall drainage network, the nature of each project and staging required for delivery. The criteria are listed below in Table 19.

Table 19: Project Readiness and Strategic Alignment

Assessment Criteria	Rating	Score
Governance (Go) – 10% Weighting (Pa+As+Fp+Sp)		
How well does the project align with program objectives (Pa)?	Significantly Moderately Slightly Not at all	8 4 2 0
To what extent does the project reflect the current direction and vision of Council as outlined in the Council Plan 2017 – 2021 (Cp)?	Significant Moderate Slightly Not at All	8 4 2 0
The works align with Council’s Flood Management Plan or have been identified through Council’s drainage inspection program and customer response system (Fp)?	Significant Moderate Slightly Not at All	8 4 2 0
To what extent does the project reflects: <ul style="list-style-type: none"> • Council’s Stormwater Management Plan • Council’s Integrated Water Action Plan • Water Sensitive Urban Design Guidelines • Government Statutory Requirements • EPA Storm Water Env Protection Policy (Sp) 	Significant Moderate Slightly Not at All	8 4 2 0
Social Outcome (So) – 20% Weighting (Sa)		
To what extent do the works improve safety and amenity for the community (Sa)?	Significant Moderate Slightly Not at All	8 4 2 0
Economic Assessment (Ea) – 30% Weighting (Ce+RI+Vm)		
Contribution to the Economy (Ce) What is the extent of economic benefits, to Council and/or the community, potential cost savings, availability of grants/contributions or any return for investment?	Significant Moderate Slightly Not at all	8 4 2 0
Project reduces Council’s risk of litigation (RI)?	Yes No	3 0
Cost of the Facility (Cf)	\$000’s	NA
Value for Money (Vm)	(So+Ce+Ea+RI)/Cf	8 to 1
Environmental Assessment (Ea) – 40% Weighting (En)		

To what extent do the works include WSUD, Recycled Water and Water Harvesting initiatives (En)?	Significant	8
	Moderate	4
	Slightly	2
	Not at all	0

Further to criteria listed, Council’s Integrated Water Action Plan 2016 – 2026 established a multiple criteria analysis framework to assess the potential benefit and cost for competing infrastructure projects. The framework was developed in collaboration with Melbourne Water, with consideration to the objectives, principles and purpose of the Integrated Water Action Plan. The adopted framework’s criteria and weightings are shown in Table 20.

Table 20: Multiple Criteria Analysis Framework

Criteria	Weighting
Catchment characteristics	5%
Downstream values	10%
Site values	5%
Potential to mitigate urban heat island (UHI) effect	5%
Potential to increase amenity and recreation	5%
Community exposure and education	5%
Potential to assist in the reduction of nuisance flooding	10%
Resilience	5%
External funding potential	20%
Financial value/cost ratio	30%

5.4.2 Summary of future upgrade/new assets expenditure

Projected upgrade/new asset expenditures are summarised in Figure 12. The projected upgrade/new capital works program is shown in Appendix B. All amounts are shown in real values.

Figure 12: Projected Capital Upgrade/New Asset Expenditure

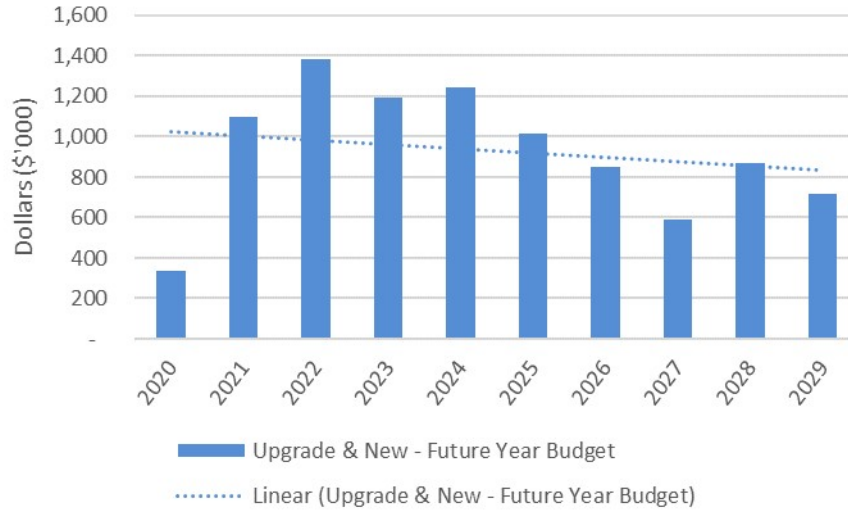


Figure Values are in current (real) dollars.

Expenditure on new assets and services in the capital works program will be accommodated in the long term financial plan but only to the extent of the available funds.

Growth estimates from Council Long Term Infrastructure Plan document sees average annual growth for Discretionary spending at 12 – 15%. Predictions for operations and maintenance grows at 3% per annum. The ratio for spending on Maintenance and Operations to Gross Replacement Value is 1%; based on this ratio the provision for Maintenance and Operations expenditure will enable Council to maintain current service levels provided with the expected growth in asset base.

5.4.3 Summary of asset expenditure requirements

The financial projections from this asset plan are shown in Figure 13 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in real values.

The bars in the graphs represent the anticipated budget needs required to achieve lowest lifecycle costs, the budget line indicates what is currently available. The gap between these informs the discussion on achieving the balance between services, costs and risk to achieve the best value outcome.

Figure 13: Projected Operating and Capital Expenditure

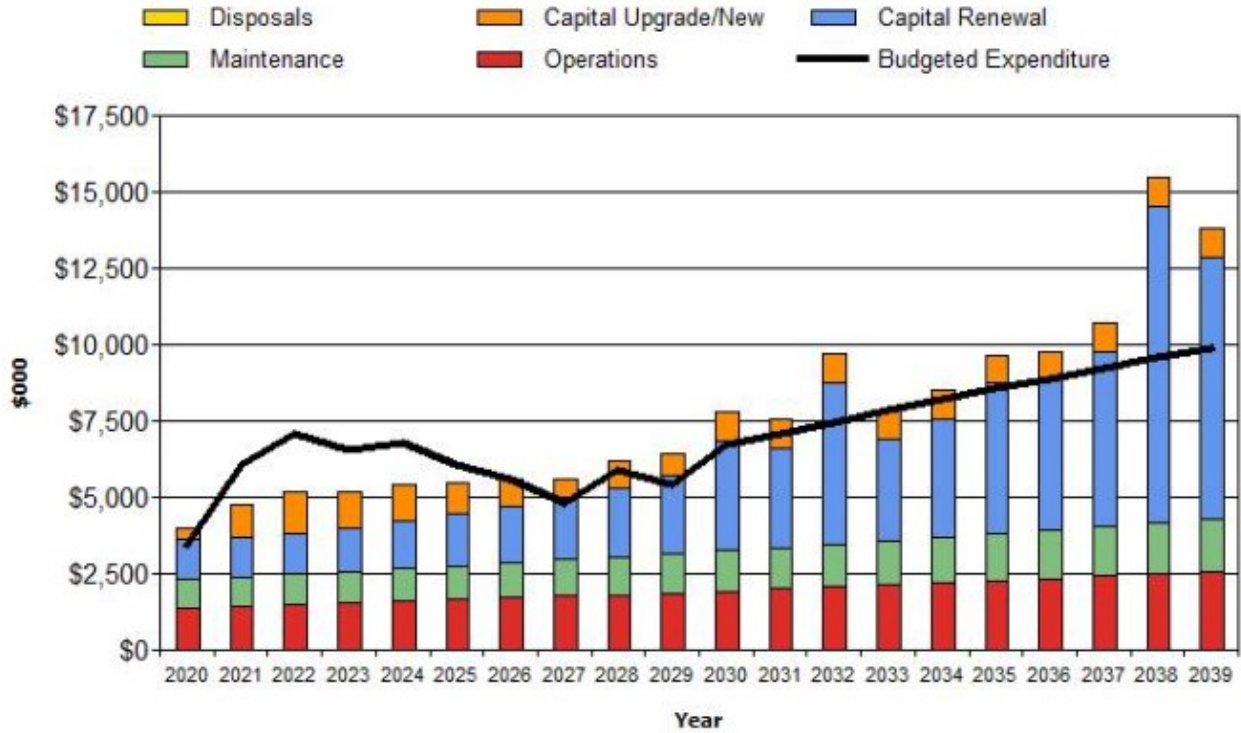


Figure Values are in current (real) dollars.

