Coorong District Council

Water & Sewer Asset Management Plan

Version 1.00 - September 2017

Schedule of Changes & Amendments

Version	Date	Changes/Amendments	Author
V0.01	September 2017	Initial creation	Raston Nga
V0.02	September 2017	Internal review	Ashay Prabu
V1.00	September 2017	Further Update & release	Raston Nga

NB:

1. Primary number changes to Versions (egg V1.0 to V2.0) will be made when the document undergoes its regular review and when significant changes are made to standards and guidelines for inspections, intervention levels or work
2. Secondary number changes (V1.0 to V1.1) will apply to minor amendments that do not materially impact the document and are intended only to clarify or update issues.
3. Tertiary number changes (V2.1.1 to V2.1.1) are related to document updates and reviews undertaken by Assetic and CC.

Endorsement Table

Name	Title	Endorsed & Signature	Date
Coorong District Council Audit Committee	*The Audit committee advise Council that it has received a presentation from Council Asset Management Consultant in relation to the following Council Asset Management Plans and are satisfied that the Plans be adopted and are based on reliable methodology and will be suitable for inclusion in the soon to be upgraded Long Term Financial Plan*		6 March 2018

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1 Executive Summary

1.1 Background

The Asset Management Plan is prepared to provide a record of:

- The state of Council's infrastructure assets at the close of the past financial year;
- The 10-year optimised funding required to achieve Council's adopted asset performance targets; and
- Planned Asset Management activities for the current financial year.

The fundamental purpose of this Stormwater, Water and Sewer Asset Management Plan (Water & Sewer AMP) is to improve Council's long-term strategic management of its infrastructure Stormwater, Water and Sewer assets. It aims to demonstrate reasonable management of Council Stormwater, Water and Sewer assets in the context of available financial and human resources.

The Water & Sewer AMP achieves this by setting standards, service levels and programmes which Council will develop and deliver. The standards and service levels have been set in accordance with user needs, regulations, industry practice and legislative codes of practice.

This Water & Sewer AMP encompasses the following infrastructure asset classes:

Assets	Asset Type
Stormwater	Pipes, Pits, Lagoon and Plant & Equipment (P&E)
Water	Mains, Nodes, Meters, Plant & Equipment (P&E)
Sewer	Mains, Nodes, Services, Treatment Facilities and Plant & Equipment (P&E)

Table 1 - Infrastructure Asset Classes

1.2   Current State of Council's Assets

The value of Council's Water & Sewer assets as at 30 June 2017 is shown in the following table.

Asset Class	Gross Replacement Cost ($)	Depreciated Replacement Cost ($)	Asset Consumption Ratio
Stormwater	$4,161,247	$2,261,345	54%
Water	$1,371,476	$826,819	60%
Sewer	$18,121,918	$12,841,255	71%
Total	**$23,654,641**	**$15,929,419**	**67%**

Table 2 - Current State of Council's Assets

The table below provides the high level Overall Condition Rating (OCI) of Council's Infrastructure network:

Asset class	Rating Date	Very Good	Good	Fair	Poor	Very Poor
		Score 1	Score 2	Score 3	Score 4	Score 5
Stormwater	June 2017	22.94%	30.47%	35.33%	11.26%	0.00%
Water	June 2017	46.23%	17.11%	2.32%	34.34%	0.00%
Sewer	June 2017	45.15%	49.15%	4.04%	1.60%	0.05%

Table 3 - Comparison of Council's Infrastructure Condition Indices

This condition information has been used in the predictive modelling to determine the required funding levels for asset renewal and maintenance detailed in Section 5 and summarised in Section 0 below.

1.3 Asset Funding Levels

The table below provides the optimised funding levels on renewals of Council's Stormwater, Water and Sewer asset portfolio over the next 10 years[1].

Year	Stormwater	Water	Sewer
2017/18	$75,210	$18,530	$125,350
2018/19	$75,210	$18,530	$23,980
2019/20	$75,210	$18,530	$25,070
2020/21	$75,210	$18,530	$119,900
2021/22	$75,210	$18,530	$104,640
2022/23	$75,210	$18,530	$341,170
2023/24	$75,210	$18,530	$9,810
2024/25	$75,210	$18,530	$17,440
2025/26	$75,210	$18,530	$113,360
2026/27	$75,210	$18,530	$113,360
Total	**$752,100**	**$185,300**	**$994,080**

[1] Projected renewal expenditures are inclusive of applied 9% administration cost.

