Stormwater Asset Management Plan

April 2020

Next Date of Review:	April 2023
Document Controller:	Infrastructure & Works Manager
Document Reviewer:	City Engineer
Date Adopted by Council:	27 July 2020
Resolution Number:	20/33

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

This asset management plan (AM Plan) details information about stormwater infrastructure assets including actions required to provide an agreed level of service in the most cost-effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 10-year planning period.

The stormwater network comprises the following assets (as at 17th December 2019):

- Pipes: 249 km
- Manholes and Pits: 7712 items
- Headwalls: 505 items
- Open Drains: 24.7 km
- Subsoil Drains: 62.6 km
- Other Structures: 38 items
- SQIDs: 19 items

These stormwater infrastructure assets have a combined replacement value of $137,706,000.

The systems Council uses to manage assets include:

- Technology One Finance System
- Technology One Enterprise Suite - Asset
- GIS software (ARCGIS & Geocortex)

We plan to provide stormwater services to mitigate the risk of flooding to people and property. Activities that deliver this outcome include:

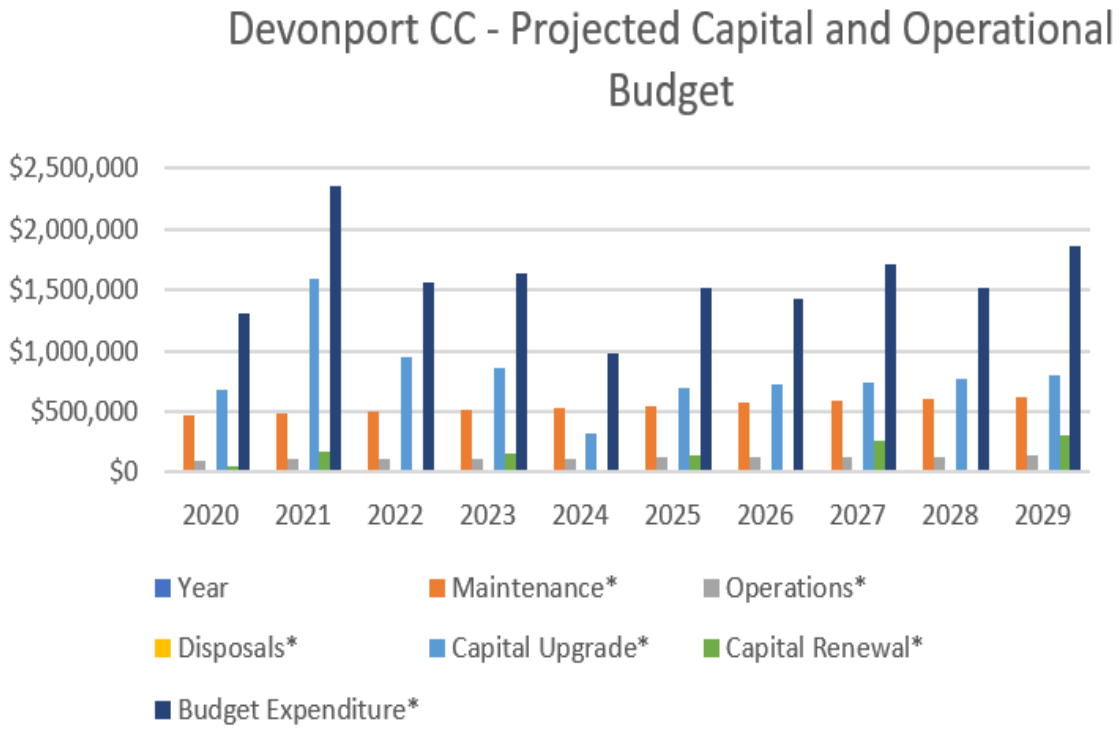
- Operation and maintenance of all stormwater assets to meet service levels set in the annual budget.
- Renewal of stormwater assets at end of life, identified in Council's forward capital works program
- Construction of new or upgraded stormwater assets to address a specific issue, identified in Council's forward capital works program
- Acceptance of donated stormwater asset from subdivisions and other developments.

The projected outlay necessary to provide the services covered by this AM Plan includes operations, maintenance, renewal and upgrade of existing assets over the 10-year planning period is $1,300,000 on average per year. This allocation is nominally available in Council's Long Term Financial Plan (LTFP). However, there is uncertainty on the accuracy of the projected outlay required, and the LFTP is subject to a range of internal and external factors.

Improved asset condition data will improve the accuracy of projected expenditure requirements. Council have recently completed stormwater system management plan which have identified a number of new projects for inclusion in future works programs.

Present funding levels for stormwater assets are enough to continue to provide existing stormwater services, but an increase in service level or provision of new assets to mitigate climate change will require a adjustments to Council's LTFP. Council's appetite for risk will determine the extent of any adjustment required.

This is shown in the figure below (the values in the figure are in current, real dollars).


Devonport CC - Projected Capital and Operational Budget
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
Year
Maintenance*
Operations*
Disposals*
Capital Upgrade*
Capital Renewal*
Budget Expenditure*

2. INTRODUCTION

2.1 Background

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

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

The AM Plan is to be read in conjunction with the Devonport City Council's key planning documents:

- Asset Management Policy
- Asset Management Strategy
- Stormwater system management plan
- Stormwater Strategy
- Roads and Stormwater Service Level Document

The infrastructure assets covered by this AM plan are shown in Table 2.1. (as at 17th December 2019)

Table 2.1: Assets covered by this Plan

Asset Category	Dimension	Replacement Value
Pipes	249 km	$98,674,000
Manholes and Pits	7712 items	$29,305,000
Headwalls	505 items	$1,602,000
Open Drains	24.7 km	$2,956,000
Subsoil Drains	62.6 km	$4,301,000
Other Structures	38 items	$562,000
SQIDs	19 items	$306,000
TOTAL		$137,706,000

2.2 Goals and Objectives of Asset Ownership

Council's goal in managing Stormwater assets is to meet the defined level of service (as amended from time to time) in a financially sustainable manner. The key elements of infrastructure asset management are:

- Defining a level of service
- Monitoring performance
- Managing the impact of growth of the asset base and increased demand for services
- Managing whole of life costs
- Identifying, assessing and appropriately controlling risks
- Linking to Council's Long Term Financial Plan

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

- International Infrastructure Management Manual 2015
- ISO 55000 Asset Management – Overview, principles and terminology

2.3 Core and Advanced Asset Management

This AM Plan is prepared as a 'core' asset management plan over a 10-year planning period. Core asset management is a 'top down' approach where analysis is applied at the system or network level. An 'advanced' asset management approach uses a 'bottom up' approach for gathering detailed asset information for individual assets. Council intends to move to an 'advanced' approach in future revisions of this AM Plan.

