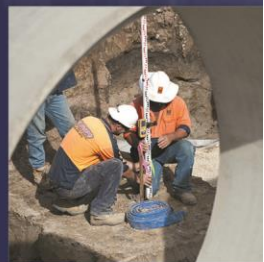


# Stormwater Asset Management Plan

December 2020



<b>Document Control</b>	<b>Asset Management Plan</b>
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	Dec 2020	Issue for Executive Review	RP, MP	Jl	AC
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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 is not currently available).

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

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## **1.0 EXECUTIVE SUMMARY**

### **1.1 The Purpose of the Plan**

This Asset Management Plan (AM Plan) details information about infrastructure assets with 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 over the 2020/21 to 2029/30 year planning period. The AM Plan will link to a Long-Term Financial Plan which typically considers a 10 year planning period.

### **1.2 Asset Description**

This plan covers the infrastructure assets associated with the stormwater network.

The stormwater network comprises:

- 149,220 metres of pipes
- 4,218 pits
- 15,920 metres of box culverts
- 4 open channels
- 322 water sensitive urban design devices
- 6 pump stations
- 7 gross pollutant traps
- 6 detention basins

The above infrastructure assets have replacement value estimated at \$137,338,282 (2020).

### **1.3 Levels of Service**

The allocation in the planned budget is sufficient to continue providing existing services for renewal and maintenance activities at current levels for the planning period. There will be times where maintenance levels of service cannot be maintained due to intermittent spikes in the number of customer requests for maintenance works.

The planned budget is insufficient to meet proposed service levels for acquisition activities. Further information on acquisition activities and funding requirements will be obtained through the finalisation of the imminent Stormwater Management Plan. The forecast budget position will be positively or negatively impacted by this.

### **1.4 Future Demand**

The factors influencing future demand and the impacts they have on service delivery are created by:

- Urban consolidation
- Climate change
- Increasing environmental awareness

These demands will be approached using a combination of managing existing assets, upgrading existing assets and providing new assets to meet demand. Demand management practices may also include a combination of non-asset solutions, insuring against risks and managing failures.

- The ongoing development of Stormwater Management Plans will highlight and prioritise the areas within the city which require a new or upgraded stormwater system to mitigate major flooding.
- Maintenance and operation costs will need to be assessed against current resources available. It is expected that additional funding for maintenance and operation activities will be required to maintain current service levels.

## 1.5 Lifecycle Management Plan

### 1.5.1 What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal, acquisition, and disposal of assets. Although the AM Plan may be prepared for a range of time periods, it typically informs a Long-Term Financial Planning period of 10 years. Therefore, a summary output from the AM Plan is the forecast of 10 year total outlays, which for stormwater assets is estimated as \$59,218,652 or \$5,921,865 on average per year.

## 1.6 Financial Summary

### 1.6.1 What we will do

Estimated available funding for the 10 year period is \$53,734,498 or \$5,373,450 on average per year as per the Long-Term Financial plan or Planned Budget. This is 90.74% of the cost to sustain the current level of service at the lowest lifecycle cost.

The infrastructure reality is that only what is funded in the long-term financial plan can be provided. The Informed decision making depends on the AM Plan emphasising the consequences of Planned Budgets on the service levels provided and risks.

The anticipated Planned Budget for stormwater assets leaves a shortfall of \$548,415 on average per year of the forecast lifecycle costs required to provide services in the AM Plan compared with the Planned Budget currently included in the Long-Term Financial Plan. This is shown in the figure below.

**Forecast Lifecycle Costs and Planned Budgets**

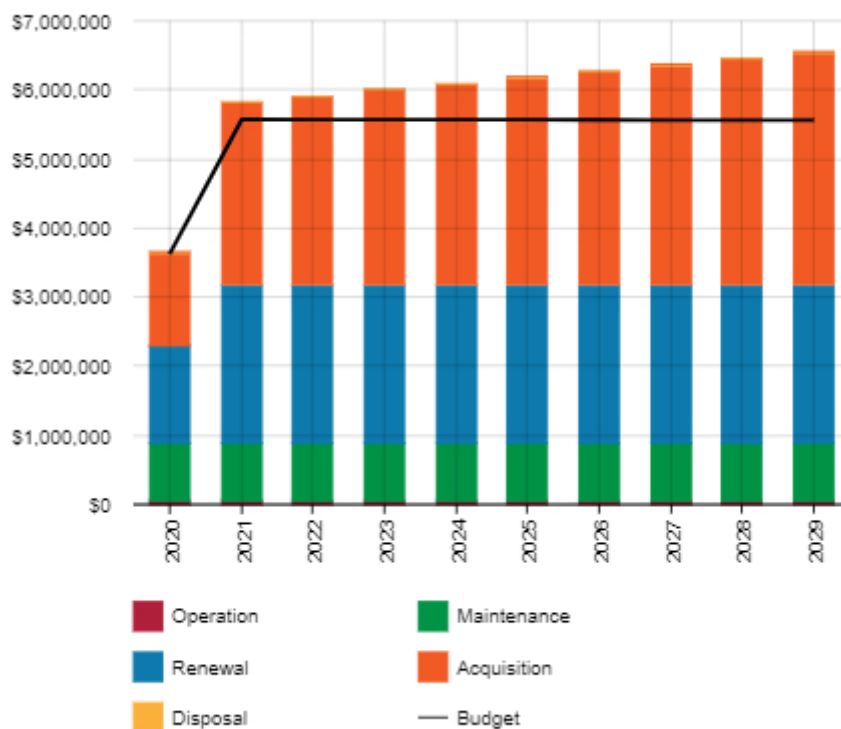


Figure Values are in current dollars.

We plan to provide services for the operation, maintenance, renewal and acquisition of stormwater assets to meet service levels set by the City of West Torrens and detailed in the AMP.

### 1.6.2 What we cannot do

We currently do **not** allocate enough budget to sustain these services at the proposed standard or to provide all new services being sought. Works and services that cannot be provided under present funding levels are:

- Sustaining maintenance service levels and response times at all times

### 1.6.3 Managing the Risks

Our present budget levels are sufficient to continue to manage risks in the medium term.

The main risk consequences are:

- Overall reduced stakeholder satisfaction leading to an increase in the number of customer works request
- Assets require additional maintenance or renewal works than desirable to remain serviceable due to delays in undertaking maintenance.

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

- Undertaking CCTV condition inspections to identify pipes/culverts near end of life
- Implementing a proactive pipe/culvert cleansing program based on prioritisation risk criteria.

## 1.7 Asset Management Planning Practices

Key assumptions made in this AM Plan are:

- The condition of stormwater assets which have been inspected are a fair representation of the entire networks condition
- Unit rates for valuations are based on the three year average of actual costs of replacement
- Operations and maintenance budget and budget growth levels remain consistent with historical figures

Assets requiring renewal are identified from either the asset register or an alternative method.

- The timing of capital renewals based on the asset register is applied by adding the useful life to the year of acquisition or year of last renewal,
- Alternatively, an estimate of renewal lifecycle costs is projected from external condition modelling systems and may be supplemented with, or based on, expert knowledge.

The condition data available for stormwater assets was used to forecast the renewal lifecycle costs for this AM Plan.

This AM Plan is based on a medium level of confidence information.

## 1.8 Monitoring and Improvement Program

The next steps resulting from this AM Plan to improve asset management practices are:

- Undertake a review of the current method for determining useful lives and actual asset useful lives accordingly
- Further develop the asset inspection regime through Council's mobile application, *Fusion*, based on the priority of all stormwater assets to assist with the ongoing development of planned maintenance programs.
- Update the renewal and acquisition projected expenditure in this asset management plan following finalising of Stormwater Management Plans.
- Develop current methods of measuring and reporting regularly on key performance indicators.
- Establish methods to determine and report on actual stormwater maintenance costs at project level to assist with decision making.

- Develop a stormwater asset hierarchy to assist with the further development of suitable levels of service for each level of the hierarchy.
- Review and correct anomalies between GIS data and data recorded in the asset register.
- Undertake a complete review of this asset management plan at least every four years.



## 2.0 Introduction

### 2.1 Background

This AM Plan communicates the requirements for the sustainable delivery of services through management of assets, compliance with regulatory requirements, and required funding to provide the appropriate levels of service over the planning period.

The AM Plan is to be read with the City of West Torrens planning documents. This should include the Asset Management Policy and Asset Management Strategy, where developed, along with other key planning documents:

- City of West Torrens Community Plan
- Long Term Financial Plan
- Annual Business Plan
- The Initial Stormwater Management Plan
- Brownhill and Keswick Creek Stormwater Management Plan

The asset management strategy, practices and policies used by the City of West Torrens to manage stormwater assets is developing. As part of the improvements in implementing this AM Plan, the organisation is striving to develop its routine maintenance and inspection practices into a robust system. The development of Stormwater Management Plans for the organisation is ongoing and this will form the basis of future stormwater upgrades to suit current and future stormwater catchment demands.

The infrastructure assets covered by this AM Plan include stormwater pits, pipes, culverts, gross pollutant traps, pump stations and other associated stormwater assets. For a detailed summary of the assets covered in this AM Plan refer to Table in Section 5. These assets are used to capture and deliver stormwater run-off to waterways in order to prevent flooding throughout the city.

The infrastructure assets included in this plan have a total replacement value of \$137,338,282.

The City of West Torrens is committed to adopting an environmentally sustainable approach to managing our assets. This is done by minimising the impact of our assets on the environment and by considering the environmental and climate change issues over the entire life of assets.

We need to be aware of the challenges we face now and in the future - such as population growth, demographic change, climate change, technology change and changes in our community's needs and aspirations.

Council recognises that climate change is likely to affect asset life and functionality. As such, in future reports and analysis Council will further explore how climate change will affect assets.