Table 4 – Optimised Asset Funding Levels

The optimised funding levels which equates to the LTFP funding levels are the desired predicted funds recommended over the following 10 years based on the desired level of service. Total optimised funding expenditure over 10 years is **$1.93 million**

Further summary recommendations, quantifying each asset classes are detailed under **Section 5**.

Council notes that there is an opportunity to reallocate fund from one asset class to another in order to alleviate any funding shortfall. This trade off analysis requires more significant data which council is recommended to collect over the next 3 to 4 years in line with its revaluation cycle.

From a strategic level, it is recommended that Council continues with Stormwater, Water and Sewer network portfolio condition assessments and reassessing strategies on a 3 to 4 yearly cycle, coinciding with Council's revaluation cycle. During this process, Council could look at trade off analysis between multiple classes and more detailed condition assessments to evaluate the relevance of current strategies and funding allocations as well as diverting any surpluses to underfunded asset type.

This will ensure that the most up to date Stormwater, Water and Sewer network condition data can be used to inform Council's revaluation. Following each condition assessment, Council revises these prediction modelling parameters then inputs and calibrates the models to ensure that they are aligned to their existing asset management practices and strategic plans. The results are used to update the Water & Sewer AMP to reflect the outcomes of the strategic modelling and reports.

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[1] Projected renewal expenditures are inclusive of applied 9% administration cost.

1.4 Action Plan

Asset Management Plans must be a dynamic document, reflecting and responding to changes that occur over time. This Asset Management Plan will be reviewed during the annual budget preparation and amended (if required) to recognise changes in levels of service and/or resources available to provide those services as a result of the budget decision process.

This Asset Management Plan has a life of 4 years and is due for revision and updating within 1 to 2 years of each Council election.

A detailed Action Plan generated from the review of this Asset Management Plan is shown in **Table 17**, for those activities and processes that will need to be monitored, developed and fine-tuned over time. The actions for improving this Plan are categorised into the following groupings; Policies and Guidelines, Service Level and Lifecycle Analysis, Financial Planning and Asset Management Practices.

The high priority improvement action items have been identified as follows:

- Obtain Council endorsement of this Asset Management Plan

- Obtain Council approval to the Business Process Model.

- Integrate the Asset Management and GIS Systems to provide for easy identification of the location of the assets, including provision of maps of asset condition.

- Confirm the condition and remaining life of assets identified for renewal over the next 10 years and investigate alternatives for renewal or extension of the asset lives.

- Establish ongoing condition inspections for all Stormwater, Water & Sewer assets on 3 to 4 yearly cycle, coinciding with Council's revaluation cycle.

- Update and revise the prediction modelling parameters and inputs for all Stormwater, Water & Sewer assets once new condition data is collected

- Utilise the predictive modelling of Stormwater, Water & Sewer assets for financial modelling and development of annual and long term capital works programs.

- Test the current levels of service to determine if they are achievable for current budgets.

- Test the current levels of service, to determine 'a confidence level' for reasonableness.

- Review response levels of service for reactive maintenance.

- Modify/Review finance system to capture expenditure against all types of maintenance - whether proactive or reactive

- Pilot effective works management, asset inspection (works and AM) integrated with spatial, finance and AM systems.

It must be noted that this Asset Management Plan is not a stand-alone document but is in fact robustly related to Council's Asset Management Policy and Strategy and Community Strategic Plan.

2 Current State of Council's Assets

2.1 Key Indicators

2.1.1 Key assets covered by this Water & Sewer AMP

The following table provides the high level breakdown by asset classes of all Water & Sewer assets managed by the Council:

Assets Class	Quantity
Stormwater Pit	Bore: 33 GIP: 22 Grated Pit: 10 Grated Sumps: 2 Grates: 2 Grating Top Sump: 1 Gross Pollutant Trap: 6 Gully - Double: 14 Gully - Single: 5 Gully - Triple: 1 Gully: 15 Junction Box: 37 Junction Pit: 1 Side Entry Pit - Double: 21 Side Entry Pit: 119 Silt Trap: 3 Sump: 4 Swale Pit: 2
Stormwater Pipe	Culvert: 118m Open Drain: 675m Pipe: 9006.2m Rising Main: 2561m Spoon Drain: 280m
Stormwater Lagoon	Detention Basin: 2 Evaporation Lagoon: 3 Lagoon: 1 Pond: 3 Ponding Basin: 2 Retention Basin: 1
Stormwater P&E	Holding Well & Pump: 1 Pump Station - Single Pump: 1 Pump Station: 2 Pumping Pit: 1 Water Reticulation Pump and Chlorinator: 1 Water Storage Tanks: 2
Water Mains	Fire Plugs: 27 Mains: 8,806m