3. LEVELS OF SERVICE

3.1 Community Research and Expectations

The Local Government Association of Tasmania (LGAT) conduct Community Satisfaction Surveys on a semi-regular basis. The last survey was conducted in 2019. The results compare community satisfaction from each Local Government areas for several services.

To complement the LGAT survey and gain a more detailed understanding of the expectations of the Devonport Community, Council have conducted their own Community Satisfaction Surveys. The last survey was conducted in 2019. One of the key services and facilities with the highest levels of importance were drains, stormwater maintenance.

Prior to the annual budget deliberations, Council seeks input from the community. This gives the community an opportunity to provide feedback regarding where they would like Council to allocate budget funding. This feedback is for both new and renewal projects as well as maintenance funding.

Collection of community expectation and satisfaction levels on a regular basis will improve Council's understanding of the community requirements and expectations of Council's Stormwater assets. Reviewing the questions asked for the budget consultation will give Council an annual indication if the Community's expectation regarding service delivery is being met.

3.2 Strategic and Corporate Goals

This AM Plan is prepared under the direction of Devonport City Council's vision, mission, goals and objectives.

Our vision is:

"*Devonport will be a thriving and welcoming regional City, living lightly by river and sea*."

Our mission is:

"*A commitment to excellence in leadership and service*."

Relevant goals and objectives and how these are addressed in this asset management plan are:

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

Goal No.	Goal	Strategy No.	Strategy	AM Plan Context
1	Living lightly on our environment	1.1.1	Lead and actively promote the adoption of practices that support the sustainable use of energy and other natural resources by Council, businesses and the community.	Natural resource input will be a consideration in selection of asset management decisions related to Stormwater assets including other environmental considerations on erosion and water quality.
2	Building a unique city	2.3.1	Develop and maintain long term Strategic Asset Management Plans	Stormwater assets will be provided and maintained to balance community expectations, technical requirements and long term financial sustainability.
5	Practicing excellence in governance	5.5.2	Ensure comprehensive financial planning to meet sustainability requirements.	This asset management plan will be used to inform Council's long term financial plan.

3.3 Legislative Requirements

There are many legislative requirements relating to the management of Stormwater assets. These include:

Table 3.3: Legislative Requirements

Legislation	Requirement
Local Government Act, 1993, Section 70B	Long-term strategic asset management plans (1) A council is to prepare a long-term strategic asset management plan for the municipal area. (2) A long-term strategic asset management plan is to relate to all assets that are within a class of assets specified in an order under section 70F(3) to be major assets. (3) A long-term strategic asset management plan is to be in respect of at least a 10 year period. (4) A long-term strategic asset management plan for a municipal area is to – (a) be consistent with the strategic plan for the municipal area; and (b) refer to the long-term financial management plan for the municipal area; and (c) contain at least the matters that are specified in an order made under section 70F as required to be included in a long-term strategic asset management plan.
Local Government Act, 1993, Section 70F	Orders determining minimum contents of plans, &c., and classes of assets (1) The Minister, by order, may specify the matters that are required to be included in – (a) a long-term financial management plan; or (b) a long-term strategic asset management plan; or (c) a financial management strategy; or (d) an asset management strategy; or (e) an asset management policy. (2) A matter may be included in a plan, policy or strategy referred to in subsection (1) , even though the matter is not specified in an order under subsection (1) as required to be included in such a plan, policy or strategy. (3) The Minister, by order, may specify the classes of assets that are to be taken to be major assets for the purposes of section 70B . (4) The Minister is to consult with councils as to the matters to be included in an order under this section.
Urban Drainage Act 2013, Section 5	Council to provide adequate public stormwater systems (1) A council must, in accordance with the objects of this Act, provide for such public stormwater systems as may be necessary to effectively drain the urban area of the council's municipal area. (2) If a complaint is made to the Minister that a council has failed or neglected to make provision in accordance with subsection (1) , the Minister may investigate the complaint. (3) If, after investigating a complaint, the Minister is satisfied that the council has failed or neglected to perform its duty, he or she may make an order declaring the council to be in default and directing it to make provision in accordance with subsection (1) within such period as may be specified in the order. (4) A council may appeal to the Appeal Tribunal against an order under subsection (3) within the period specified in the order. (5) The Appeal Tribunal is to hear and determine an appeal in accordance with the Resource Management and Planning Appeal Tribunal Act 1993 .

	(6) A council must – (a) comply with an order under subsection (3) within the period specified; or (b) lodge an appeal in accordance with subsection (4) . Penalty: Fine not exceeding 1 000 penalty units. (7) If a council fails to comply with any requirement of an order within the period specified, the Minister may take whatever action he or she considers necessary to rectify the council's default, and all the costs and expenses of and incidental to the Minister's action must be paid by the council to the Crown.
Legislation	**Requirement**
Local Government Act 1993, Section 20	Functions and powers (1) In addition to any functions of a council in this or any other Act, a council has the following functions: (a) to provide for the health, safety and welfare of the community; (b) to represent and promote the interests of the community; (c) to provide for the peace, order and good government of the municipal area. (2) In performing its functions, a council is to consult, involve and be accountable to the community. (3) A council may do anything necessary or convenient to perform its functions either within or outside its municipal area. (4) A council may transfer to a single authority or a joint authority – (a) any of its assets and liabilities on any condition it determines; or (b) any of its employees. (5) A council may – (a) acquire, hold, dispose of and otherwise deal with property; and (b) sue and be sued in its corporate name

3.4 Customer Levels of Service

Customer Levels of Service measure how the customer receives the service and whether value to the customer is provided. Council has defined some customer levels of service in the following documents:

- Stormwater Strategy
- Roads and Stormwater Service Level Document

However, the customer levels of service are not fully defined and have not been matched with community expectations in a formal way.