Maintenance and operational forecasting was determined as per Section 5.2 and do not include funding requirements for newly constructed and gifted infrastructure acquired over the planning period.

Capital new, upgrade and renewal requirement was extracted from Council’s Long Term Infrastructure Plan – 2019 for years one to ten of the planning period, with the trend for this period used for budgeted amount in years eleven to twenty. The minor misalignment between renewal targets and budget allocation is the result of scheduling and phasing performed to achieve sensible delivery.

5.5 Disposal Plan

The disposal of assets is a critical part of the asset lifecycle and should be considered throughout service planning processes. It enables Council to reduce its asset management liabilities once assets have reached their useful lives or have become obsolete, as well as create opportunity for new assets and services to fill the gaps identified within service plans.

Disposal includes any activity associated with the disposal of a decommissioned asset including demolition or relocation. Any costs or revenue gained from asset disposals is accommodated in Council’s Long Term Financial Plan (LTFP).

Council’s Asset Options Policy and Procedure are in the final stages of development and are planned for adoption in the near future. The Asset Options Policy is intended to guide decision making around the assessment, rationalisation and disposal of Council owned assets in line with community needs and expectations.

The Asset Options Procedure will provide guidance to in implementing the Asset Options Policy, and will focus primarily on steps to take to assess, rationalise, transfer and dispose high value, physical assets. The adoption of the Policy and Procedure will provide the framework to determine assets which require rationalisation and disposal.

Storm water infrastructure will be investigated to determine the required levels of service and alternative options for service delivery under the new policy.

6. RISK MANAGEMENT PLAN

The purpose of infrastructure risk management is to document the results and recommendations resulting from the periodic identification, assessment and treatment of risks associated with providing services from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: ‘coordinated activities to direct and control with regard to risk’²⁰.

An assessment of risks associated with service delivery from infrastructure assets identifies critical risks that will result in loss or reduction in service from infrastructure assets or a ‘financial shock’. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Risk management application for drainage assets currently follows the process and procedures adopted under Council Road Management Plan 2019, Section E3.

6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Similarly, critical failure modes are those which have the highest consequences.

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

Council drainage infrastructure has been assessed against the criteria listed in Table 21 in preparation for the condition audit conducted during 2017/18. The criteria is still in draft format for review within the broader stakeholder group. Once the criteria have been accepted, data improvements will be incorporated within Council drainage asset register as part of the overall data improvement action.

Critical assets, typical failure modes and the potential impact on service delivery are as follows:

Table 21: Asset failure modes and impact

Critical Assets	Failure Mode / Hazard	Area of Impact
<ul style="list-style-type: none"> - Assets located within flood prone areas, key activity district and industrial zones - Blocked, obstructed or failed infrastructure 	<ul style="list-style-type: none"> - Flooding and inundation - Subsidence, compromised slope stability causing landslide, slippage and erosion 	<ul style="list-style-type: none"> - Public safety and amenity - Property damage and financial loss - Water quality (increased load of surface pollutants) - Health of the local ecological habitat and ecosystem - Recreational and aesthetic amenity
<ul style="list-style-type: none"> - Asset where the structural condition rating exceeds adopted intervention level 	<ul style="list-style-type: none"> - Premature structural failure caused by: defective design or construction, early component failure, external factors e.g. overloading. 	<ul style="list-style-type: none"> - Increased risk and consequence of flooding - Reduced useful life expectancy - Compromised structural integrity resulting in collapse or intrusion of sediment and or roots - Increased impact on structural integrity resulting from heavy vehicle loads (B-Double, Higher Mass Limit Vehicles and other heavy traffic)

²⁰ ISO 31000:2009, p 2

- Asset with hydraulic condition rating above intervention level	- Hydraulic or functional failure	- Increased risk and consequence of flooding and damage to property - Due to a combination of factors where the extent of Frankston City's coastline combined with low lying drainage infrastructure; the effects of tidal flooding, storm surge and heavy rainfall result in a backflow effect causing water to push back up into the drainage network. This leads to reduced capacity to effectively drain and transport storm water flows during major rainfall events. - Increased risk of flooding where water volume exceed drainage design standards at the time of construction
- Assets located in proximity of flood prone areas, key activity district and industrial zones	- Incorrect assessment and identification of asset at risk resulting from the range and impact from modelling outcomes.	- Efficient and sustainable management of critical infrastructure
All storm water infrastructure	Uncertainty resulting from a rate capped environment.	Inability to maintain adopted standards and levels of service in relation to inspection, maintenance asset renewals, upgrade and new
- All storm water infrastructure	- Standard and maturity level of asset management practices	- Level of service outcomes - Inefficient allocation of funding - Inaccurate life cycle cost information leading to insufficient funding allocation to effectively manage the drainage network - Funding of network maintenance, renewal and upgrade - Unclear demarcation regarding management responsibilities affecting service outcomes
Stormwater Infrastructure in the road reserve or under the road	Inability to maintain drainage assets as per RMP	Damage to other Council infrastructure resulting in significant costs as disruption to service i.e. damage to major road pavements.

6.2 Risk Assessment

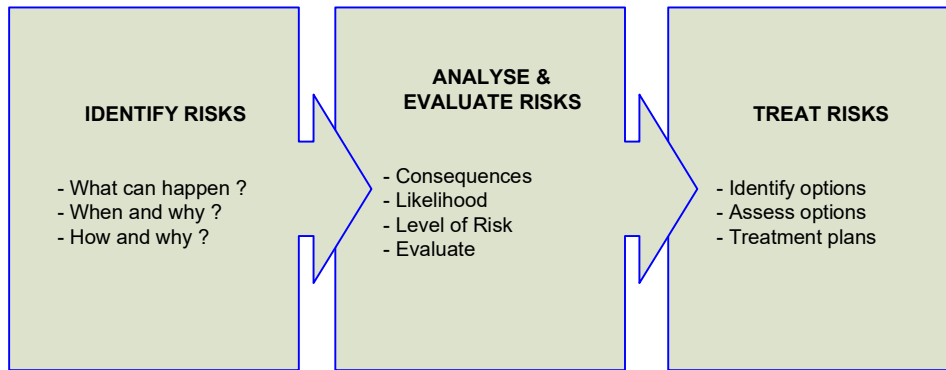
The risk management process used is based on the fundamentals of the ISO risk assessment standard ISO 31000:2009, and is shown in Figure 14 below.

The process is an analysis and problem solving technique designed to provide a logical method for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks. An assessment of risks²¹ associated with service delivery from infrastructure assets has identified the critical risks that will result in significant loss, 'financial shock' or a reduction in service.