Assets Class	Quantity
Water Nodes	Bore: 1 Node: 60 Valve: 25
Water Meters	Meters: 74 Connections: 130
Water P&E	Electrical: 2 Pump: 4 Pump Shed: 2 Stand: 1 Tank: 5
Sewer Mains	Mains: 36,684m Raising Main: 9,028m
Sewer Nodes	Flushing Points: 806 Manhole: 46
Sewer Services	Property Connections: 1640
Sewer Treatment Facilities	Lagoon: 2
Sewer P&E	Baffles: 2, Total Area: 230m2 Earthworks: 6 Flow Meter: 4 Internal Baffles: 1, Total Area: 180m2 Internal Pipework: 1 Irrigation: 3 Non-Return Valve: 1 Pump Station: 52 Treatment Plant: 15 Others: 4 Fencing: 2, Total Length: 980,000mm Perimeter Fence: 4, Total Length: 2,294,000mm

Table 5 - Stormwater, Water and Sewer by Asset Classes

2.1.2 What is the useful life of Council's Stormwater, Water and Sewer Assets

The following table highlights the useful life/expected life that the Council has adopted for its Stormwater, Water and Sewer assets.

Assets Class	Asset Type	Coorong District Council (NSW)
Stormwater Pit	Bore	40
	GIP	60
	Grated Pit	60
	Grated Sumps	80
	Grates	60
	Grating Top Sump	80
	Gross Pollutant Trap	50-60
	Gully	60
	Gully - Double	60
	Gully - Single	60
	Gully - Triple	60
	Junction Box	60
	Junction Pit	60
	Side Entry Pit	60
	Side Entry Pit - Double	60
	Silt Trap	30
	Sump	60
	Swale Pit	60
Stormwater Pipe	Culvert	60
	Open Drain	50
	Pipe	60
	Rising Main	60
	Spoon Drain	50
Stormwater Lagoon	Detention Basin	50
	Evaporation Lagoon	50-80
	Lagoon	50
	Pond	50
	Ponding Basin	50
	Retention Basin	100
Stormwater P&E	Holding Well & Pump	45
	Pump Station	35
	Pump Station - Single Pump	25
	Pumping Pit	60

Assets Class	Asset Type	Coorong District Council (NSW)
	Water Reticulation Pump and Chlorinator	30
	Water Storage Tanks	60
Water Mains	Fire Plugs	50-60
Water Nodes	Mains	60
	Bore	40
	Node	60
	Valve	20-25
Water Meters	Connections	60
	Meters	50-60
	Electrical	25-35
Water P&E	Pump	15-20
	Pump Shed	35-40
	Stand	60
	Tank	50
Sewer Mains	Mains	80
	Rising Main	50-60
Sewer Nodes	Flushing Point	80
	Manhole	40-60
Sewer Services	Property Connections	80
Sewer Treatment Facilities	Lagoons	100
Sewer P&E	Baffles	20-50
	Earthworks	100-150
	Fencing	25-40
	Flow Meter	20
	Internal Baffles	15
	Internal Pipework	100
	Irrigation	40
	Non-Return Valve	20
	Perimeter Fence	25
	Pump Station	25-60
	Treatment Plant	25-50

Table 6 - Useful Life of Council's Stormwater, Water and Sewer Assets

2.1.3   Stormwater, Water and Sewer Hierarchy

In accordance with the International Infrastructure Management Manual, Council acknowledges that the primary purpose of an asset hierarchy is to ensure that appropriate management, engineering standards and planning practices are applied to the asset based on its function. It also enables more efficient use of limited resources by allocating funding to those assets that are in greater need and the costs are better justified.

At present, Council is reviewing hierarchies for Stormwater, Water and Sewer assets to provide a consistent classification of assets predominantly based on their role within the Stormwater, Water and Sewer network which relates to their use and risk to community members should they fail. Once the hierarchies are finalised and implemented, they will be included in the future Asset Management Plans.