The levels of service measures in these documents include:

Quality How good is the service … what is the condition or quality of the service? e.g. drains works

Function Is it suitable for its intended purpose …. Is it the right service? e.g reduce the flooding

Capacity/Use Is the service over or under used … do we need more or less of these assets? e.g. pipe size is adequate to carry stormwater

Formalisation of Customer Levels of Service and assessment of the assets against these levels of service to identify over or under servicing will better align the services provided by Stormwater assets with community expectation and needs and assist in prioritizing provision of new and upgraded assets.

3.5 Technical Levels of Service

Technical Levels of Service are the technical measurements and specifications relating to allocation of resources and physical work to best achieve the desired customer outcomes and demonstrate effective performance.

Council often refers to these as ‘Service Levels’ or ‘Maintenance Service Levels’

Technical levels of service are achieved through work under Council’s capital and operational budgets, including:

- Operations – the regular activities to provide services (e.g. inspections, clear outfalls, clean open drains),
- Maintenance – activities that enable an asset to provide service for its planned life and may be proactive (e.g. minor concrete repairs) or reactive (e.g. pipe patching),
- Renewal – activities that return the service capability of an asset up to that which it had originally (e.g. replacing a collapsed pipe), and
- New – the activities to provide a higher level of service (e.g. construct new detention basins) or a new service that did not exist previously (e.g. an extension of the pipe network).

Operations and Maintenance are carried out under Council’s operational budget. Renewal and new project work is carried out under Council’s capital works program.

Council’s technical levels of service for operations and maintenance are defined in the Roads and Stormwater Service Level Document and are reviewed annually.

4. FUTURE DEMAND

4.1 Demand Drivers

Demand drivers that may impact future service delivery and use of assets were identified and are documented as:

- Total population
- Public Stormwater availability and utilisation
- Change of land use
- Climate change

4.2 Demand Forecasts

Stormwater assets are impacted by changes in demand in that they have finite capacity so additional flow from either human or environmental factors will increase demand and at some point, exceed capacity. These are shown in table 4.2 below.

Table 4.2: Demand Forecasts on Stormwater Assets

Asset Category	Impacted by changes in demand
Pipes	Yes
Manholes and Pits	Yes
Headwalls	Yes
Open Drains	Yes
Subsoil Drains	Yes
Other Structures	Yes
SQIDs	Yes

Council undertakes hydraulic modelling of all stormwater catchments to determine the current performance of the stormwater network and to identify locations at risk of flooding. This data is included in Council's Stormwater System Management Plan (SSMP).

4.3 Demand Management Plan

The SSMP analyses the performance of existing infrastructure and includes a risk assessment for each catchment. AS at December 2019, 79% of the catchments have been assessed. The table 4.3 shows summary of the risk ratings for Devonport city council 75 urban catchments.

Table 4.3: Summary of the risk ratings

Risk Rating	Total Catchments	% Total
High	4	5%
High-Medium	0	0%
Medium-High	1	1%
Medium	9	12%
Low-Medium	45	60%
Low	0	0%
Not Classified (TBC)	16	21%
TOTAL	75	

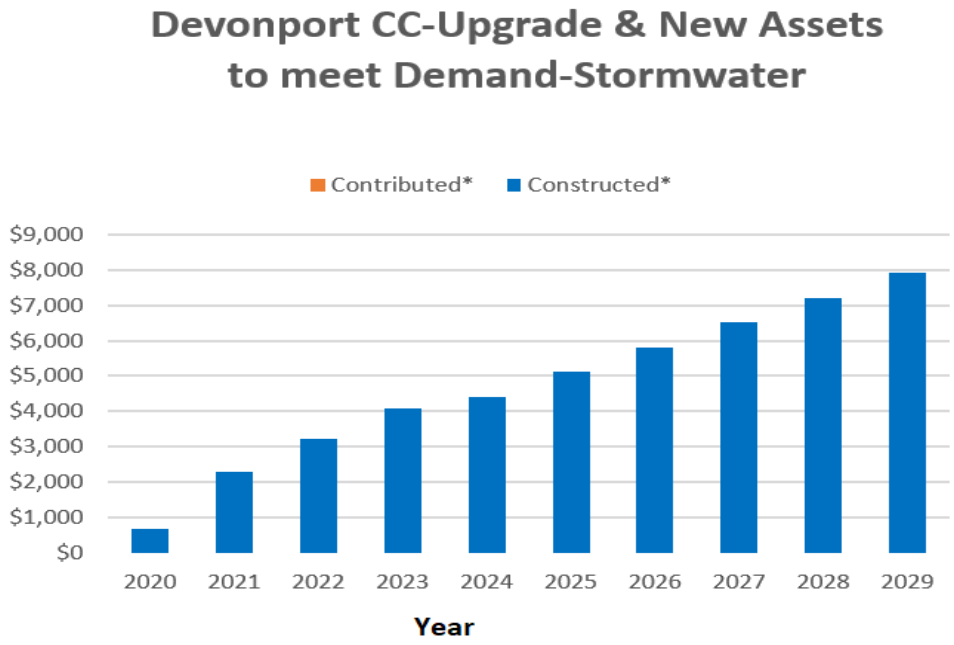
4.4 Asset Programs to meet Demand

The new assets required to meet demand can be constructed as part of Council's capital works program or may be donated or acquired from private developers.

The projection of the cumulative value of additional asset is shown in Figure 1. This projection is based on:

- Contributed assets - as an average of past subdivisional assets donated to Council.
- Constructed assets - the projected capital upgrades and new assets detailed in the forward capital works program.