²¹ Frankston City Council Road Management Plan 2019 (A3802512)

Figure 14 Risk Management Process – Abridged



Critical risks are those assessed with ‘Very High’ (requiring immediate corrective action) and ‘High’ (requiring corrective action) risk ratings identified in the Infrastructure Risk Management Plan. Residual risk and treatment options are shown in Table 23.

Council drainage defects are evaluated in terms of a public safety risk rating as the focus. The process is consistent with the Public Safety Risk Assessment Process adopted under The Road Management Plan 2019 and is detailed in Table 22.

Current practices and procedures in relation to assessment of risk does not align with Council’s adopted Risk Management Framework and does not comply with ISO 31000:2009 process and procedures. Implementation of compliant process and procedures will be addressed under Plan Improvements and Monitoring in Section 8 of this Plan.

Table 22: Public Safety Risk Assessment Process

1. NOMINATE THE MOST LIKELY PUBLIC SAFETY CONSEQUENCE	
CONSEQUENCE	DESCRIPTION
CRITICAL	An incident caused by the defect is likely to result in death, permanent disability or disease.
MAJOR	An incident caused by the defect is likely to result in extensive injury, long-term illness or require admission to hospital
MODERATE	An incident caused by the defect is likely to result in medical attention. Injured person will need to visit a doctor or hospital casualty wards
MINOR	An incident caused by the defect is likely to result in first aid treatment.
INSIGNIFICANT	An incident caused by the defect is likely to result in no injury.
2. FOR THE CONSEQUENCE SELECTED IN STEP 1, NOMINATE THE LIKELIHOOD	
ALMOST CERTAIN	<p>A negative public safety consequence is expected to occur in most circumstances. For example:</p> <ul style="list-style-type: none"> • Defect exceeds intervention level specified in the RMP • The size/ extent of the defect exceeds the intervention level specified in the RMP by more than 100% • Defect is in an area which is not illuminated at all • Asset user has little or no opportunity to identify and safely avoid the defect or hazard • High usage of the asset by frail individuals including the elderly/ children/ disabled • The nature of the defect would make it difficult to identify at night

PROBABLE	<p>A negative public safety consequence will probably occur in most circumstances.</p> <p>For example:</p> <ul style="list-style-type: none"> Defect exceeds intervention level specified in the RMP The size/ extent of the defect exceeds the intervention level specified in the RMP by 75% to 100% Defect is in an area which is poorly illuminated. Asset user has minimal opportunity to identify and safely avoid the defect or hazard Moderate to high usage of the asset by frail individuals including the elderly/ children/ disabled The nature of the defect would make it difficult to identify at night
POSSIBLE	<p>A negative public safety consequence should occur at some time.</p> <p>For example:</p> <ul style="list-style-type: none"> Defect exceeds intervention level specified in the RMP The size/ extent of the defect exceeds the intervention level specified in the RMP by 50% to 75% Defect is in an area with variable/ restricted visibility Asset user has some opportunity to avoid the defect Grade is variable Moderate usage of the asset by frail individuals including the elderly/ children/ disabled
UNLIKELY	<p>A negative public safety consequence could occur at some time.</p> <p>For example:</p> <ul style="list-style-type: none"> Defect exceeds intervention level specified in the RMP The size/ extent of the defect exceeds the intervention level specified in the RMP by less than 50% Defect is in an area with good visibility Asset user can easily avoid the defect Asset usage is low and infrequent Occasional usage of the asset by frail individuals including the elderly/ children/ disabled
RARE	<p>A negative public safety consequence may only occur in exceptional circumstances</p> <ul style="list-style-type: none"> Defect exceeds intervention level specified in the RMP The size/ extent of the defect is equal to the intervention level specified in the RMP Defect is in an area with good visibility Defect is easily avoidable Rare usage of the asset by frail individuals including the elderly/ children/ disabled

3. EVALUATE THE RISK

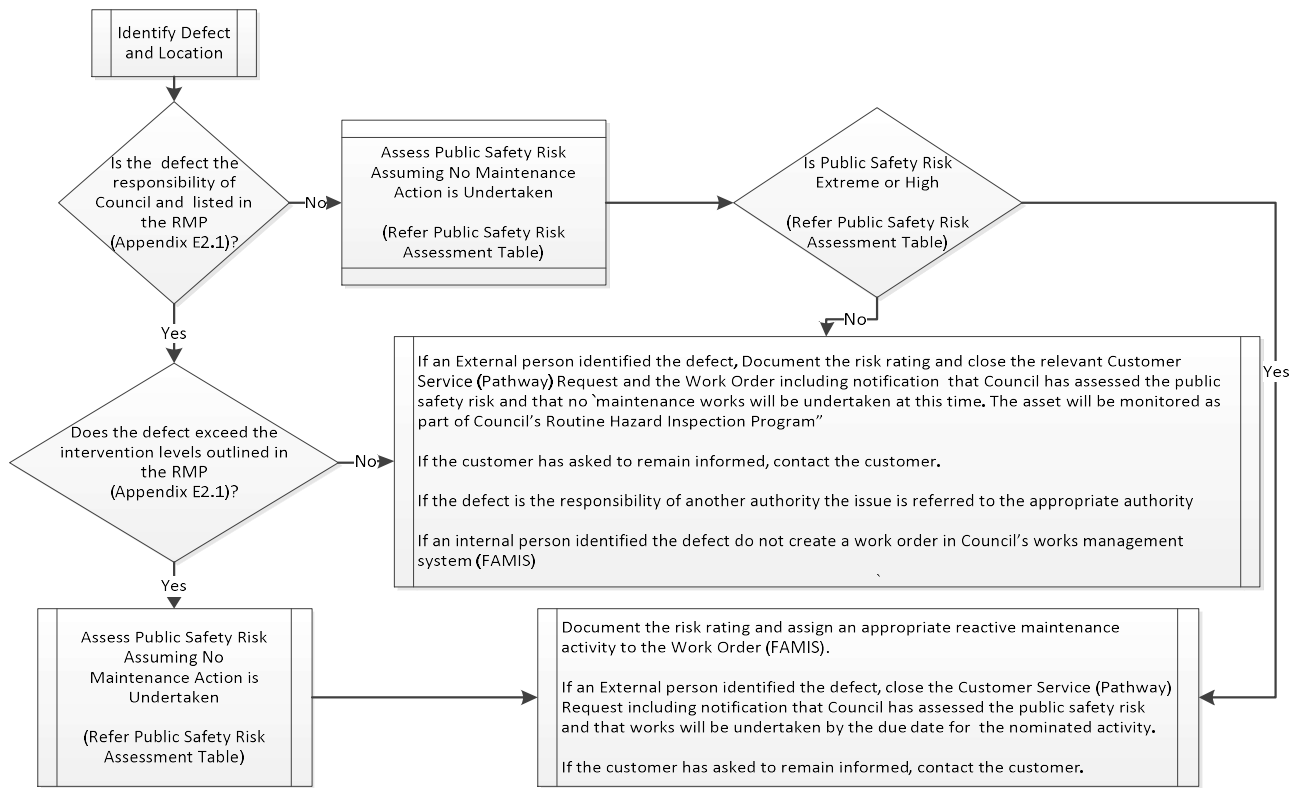
LIKELIHOOD	CONSEQUENCE				
	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CRITICAL
ALMOST CERTAIN	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
PROBABLE	LOW	MEDIUM	HIGH	HIGH	EXTREME
POSSIBLE	LOW	MEDIUM	MEDIUM	HIGH	HIGH
UNLIKELY	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
RARE	LOW	LOW	LOW	LOW	MEDIUM

Public safety risk assessments are undertaken by:

- Council’s routine defect inspector(s) as part of the routine defect inspections described in this document;
- Council officers, with responsibility for asset maintenance, when potential hazards are brought to their attention via requests logged into Council’s customer service system (Pathways);
- Council officers, with responsibility for asset maintenance, when undertaking ad hoc inspections, while undertaking other duties on site.