2.2   What does it Cost?

The summary of Council's financial revaluation values for Stormwater, Water and Sewer portfolio as at 30th June 2017 is detailed in the table below:

Asset Financial Class	Replacement Value ($)	Written Down Value ($)	Accumulated Depreciation ($)	Annual Depreciation ($)
Stormwater	4,161,247	2,261,345	1,899,903	71,202
Water	1,371,476	826,819	544,657	27,948
Sewer	18,121,918	12,841,255	5,280,663	326,290
Total	**23,654,641**	**15,929,419**	**7,725,223**	**425,440**

Table 7 - Coorong District Council Financial Revaluation Values as at 30 June 2017

2.3 Asset Class Status

The following provides a high level overview with regards to the details of the condition rating scales and community perception scales for Council's Stormwater, Water and Sewer asset stock.

Condition Rating	Description
1	**Excellent Condition**: Only planned maintenance required
2	**Good**: Minor maintenance required plus planned maintenance
3	**Fair**: Significant maintenance required
4	**Poor**: Significant renewal/upgrade required
5	**Very Poor**: Unserviceable

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Table 8 - Asset Class Status

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For above ground Stormwater, Water and Sewer assets, the condition of the Coorong District Council's asset stock is determined by a visual inspection carried out by Council staff or an external contractor, with the latest condition assessment generated from Assetic myData dating June 2017. This above ground Stormwater, Water and Sewer assets condition data have since been updated to reflect the changes in condition as a result of major renewal and upgrade works delivered via Council's capital works program and works delivered via Council's preventative maintenance program.

For Council's below ground Stormwater, Water and Sewer assets, for example stormwater pipes which are buried underground, a visual assessment of the pipe network is conducted with the use of a remote controlled Closed Circuit Television Unit (CCTV).

CCTV camera inspections are carried out by a small remote controlled car fitted with a camera inside the stormwater pipe. The camera on the remote controlled car allows the inspector to record inspections, in a digital format, to be kept as a permanent record. As the camera moves up the pipe internally, the inspector undertakes a visual inspection while viewing the images and reports defects and provides photographs.

Due to the extensive below ground asset network that Council owns, the exercise of undertaking CCTV inspections is a costly one and will take decades to undertake visual condition assessments of the entire below ground assets.

Therefore, when determining the condition of the Council's below ground assets a mixture of methods and methodologies is required. These include a visual inspection of ground level pits, culverts and a percentage of the network each year for Stormwater, Water and Sewer below ground assets.

At the time of audit it is also appropriate to confirm the location and dimensions as well as take a series of photos as follows.

- Material
- Diameter or dimensions
- Quantity
- Number of cells
- Material and Condition of left and right headwalls
- Material and Condition of left and right wingwalls
- General comments relating to any defects and urgency for repairs

The condition profile of Council's Stormwater, Water and Sewer assets are shown below.

Asset class	Rating Date	Very Good	Good	Fair	Poor	Very Poor
		Score 1	Score 2	Score 3	Score 4	Score 5
Stormwater	June 2017	22.94%	30.47%	35.33%	11.26%	0.00%
Water	June 2017	46.23%	17.11%	2.32%	34.34%	0.00%
Sewer	June 2017	45.15%	49.15%	4.04%	1.60%	0.05%