Figure 1: Upgrade and New Assets to meet Demand – (Cumulative)



- Figure 1 represents the expected value on a cumulative basis of new assets that will be contributed and constructed and upgraded. The contributed asset forecast is assumed to be negligible due to low forecast population growth and the relatively low value of stormwater assets in subdivisions if they do occur. (Values are in current (real) dollars)
- The construction of new assets is driven from the SSMP and is reflected in the Forward Capital Works Program. However, the rate at which this investment is made must align with the LTFP. Council is required to balance the affordability of new assets with the risk of not constructing them.
- 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 further in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

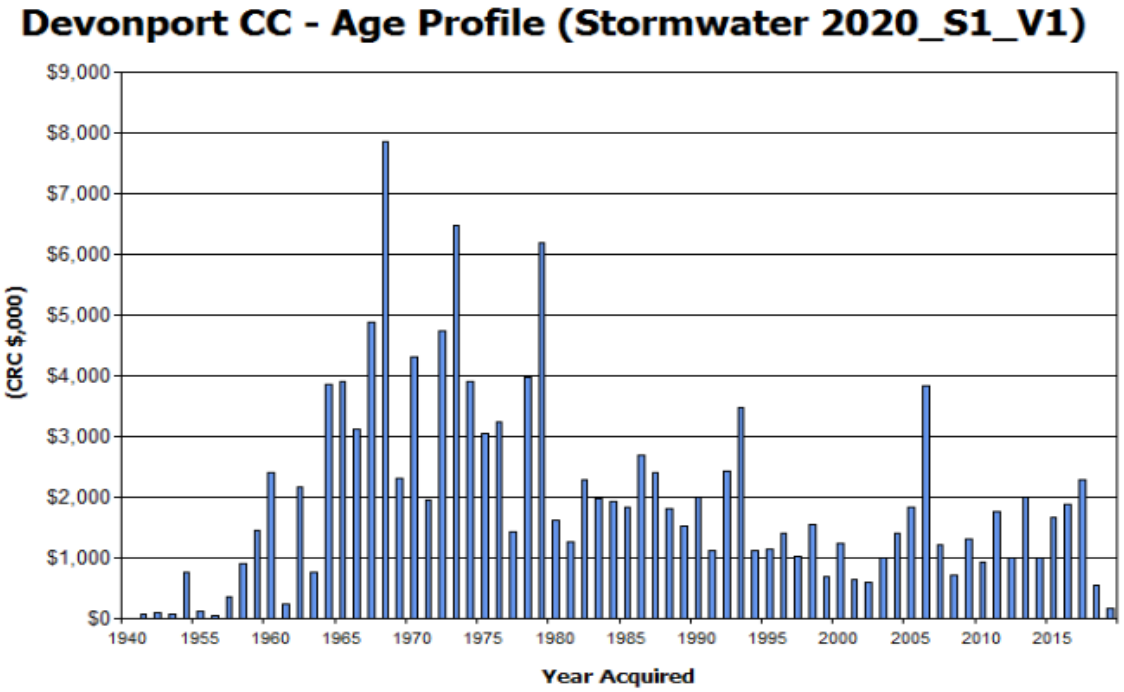
The lifecycle management plan details how Council plans to manage and operate the assets at the agreed levels of service (defined in Section 3) while managing life cycle costs.

5.1 Background Data

5.1.1 Physical parameters

Council's Stormwater assets include a mixture of medium and long-life assets. The age profile of the assets included in this AM Plan are shown in Figure 2 (values are in current dollars).

Figure 2: Asset Age Profile



The peak between 1960 and 1980 is reflective of a period of population growth for Devonport. Most of the pipe network in the urban area was constructed during this period.

5.1.2 Asset capacity and performance

Council has adopted some key performance criteria for Stormwater assets in strategic documents, which are reflective of Customer Levels of Service including;

- Stormwater Strategy
- Stormwater system management plan
- Roads and Stormwater Service Level Document

Catchments identified as priority for upgrade in the SSMP now need a more detailed analysis to plan specific upgrade projects so that the customer levels of service can be met. This would allow the creation of a more comprehensive capital works program and prioritisation of high-risk areas.

An asset management system is required to effectively manage data related to Customer Levels of Service.

5.1.3 Asset condition

Asset condition data is collected as part of various programs on certain asset types (stormwater pits, pipes, major CCTV camerawork, stormwater outfall program). Condition data is managed effectively to inform asset renewal programs.

Implementation of an asset management system will allow storage, interrogation and management of key asset data, including condition.

Development of a full program of asset condition assessments will result in major improvements in the reliability of asset data, notably projected renewal dates. Therefore, the projected asset renewal funding requirements in the forward capital works program will be more accurate. This then improves the reliability of Council's Long-Term Financial Plan.

Asset condition assessment processes should be developed using IPWEA practice notes where available.

5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as safety and amenity (e.g. inspections clear outfalls, clean open drains).

Maintenance includes activities that enable an asset to provide service for its planned life and may be proactive (e.g. CCTV camera work) or reactive (e.g. patching).

Operations and maintenance expenditure is shown in Table 5.2.1.

Table 5.2.1: Operations and Maintenance Expenditure Trends

Year	Operations and Maintenance Budget $
2017-18	$379,622
2018-19	$417,832
2019-20	$572,500

Operational and maintenance expenditure levels appear to be sufficient to meet projected service levels. However, no objective assessment of funding levels has been undertaken. To confirm required projected operational and maintenance expenditure the following activities need to be completed over a 2 - 3 year period;

- Completion of maintenance inspections in accordance with Council's Service Level Documents
- Generation of work requests resultant from maintenance inspections
- Performance reporting on completion of work requests in timeframes specified by Council's Service Level Document
- Implementation of program of asset condition assessments to determine overall condition of asset class

Inadequate funding of operations and maintenance, inefficient use of resources, or incorrect prioritisation of work can result in asset condition deteriorating beyond a level where it can be addressed through maintenance. Beyond this point, more expensive capital renewal is required. This creates an overall reduction in asset condition or requires increased expenditure, neither of which is a desired outcome.

Until these processes are embedded, and reporting can be provided consistently, there is uncertainty around the adequacy of current funding of operations and maintenance levels and future projection of required funding.

5.2.2 Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is shown in Figure 4. This graph shows an increase as it assumes that the asset base will increase (as shown in Figure 1).