The detailed public safety risk assessment process is illustrated in Figure 15²². Officers use this process to assess the consequences and likelihood of a potential hazard. The risk rating is assigned to the resulting work order and is an indication of the risk if no action was to be undertaken by Council.

Figure 15: Public Safety Risk Assessment Process



The assigned rating is used to prioritise works and to identify if temporary protection works are required.

A criticality and risk treatment plan has not been developed and adopted for drainage assets. This will be developed in consultation with the stakeholder group. This action is identified within Section 8, Plan Improvement and Monitoring. The following criteria and treatment options listed in Table 23 are typically used in assessment of criticality applicable to drainage infrastructure assets.

²² Frankston City Council Road management Plan 2019; Version 2.0, Section E3 (A3802512)

Table 23: Critical Risks and Treatment Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *
Assets located within flood prone areas, key activity district and industrial zones Blocked, obstructed or failed infrastructure	- Flooding and inundation - Subsidence, compromised slope stability causing landslide, slippage and erosion	High	- Develop a prioritised program to upgrade and expand under capacity drainage based on risk assessment - Improve efficiency and sophistication of flood modelling and mapping - Review if inspection frequency reflect higher risk - Review defined technical level of service - Review maintenance intervention and treatment standards - Review maintenance records for identification of under capacity infrastructure - Implement measures to minimise impact from Flooding events	Low
Asset with a structural condition rating exceeding adopted intervention level	Premature structural failure caused by:	High	- Regular condition inspection using CCTV - Identify affected infrastructure based on standards at the time of construction and increase inspection frequency where required - Monitor and inspect all works impacting on Council drainage network - Identify affected infrastructure based on standards at the time of construction and increase inspection frequency where required.	Medium
Asset with hydraulic condition rating above intervention level	- Hydraulic or functional failure	High	- Identify critical infrastructure - Increase monitoring and inspection frequency - Review and monitor effectiveness of flood mitigation systems to reduce the impact of storm water run-off during high intensity rainfall events.	Medium
Assets located in proximity of flood prone areas, key activity district and industrial zones	Range of climate change predictions and associated impacts affecting identification of infrastructure at risk	Med	- Monitoring of modelling results and predictions - Re-assessment of asset criticality and risk score.	Low
All storm water infrastructure	Uncertainty resulting from a rate capped environment.	High	Undertake appropriate service planning for pathway services to allocate available resources effectively and plan for future demand. Develop and implement pathways service standards with community involvement, through Council's Asset Management Information System. Review of the Long Term Infrastructure Plan (LTIP) to document future capital works and expenditure needs.	Medium

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *
All Storm water infrastructure	Standard and maturity level of asset management practices affecting efficient and sustainable management of assets	Medium	<ul style="list-style-type: none"> - Benchmarking and review of key asset management performance indicators - Review and prioritise data quality improvements - Targeted data collection to address high risk areas and assets. - Analysis and review of lifecycle information available in FAMIS - Support and tracking of progress with the 60ha asset transfer process. 	Low
Stormwater Infrastructure in the road reserve or under the road	Damage to other Council infrastructure resulting in significant costs as disruption to service i.e. damage to major road pavements.	High	<ul style="list-style-type: none"> - Inspections and maintenance of stormwater and road infrastructure as per Council's RMP 2019. - Localised investigations for successful capital works delivery 	Medium

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

6.3 Service and Risk Trade-Offs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

6.4.1 What we cannot do

The organisation is well placed to avoid service and risk trade-offs as the current budget in the LTIP for drainage operations, maintenance, and renewal is sufficient to meet the current long term funding requirements. Long-term financial projections can however change quickly with the uncertainties associated with a rate-capped environment. It is important to consider impacts of being unable to sustain current service levels.

In the case of being unable to maintain required funding levels, Council will preserve non-discretionary budget allowances over discretionary budget outlays in the first instance. Renewal and compliance work will be prioritised above construction of new and upgrade drainage works.

It is possible that Council would need to adjust its current levels of service for operations and maintenance activities and indeed, renewal projects. This could include:

- Frequency of routine defect inspection
- Routine maintenance – intervention levels and timeframes
- Reactive maintenance – intervention levels and timeframes
- Operations – Root cutting, high pressure jetting, clearing and cleaning of drainage assets.
- Drainage renewals – potential review and adjustment in asset useful lives based on revised intervention levels

6.4.2 Service trade-off

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. Service trade-offs due to a lack of available funding may include:

- Reduction of new and upgraded drainage in the municipality
- Delayed renewal / replacement of existing drainage (adjustment in asset useful lives)
- Reduced inspection frequency of higher priority drainage based on the risk assessment
- Reducing the intervention levels for drainage related assets as assessed as under RMP inspections.

6.4.3 Risk trade-off

The operations and maintenance activities and capital projects that cannot be undertaken may maintain or create risk consequences. These include:

- Poorer quality assets at each respective level of the pathway hierarchy
- RMP intervention levels for hazards may need to be reviewed and increased
- Temporary works may have a longer duration and cause disruption of services
- Less provision of services to the community

These actions and expenditures are considered in the projected expenditures, and where already developed, have been included in the Risk Management Plan.

7. FINANCIAL SUMMARY

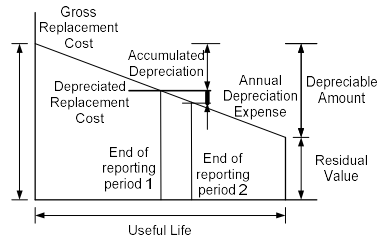
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset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

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued according to the Revaluation model where after recognition, the depreciable amount of assets are valued at fair value less any accumulated depreciation and any subsequent impairment losses.

Gross Replacement Cost	\$ 273,418,511
Depreciable Amount	\$ 273,418,511
Depreciated Replacement Cost ²³	\$ 146,154,506
Annual Average Asset Consumption	\$ 3,417,731



7.1.2 Sustainability of service delivery

Two 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, and
- medium term budgeted expenditures/projected expenditure (over 10 years of the planning period).

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio²⁴ 131%

The Asset Renewal Funding Ratio is the most important indicator and indicates that over the next 20 years of the forecasting that we expect to have 131% of the funds required for the optimal renewal and replacement of assets. The ratio predicts a budgeted over-expenditure compared with the modelled renewal requirement. This figure should be view against Council historic performance where over the last 8 years, between 9% and 35% of average annual asset consumption have been funded.

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 \$4,394,000. on average per year.

²³ Also reported as Written Down Value, Carrying or Net Book Value.