Table 9 – Stormwater Assets Condition Rating by Replacement Value
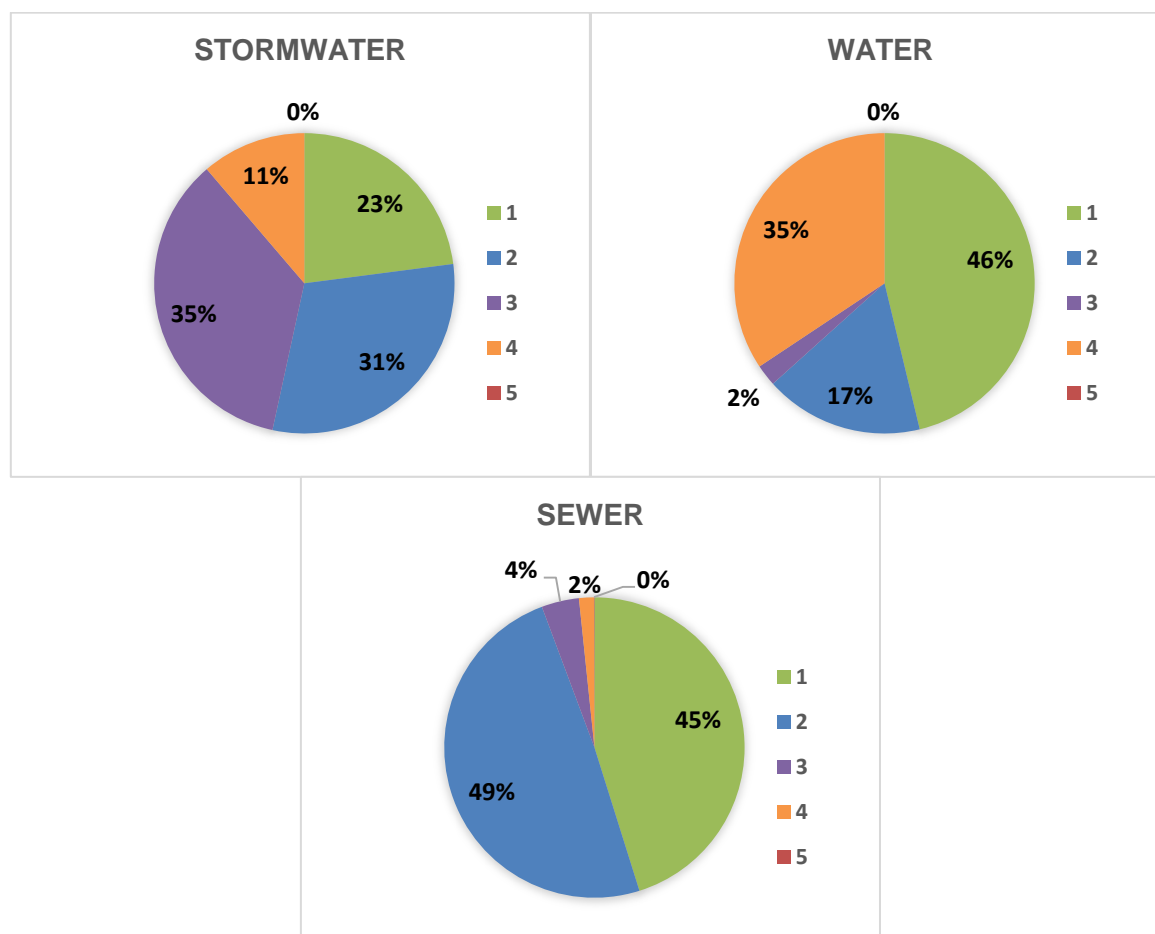

Figure 1 – Assets Condition Rating by Replacement Value

3 Levels of Service and Condition Assessment

At Coorong District Council, we have defined two tiers of levels of service; Strategic Levels of Service and Operational Levels of Service.

3.1 Strategic Levels of Service

Strategic Levels of Service are what we expect to provide in terms of key customer outcomes:

- Appropriateness of service.
- Accessibility to users 24 hours a day, 7 days a week.
- Affordability - acknowledging that we can only deliver what we can afford.
- Relevance of the service being provided - in terms of demand characteristics, future demographics, current back-logs and where the pressure points are.
- Coorong District Council's Strategic Levels of Service that have been adopted as a result of this Water & Sewer AMP are tabulated in the table below as follows:

Service Criteria	What will Council do?	Performance Standard / Measure
Community		
Appropriateness	Provide fit for purpose Stormwater, Water and Sewer infrastructure with adequate capacity to manage current population requirements.	Assets are working and functionally up to standard. Performance will be measured on the basis of incidents.
Customer Satisfaction	Stormwater, Water and Sewer assets meet community needs.	>60% customer satisfaction.
Responsiveness	Provide maintenance and risk related repairs, based on reactive incidents.	As per maintenance service levels.
Affordability	Provide cost-effective maintenance and construction programs that will also lower long-term costs of asset provisions.	Life Cycle asset costs and renewal gaps in future. Target is to meet asset funding gaps in less than 5 years.

Table 10 - Strategic Levels of Service

It is noted that that performance targets have not yet been agreed for any of the service criteria above. Until these are agreed, performance against target cannot be measured. This will be completed in future updates of this plan.