Figure 4: Projected Operations and Maintenance Expenditure

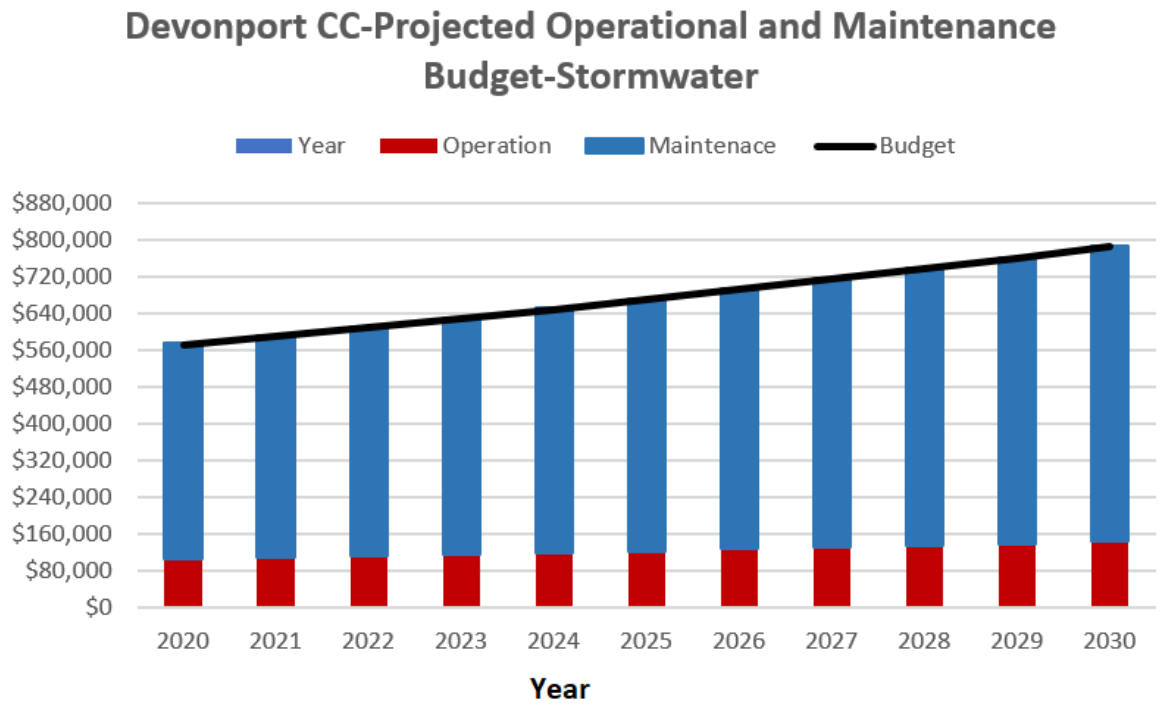


Figure Values are in current (real) dollars.

Maintenance and operational cost as a percentage of total asset value; current replacement cost and written down value is show in the following graphs. The shows funding trends in context of a growing asset base.

5.2.3 Deferred Maintenance

Deferred maintenance is work that is required to meet Council's technical levels of service but is unable to be completed within the required timeframe due to budget constraints.

Council does not defer maintenance in normal circumstances. However, it may be required following natural disasters (flood, fire etc) or following periods of accelerated deterioration (e.g. an extended wet period which facilitates blockage of outfalls).

Council has a number of options in these situations including:

- Deferring the identified maintenance, temporarily lowering the level of service
- Reprioritising maintenance work, resulting in different maintenance work being deferred
- Increasing the maintenance budget
- Funding the work from the capital budget, if the required thresholds can be met

The most appropriate option depends on the type of work and the risks of each option should be assessed.

5.3 'Renewal' Projects

Renewal expenditure is major work which restores, rehabilitates, replaces or renews an existing asset to its original condition.

Council's renewal projects have three main drivers:

- Asset renewal – based on condition (but may include 'new' elements to increase capacity)
- Safety and Risk – assets are renewed to address a specific risk (these projects may also have 'new' elements)
- Prioritisation – high profile projects that may have local or regional significance (these projects may also have 'new' elements)

Renewal projects in Council's forward capital works program are identified by the main project driver.

Currently, Council uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year. Assets are inspected and expiry date adjusted once they are within 5 years of their nominal expiry date.

In future, moving to a system that uses capital renewal expenditure projections from external condition modelling systems (like an asset management system), will streamline the identification and prioritisation of renewal projects.

Council's current renewal plan – the forward capital works program – is only a five-year program. Extending this program to 10 years will provide more reliable data to Council's Long Term Financial Plan, as long as it is based on accurate asset condition and age data.

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 pipes to avoid flooding proprieties and business), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. upgrade pits and pipes to increase the capacity of the stormwater intake).

Council does not use 'Renewal Priority Ranking Criteria' to prioritise renewal and replacement proposals. Instead, the following factors are considered, and engineering judgement applied:

- Asset condition
- Position in relevant asset hierarchy
- Risk to public safety
- Forecast future maintenance

Development of 'Renewal and Replacement Priority Ranking Criteria' that can compare and prioritise Stormwater renewal projects of different types will improve the consistency and transparency of the forward capital works program.

5.3.2 Summary of future renewal expenditure

The projected expenditure on renewal projects is shown in Figure 5. This data reflects the value of assets requiring renewal over the next 10 years, as listed in the asset register. In the long term, renewal expenditures are forecast to increase over time when the asset stock increases.

Variances will occur from year to year depending on the specific assets requiring renewal each year. It may also be preferable to 'smooth expenditure' to reduce large variances and ensure consistent and manageable workloads. The projected capital renewal program is shown in Appendix A.