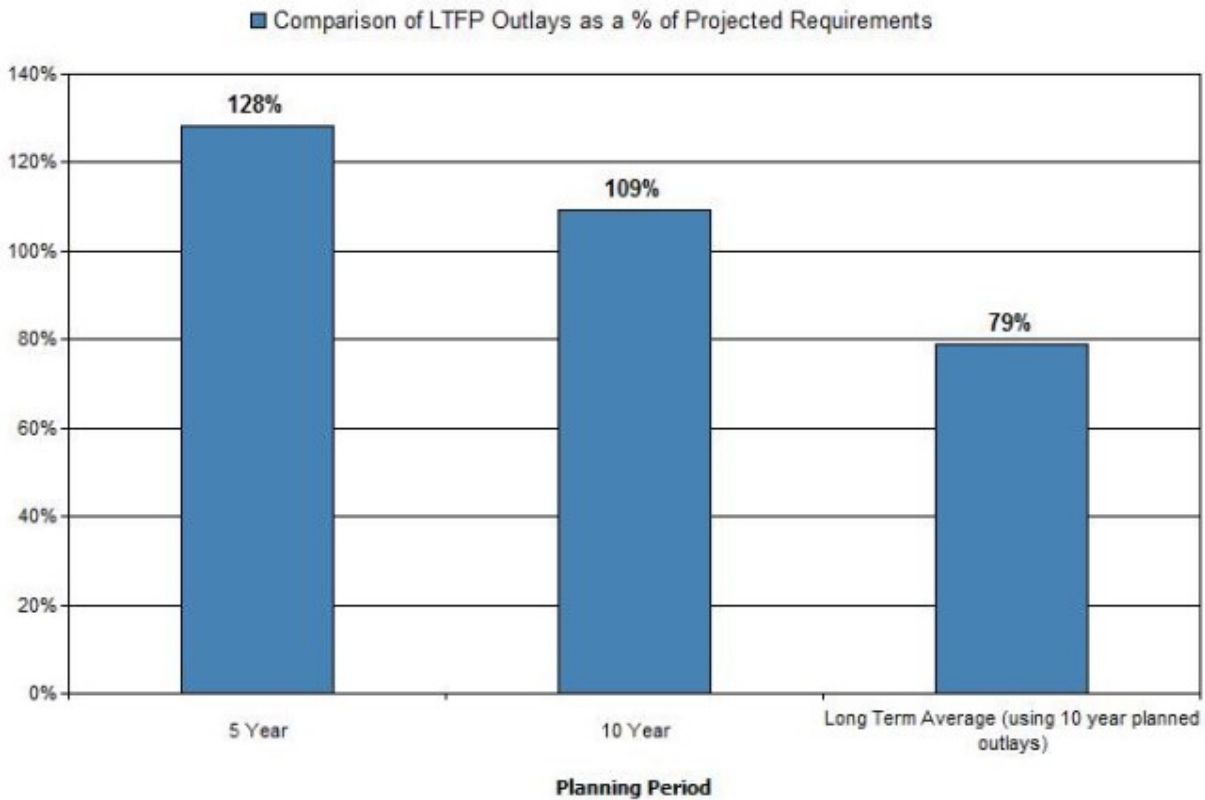
²⁴ AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

Estimated (budget) operations, maintenance and capital renewal funding is \$5,773,000. on average per year giving an average funding surplus of \$412,000 per year over the ten year period. This indicates 108% of the projected expenditures have been provided to ensure current service levels as documented in the asset management plan will be achieved. This excludes upgrade/new assets.

Providing services from infrastructure in a sustainable manner requires the matching and managing of service levels, risks, projected expenditures and financing to achieve a financial indicator of approximately 1.0 for the first years of the asset management plan and ideally over the 10-year life of the Long Term Financial Plan.

Figure 16 shows the asset financial indicators over the 10 year planning period and for the long term life cycle based on the current budget.

Figure 16: Asset Management Financial Indicators



7.1.3 Projected expenditures for long term financial plan

Table 24 shows the projected expenditures for the 10 year long term financial plan.

Expenditure projections are in 2019 real values.

Table 24: Projected Expenditures for Long Term Financial Plan (\$000)

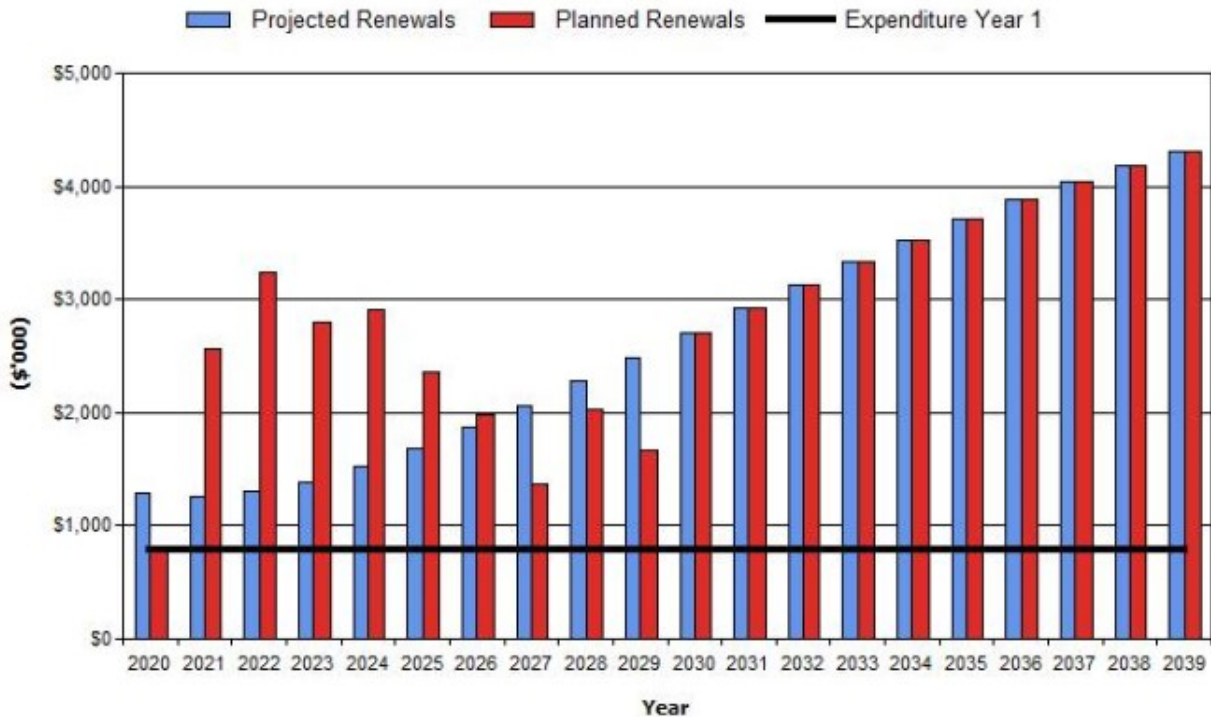
Year	Operations (\$000)	Maintenance (\$000)	Projected/Budgeted Capital Renewal (\$000)	Capital Upgrade/New (\$000)	Disposals (\$000)	Proposed Annual Budget
2019/20	\$1,388	\$944	\$791	\$339	\$0	\$3,462
2020/21	\$1,430	\$973	\$2,558	\$1,096	\$0	\$6,057
2021/22	\$1,474	\$1,002	\$3,234	\$1,386	\$0	\$7,096
2022/23	\$1,519	\$1,033	\$2,791	\$1,196	\$0	\$6,539
2023/24	\$1,565	\$1,065	\$2,906	\$1,245	\$0	\$6,781

2024/25	\$1,613	\$1,097	\$2,364	\$1,013	\$0	\$6,087
2025/26	\$1,662	\$1,130	\$1,979	\$848	\$0	\$5,620
2026/27	\$1,713	\$1,165	\$1,373	\$588	\$0	\$4,839
2027/28	\$1,765	\$1,200	\$2,036	\$872	\$0	\$5,874
2028/29	\$1,819	\$1,237	\$1,672	\$717	\$0	\$5,445
Total	\$15,949	\$10,847	\$21,704	\$9,300	\$0	\$57,799

Providing services in an optimised and cost effective manner will require reconciling the projected asset renewal and replacement requirement to meet agreed service levels with the corresponding Capital Works Program budgets accommodated in the long term financial plan.