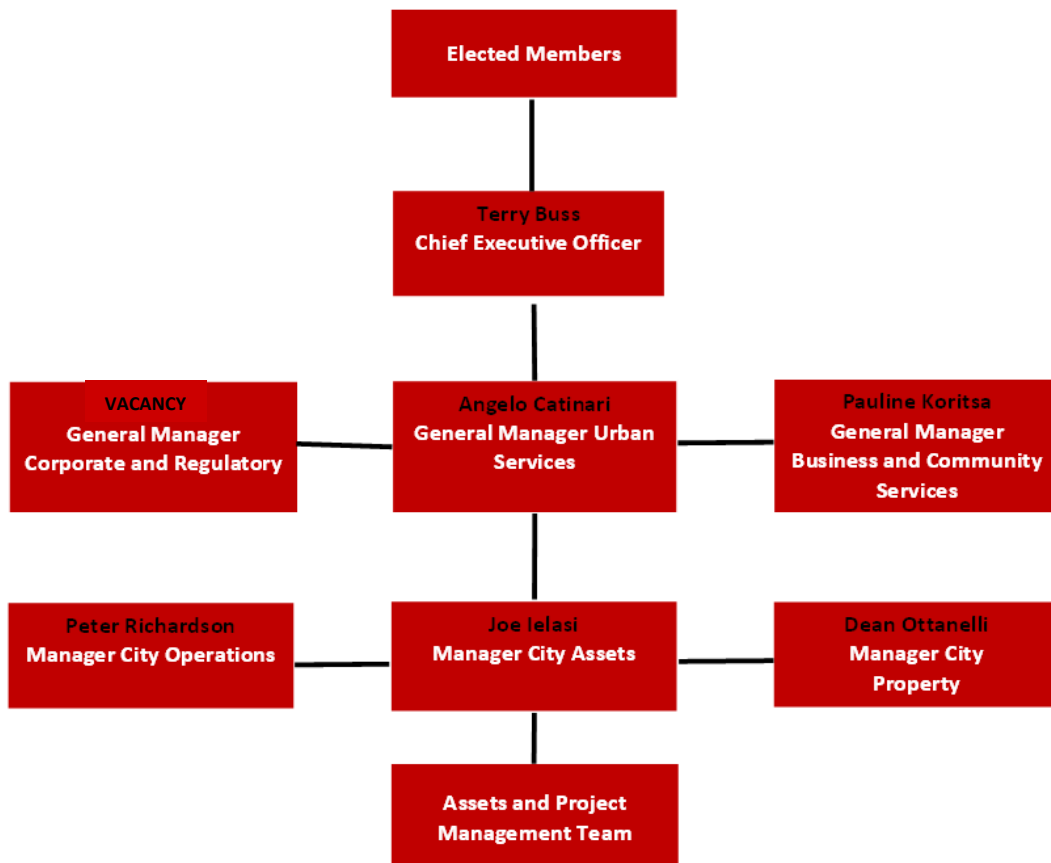
Key stakeholders in the preparation and implementation of this AM Plan are shown in Table 2.1.

**Table 2.1: Key Stakeholders in the AM Plan**

Key Stakeholder	Role in Asset Management Plan
Elected Members	<ul style="list-style-type: none"><li>■ Represent needs of community/shareholders; and</li><li>■ Ensure organisation is financially sustainable.</li></ul>
CEO/ General Manager Urban Services	Executive management endorsement of AM Plan

Manager City Assets	Review and approval of AM Plan
Team Leader Asset and Project Management	Development, implementation and maintenance of AM Plan to meet community levels of service.
Asset Officer/ Engineer	Assist with the development, implementation and maintenance of AM Plan to meet community levels of service.
City Operations Department	Coordinate and deliver maintenance and operation works in accordance with the AM Plan.
City Property Department	Coordinate and deliver maintenance and operation works in accordance with the AM Plan for stormwater pump stations.
City Assets Department	Coordinate and delivery capital works including asset renewals and acquisitions in accordance with the AM Plan.
General public	Assist with the determining of levels of service through public consultation processes.

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



## 2.2 Goals and Objectives of Asset Ownership

Our goal for managing infrastructure assets is to meet the defined level of service (as amended from time to time) in the most cost effective manner for present and future 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
- Linking to a Long-Term Financial Plan which identifies required, affordable forecast costs and how it will be allocated.

Key elements of the planning framework are

- Levels of service – specifies the services and levels of service to be provided,
- Risk Management,
- Future demand – how this will impact on future service delivery and how this is to be met,
- Lifecycle management – how to manage its existing and future assets to provide defined levels of service,
- Financial summary – what funds are required to provide the defined services,
- Asset management practices – how we manage provision of the services,
- Monitoring – how the plan will be monitored to ensure objectives are met,
- Asset management improvement plan – how we increase asset management maturity.

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

- International Infrastructure Management Manual 2015 <sup>1</sup>
- ISO 55000<sup>2</sup>

A road map for preparing an AM Plan is shown below.

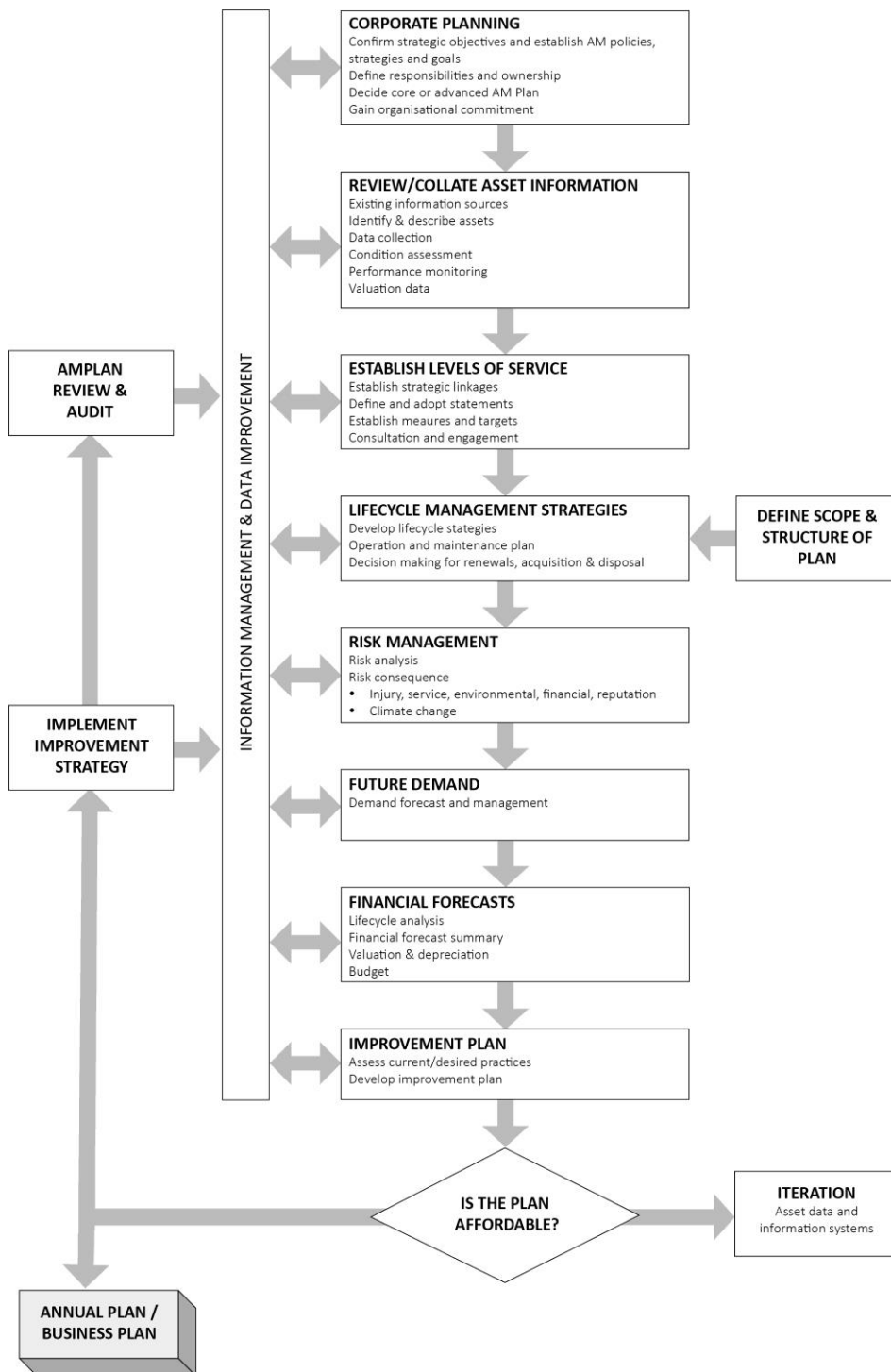
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<sup>1</sup> Based on IPWEA 2015 IIMM, Sec 2.1.3, p 2 | 13

<sup>2</sup> ISO 55000 Overview, principles and terminology

### Road Map for preparing an Asset Management Plan

Source: IPWEA, 2006, IIMM, Fig 1.5.1, p 1.11



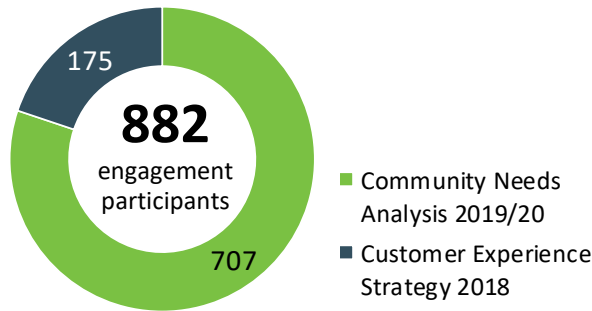
### 3.0 LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

The City of West Torrens is committed to meeting community expectations through asset management. Feedback was received from the community relating to Council's current state of infrastructure assets from recent city-wide community engagement initiatives, which include:

- City of West Torrens Community Needs Analysis 2019/20 (CNA)
- City of West Torrens Customer Experience Strategy 2018 (CES)

##### 3.1.1 Engagement Participation Rate



The 2019 Community Needs Analysis Community Survey (with 410 participants) asked respondents about the importance of services in addressing future changing societal needs in West Torrens. The chart below lists 15 highest priorities, based on the number of people that identified them.



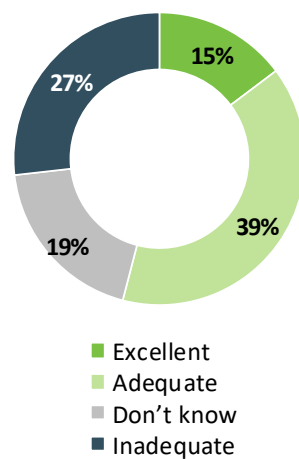
**15 most important future community needs considerations**  
 (Results from the Community Needs Analysis survey, 410 participants)

Whilst stormwater management was not specifically considered, climate adaption, residential infill development and environmental issues were ranked the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> most important accordingly. Stormwater infrastructure plays an important role in all of these issues highlighting the level of importance to provide a suitable stormwater network.

At the 2019 Summer Festivals, Council engaged with 162 participants by asking them to allocate “budget” to ten council services as part of a hypothetical spending exercise. Parks and open spaces were allocated the highest “budget amount” with climate change adaptation being a close second.

The 2019 Community Needs Analysis Survey sought feedback on customer expectations and levels of satisfaction with current services. Respondents did not specifically rank stormwater management, however, many respondents sought a greater commitment to the environment from Council. In this, 27% considered Council’s current commitment to be inadequate. This was the third worst ranking consideration with only local public art and local entertainment being lower. Increased tree planting, sustainable water drainage systems and protecting property from potentially more intense rainfall events were suggested responses to address the issues.

**Council’s commitment to the environment**



**Level of Service Ranking**

(Results from the Community Needs Analysis survey, 410 participants)

The results from the community engagement for the Community Needs and Customer Experience Strategy were interpreted to determine the customer satisfaction levels in Table 3.1.

**Table 3.1: Customer Satisfaction Survey Levels**

Performance Measure	Satisfaction Level				
	Very Satisfied	Fairly Satisfied	Satisfied	Somewhat satisfied	Not satisfied
	80 - 100%	60 - 80%	40 - 60%	20 - 40%	0 - 20%
The suitability of the organisation's stormwater network		✓			

### 3.2 Strategic and Corporate Goals

This AM Plan is prepared under the direction of the City of West Torrens vision, mission, goals and objectives.