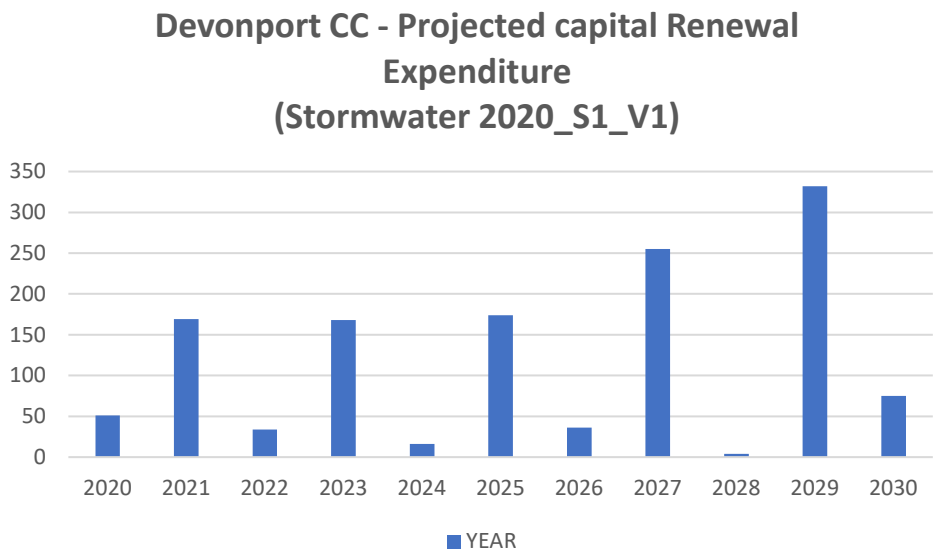


Figure 5: Projected Capital Renewal and Replacement Expenditure

Figure 5 shows the projected capital renewal expenditure based on current replacement cost and on the data from Councils' asset register of useful life and resultant expiry date. All figures are shown in real values.

The remaining assets are still in service and therefore have a remaining useful life. Work to assess the condition of these assets and input this condition data into an asset management system will allow the expiry dates of these assets to be recalculated, vastly improving the accuracy of the projected capital renewal expenditure.

5.3.3 Deferred Renewal Projects

Deferred renewal projects are projects that are required to meet Council's technical levels of service but are unable to be completed within the required timeframe due to budget constraints.

Council does not defer renewal projects in normal circumstances; however it may be required following natural disasters (flood, fire etc).

Council has a number of options in these situations including;

- Deferring the identified project, temporarily lowering the level of service.
- Reprioritising renewal work, resulting in different renewal work being deferred
- Increasing the capital budget

The most appropriate option depends on the type of work and the risks of each option should be assessed.

Renewals and replacement expenditure in the capital works program will be accommodated in the long term financial plan. This is further discussed in Section 7.

5.4 'New' Projects

'New' projects 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.

Council's 'New' projects have three main drivers:

- Asset renewal – based on condition (but may include 'new' elements to increase capacity)
- Safety and Risk – new assets are created to address a specific risk (these projects may also have 'renewal' elements)
- Prioritisation – high profile projects that may have local or regional significance (these projects may also have 'renewal' elements)

'New' projects in Council's forward capital works program are identified by the main project driver.

5.4.1 Selection criteria

'New' projects are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate:

- Position in relevant asset hierarchy
- Value for money for Council (benefit cost ratio or similar)
- Projected utilisation

Development of 'New Project Priority Ranking Criteria' that can compare and prioritise 'new' Stormwater projects of different types will improve the consistency and transparency of the forward capital works program.

5.4.2 Summary of future 'new' project expenditure

Projected 'new' project expenditures are summarised in Figure 6. The projected upgrade/new capital works program is shown in Appendix A.

Figure 6: Projected Capital Upgrade/New Asset Expenditure

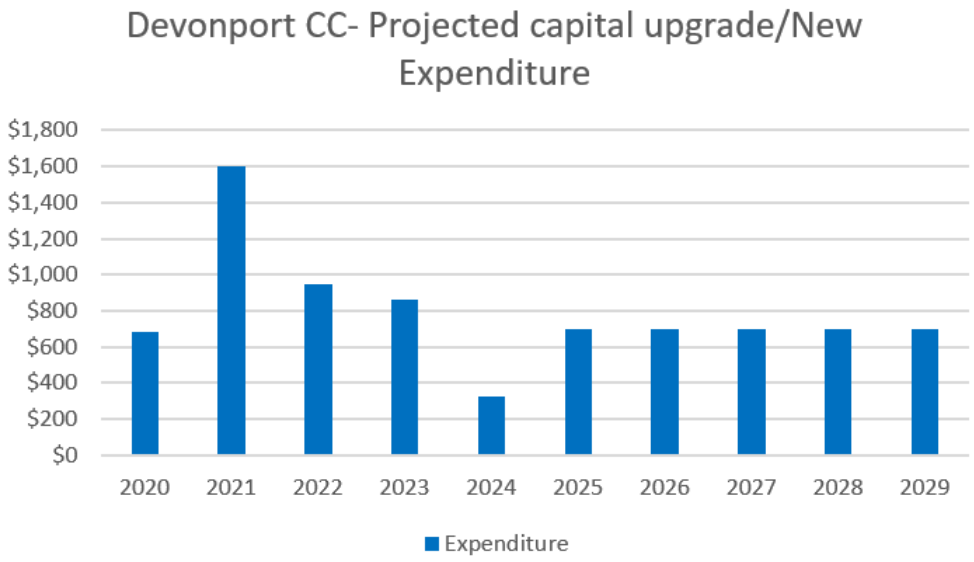


Figure 6 shows the projected capital upgrade/new asset expenditure detailed in the Forward Capital Works Program. All amounts are shown in real values (net of inflation). Values are in current (real) dollars.

The projected 'spike' in 2020 to 23 is largely due upgrade catchments as part of stormwater system management plan. The programming of this type of project is driven by risk of flooding to public.

Projects can be added, deleted, deferred and brought forward during annual budget deliberations, sometimes without consideration for the long term financial plan. Therefore Figure 6 may not be a reliable projection.

Construction of new assets will commit the funding of ongoing operations, maintenance and renewal costs.

Council's current 'new' project plan – the forward capital works program – is only a 5-year program. Extending this program to 10 years will provide more reliable data to Council's Long Term Financial Plan.

5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation.

5.6 Combined Projected Expenditure

Projected operating and capital expenditures are summarised in Figure 7.