3.2 Operational Level of Service

Operational Levels of Service are what we will do in real terms, i.e. reliability, functionality and adequacy of the services provided i.e. at what point will we repair, renew or upgrade to meet the customer outcomes listed in the strategic levels.

Operational levels of service are also referred within Council as Technical Levels of Service and have been defined for each of the following:

- **New Asset** - If we provide new Stormwater, Water and Sewer structures / assets, then what design and maintainability standards shall apply to make them meet our strategic outcomes.

- **Upgraded or Reconstructed Asset to original standard** - If we upgrade or reconstruct Stormwater, Water and Sewer assets, then what design and maintainability standards shall apply to make them meet our strategic outcomes.

- **Maintenance** - When will we intervene with a maintenance repair and what will be our responsiveness in terms of customer requests for maintenance faults.

3.2.1 Capital Levels of Service - New Assets, Reconstructed Assets, Upgraded Assets

New or Upgraded Stormwater, Water and Sewer assets are provided in accordance with the following.

- Coorong District Council Development Design Specification;

- Coorong District Council standard drawings;

- Australian Rainfall and Runoff Guidelines; and

- Coorong District Council Stormwater, Water and Sewer Service Provision Manual.

3.2.2 Maintenance level of Service

For the Levels of Service delivered on a day to day nature (i.e. responding to customer requests for maintenance faults), refer to the following manuals, available for display at the Council's offices:

The service manuals documents:

1. The task or work expected to be undertaken, e.g. remove debris from drainage pit or pipe to reduce flooding hazard, pump replacement etc.

2. The schedule of inspections to be undertaken of specified matters at specified intervals;

3. The circumstances under which intervention action is to be taken with respect to repair or maintenance needs for defects reported or found on inspection;

4. The priority to be given to intervention level;

5. The type of priority intervention action that will be carried out;

6. Provision, as far as practicable, for the unpredictable, i.e. emergencies, natural disasters; and

7. Assessment of resources required delivering the specified maintenance services.

Responsibility for immediate dangerous situations with respect to stormwater, water and sewer assets are initially assessed or undertaken by Councils operational staff or the after hour's response team.

3.3 Condition Assessment Framework

The Council's "Stormwater, Water and Sewer Business Process Manual" provides further information on the methodology for rating the condition of Council's Stormwater, Water and Sewer assets.

As the bulk of the Stormwater, Water and Sewer assets are buried underground, Council has adopted two methods of applying condition rating scores to these assets and this is by visual and non-visual assessment.

The non-visual assessment relies on two main factors which contribute to the allocation of a condition score and they are:

- Age of the asset; and
- Known capacity issues / blockage issues.

The visual assessment relies on the use of CCTV cameras to view the asset and the factors which contribute to the allocation of a condition score are:

- Structural soundness of the structure;
- Known capacity issues / blockage issues.

Condition Information needs to be of sufficient accuracy, repeatability and completeness to support the delivery this Water & Sewer AMP, Capital works programs and use in corporate Asset Management system for predictive modelling.

4 Demand Management

The Coorong District Council area is located in the Murraylands Region of South Australia, about 180 kilometres south-east of the Adelaide CBD. The Coorong District Council area is bounded by the Rural City of Murray Bridge and the District Council of Karoonda East Murray area in the north, the Southern Malllee District Council area in the east, the Tatiara District Council area and the Kingston District Council area in the south, and the Southern Ocean and the Alexandrina Council area in the west.

In general, future demand for Stormwater, Water and Sewer assets is affected by the following factors:

- Population growth and associated urban development
- Changing community expectations
- Residential Development
- Demographic Changes
- Demand for increased services
- Strategic extensions to the network

These factors will affect the addition of new assets to the Stormwater, Water and Sewer network system as well as the renewal and upgrade requirements for the existing network.

4.1 Demand Forecast

In the absence of comprehensive service strategies, population trends can be used as a guide to ascertain future demand. The official population of Coorong District Council area as of the 30th June 2016, is 5,555[2].