Our vision is:

***Committed to be being the best place to live, work and enjoy life.***

Our mission is:

***To strive for excellence in serving our diverse community.***

Strategic goals have been set by the City of West Torrens. The relevant goals and objectives and how these are addressed in this AM Plan are summarised in Table 3.2.

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

Council Vision	Operational Focus	How Goal and Objectives are addressed in the AM Plan
Organisational Strength	<ul style="list-style-type: none"> <li>- Strong partnerships and working relationships with our community, other organisations and spheres of Government</li> <li>- Customer experience and community are at the centre of our considerations</li> <li>- Our community can meaningfully engage with Council</li> <li>- Sustainable financial management principles</li> </ul>	<p>As part of the improvement plan, methods are to be established to measure key performance indicators regularly including customer satisfaction levels.</p> <p>As part of this AM plan, the levels of service of stormwater assets have been reviewed to ensure that service levels are financially sustainable based on funding available.</p>
Built Environment	<ul style="list-style-type: none"> <li>- Provide infrastructure that meets the needs of a changing city and climate</li> </ul>	<p>As part of this AM plan, the acquisition, renewal and maintenance levels of service of stormwater assets have been reviewed to ensure that they are fit for purpose and with the intent to achieve high quality stormwater management.</p>
Environmental and sustainability	<ul style="list-style-type: none"> <li>- Sustainably manage our resources through reuse, recycling and circular economy</li> <li>- Reduce the City's impact on the environment</li> <li>- Prepare for and respond to the challenges of changing climate reuse, and incorporate water sensitive urban design in streetscapes</li> </ul>	<p>As part of this AM plan, acquisition forecasts include expenditure for the implementation of water sensitive urban design as part of stormwater projects including the installation of bio-filter areas and capturing stormwater for reuse in irrigation.</p>

### 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. Legislative requirements that impact the delivery of the stormwater assets are outlined in Table 3.3.

**Table 3.3: Legislative Requirements**

Legislation	Requirement
South Australian Local Government Act 1999	Sets out role, purpose, responsibilities, and powers of local governments including the preparation of a LTFP supported by asset management plans for sustainable service delivery.
South Australian State Records Act 1997	To ensure the City of West Torrens records and stores all relevant information as set out by the State Government of South Australia.
Environment Protection Act 1993	An Act to provide for the protection of the environment: to establish the Environmental Protection Authority and define functions and powers and for other purposes.
Work Health and Safety Act 2012	To take a constructive role in promoting improvements in work health and safety practices whilst assisting in the preservation of public health and safety in all undertakings of the organisation.
Development Act 1993	An act to provide for planning and regulate development in the state; to regulate the use and management of land and building and for other purposes.
Australian Road Rules 1989	The Australian Road Rules have been made into regulations under the Road Traffic Act (South Australia) and gives road authorities in each state delegated power to establish standards for all aspects of roadways, including bridges and shared use paths.
Disability Discrimination Act 1992	A Commonwealth Act relating to discrimination on the grounds of disability.
Highways Act 1926	An Act to provide for the appointment of a Commissioner of Highways and to make further and better provisions for the construction and maintenance of roads and works and for other purposes.

### 3.4 Customer Values

Service levels are defined in three ways, customer values, customer levels of service and technical levels of service.

**Customer Values** indicate:

- what aspects of the service is important to the customer,
- whether they see value in what is currently provided and
- the likely trend over time based on the current budget provision



**Table 3.4: Customer Values**

<b>Service Objective:</b> Provide a stormwater network that successfully controls drainage within the urban environment and protects the public from major flooding.			
<b>Customer Values</b>	<b>Customer Satisfaction Measure</b>	<b>Current Feedback</b>	<b>Expected Trend Based on Planned Budget</b>
The stormwater network captures and directs stormwater to prevent flooding of properties.	Number of customer requests relating to property flooding	Less than 5 per annum (2019)	Less than 5 per annum
The stormwater network is fit for purpose in managing stormwater	Customer satisfaction survey	Greater than 60% customer satisfaction	Greater than 60% customer satisfaction

### 3.5 Customer Levels of Service

The Customer Levels of Service are considered in terms of:

**Condition**      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?

In Table 3.5 under each of the service measures types (Condition, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.

These are measures of fact related to the service delivery outcome (e.g. number of occasions when service is not available or proportion of replacement value by condition %'s) to provide a balance in comparison to the customer perception that may be more subjective.

**Table 3.5: Customer Level of Service Measures**

<b>Type of Measure</b>	<b>Level of Service</b>	<b>Performance Measure</b>	<b>Current Performance</b>	<b>Expected Trend Based on Planned Budget</b>
<b>Condition</b>	Provide a stormwater network that efficiently captures and treats stormwater run-off.	Value of stormwater renewal and upgrade projects	\$2,745,711 (2020/21)	The renewal and upgrade expenditure is expected to increase as a better knowledge base on the condition of stormwater assets, asset utilisation and catchment demand is developed as part of the imminent stormwater management plans.
		Incorporation of water sensitive	Council incorporates raingardens, soakage tree wells, permeable paved footpath and permeable	Water sensitive urban design will continue to be incorporated into capital projects including the

		urban design into projects	paved road pavements into capital projects where suitable.	exploration of new techniques, applications and products.
	<b>Confidence levels</b>		Medium	Low
<b>Function</b>	Provide a stormwater network that controls drainage, protects the public from major flooding.	Number of customer requests relating to property flooding	Less than 5 per annum (2019)	Less than 5 per annum
	<b>Confidence levels</b>		Medium	Low
<b>Capacity</b>	Provide and maintain a fit for purpose stormwater network	Number of customer requests for blocked drains/ pits	114 per annum (2019)	Less than 100 per annum
	<b>Confidence levels</b>		High	Low

### 3.6 Technical Levels of Service

**Technical Levels of Service** – To deliver the customer values, and impact the achieved Customer Levels of Service, are operational or technical measures of performance. These technical measures relate to the activities and allocation of resources to best achieve the desired customer outcomes and demonstrate effective performance.

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

- **Acquisition** – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).
- **Operation** – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, 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. road patching, unsealed road grading, building and structure repairs),
- **Renewal** – the activities that return the service capability of an asset up to that which it had originally provided (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),

Service and asset managers plan, implement and control technical service levels to influence the service outcomes.<sup>3</sup>

Table 3.6 shows the activities expected to be provided under the current 10 year Planned Budget allocation, and the Forecast activity requirements being recommended in this AM Plan.

<sup>3</sup> IPWEA, 2015, IIMM, p 2|28.

**Table 3.6: Technical Levels of Service**

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
<b>TECHNICAL LEVELS OF SERVICE</b>				
<b>Acquisition</b>	Develop a stormwater network which successfully controls flooding	Delivery of upgrade program in accordance with Stormwater Management Plans	Stormwater Management Plans are yet to be finalised. Determination of stormwater upgrades and new assets are based on localised investigations.	Acquisition activities are delivered in accordance with the imminent Stormwater Management Plans.
		<b>Budget</b>	\$1,349,573	\$2,831,695
<b>Operation</b>	Undertake CCTV inspection of pipes and pits to assist with the development of planned maintenance programs and to obtain condition data.	Length of stormwater pipework inspected per annum	Approximately 5,000 lineal metres per annum	4% of the stormwater network per annum or approximately 6,500 lineal metres per annum
		<b>Budget</b>	\$50,000	\$65,000
<b>Maintenance</b>	Maintain the serviceability of the stormwater network	Compliance with a planned pit and pipe cleaning program.	Pit and pipe cleaning is undertaken at varying frequencies across the network.	The pit and pipe cleaning program is to be further develop through Council's mobile application, <i>Fusion</i> , based on the prioritisation of assets.
	Maintain the serviceability of the stormwater flood walls	Compliance with a planned inspection regime	Flood wall inspections is undertaken at varying frequencies across the network.	Establish set frequencies for inspections through Council's mobile application, <i>Fusion</i> .
	Maintain the serviceability of stormwater pump stations	The frequency of planned maintenance	Pump stations are subject to the following: - monthly inspections - yearly major services - cleaning as required (generally yearly)  This may vary based on make and model of pump stations dependant on the manufacturer's recommendation.	The current level of service is expected to be maintained.
	Maintain the serviceability of gross pollutant traps and water	The frequency of planned maintenance	Planned maintenance is undertaken in accordance with industry best practice.	The current level of service is expected to be maintained.

Lifecycle Activity	Purpose of Activity	Activity Measure	Current Performance*	Recommended Performance **
	sensitive urban design devices			
		<b>Budget</b>	\$744,669	\$829,329
<b>Renewal</b>	Provide a stormwater network that is of appropriate condition.	Stormwater asset condition scores	Renewals are currently undertaken as identified in the findings of CCTV condition inspections.	Renewal of all stormwater assets of condition 4 or poorer over the 10 year period.
		<b>Budget</b>	\$3,144,548	\$2,195,841
<b>Disposal</b>	There are currently no plans for the disposal of stormwater assets.	-	-	-
		<b>Budget</b>	-	-

Note: \* Current activities related to Planned Budget.

\*\* Expected performance related to forecast lifecycle costs.

It is important to monitor the service levels regularly as circumstances can and do change. Current performance is based on existing resource provision and work efficiencies. It is acknowledged changing circumstances such as technology and customer priorities will change over time.

## 4.0 FUTURE DEMAND

### 4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

### 4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been identified and documented.

### 4.3 Demand Impact and Demand Management Plan

The impact of demand drivers that may affect future service delivery and use of assets are shown in Table 4.3.

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

Opportunities identified to date for demand management are shown in Table 4.3. Further opportunities will be developed in future revisions of this AM Plan.

**Table 4.3: Demand Management Plan**

Demand driver	Current position	Projection	Impact on services	Demand Management Plan
Urban consolidation	Urban consolidation is resulting in the subdivision of existing allotments into multiple allotments and an increase in impermeable area as part of this development. This will be further impacted by Planning Development and Infrastructure Act 2016 Planning Reform which will allow for further increases in property density than the current Development Plan.	The introduction of new legislation regulating development will further encourage development to achieve urban consolidation.	This will result in an increase in impermeable area and therefore increase the volume of stormwater run-off to road reserves. The capacity of the existing stormwater network will be inadequate to cope with the additional run off.	The ongoing development of Stormwater Management Plans will highlight and prioritise the areas within the city which require a new or upgraded stormwater system to mitigate major flooding. Capital works will be undertaken in accordance with the Stormwater Management Plans.