Figure 17 shows the projected asset renewal and replacement expenditure over a 20 year period. 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. Project asset renewal and replacement expenditure over the 20 year period have been determined through Moloney Condition Modelling.

Figure 17: Projected and LTFP Budgeted Renewal Expenditure



7.2 Funding Strategy

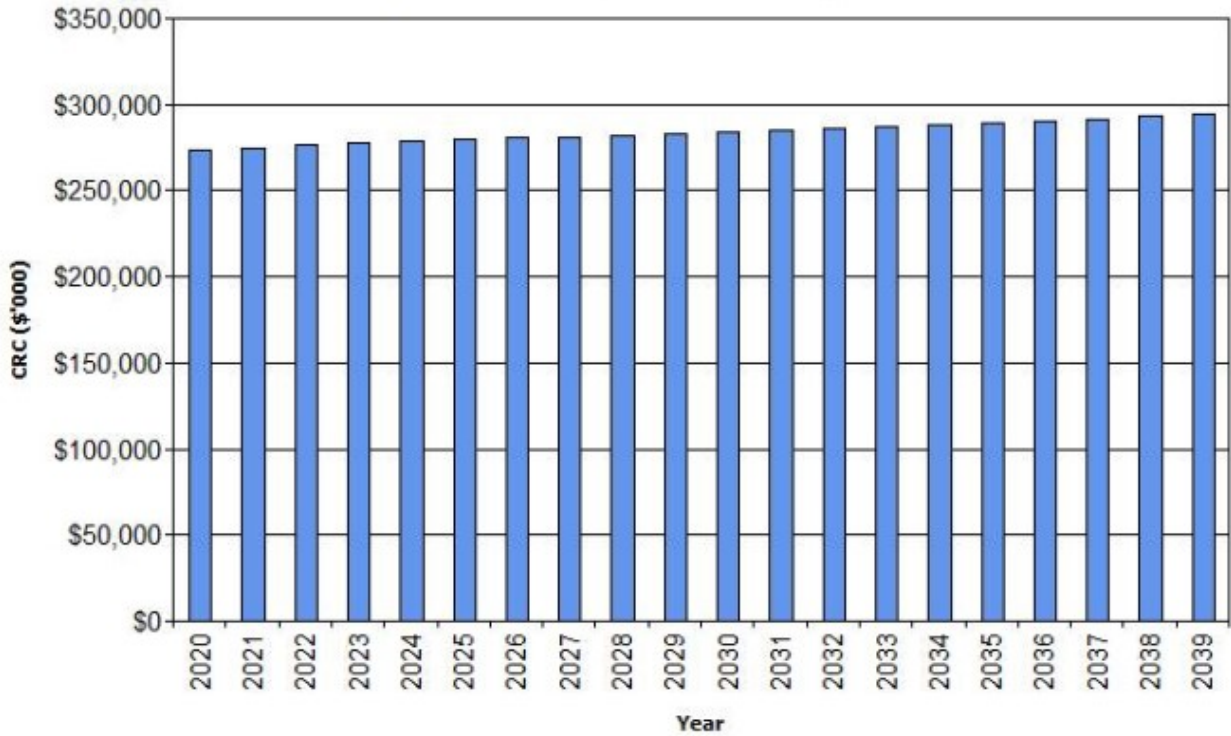
Funding for assets is provided from Council annual budgeting, the Long Term Infrastructure Plan and Long Term Financial Plan.

Council’s Long Term Infrastructure Plan and Long Term Financial Plan determines how funding will be provided, whereas the asset management plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added from capital discretionary spending and developer contributed assets. The asset base have been expanding at an average rate of approximately 2.6% per annum, based on the change in Gross Replacement Value.

Figure 18: Projected Asset Valuations



Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts and depreciated replacement value.

Figure 19: Projected Depreciated Replacement Cost



Gross replacement values for the valuations 2017/18 to 2018/19 have increased with 5.6% as a result of improvements in data quality following allocation of additional resources. The trend is predicted to continue for over the short term, with long term growth expected to remain consistent with historical movement (2.6%).

7.4 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this asset management plan. It is presented to enable readers to gain an understanding of the levels of confidence in the data behind the financial forecasts.

Key assumptions made in this asset management plan are:

- Current levels of service will be retained for duration of the plan;
- Rate capping will be maintained at current levels (2.5%)
- Additional cost from the Sandhurst proposal will be accommodated within LTIP and LTFP.

7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale²⁵ in accordance with Table 25.

Table 25: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate \pm 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 \pm 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 \pm 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy \pm 40%
E Unknown	None or very little data held.

²⁵ IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

The estimated confidence level for and reliability of data used in this AM Plan is expressed in Table 26:

Table 26: Confidence Assessment for Data used in this AM Plan

Data	Confidence Assessment	Comment
Demand drivers and growth projections	C	Findings and results from catchment investigations and modelling. Estimated from population forecasting (Census 2016) in conjunction with analysis Frankston Housing Strategy - 2018. Service level planning is required to improve confidence. Impact of growth prediction on infrastructure requirements needs to be developed.
Operations and maintenance expenditures projections	C	Expenditures requirements determined from analysis and trend from historic analysis for a 6 year period.
Non-discretionary renewal expenditure.	C	10 year non-discretionary capital works program developed from asset renewal requirements and sourced from long Term Infrastructure Plan - 2019. Renewal modelling based on Moloney Condition Modelling revised in 2018/19.
Discretionary new and upgrade expenditures	C	Sourced from long Term Infrastructure Plan 2019
Asset values, useful life and financial projections	C	Gross replacement values based on 2018/19 asset valuation. Depreciation calculated using straight line depreciation method. Asset useful life based on analysis of condition inspection results conducted in 2017/18, Useful Life of Infrastructure Practice Note 12, 2017, and Stormwater Drainage Condition Assessment & Asset Performance Guidelines; Practice Note 5 V2 2015.

8. IMPROVEMENT AND MONITORING PLAN

8.1 Status of Asset Management Practices²⁶

8.1.1 Accounting and financial data sources

Financial transactions, budgets and forecasts are recorded in Council’s corporate financial system TechnologyOne. Asset valuations are performed within Excel.

8.1.2 Asset management data sources

Council drainage infrastructure assets registers are maintained within FAMIS (IPS) and spatially in Council’s geographic information system (GIS), MapInfo. The registers are linked with the Single Point of Change process where updates are processed within the MapInfo environment, and written to Council’s asset information system, FAMIS. Routine and reactive maintenance activities are managed from FAMIS, in combination with KERN mobile solution for field updates and recording of asset information.

Asset register information including asset attributes, data quality, currency and availability across Council spatial platforms and asset management system have been identified as a key area for improvement by the broader stakeholder group. Improvements will be addressed as priority tasks under direction of the asset class working group. The task will prioritise consolidation of the various sources of information, addressing discrepancies between the various data sources and supplementing the asset register with missing asset sub category information.

8.2 Improvement Plan

The asset management improvement plan generated from this asset management plan is shown in Table 27.