Figure 7: Projected Operating and Capital Expenditure

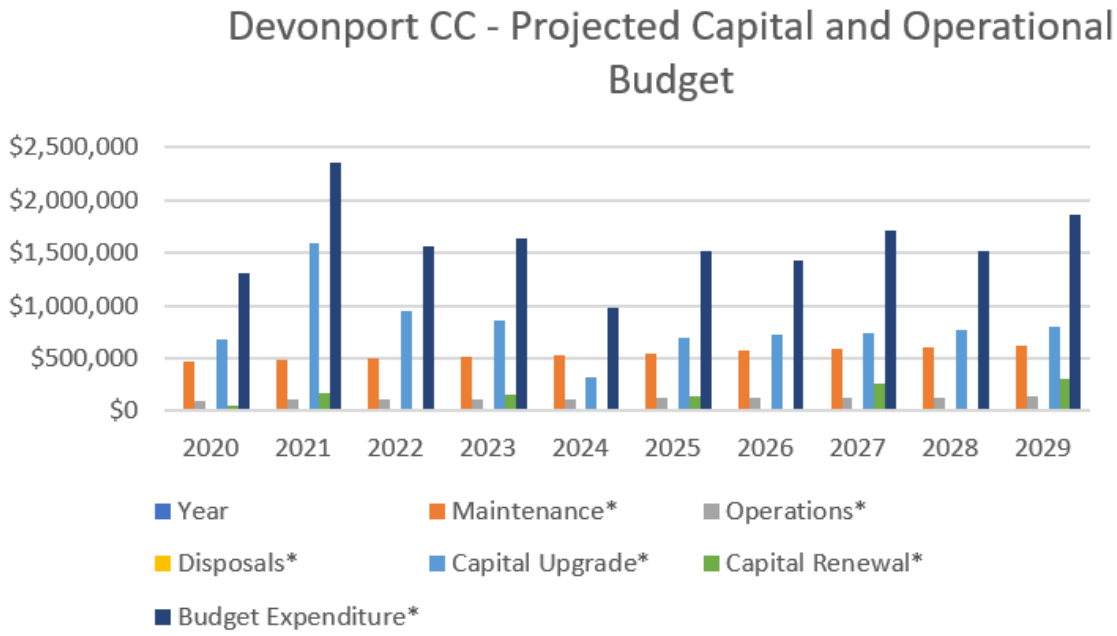


Figure 7 shows the total of projected operating (maintenance and operating) and capital (upgrade/new and renewal) expenditure. The year to year variance is a result of the yearly movements in the projected renewal value, whereas the maintenance and operating expenditure increases marginally each year allowing for contributed and new assets. Figure Values are in current (real) dollars.

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 regarding risk'[1].

An assessment of risks associated with service delivery from infrastructure assets can identify 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.

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.

Critical assets have been identified as;

Critical Asset(s)	Failure Mode	Impact
High capacity pipes	Blockage, crack and collapse	Flooding and financial loss
Stormwater pits	Blockage	Minor flooding, public confidence loss
outflows	Blockage	Upstream flooding and financial loss
pipes under major road assets and buildings	Blockage, crack and collapse	Flooding and financial loss

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

6.2 Risk Assessment

Council does not undertake risk assessments at an asset class level. Future revisions of this AM Plan will consider undertaking risk assessments at an asset class level.

6.3 Infrastructure Resilience Approach

Council does not measure infrastructure resilience. Future revisions of this AM Plan may consider measuring infrastructure resilience.

6.4 Service and Risk Trade-Offs

Council does not analyse service and risk trade-offs. This AM Plan is based on balancing service performance, cost and risk to provide an agreed level of service from available resources in the long-term financial plan.

[1] ISO 31000:2009, p 2

7. FINANCIAL SUMMARY

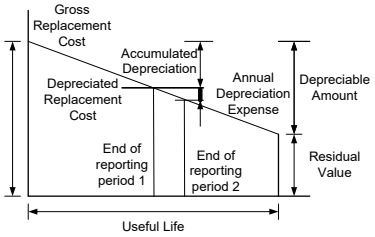
This section contains the financial requirements resulting from all the information presented in the previous sections of this AM Plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

7.1 Financial Statements and Projections

7.1.1 Asset valuations

The best available estimate of the value of assets included in this AM Plan are shown below. Stormwater assets are valued at fair value.

Gross Replacement Cost	$136,943,000
Depreciable Amount	$136,943,000
Depreciated Replacement Cost[2]	$76,676,000
Annual Average Asset Consumption	$1,383,000



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 Council's Stormwater assets, 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 Ratio[3] 29%

The Asset Renewal Funding Ratio is an important indicator and compares the forecasted renewal funding requirements identified in the AM Plan, to the funds included in the Long Term Financial Plan over the next 10 year period. The benchmark established by the Tasmanian Audit Office for the ratio is in a range between 90% and 100%.

The result above indicates Council is forecasting to provide for 29% of asset renewal requirements based on the current asset data. For assets with long lives, like stormwater pipes, in a stormwater network with a low consumption ratio, a low asset renewal funding ratio is acceptable. There is not the number of assets at end-of-life that warrant larger expenditure on renewal projects. Some assets require renewal due to an increase in demand (refer section 4), but often the approach is to construct duplicate assets and retain the existing asset in service.

The renewal funding provided for in the 5-year capital program often reflects funding at a summary level, rather than at a detailed listing. Further refinement of the asset management process will allow Council to identify individual capital works in future years.

Medium term – 10-year financial planning period

This AM 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.

[2] Also reported as Written Down Value, Carrying or Net Book Value.
[3] AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is $1,300,000 on average per year. This allocation is nominally available in Council's Long Term Financial Plan (LTFP). However, there is uncertainty on the accuracy of the projected outlay required, and the LFTP is subject to a range of internal and external factors.

There accuracy of the projected outlay required is currently limited by:

- Asset condition data not currently included in the asset register
- Some capital works projections including operational work or work on other asset classes

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 AM Plan and ideally over the 10-year life of the Long Term Financial Plan.

7.1.3 Projected expenditures for long term financial plan

Table 7.1.2 shows the projected expenditures for the 10 year Long Term Financial Plan.

Year	Maintenance*	Operations*	Disposals*	Capital Upgrade*	Capital Renewal*	Total Budget Expenditure*
2020	$470,000	$102,500	$0	$680,000	$51,000	$1,303,500
2021	$485,040	$105,780	$0	$1,598,000	$164,000	$2,352,820
2022	$500,561	$109,165	$0	$950,000	$8,000	$1,567,726
2023	$516,579	$112,658	$0	$859,000	$155,000	$1,643,237
2024	$533,110	$116,263	$0	$326,000	$9,000	$984,373
2025	$550,169	$119,984	$0	$700,000	$140,000	$1,510,153
2026	$567,775	$123,823	$0	$722,400	$11,000	$1,424,998
2027	$585,943	$127,786	$0	$745,517	$255,000	$1,714,246
2028	$604,694	$131,875	$0	$769,373	$15,000	$1,520,942
2029	$624,044	$136,095	$0	$793,993	$310,000	$1,864,132

Table 7.1.2: Projected Expenditures for Long Term Financial Plan ($000)

7.2 Funding Strategy

Funding for assets is provided from Council's operational budget and Long Term Financial Plan. Council's financial strategy determines how funding will be provided, whereas the AM 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.