<p>Climate Change- Changes to the frequency and intensity of rainfall events</p>	<p>Changes to the frequency and intensity of rain events will provide greater stormwater catchment demand on the existing system.</p>	<p>The increase in stormwater catchment demand will lead to increased risk of flooding.</p>	<p>The capacity and serviceability of the existing stormwater network may be inadequate to cope with the additional stormwater catchment demands.</p>	<p>The ongoing development of Stormwater Management Plans will highlight and prioritise the areas within the city which require a new or upgraded stormwater system to mitigate major flooding. Capital works will be undertaken in accordance with the Stormwater Management Plans.</p> <p>Continued development of the proactive inspection and maintenance cleansing program based on asset prioritisation including gross pollutant traps, pump stations, side entry pits etc.</p>
<p>Environmental Awareness</p>	<p>There is increasing public awareness of environmental issues including those associated with water quality.</p>	<p>There will be greater community and legislative demand for implementing water sensitive urban design (WSUD) as part of capital works projects and maintenance cleansing of existing stormwater assets.</p>	<p>There will be an increase capital expenditure to acquire new WSUD assets including raingardens, permeable paving etc. There will also be an increase expenditure to maintain and operate these assets.</p>	<p>The acquisition activities in this AMP allows for the acquiring of new WSUD assets. The additional maintenance and operation costs will need to be assessed against current resources available. It is expected that additional funding for maintenance and operation activities will be required to maintain the current service levels.</p>

#### 4.4 Asset Programs to meet Demand

The new assets required to meet demand may be acquired, donated or constructed. Additional assets are discussed in Section 5.4.

Acquiring new assets will commit the City of West Torrens to 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 (Refer to Section 5).

#### 4.5 Environmental Sustainability

The way in which we manage assets should recognise that there is an opportunity to incorporate environmental sustainability as part of asset lifecycle activities. Building environmental sustainability into assets can have the following benefits:

- Assets will withstand the impacts of climate change;
- Services can be sustained; and
- Assets that can endure effects of climate change may potentially lower the lifecycle cost and reduce their carbon footprint

The impacts of climate change can have a significant impact on the assets we manage and the services they provide. In the context of the Asset Management Planning process climate change can be considered as both a future demand and a risk.

How climate change will impact on assets can vary significantly depending on the location and the type of services provided, as will the way in which we respond and manage those impacts.

As a minimum we should consider both how to manage our existing assets given the potential climate change impacts, and also how to incorporate environmental sustainability in any new works or acquisitions.

Current practices and issues as well as future opportunities for improvement with regards to the achievement of environmental sustainability have been identified in Table 4.5.1.

**Table 4.5.1 Environmental Sustainability - Current Issues, Practices and Future Opportunities**

Asset Class: Stormwater		
Environmental Sustainability Pillar	Current Practices and Issues	Opportunities for Future Improvements
Water	<ul style="list-style-type: none"> <li>• Incorporating water sensitive urban design into capital projects to improve water quality and encourage stormwater reuse (passive and active)</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to explore opportunities and new techniques to promote water quality and efficiently capture and reuse stormwater for irrigation purposes as part of capital projects</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• Exploration of techniques to prolong asset life to reduce energy consumption in comparison to complete asset renewals e.g. relining of existing pipes</li> </ul>	<ul style="list-style-type: none"> <li>• Specifying of green plant and equipment by contractors to encourage cleaner energy sources</li> </ul>
Climate Change	<ul style="list-style-type: none"> <li>• Increased soil movements will deteriorate buried assets faster resulting in a shorter useful life</li> </ul>	<ul style="list-style-type: none"> <li>• Stormwater Management Plans are being developed to provide a plan to upgrade infrastructure to cope with increases in rainfall</li> </ul>

Waste	<ul style="list-style-type: none"> <li>• Extending the life of assets and determining opportunities for reuse of assets at the end of useful life will reduce waste sent to landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Explore techniques and materials that allow existing stormwater assets' life to be extended or to be reused at end of life</li> </ul>
Greening	<ul style="list-style-type: none"> <li>• Catchment and reuse of stormwater for irrigation purposes has been employed (passive and active systems)</li> <li>• The construction of stormwater detention basins provides opportunity for green spaces</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to explore opportunities and new techniques to efficiently capture and reuse stormwater for irrigation purposes as part of capital projects</li> </ul>



## 5.0 LIFECYCLE MANAGEMENT PLAN

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

### 5.1 Background Data

#### 5.1.1 Physical parameters

The assets covered by this AM Plan are shown in Table 5.1.1.

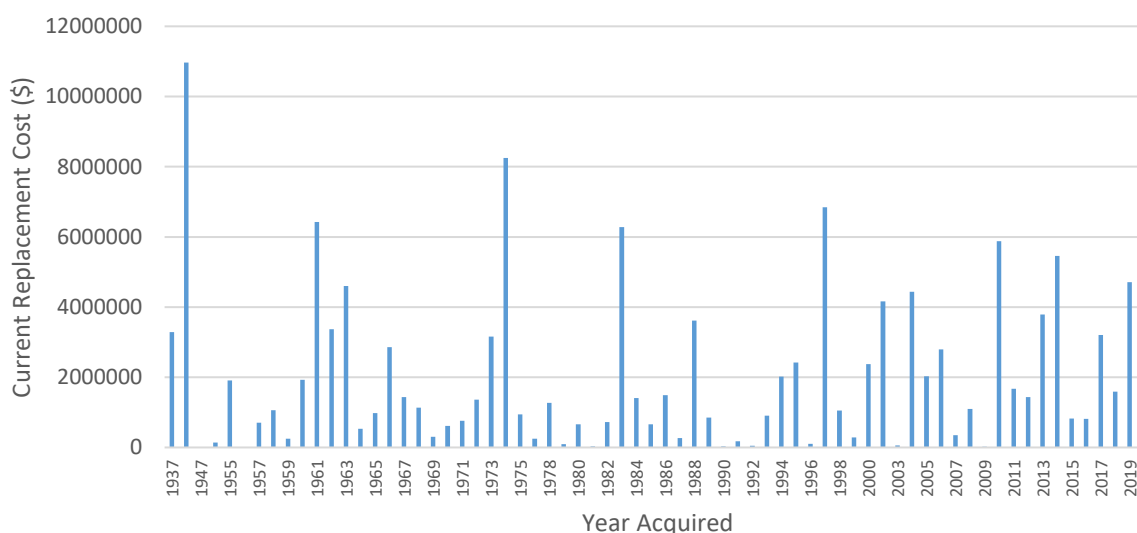
The stormwater assets include stormwater pipes, pits, box culverts, open channels, water sensitive urban design devices, pump stations, gross pollutant traps and detention basins located with the City of West Torrens.

The age profile of the assets included in this AM Plan are shown in Figure 5.1.1.

**Table 5.1.1: Assets covered by this Plan**

Asset Category	Quantity	Replacement Value
Pipes	149,220 metres	\$69,745,008
Pits	4218 No.	\$14,085,642
Box Culverts	15,920 metres	\$37,820,957
Open Channel	4 No.	\$3,865,681
WSUD Device	322 No.	\$1,940,641
Pump Stations	6 No.	\$6,853,171
Gross Pollutant Traps	8 No.	\$446,053
Detention Basin	13 No.	\$2,581,130
<b>TOTAL</b>		<b>\$137,338,282</b>

**Asset Age Profile - Stormwater**



All figure values are shown in current day dollars.

**5.1.2 Asset capacity and performance**

Assets are generally provided to meet design standards where these are available. However, there is insufficient resources to address all known deficiencies. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

**Table 5.1.2: Known Service Performance Deficiencies**

Location	Service Deficiency
Overall network condition	There is condition data available for approximately only 17 percent of stormwater assets.
Planned Maintenance	Planned maintenance is undertaken routinely on some stormwater assets and is unscheduled for others.

**5.1.3 Asset condition**

Condition is currently monitored via annual CCTV condition audit programs. Approximately two percent of the stormwater network is audited per year through this program and this program is typically determined by considering upcoming major road capital works projects.

Condition is measured using a 1 – 5 grading system<sup>4</sup> as detailed in Table 5.1.3. It is important that a consistent approach is used in reporting asset performance enabling effective decision support. A finer grading system may be used at a more specific level, however, for reporting in the AM plan results are translated to a 1 – 5 grading scale for ease of communication.

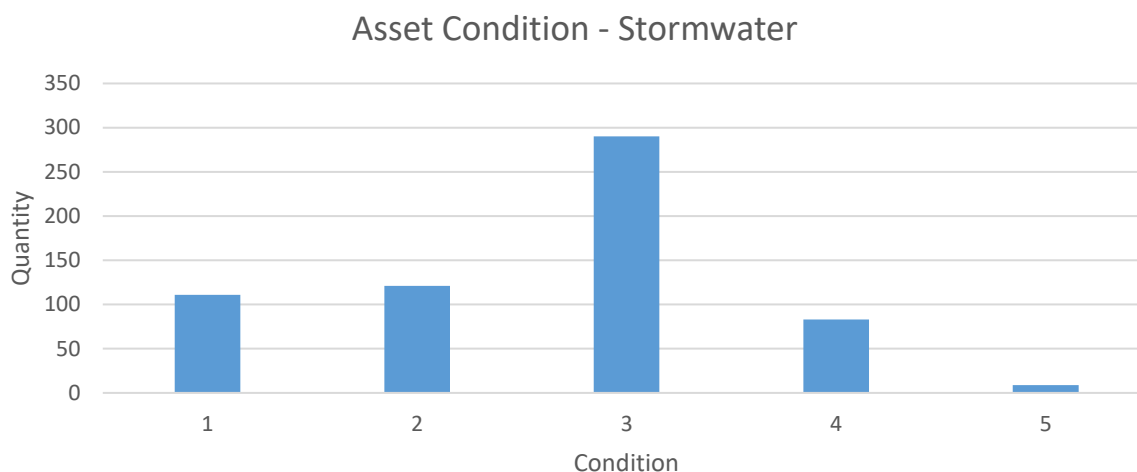
**Table 5.1.3: Condition Grading System**

Condition Grading	Description of Condition
1	<b>Very Good:</b> free of defects, only planned and/or routine maintenance required
2	<b>Good:</b> minor defects, increasing maintenance required plus planned maintenance
3	<b>Fair:</b> defects requiring regular and/or significant maintenance to reinstate service
4	<b>Poor:</b> significant defects, higher order cost intervention likely
5	<b>Very Poor:</b> physically unsound and/or beyond rehabilitation, immediate action required

As the annual condition audit program has only been implemented in recent years, condition data is only captured for approximately 17 percent of stormwater assets. The condition profile for those assets which have been condition scored is shown in Figure 5.1.3. Due to the random nature in which the annual audit program is developed, it is reasonable to assume that the condition profile shown is similar for all stormwater assets in the network.

<sup>4</sup> IPWEA, 2015, IIMM, Sec 2.5.4, p 2 | 80.

**Figure 5.1.3: Asset Condition Profile**



The majority of assets which have been condition scored are graded as being in fair condition. For the purposes of this AMP, it is assumed that the assets which have been condition scored are a fair reflection of the condition of stormwater assets for all of the network due to the random sampling.

All figure values are shown in current day dollars.

## 5.2 Operations and Maintenance Plan

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, street sweeping, asset inspection, and utility costs.

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. Examples of typical maintenance activities include pipe repairs, asphalt patching, and equipment repairs.

The trend in maintenance budgets are shown in Table 5.2.1.