Table 27: Improvement Plan

Task No	Task	Primary Responsibility	Timeline
1	Support and contribute the asset class working group to prioritise and manage ongoing drainage related matters through regular meetings.	Asset Planning	Ongoing
2	Develop and implement action and resource plan to improve asset register information and data quality to align with user needs and expectations. The following elements will be addressed: <ul style="list-style-type: none"> Review and update data schema based on stakeholder needs (data) Review and re-configure data schema in FAMIS (system) Review and re-configure drainage data structure (system) Cleansing of existing data (data) Identify data gaps (data) Develop a data capture plan (data) Review asset ownership and demarcation (data) 	Asset Planning	0 – 6 months
3	Implement asset criticality assessment criteria and treatment options based Council’s Risk Management Framework.	Asset Planning	Ongoing
4	Identify and document criticality of drainage assets	Asset Planning	0 – 12 months
5	Review inspections and routine maintenance scheduling	City Works/ Asset	0 - 12 months

²⁶ ISO 55000 Refers to this the Asset Management System

Task No	Task	Primary Responsibility	Timeline
	for off-street drainage assets and its impact on resource requirements	Planning	
6	Review FAMIS routine and scheduled maintenance activities and align with TechOne cost centres to accurately capture lifecycle cost to make allowance for future operational budgets.	Asset Planning/Finance/City Works	0 – 12 months
7	Develop a condition audit program for all drainage assets.	Asset Planning	0 - 12 months
8	Continue scheduling of supplementary CCTV condition inspections, based on priority areas as identified from sample condition inspections to inform capital works planning.	Asset Planning / City Works	Ongoing
9	Document, review and incorporate all findings and recommendations from catchment analysis and modelling into Council Long Term Infrastructure Plan and make this information available to inform the assessment of development applications.	Asset Planning/Capital Works Planning/Engineering Services	0 – 24 months
10	Review capital works program development process and procedures for discretionary and non-discretionary budget. Finalise project selection, evaluation and priority ranking criteria.	Capital Works Planning & Monitoring/ Asset Planning	0 – 18 months
11	Review and standardise asset handover requirements and procedures for capital works and developments to consolidate and formalise asset information received.	Asset Planning	0 - 18 months
12	Review asset class valuation methodology and process. Include valuation of all classes of stormwater assets including recycled water and other WSUD assets.	Asset Planning	0 – 12 months
13	Review the drainage capitalisation process, procedures and thresholds as part of Council’s Capitalisation Policy.	Asset Planning / Finance	0 – 12 months
15	Develop and review levels of service for all drainage infrastructure and establish measurable key performance indicators through the service planning process.	Asset Planning, Engineering Services and Operations	0 – 18 months
14	Identify cost of level of services, based on asset criticality. Establish community engagement strategy to determine and measure levels of service provided.	Service Planning /Asset Planning / City Works/Engineering Services	0 – 24 months
16	Review and update standards, specifications, relevant guidelines and codes, implement updates and improvements on a yearly basis with associated FCC web based guidance to ensure contractors, developers, designers are better informed as to FCC requirements.	Engineering Services	0 – 12 months
17	Utilise Integrated Water Service Plan to inform future revisions of AM Plan and levels of service.	Asset Planning	Ongoing
18	Review resource requirements for lifecycle management of Water Sensitive Urban Design assets.	Asset Planning/Operations	Ongoing

8.3 Monitoring and Review Procedures

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

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

The AM Plan has a life of 4 years and is due for complete revision and updating within expiry of this period.

The progress of the implementation of the improvement plan will be monitored by the Strategic Asset Management Leadership Team.

8.4 Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- Progress with implementation of the Improvement Actions detailed under Section 8.2 of this document.
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

10. APPENDICES

Appendix A	Projected 10 year Capital Renewal, Upgrade and New Works Program
Appendix B	LTFP Budgeted Expenditures Accommodated in AM Plan
Appendix C	RMP Drainage Maintenance Activities
Appendix D	RMP Drainage Inspections
Appendix E	Background Documentation

Appendix B Budgeted Expenditures Accommodated in LTFP

NAMS.PLUS3 Asset Management Frankston CC

© Copyright. All rights reserved. The Institute of Public Works Engineering Australasia

Stormwater_S2_V3

Asset Management Plan



First year of expenditure projections **2020** (financial yr ending)

Stormwater

Asset values at start of planning period

Current replacement cost	\$273,419 (000)
Depreciable amount	\$273,419 (000)
Depreciated replacement cost	\$146,155 (000)
Annual depreciation expense	\$3,418 (000)

Calc CRC from Asset Register
 (000)
 This is a check for you.

Operations and Maintenance Costs for New Assets

Additional operations costs	0.58%
Additional maintenance	0.40%
Additional depreciation	1.25%
Planned renewal budget (information only)	

You may use these values calculated from your data or overwrite the links.

Planned Expenditures from LTFP

20 Year Expenditure Projections Note: Enter all values in current **2020** values

Financial year ending	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000

Expenditure Outlays included in Long Term Financial Plan (in current \$ values)

Operations

Operations budget	\$1,339	\$1,380	\$1,422	\$1,465	\$1,510	\$1,556	\$1,603	\$1,652	\$1,703	\$1,755
Management budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
AM systems budget	\$49	\$49	\$49	\$49	\$49	\$49	\$49	\$49	\$49	\$49

Total operations	\$1,388	\$1,429	\$1,471	\$1,514	\$1,559	\$1,605	\$1,652	\$1,701	\$1,752	\$1,804
-------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

Maintenance

Reactive maintenance budget	\$944	\$973	\$1,002	\$1,033	\$1,065	\$1,097	\$1,130	\$1,165	\$1,200	\$1,237
Planned maintenance budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Specific maintenance items budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Total maintenance	\$944	\$973	\$1,002	\$1,033	\$1,065	\$1,097	\$1,130	\$1,165	\$1,200	\$1,237
--------------------------	-------	-------	---------	---------	---------	---------	---------	---------	---------	---------

Capital

Planned renewal budget	\$791	\$2,558	\$3,234	\$2,791	\$2,906	\$2,364	\$1,979	\$1,373	\$2,036	\$1,672
-------------------------------	-------	---------	---------	---------	---------	---------	---------	---------	---------	---------

Planned upgrade/new budget	\$339	\$1,096	\$1,386	\$1,196	\$1,245	\$1,013	\$848	\$588	\$872	\$717
-----------------------------------	-------	---------	---------	---------	---------	---------	-------	-------	-------	-------

Non-growth contributed asset value	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Asset Disposals

Est Cost to dispose of assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
--------------------------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Carrying value (DRC) of disposed assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan)

Additional Expenditure Outlays required and not included above	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000

Operations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Capital Upgrade	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
-----------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

User Comments #2

Forecasts for Capital Renewal using Methods 2 & 3 (Form 2A & 2B) & Capital Upgrade (Form 2C)

Forecast Capital Renewal from Forms 2A & 2B	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000

Forecast Capital Upgrade from Form 2C	\$1,295	\$1,265	\$1,302	\$1,390	\$1,520	\$1,681	\$1,865	\$2,065	\$2,275	\$2,491
---------------------------------------	---------	---------	---------	---------	---------	---------	---------	---------	---------	---------

	\$339	\$1,096	\$1,386	\$1,196	\$1,245	\$1,013	\$848	\$588	\$872	\$717
--	-------	---------	---------	---------	---------	---------	-------	-------	-------	-------