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.

7.4 Key Assumptions Made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this AM 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 AM Plan are:

- Asset age is inversely proportional to asset condition. That is, condition deteriorates linearly over from 'new' to 'failure' over the designated standard asset life.
- Standard assets lives applied to Stormwater assets are a reasonable approximation of the average life of the assets.
- The inventory of assets in the asset register is a reasonable approximation of the asset stock (i.e. there are not a significant number of assets missing from the register)

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 scale[4] below.

Table 7.5: 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 ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data 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 ± 40%
E Unknown	None or very little data held.

The estimated confidence level for reliability of data used in this AM Plan is considered to be **C – uncertain**. Asset data held in the asset register including financial and attribute data is very reliable, however limited condition assessment data has been collected, analysed and documented, therefore uncertain or unknown. Improved confidence will be delivered through the establishment and delivery of an asset condition assessment program and management of condition data in an asset management system.

[4] IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Status of Asset Management Practices[5]

8.1.1 Accounting and financial data sources

The asset data sources used for the development of this AM Plan included Council's finance system, forward works program and budgets.

8.1.2 Asset management data sources

The asset data sources used for the development of this AM Plan included Council's finance system and asset management register Technology One.

8.2 Improvement Plan

The asset management improvement plan generated from AM Plan is shown in Table 8.1.

Table 8.1: Improvement Plan

Action No	Action	Responsibility	Resources Required	Estimated Timeline	Current Status
1	Implement an asset management system	Infrastructure & Works	Opex	Year 1-2	AM system and AM information system both are currently in the process of an upgrade
2	Inspect 'expired' assets still in service	Infrastructure & Works	Opex	Year 1-2	Condition and performance data collection process will start during the current financial year
3	Establish an asset condition assessment program	Infrastructure & Works	Opex	Year 1-4	Underway
4	Develop forward capital works program in line with Stormwater system management plan findings	Infrastructure & Works	Management	Year 2-4	Already in place, will be matured further after condition data collection process is completed
5	Review LTFP and updated to align with forward works program	Infrastructure & Works	Management	Year 2-4	Dependent on condition data, next financial year budget and LTFP will be based on system backed data
6	review Customer Levels of Service across Stormwater assets	Infrastructure & Works	Opex	Year 3-4	Level of service will be updated once condition data is collected and the condition of assets are identified, LOS will then be re-developed based on the number of assets below the desired level of service
7	Objectively assess operations and maintenance funding levels	Infrastructure & Works	Opex	Year 3-4	
8	Extend forward capital works program from 5 years to 10 years	Infrastructure & Works	OPex	Year 3-4	This will based on the condition data collected in the field, the data collection process will start this financial year

[5] ISO 55000 Refers to this the Asset Management System

8.3 Monitoring and Review Procedures

This AM 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. A status update report on the progress of the actions from section 8.2 Improvement plan will be reported to Council annually.

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.

8.4 Performance Measures

The effectiveness of the AM Plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this AM Plan is incorporated into the Long Term Financial Plan,
- The degree to which 1-4 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the AM 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
- DCC Strategic Plan 2009 – 2030 (2014 review)
- DCC Asset Management Policy
- DCC Asset Management Strategy
- DCC Stormwater system management plan
- DCC Stormwater Strategy
- DCC Roads and Stormwater Service Level Document

10. APPENDICES

Appendix A Forward Works Program

Appendix B Budgeted Expenditures Accommodated in Long Term Finance Plan

Appendix A - Forward Capital Works Program

https://www.devonport.tas.gov.au/wpfd_file/forward-capital-works-program-2019-2024-2/

Appendix B - Budgeted Expenditures Accommodated in Long Term Finance Plan

NAMS.PLUS3 Asset Management **Devonport CC**

Stormwater 2020_S1_V1 **Asset Management Plan** IPWEA NAMS Canada

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

Stormwater 2020

Asset values at start of planning period

			Calc CRC from Asset Register
Current replacement cost	$136,943	(000)	$136,944 (000)
Depreciable amount	$136,943	(000)	This is a check for you.
Depreciated replacement cost	$76,676	(000)	
Annual depreciation expense	$1,383	(000)	

Operations and Maintenance Costs for New Assets

	% of asset value
Additional operations costs	0.08%
Additional maintenance	0.34%
Additional depreciation	1.01%
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**	$77	$77	$77	$77	$77	$77	$77	$77	$77	$77
Management **budget**	$26	$26	$26	$26	$26	$26	$26	$26	$26	$26
AM systems **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total operations	$103	$103	$103	$103	$103	$103	$103	$103	$103	$103
Maintenance										
Reactive maintenance **budget**	$308	$308	$308	$308	$308	$308	$308	$308	$308	$308
Planned maintenance **budget**	$120	$120	$120	$120	$120	$120	$120	$120	$120	$120
Specific maintenance items **budget**	$42	$42	$42	$42	$42	$42	$42	$42	$42	$42
Total maintenance	$470	$470	$470	$470	$470	$470	$470	$470	$470	$470
Capital										
Planned renewal **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Planned upgrade/new **budget**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Non-growth contributed asset valu	$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 asse	$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 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000	2029 $000
Operations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Capital Renewal to be incorporated into Forms 2 & 2.1 (where Method 1 is used) OR Form 2B Defect Repairs (where Method 2 or 3 is used)

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)

	2020 $000	2021 $000	2022 $000	2023 $000	2024 $000	2025 $000	2026 $000	2027 $000	2028 $000	2029 $000
Forecast Capital Renewal from Forms 2A & 2B	$732	$282	$167	$620	$470	$464	$464	$464	$464	$464
Forecast Capital Upgrade from Form 2C	$680	$1,598	$950	$859	$326	$700	$700	$700	$700	$700