**Table 5.2.1: Maintenance Budget Trends**

Year	Maintenance Budget \$
2015/16	\$762,799
2016/17	\$879,248
2017/18	\$932,641
2018/19	\$1,216,434
2019/20	\$744,669
2020/21 (Estimated)	\$829,329

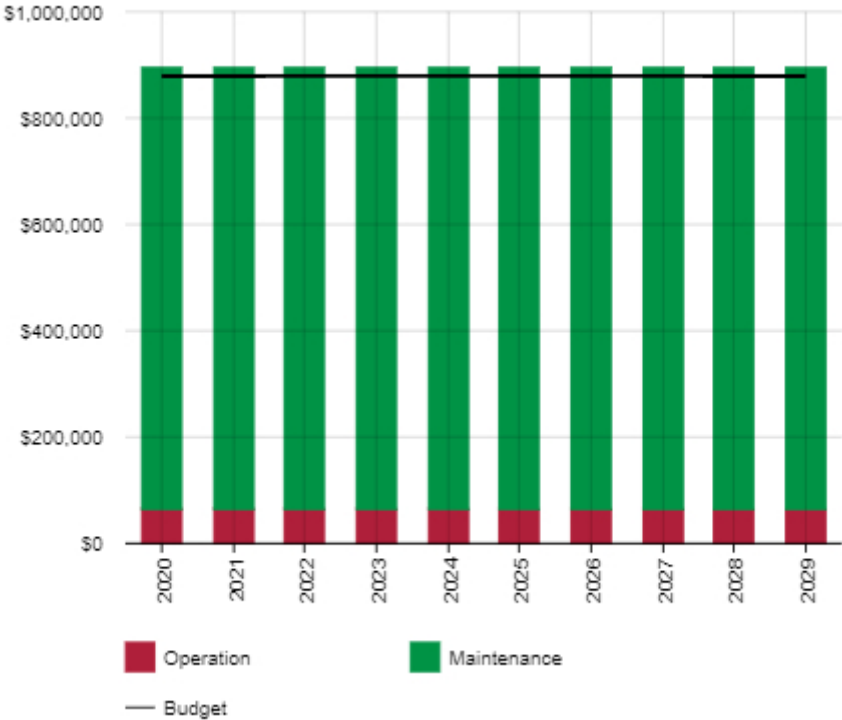
Maintenance budget levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. Where maintenance budget allocations are such that they will result in a lesser level of service, the service consequences and service risks have been identified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

Assessment and priority of reactive maintenance is undertaken by staff using experience and judgement.

**Summary of forecast operations and maintenance costs**

Forecast operations and maintenance costs are expected to vary in relation to the total value of the asset stock. If additional assets are acquired, the future operations and maintenance costs are forecast to increase. If assets are disposed of the forecast operation and maintenance costs are expected to decrease. Figure 5.2 shows the forecast operations and maintenance costs relative to the proposed operations and maintenance Planned Budget.

**Figure 5.2: Operations and Maintenance Summary**



All figure values are shown in current day dollars.

Future maintenance costs have been estimated by considering the historical maintenance costs for the recent five year period, excluding 2018/19 which appears to be an outlier in the historical expenditure data.

Maintenance budget levels are considered to be adequate to meet projected service levels, which are equal to current service levels. Where maintenance budget allocations are such that they will result in a lesser level of service, the service consequences and risks of providing services at that level have been identified and are highlighted in this AM Plan.

There is a \$15,000 shortfall in operation expenditure per year due to the proposed increase in budget for CCTV condition inspections. The revised budget will allow for 4% of the network to be audited each year.

**5.3 Renewal Plan**

Renewal is major capital work which does not significantly alter the original service provided by the asset, 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 acquisition resulting in additional future operations and maintenance costs.

Assets requiring renewal are identified from one of two approaches in the Lifecycle Model.

- The first method uses Asset Register data to project the renewal costs (current replacement cost) and renewal timing (acquisition year plus updated useful life to determine the renewal year), or

- The second method uses an alternative approach to estimate the timing and cost of forecast renewal work (i.e. condition modelling system, staff judgement, average network renewals, or other).

The typical useful lives of assets used to develop projected asset renewal forecasts are shown in Table 5.3. Asset useful lives are due for review. There has been no significant change to asset management practices or other factors affecting useful life since the last review of the useful lives of stormwater assets.

**Table 5.3: Useful Lives of Assets**

Asset (Sub)Category	Useful life
Box Culvert	70 years
Gross Pollutant Trap	50 to 100 years depending on make/ type
Open Channel and Flood Walls	75 years
Pump Station	50 years
Stormwater Pipe	100 years
Stormwater Pit	70 years
WSUD Device	50 years

The estimates for renewals in this AM Plan were based on the condition data currently available.

### 5.3.1 Renewal ranking criteria

Asset renewal 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. condition of a playground).<sup>5</sup>

It is possible to prioritise renewals by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be significant,
- Have higher than expected operational or maintenance costs, and
- Have potential to reduce life cycle costs by replacement with a modern equivalent asset that would provide the equivalent service.<sup>6</sup>

The ranking criteria used to determine priority of identified renewal proposals is detailed in Table 5.3.1.

**Table 5.3.1: Renewal Priority Ranking Criteria**

Criteria	Weighting
<b>Requirement for road reconstruction or upgrade</b> - All stormwater pipes and pits within the scope of works for road	40%

<sup>5</sup> IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

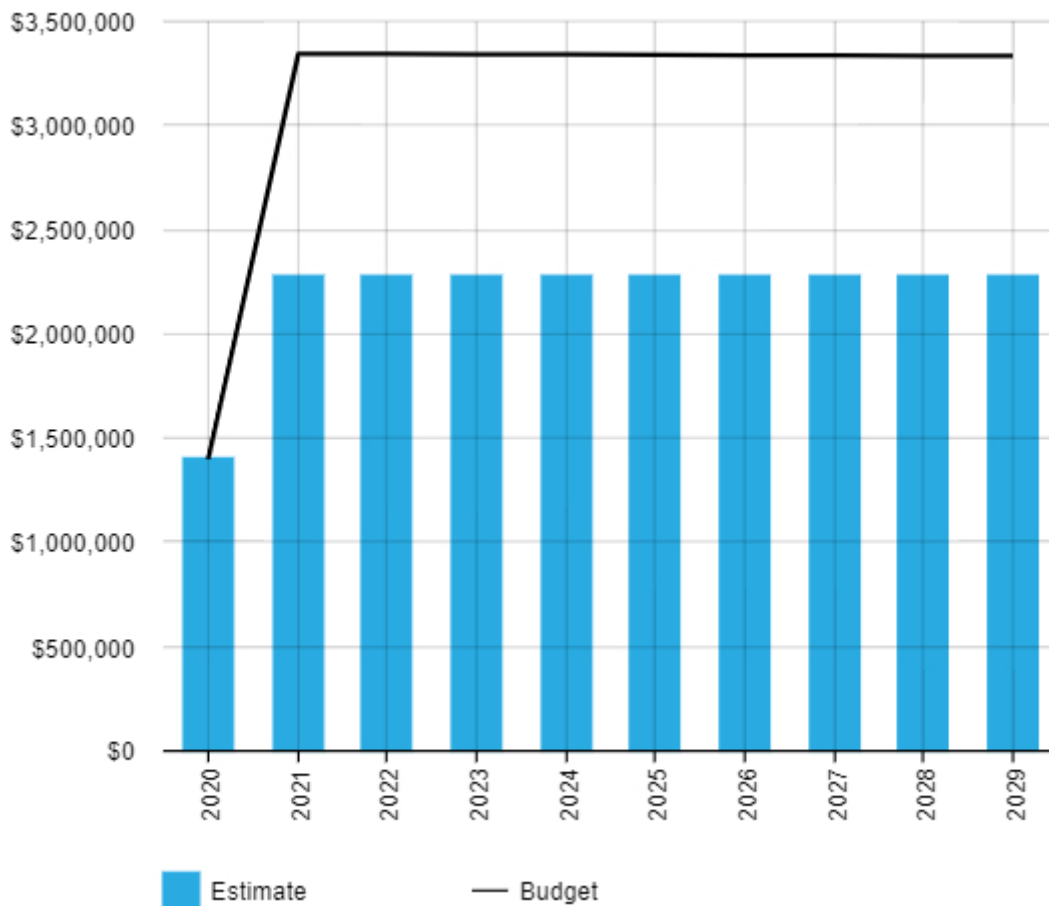
<sup>6</sup> Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

reconstruction projects are subject to CCTV inspections to determine if they are in poor condition	
<b>Infrastructure failure</b> - Stormwater infrastructure failures are made safe and referred to City Assets for asset renewal if the threshold for maintenance works is exceeded	40%
<b>Condition Score</b> - based on yearly CCTV audit inspections	20%
<b>Total</b>	<b>100%</b>

#### 5.4 Summary of future renewal costs

Forecast renewal costs are projected to increase over time if the asset stock increases. The forecast costs associated with renewals are shown relative to the proposed renewal budget in Figure 5.4.1. A detailed summary of the forecast renewal costs is shown in Appendix B.

**Figure 5.4.1: Forecast Renewal Costs**



All figure values are shown in current day dollars.

The forecast renewals are expected to remain relatively consistent based on renewing all assets with a condition score of 4 or 5 within the ten year period. Additional investigation of the existing network is required to develop a detailed renewal works program.

The forecasted renewals are significantly less than the current renewal budget however this is expected to be offset by the deficit in acquisition activities.

**5.5 Acquisition Plan**

Acquisition reflects are new assets that did not previously exist or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, demand, social or environmental needs. Assets may also be donated to the City of West Torrens.

**5.5.1 Selection criteria**

Proposed acquisition of new assets, and upgrade of existing assets, are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Potential upgrade and new works should be reviewed to verify that they are essential to the Entities needs. Proposed upgrade and new work analysis should also include the development of a preliminary renewal estimate to ensure that the services are sustainable over the longer term. Verified proposals can then be ranked by priority and available funds and scheduled in future works programmes.