Appendix C RMP Drainage Maintenance Activities

Reactive Maintenance Activity Title/ Description	Defect Intervention Levels	Target Response Times	
		Initial Assessment (Working Days)	Rectification Works (Working Days)
BRIDGES & MAJOR CULVERTS			
<p>B-REA-001 Bridge/ Major Culvert Maintenance Maintenance of bridge and culvert components including: repair and painting including repair of spalled posts and parapets, and repair, tightening and painting of railing.</p> <p>Repair or reinstatement of isolated damage <2 sq. m. caused by vandalism or traffic incident.</p> <p>In the event that defects identified are beyond the scope of maintenance crews, or if structural integrity issues are observed, then the person undertaking the inspection, must undertake temporary protection works and make recommendation for the structure to be assessed via a Level 3 inspection.</p> <p>If structural failure is identified (or damage caused by vandalism or traffic incident is >2 sq/m.) temporary protection works are undertaken and the repair is prioritised as part of Council's asset renewal program.</p>	<p>B001 – Component damage or deterioration is presenting a hazard to road or path users B002 – Structural integrity issues require further investigation</p>	2 days	150 days
<p>B-REA-002 Bridge/ Major Culvert Cleaning and Clearing Cleaning and clearing of components including: (a) cleaning and clearing of deck, footway, expansion joints, scuppers and downpipes; (b) cleaning and clearing of dirt from superstructure and substructure and vegetation from in and around bridge;</p> <p>In the event that defects identified are beyond the scope of maintenance crews, or if structural integrity issues are observed, then the person undertaking the inspection, must undertake temporary protection works and make recommendation for the structure to be assessed via a Level 3 inspection. If required, consent from the asset owner or service authority will be sought to facilitate maintenance or repairs.</p>	<p>B003 - Accumulation of material causes interruption to the escape of stormwater runoff B004 - Accumulation of material causes interruption to the operation of expansion joints. B005 – Vegetation growing in joints or cracks</p>	2 days	100 days

Reactive Maintenance Activity Title/ Description	Defect Intervention Levels	Target Response Times	
		Initial Assessment (Working Days)	Rectification Works (Working Days)
<p>B-REA-003 Stream Maintenance</p> <p>Maintenance and cleaning of debris from streams within 10m of structure.</p> <p>In the event that defects identified are beyond the scope of maintenance crews, or if structural integrity issues are observed, then the person undertaking the inspection, must undertake temporary protection works and make recommendation for the structure to be assessed via a Level 3 inspection.</p>	<p>B006 - Any log debris >150 mm in diameter within 10m of structure.</p> <p>B007 - Any accumulation of debris >400 mm in dimension within 10m of structure.</p>	2 days	120 days
DRAINAGE			
<p>D-REA-001 Clear Blocked Drainage Pits</p> <p>Clean debris from pit inlet and pit if obstruction impedes pipe flow to the outlet causing upstream flooding.</p>	<p>D-002 Water on trafficable lanes</p> <p>D-003 Private land inundated</p> <p>D-004 Building inundated</p> <p>D-005 Nature-strip holding water</p> <p>D-006 Water ponding over >60% of path for longer than 72 hours.</p> <p>DI-001 Debris in pit impeding pipe flow to outlet pipe</p> <p>DE-001 Debris obstructing pit inlets</p>	2 days	60 days
<p>D-REA-002 Clear Blocked Drainage Pipes & Culverts</p> <p>Temporary and/or permanent treatment to remove obstruction that impedes pipe flow. This activity may include replacement of up to 10m of pipe of up to 300mm diameter.</p> <p>If damaged pipe length exceeds 10m, temporary protection works are undertaken and the repair is prioritised as part of Council's asset renewal program.</p>	<p>D-002 Water on trafficable lanes</p> <p>D-003 Private land Inundated</p> <p>D-004 Building inundated</p> <p>D-005 Nature-strip holding water</p> <p>D-006 Water ponding over >60% of path for longer than 72 hours.</p> <p>DI-002 Pipe/ culvert obstructions impede stormwater flow</p>	2 days	40 days
<p>D-REA-003 Drainage Pit Structure Maintenance</p> <p>Provide temporary and/or permanent pit repair when pit structure is damaged or deteriorated and posing a potential hazard to road users/ pedestrians.</p> <p>If pit walls and/or floors are collapsed the repair is prioritised as part of Council's asset renewal program.</p>	<p>DE-002 Pit throat (inlet) is damaged to the extent that it obstructs stormwater flow into the pit:</p> <p>DE-003 Lintel damaged or deteriorated to the extent that it could be hazardous to pedestrians</p> <p>DE-004 Reinforcement is exposed</p> <p>DI-003 Broken frames that no longer support the pit lid</p> <p>DI-004 Missing/ damaged/ deteriorated step irons and/or mesh panels.</p> <p>DI-005 Collapsed pit walls</p> <p>DI-006 Collapsed pit floor</p>	2 days	90 days

Reactive Maintenance Activity Title/ Description	Defect Intervention Levels	Target Response Times	
		Initial Assessment (Working Days)	Rectification Works (Working Days)
D-REA-004 Drainage Pit Surrounds Maintenance Provide temporary and/or permanent pit surrounds repair when damaged or deteriorated posing a potential hazard to road users/ pedestrians.	DE-004 Reinforcement is exposed DE-007 Pit surrounds damaged to the extent that they are hazardous to road users/ pedestrians DE-008 Vertical displacement >25mm only if the pit is within a designated pedestrian walkway DE-009 Cracks considered likely to cause the pit lid or surrounds to collapse	2 days	45 days
D-REA-005 Drainage Pit Lid Maintenance	DE-005 Broken or missing pit covers DE-006 Broken or missing pit grates DE-009 Cracks considered likely to cause the pit lid or surrounds to collapse	2 days	5 days
D-REA-006 Open Drain Maintenance Clean and/or reshape open drain to maintain adequate stormwater flow.	D-001 Open drain capacity >50% obstructed	7 days	120 days

Appendix D RMP Drainage Inspections

RMP Inspections	Assets being Inspected	Internal Defect Inspection Frequency	External Defect Inspection Frequency
Bridge and Major Culverts Inspections (RMP Reference: E.2.2)	Major culverts	6 month cycle	6 month cycle
Internal Drainage Pit Defect Inspections (RMP Reference: E.2.6)	Side entry pits and grated pits within the road reserve	Between a 3 month and 3 year cycle (depending on road hierarchy). Fire tracks are only inspected on a reactive basis	N/A
Path & Path Related Defect Inspections (RMP Reference: E.2.3)	Drainage pits located on path network	N/A	Between a monthly and 2 year cycle (depending on path hierarchy)
Road & Road Related Defect Inspections (RMP Reference: E.2.5)	Side entry pits and other pits located in trafficable lanes (including on-road cycle paths)	N/A	Between a 6 month and 2 year cycle (depending on road hierarchy). Fire tracks are only inspected on a reactive basis
Road Patrol Inspections (RMP Reference: E.2.9)	Side entry pits and other pits located in trafficable lanes (including on-road cycle paths) or on constructed pathways	N/A	Between a twice per week and monthly cycle (depending on road hierarchy). Only Major Roads, Collector Roads and Key CAA Roads are inspected

Appendix E Background Documentation

- Integrated Water Action Plan 2016-2026
- Flood Management Plan for City of Frankston and Melbourne Water 2019 (A4028542)
- Frankston City Council Storm and Flood Emergency Plan 2017 (A3670483)
- Frankston City Climate Change Impacts and Adaptation Plan 2011
- Frankston Water Sensitive Urban Design Guidelines 2011
- Sustainable Water Use Plan 2006
- Seaford Wetlands Residential Environs Study 2019
- Frankston City Council Storm Water Drainage Management Plan – Operations 2007
- Frankston City Council Annual Budget 2019 – 2020
- Frankston City Council Long Term Financial Plan 2016/2017 to 2020/2021
- Frankston City Council Financial Plan – 2019 - 2029
- Frankston City Council Plan 2017 – 2021
- Frankston City Council Road Management Plan 2019
- Frankston City Council Roads Asset Management Plan 2010
- Frankston City Council State of the Assets Report 2014
- Frankston City Health and Wellbeing Plan 2017 – 2021
- Frankston City Council Housing Strategy - 2018
- Frankston City Integrated Transport Strategy 2013
- Frankston Planning Scheme 2019 - Planning Scheme Review Report (A4073141)