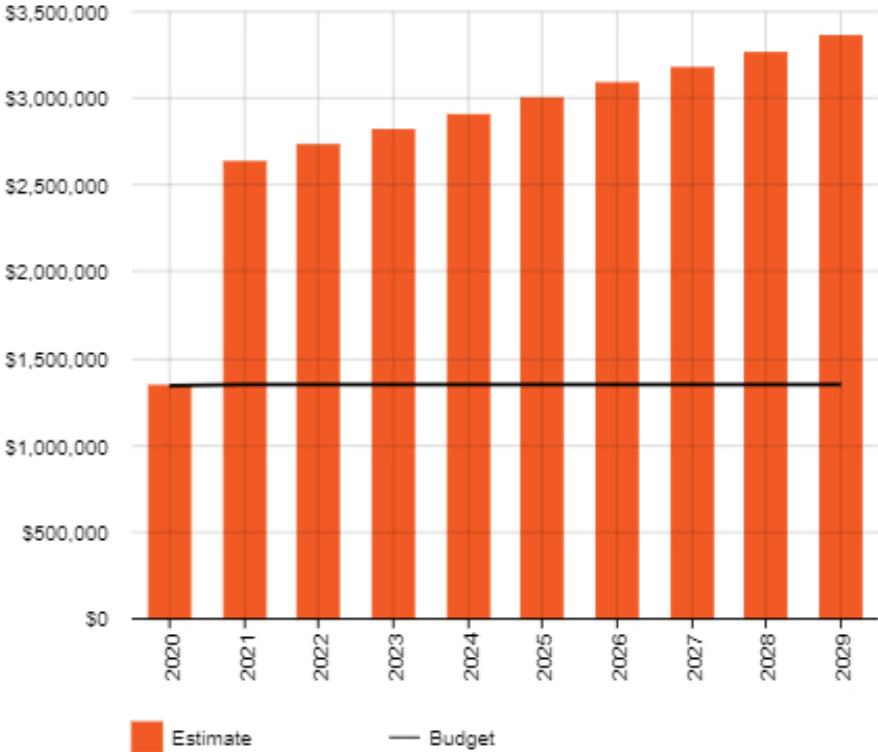
Acquisitions are determined through a combination of City-wide and local stormwater catchment analyses which identify areas where there is a shortfall in the capacity of stormwater infrastructure and therefore is a high risk of flooding.

Detailed selection criteria and a project summary of upcoming acquisition projects is being formalised as part of the imminent Stormwater Management Plans. This AM plan will be updated following the endorsement of Stormwater Management Plans.

**Summary of future asset acquisition costs**

Forecast acquisition asset costs are summarised / summarized in Figure 5.4.1 and shown relative to the proposed acquisition budget. The forecast acquisition capital works program is shown in Appendix C.

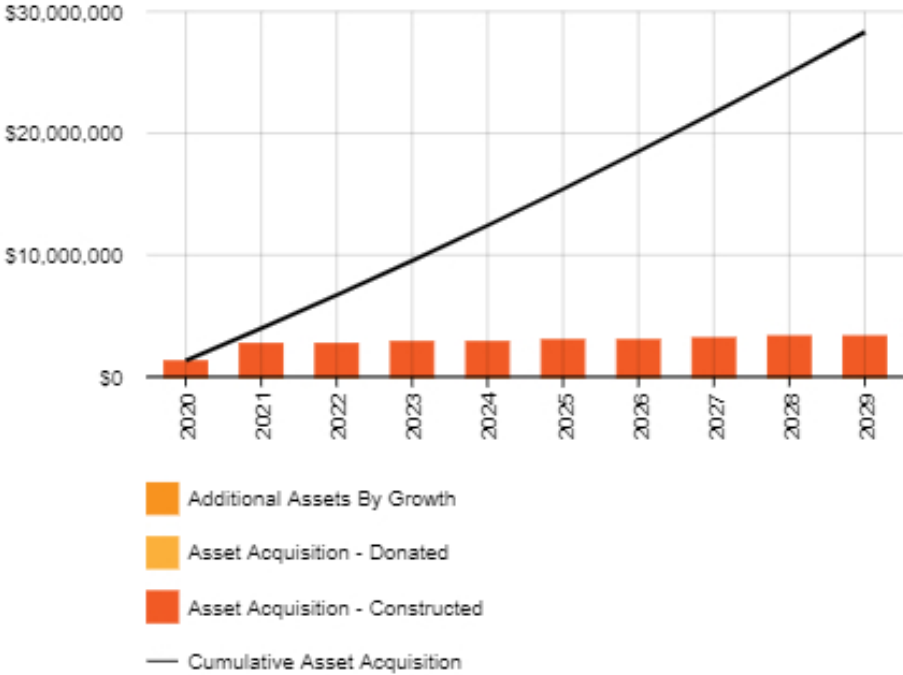
**Figure 5.5.1: Acquisition (Constructed) Summary**



All figure values are shown in current day dollars.

When an Entity commits to new assets, they must be prepared to fund future operations, maintenance and renewal costs. They must also account for future depreciation when reviewing long term sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value of the acquired assets being taken on by the Entity. The cumulative value of all acquisition work, including assets that are constructed and contributed shown in Figure 5.4.2.

**Figure 5.5.2: Acquisition Summary**



All figure values are shown in current 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 that there is available funding.

The acquisition activities include upgrades to Keswick and Brownhill Creek, the Lower Sturt Stormwater catchment and general stormwater upgrades or new assets to mitigate flooding. A detailed acquisition program is currently being developed as part of the Stormwater Management Plans.

The forecasted expenditure exceeds the current acquisition budget however this is expected to be partially offset by the surplus budget from renewal activities.

Financial year 2020/21 is an outlier for the period due to the yearly budget being endorsed and approved by Council at the time of preparing this AMP.

**Summary of asset forecast costs**

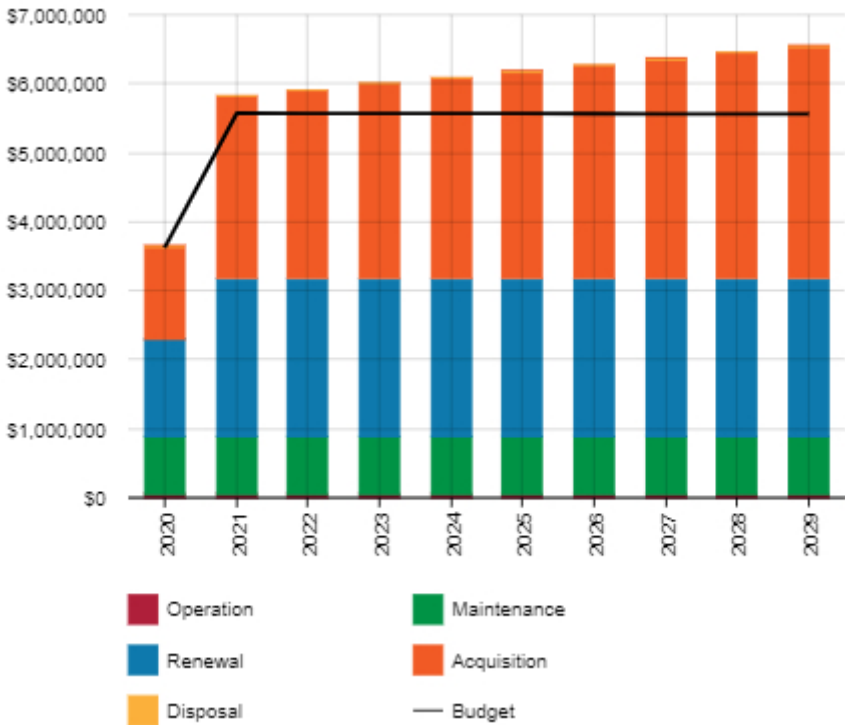
The financial projections from this asset plan are shown in Figure 5.4.3. These projections include forecast costs for acquisition, operation, maintenance, renewal, and disposal. These forecast costs are shown relative to the proposed budget.

The bars in the graphs represent the forecast costs needed to minimise the life cycle costs associated with the service provision. The proposed budget line indicates the estimate of available funding. The gap between the



forecast work and the proposed budget is the basis of the discussion on achieving balance between costs, levels of service and risk to achieve the best value outcome.

**Figure 5.5.3: Lifecycle Summary**



All figure values are shown in current day dollars.

Between 2021 and 2029, there is an increasing shortfall in the current budget. This is due to the increasing forecasted acquisition expenditure over this period.

**5.6 Disposal Plan**

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.6. A summary of the disposal costs and estimated reductions in annual operations and maintenance of disposing of the assets are also outlined in Table 5.6. Any costs or revenue gained from asset disposals is included in the long-term financial plan.

At this point in time, there are no stormwater assets identified for disposal.

## 6.0 RISK MANAGEMENT PLANNING

The purpose of infrastructure risk management is to document the findings 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 31000:2018 Risk management – Principles and guidelines alongside the City of West Torrens Enterprise Risk Management Policy and Framework.

Risk Management is defined in ISO 31000:2018 as: ‘coordinated activities to direct and control with regard to risk’<sup>7</sup>.

### 6.1 Critical Assets

Critical assets are defined as those which have a high consequence of failure causing significant loss or reduction of service. Critical assets have been identified and along with their typical failure mode, and the impact on service delivery, are summarised in Table 6.1. Failure modes may include physical failure, collapse or essential service interruption.

**Table 6.1 Critical Assets**

Critical Asset(s)	Failure Mode	Impact
Stormwater pipes and culverts	Collapse due to degradation and age	- Loss of serviceability of stormwater system which may lead to flooding - Risk of injury to the public
	Poor serviceability due to blockages	- Reduction in performance of the stormwater system may lead to flooding
Stormwater Pump Stations	Loss of power and/or mechanical failure	- Loss of serviceability of stormwater system which may lead to mass flooding - Risk of injury to the public
Stormwater Detention Basins	Blockage of detention basin outlet	- Loss of serviceability of stormwater system which may lead to mass flooding
West Beach Flood Wall	Structural failure of the flood wall	- Mass flooding of adjacent properties

By identifying critical assets and failure modes an organisation can ensure that investigative activities, condition inspection programs, maintenance and capital expenditure plans are targeted at critical assets.

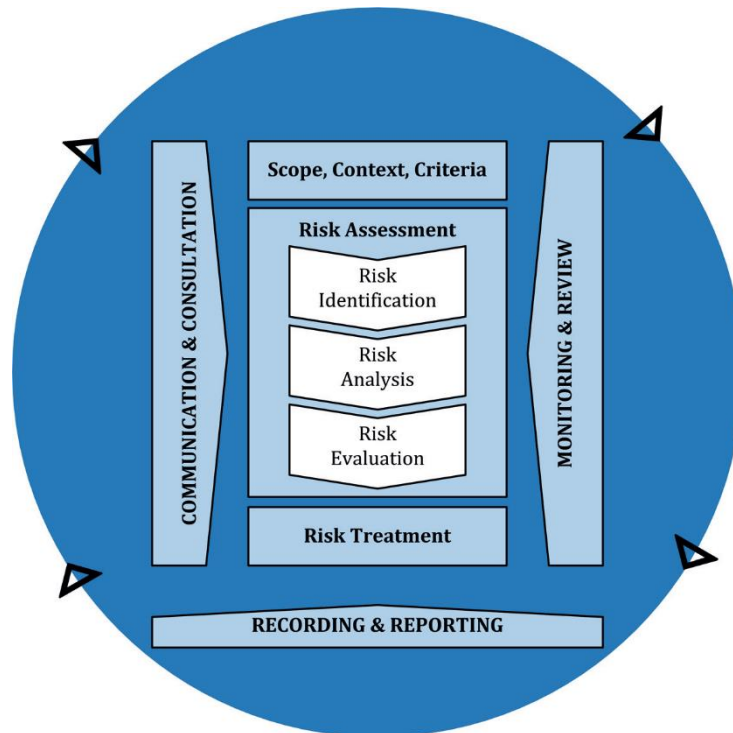
### 6.2 Risk Assessment

The risk management process used is shown in Figure 6.2.1 below.

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

The process is based on the fundamentals of International Standard ISO 31000:2018.

<sup>7</sup> ISO 31000:2009, p 2



**Fig 6.2.1 Risk Management Process – Abridged**  
 Source: ISO 31000:2018, Figure 1, p9

In accordance with the Enterprise Risk Management Framework, risk consequences are cited as the following:

- Financial
- Organisational or customer impact
- Reputation and relationships
- People
- Work health and safety

Furthermore, an assessment of risks<sup>8</sup> associated with service delivery will identify risks that will result in loss or reduction in service, personal injury, environmental impacts, a ‘financial shock’, reputational impacts, or other consequences. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, and the consequences should the event occur. The risk assessment should also include the development of a risk rating, evaluation of the risks and development of a risk treatment plan for those risks that are deemed to be non-acceptable.

The City of West Torrens' Risk Analysis Matrix in Figure 6.2.2 is used to assess risk levels associated with assets. The guidelines for using the risk matrix is detailed in *Administration Policy: Enterprise Risk Management Framework*<sup>9</sup>.

<sup>8</sup> Administration Policy: Enterprise Risk Management Framework, 2019

<sup>9</sup> As above

Prevent/Reduce/Manage Negative Consequences					LIKELIHOOD	Enhance/Promote/Facilitate Positive Consequences				
E	E	H	M	M	<b>Almost Certain</b> > 95% chance of occurring  <b>Likely</b> 75% - 95% chance of occurring  <b>Moderate</b> 25% - 75% chance of occurring  <b>Unlikely</b> 5% - 25% chance of occurring  <b>Rare</b> < 5% chance of occurring	M	M	H	E	E
E	E	H	M	L		L	M	H	E	E
H	H	M	M	L		L	M	M	H	H
H	M	M	L	L		L	L	M	M	H
M	M	L	L	L		L	L	L	M	M
Catastrophic	Major	Moderate	Minor	Insignificant	Scale	Insignificant	Minor	Moderate	Major	Outstanding

**Fig 6.2.2 Risk Analysis Matrix - Level of Risk**  
 Source: City of West Torrens

Critical risks are those assessed with High or Extreme risk ratings. The residual risk and treatment costs of implementing the selected treatment plan is shown in Table 6.2. Services and assets with a residual risks rating of High are required to be managed by the CEO and General Managers, respectively in accordance with the Enterprise Risk Management Framework.

**Table 6.2: Critical Risks and Treatment Plans**

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Stormwater Pipes and Culverts	Structural failure leading to collapsing of pipe/culvert	High	Continue to undertake CCTV condition inspections to identify pipes/culverts near end of life.	Moderate	The cost of CCTV audit inspections of \$65,000 per year which is the equivalent of 4% of the network.
	Poor performance of the stormwater system due to blockages	High	Further develop the pipe/culvert cleansing program through Council's mobile application, <i>Fusion</i> , based on asset prioritisation criteria.	Moderate	The cost of the process to develop and implement a proactive pipe/culvert cleansing program is estimated as the equivalent of 2 weeks full time work from Council's Asset Engineer.

					The cost to undertake the cleansing program is yet to be determined.
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Note \* The residual risk is the risk remaining after controls are implemented.

### 6.3 Organisation Strategic Risks

The strategic risks of the organisation significantly impact the ongoing provision of services to customers. To adapt to changing conditions we need to understand our capacity to ‘withstand a given level of stress or demand’, and to respond to possible disruptions to ensure continuity of service.

The City of West Torrens' strategic risks related to asset management are identified in Table 6.3 which includes the type of threats and hazards and the current measures that the organisation takes to manage this risk. .

**Table 6.3: Strategic Risks**

Threat / Hazard	Current Risk Control Approach	CWT Risk Level (Revised Risk- after controls)
Business Continuity and Community Resilience	This is reviewed as part of Organisational Strategic Risks including the ability to respond, recover, restore and resume business as usual. Robust plans and processes are developed.	Moderate
Emergency Events	This is reviewed as part of Organisational Strategic Risks. CWT considers all hazards including the response to multiple threats including flooding, earthquake, transport incidents etc.	Moderate
Infrastructure Management	This is reviewed as part of Organisational Strategic Risks and includes monitoring damage caused by deterioration or emergency events	Moderate
Urban Densification	This is reviewed as part of Organisational Strategic Risks and includes the planning and implementation of systems to cope with changes caused by infill development and changes to State Planning Regulations.	Moderate
Financial Management, Sustainability and Cost Shifting	This is reviewed as part of Organisational Strategic Risks and includes strategies to deal with changes in income and expenditure caused by either changes in policy or emergency events	Moderate

### 6.4 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**

There are some operations and maintenance activities and capital projects that are unable to be undertaken within the next 10 years. These include:

- Maintain maintenance service levels at all times.

#### **6.4.2 Service trade-off**

If there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, then this will result in service consequences for users. These service consequences include:

- Increased risk of flooding and associated property damage
- Shorter than expected useful life of stormwater assets due to delayed maintenance works

#### **6.4.3 Risk trade-off**

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

- Overall reduced stakeholder satisfaction leading to an increase in the number of customer works request
- Assets require additional maintenance or renewal works than desirable to remain serviceable due to delays in undertaking maintenance.

These actions and expenditures are considered and included in the forecast costs.

## 7.0 FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this AM Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

### 7.1 Financial Sustainability and Projections

#### 7.1.1 Sustainability of service delivery

There are two key indicators of sustainable service delivery that are considered in the AM Plan for this service area. The two indicators are the:

- asset renewal funding ratio (proposed renewal budget for the next 10 years / forecast renewal costs for next 10 years), and
- medium term forecast costs/proposed budget (over 10 years of the planning period).

#### Asset Renewal Funding Ratio

Asset Renewal Funding Ratio<sup>10</sup> 143.2%

The Asset Renewal Funding Ratio is an important indicator and illustrates that over the next 10 years we expect to have 143.2% of the funds required for the optimal renewal of assets.

The forecast renewal work along with the proposed renewal budget, and the cumulative shortfall, is illustrated in Appendix B.

#### Medium term – 10 year financial planning period

This Asset Management Plan identifies the forecast operations, maintenance and renewal costs 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.

This forecast work can be compared to the proposed budget over the 10 year period to identify any funding shortfall.

The forecast operations, maintenance and renewal costs over the 10 year planning period is \$3,090,170 on average per year.

The proposed (budget) operations, maintenance and renewal funding is \$4,023,877 on average per year giving a 10 year funding excess of \$933,707 per year. This indicates that 130.22% of the forecast costs needed to provide the services documented in this Asset Management Plan are accommodated in the proposed budget. This excludes acquired assets where there is a shortfall equal to \$1,482,122 per year.

Providing sustainable services from infrastructure requires the management of service levels, risks, forecast outlays 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.

#### 7.1.2 Forecast Costs (outlays) for the long-term financial plan

Table 7.1.3 shows the forecast costs (outlays) required for consideration in the 10 year long-term financial plan.

Providing services in a financially sustainable manner requires a balance between the forecast outlays required to deliver the agreed service levels with the planned budget allocations in the long-term financial plan.

A gap between the forecast outlays and the amounts allocated in the financial plan indicates further work is required on reviewing service levels in the AM Plan (including possibly revising the long-term financial plan).

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<sup>10</sup> AIFMM, 2015, Version 1.0, Financial Sustainability Indicator 3, Sec 2.6, p 9.

We will manage the 'gap' by developing this AM Plan to provide guidance on future service levels and resources required to provide these services in consultation with the community.

Forecast costs are shown in 2020/21 dollar values.

**Table 7.1.2: Forecast Costs (Outlays) for the Long-Term Financial Plan**

Year	Forecast Acquisition	Forecast Operation	Forecast Maintenance	Forecast Renewal
2020/21	\$1,345,711	\$65,000	\$829,329	\$1,400,000
2021/22	\$2,636,813	\$65,000	\$829,329	\$2,284,268
2022/23	\$2,726,814	\$65,000	\$829,329	\$2,284,268
2023/24	\$2,816,811	\$65,000	\$829,329	\$2,284,268
2024/25	\$2,906,808	\$65,000	\$829,329	\$2,284,268
2025/26	\$2,996,805	\$65,000	\$829,329	\$2,284,268
2026/27	\$3,086,802	\$65,000	\$829,329	\$2,284,268
2027/28	\$3,176,799	\$65,000	\$829,329	\$2,284,268
2028/29	\$3,266,795	\$65,000	\$829,329	\$2,284,268
2029/30	\$3,356,792	\$65,000	\$829,329	\$2,284,268

**7.2 Funding Strategy**

The proposed funding for assets is outlined in the City of West Torrens' budget and Long-Term financial plan.

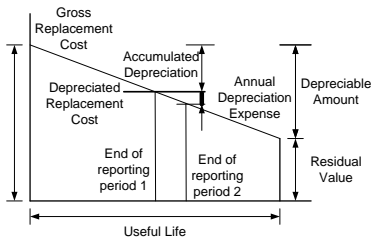
The financial strategy of the entity determines how funding will be provided, whereas the AM Plan communicates how and when this will be spent, along with the service and risk consequences of various service alternatives.

**7.3 Valuation Forecasts**

**7.3.1 Asset valuations**

The best available estimate of the value of assets included in this AM Plan are shown below. The assets are valued at the three year average of the assets current replacement cost:

Replacement Cost (Current/Gross)	\$137,338,282
Depreciable Amount	\$137,338,282
Depreciated Replacement Cost <sup>11</sup>	\$77,856,880
Depreciation	\$1,468,421



**7.3.2 Valuation forecast**

Asset values are forecast to increase as additional assets are acquired.

Additional assets will generally add to the operations and maintenance needs in the longer term. Additional assets will also require additional costs due to future renewals. Any additional assets will also add to future depreciation forecasts.

The increase in asset values is not expected to impact operations and maintenance expenditure over the period of this AMP.

<sup>11</sup> Also reported as Written Down Value, Carrying or Net Book Value.



## 7.4 Key Assumptions Made in Financial Forecasts

In compiling this AM Plan, it was necessary to make some assumptions. This section details the key assumptions made in the development of this AM plan and should provide readers with an understanding of the level of confidence in the data behind the financial forecasts.

Key assumptions made in this AM Plan are:

- The condition of stormwater assets which have been inspected are a fair representation of the entire networks condition
- Unit rates for valuations are based on the three year average of actual costs of replacement
- Operations and maintenance budget and budget growth levels remain consistent with historical figures

## 7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. For effective asset and financial management, it is critical that the information is current and accurate. Data confidence is classified on a A - E level scale<sup>12</sup> in accordance with Table 7.5.1.

**Table 7.5.1: Data Confidence Grading System**

Confidence Grade	Description
A. Very High	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. High	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. Medium	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. Low	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. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 7.5.2.

**Table 7.5.2: Data Confidence Assessment for Data used in AM Plan**

Data	Confidence Assessment	p
Demand drivers	Medium	Demand drivers are based on a combination of sound statistics and analysis of current local demand drivers.
Growth projections	High	Growth projections are based on the analysis of historical figures.

<sup>12</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

Acquisition forecast	Medium	Acquisitions are based on Brownhill and Keswick Creek Stormwater Management Plan, Lower Sturt Stormwater Management Plan and historical expenditure.
Operation forecast	Low	Very little data has been interpreted for forecasting operation activities except for Condition Inspections.
Maintenance forecast	Medium	Maintenance forecasts are based on the analysis of trends in historical maintenance expenditure.
Renewal forecast		
- Asset values	High	Asset values are based on actual stormwater construction costs.
- Asset useful lives	Medium	Asset useful lives are due for detailed review.
- Condition modelling	Low	Condition modelling is mostly estimated.
Disposal forecast	Medium	Very few disposals have historically been undertaken.

The estimated confidence level for and reliability of data used in this AM Plan is considered to be Medium.

## 8.0 PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Asset Management Practices<sup>13</sup>

#### 8.1.1 Accounting and financial data sources

This AM Plan utilises accounting and financial data. The source of the data is "Technology One", City of West Torrens' corporate finance system.

#### 8.1.2 Asset management data sources

This AM Plan also utilises asset management data. The source of the data is "Conquest", City of West Torrens' Asset Management System.

### 8.2 Improvement Plan

It is important that an entity recognise areas of their AM Plan and planning process that require future improvements to ensure effective asset management and informed decision making. The improvement plan generated from this AM Plan is shown in Table 8.2.

**Table 8.2: Improvement Plan**

Task	Task	Responsibility	Resources Required	Timeline
1	Undertake a review of the current method for determining useful lives and actual asset useful lives accordingly.	Team Leader Asset and Project Management	Internal Asset Management staff	June 2021
2	Further develop the asset inspection regime through Council's mobile application, <i>Fusion</i> , based on the priority of all stormwater assets to assist with the ongoing development of planned maintenance programs.	Team Leader Asset and Project Management,  Coordinator of Civil Works and Services	Internal Asset Management, City Operations and Information Technology staff	December 2021
3	Develop current methods of measuring and reporting regularly on key performance indicators including: - compliance with asset inspections - planned maintenance expenditure versus reactive maintenance expenditure - asset utilisation - customer satisfaction with the performance of stormwater assets	Team Leader Asset and Project Management  Coordinator of Civil Works and Services	Internal Asset Management, Information Technology and Finance staff	June 2022
4	Establish methods to determine and report on actual stormwater maintenance costs at project level to assist with decision-making.	Team Leader Asset and Project Management  Coordinator of Civil Works and Services	Internal Asset Management, Information Technology and Finance staff	June 2022
5	Update the renewal and acquisition projected expenditure in this asset management plan	Team Leader Asset and Project Management	Internal Asset Management staff	December 2022

<sup>13</sup> ISO 55000 Refers to this as the Asset Management System

	following finalising of the Stormwater Management Plans.	Coordinator Engineering Services		
6	Update this asset management plan in accordance with the recommended improvements detailed in the Stormwater Management Plans.	Team Leader Asset and Project Management  Coordinator Engineering Services	Internal Asset Management staff	December 2022
7	Develop a stormwater asset hierarchy to assist with the further development of suitable levels of service for each level of the hierarchy.	Team Leader Asset and Project Management	Internal Asset Management staff	March 2023
8	Review and correct anomalies between GIS data and data recorded in the asset register.	Team Leader Asset and Project Management	Internal Asset Management staff	Ongoing
9	Undertake a complete review of this asset management plan at least every four years, within two years of each Council election.	Team Leader Asset and Project Management	Internal Asset Management staff	October 2024

### 8.3 Monitoring and Review Procedures

This AM Plan will be reviewed during the annual budget planning process and revised to show any material changes in service levels, risks, forecast costs and proposed budgets as a result of budget decisions.

The AM Plan will be reviewed and updated annually to ensure it represents the current service level, asset values, forecast operations, maintenance, renewals, acquisition and asset disposal costs and planned budgets. These forecast costs and proposed budget are incorporated into the Long-Term Financial Plan or will be incorporated into the Long-Term Financial Plan once completed.

The AM Plan has a maximum life of 4 years and is due for complete revision and updating within two years of each Council election.

### 8.4 Performance Measures

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

- The degree to which the required forecast costs identified in this AM Plan are incorporated into the long-term financial plan,
- The degree to which the 1-5 year detailed works programs, budgets, business plans and corporate structures consider the 'global' works program trends provided by the AM Plan,
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans,
- The Asset Renewal Funding Ratio achieving the Organisational target (this target is often 90 – 100%).

## 9.0 REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
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- ISO, 2014, ISO 55000:2014, Overview, principles and terminology
- ISO, 2018, ISO 31000:2018, Risk management – Guidelines
- City of West Torrens Community Plan 2030
- City of West Torrens Adopted Budget and Annual Business Plan 2020/21
- City of West Torrens, 2019, Administration Policy: Enterprise Risk Management Framework

## 10.0 APPENDICES

### Appendix A Maintenance Response Levels of Service

Appendix A provides an overview of the maintenance strategy and response level of service for stormwater assets.

#### Asset Criticality

Asset criticality and maintenance intervention is based on the following framework:-

Level	Function	Safety
1	High Importance	Extreme/ High
2	Important	Moderate
3	Lower Importance	Low

**Proposed Criticality/Performance Categories** (including defect/ maintenance response times and proposed defect inspection cycle) are:-

Stormwater	
Blocked Drainage - High/Extreme risk defects	Clear blockage within 1 day
Property Flooding - High/Extreme risk defects	Permanent repairs and other defect repairs completed within 90 days
Pipework damage - High/Extreme risk defects	Permanent repairs and other defect repairs completed within 12 months through Capital Works Program

#### Risk Ratings

Risks are rated:

- Extreme (extreme safety risk and extreme functional or presentation risk exists)
- High (high safety risk, and high functional or presentation risk exists);
- Moderate (moderate functional or presentation risk exists); and
- Low (low functional or presentation risk exists).

**Appendix B    Renewal Forecast Summary**

**B.1 – Renewal Forecast Summary**

*Table B1 - Renewal Forecast Summary*

Year	Renewal Forecast	Renewal Budget
2020/21	\$1,400,000	\$1,400,000
2021/22	\$2,284,268	\$3,344,202
2022/23	\$2,284,268	\$3,342,742
2023/24	\$2,284,268	\$3,341,284
2024/25	\$2,284,268	\$3,339,829
2025/26	\$2,284,268	\$3,338,377
2026/27	\$2,284,268	\$3,336,928
2027/28	\$2,284,268	\$3,335,482
2028/29	\$2,284,268	\$3,334,038
2029/30	\$2,284,268	\$3,332,597

**B.2 –Renewal Program Summary**

The forecast renewal projects are to be determined based on the findings of yearly CCTV inspections and in alliance with the road reconstruction program.

Year	Project	Estimate
2020/21	Renewal Projects- Based on Condition Audits	\$ 1,400,000
2021/22	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2022/23	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2023/24	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2024/25	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2025/26	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2026/27	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2027/28	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2028/29	Renewal Projects- Based on Condition Audits	\$ 2,284,267
2029/30	Renewal Projects- Based on Condition Audits	\$ 2,284,267

**Appendix C      Acquisition Forecast**

**C.1 – Acquisition Forecast Summary**

*Table C1 - Acquisition Forecast Summary*

<b>Year</b>	<b>Forecast Acquisition Expenditure</b>	<b>Acquisition Budget</b>
2020/21	\$1,345,711	\$1,345,711
2021/22	\$2,636,813	\$1,350,002
2022/23	\$2,726,814	\$1,350,002
2023/24	\$2,816,811	\$1,350,002
2024/25	\$2,906,808	\$1,350,002
2025/26	\$2,,996,805	\$1,350,002
2026/27	\$3,086,802	\$1,350,002
2027/28	\$3,176,799	\$1,350,002
2028/29	\$3,266,795	\$1,350,002
2029/30	\$3,356,792	\$1,350,002

**C.2 – Acquisition Project Summary**

<b>Year</b>	<b>Project</b>	<b>Estimate</b>
2020/21	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,345,711
2021/22	Stormwater Projects- New Assets and Upgrades - General	\$1,168,296
2021/22	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,515
2021/22	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2022/23	Stormwater Projects- New Assets and Upgrades - General	\$1,258,293
2022/23	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2022/23	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2023/4	Stormwater Projects- New Assets and Upgrades - General	\$1,348,290
2023/24	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2023/24	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2024/25	Stormwater Projects- New Assets and Upgrades - General	\$1,438,287
2024/25	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2024/25	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2025/26	Stormwater Projects- New Assets and Upgrades - General	\$1,528,284
2025/26	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519



2025/26	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2026/27	Stormwater Projects- New Assets and Upgrades - General	\$1,618,281
2026/27	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2026/27	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2027/28	Stormwater Projects- New Assets and Upgrades - General	\$1,708,277
2027/28	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2027/28	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2028/29	Stormwater Projects- New Assets and Upgrades - General	\$1,798,274
2028/29	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2028/29	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002
2029/30	Stormwater Projects- New Assets and Upgrades - General	\$1,888,271
2029/30	Stormwater Projects- New Assets and Upgrades- Lower Sturt SMP Projects	\$118,519
2029/30	Stormwater Projects- New Assets and Upgrades- Brownhill and Keswick Creek Upgrade	\$1,350,002

**Appendix D Forecast Expenditure and Long Term Financial Plan**

**Table D1 – Forecast Expenditure and Long Term Financial Plan**

Year	Acquisition	Renewal	Total	LTFP	Shortfall (-)	Cumulative Shortfall (-)
2020/21	\$1,345,711	\$1,400,000	\$2,745,711	\$2,745,711	\$0	\$0
2021/22	\$2,636,813	\$2,284,268	\$4,921,081	\$4,694,204	-\$226,877	-\$226,877
2022/23	\$2,726,814	\$2,284,268	\$5,011,082	\$4,692,744	-\$318,338	-\$545,215
2023/24	\$2,816,811	\$2,284,268	\$5,101,079	\$4,691,286	-\$409,793	-\$955,008
2024/25	\$2,906,808	\$2,284,268	\$5,191,076	\$4,689,831	-\$501,245	-\$1,456,253
2025/26	\$2,996,805	\$2,284,268	\$5,281,073	\$4,688,379	-\$592,694	-\$2,048,947
2026/27	\$3,086,802	\$2,284,268	\$5,371,070	\$4,686,930	-\$684,140	-\$2,733,087
2027/28	\$3,176,799	\$2,284,268	\$5,461,067	\$4,685,484	-\$775,583	-\$3,508,670
2028/29	\$3,266,795	\$2,284,268	\$5,551,063	\$4,684,040	-\$867,023	-\$4,375,693
2029/30	\$3,356,792	\$2,284,268	\$5,641,060	\$4,682,599	-\$958,461	-\$5,334,154



A6 WEST TORRENS ROAD  
 ↑ West Beach  
 A15 GARDENS ROAD  
 ← Pt Adelaide  
 ← Cleveley  
 ← GARDENS ROAD  
 ← JOURNAL PARK

City of  
**West Torrens**

Between the City and the Sea



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