The total land area of the Council is 8,832 km2 with a population of density of 0.63 persons per km2 in 2016. Figure below provides the 10 year population trend from 2006 to 2016:
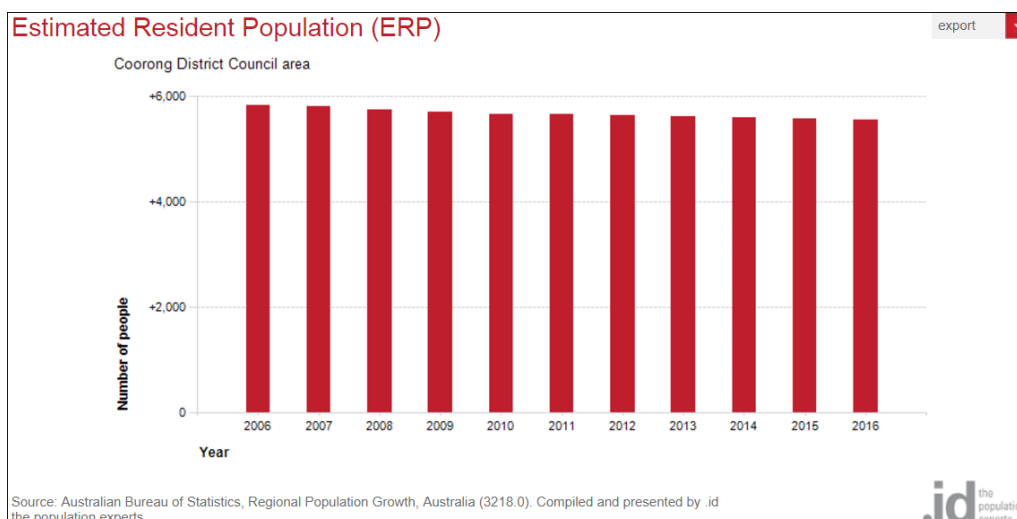

Figure 2 – Estimated Resident Population

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[2] Data sourced from .idcommunity who references Australian Bureau of Statistics (ABS)

It is noted that the population projection will be somewhat similar to the current trend therefore the impact of population on services will be relatively insignificant.

4.2 Current Stormwater, Water and Sewer Asset Utilisation

In general, the Stormwater, Water and Sewer network is considered by residents to provide adequate capacity across developed areas of the Council. Council participates in the Local Government Association of South Australia Comparative Performance Measures in Local Government Customer Satisfaction survey. This telephone survey polls a sample of residents on their level of satisfaction with Council's services (with scores ranging from 1 being least satisfied or least important and 10 very satisfied or very important).

The objectives of this research are to assist Council management in:

- Understanding the needs and expectations of residents within the municipality;
- Delivery of Council services; and
- Evaluating the effectiveness of Council services and programs. Allocating resources across Council services and programs.

When asked to rank the importance of Council Stormwater, Water and Sewer asset related infrastructure services, Council scored 9.04 in comparison to SA state average score of 9.02.

4.3 Changes in Technology

Council is continuously monitoring new asset treatments that may be available to increase the life of its assets.

The following impacts on demand from technological changes may be brought about by:

- Applying new techniques to strengthen and increase the life or reduce cost of Stormwater, Water, Sewer assets. For example trenchless pipeline techniques could reduce the cost of pipeline maintenance and renewal, therefore reduce the impact of works on the community and environment
- More condition based than intervention point planning to enable a better timed treatment points
- Technological change may 'drive Council's dollar further'.

4.4 Demand Management Plan

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures.

Opportunities for demand management will be investigated as required and will be developed in future revisions of this AM Plan.

4.5 New Assets from Growth

The new assets required to meet growth will be acquired from both land developments constructed by the developer and those constructed as part of Council's program.

Acquiring these new assets will commit Council to fund ongoing operations and maintenance 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 operating and maintenance costs.

5 Asset Funding Levels

A key objective of this Water & Sewer AMP has been to match the level of service provided by Council's Stormwater, Water and Sewer network to the expectations of the users (i.e. the community) within available resources. This requires a clear understanding of the user needs, expectations and preferences.

To achieve and sustain acceptable standards of service for Council's Stormwater, Water and Sewer asset network requires an annual commitment of funds. These funds provide for regular and responsive maintenance and for timely renewal or replacement of the asset. The provision of adequate financial resources ensures that the Stormwater, Water and Sewer network are appropriately managed and preserved.

Financial provisions below requirements impact directly on community development and if prolonged, results in substantial needs for "catch up" expenditure imposed on ratepayers in the future. Additionally, deferred renewal results in increased and escalating reactive maintenance as aged assets deteriorate at increasing rates.

Council has developed a simulation model for the condition analysis of the Council's Stormwater, Water and Sewer network using prediction modelling software (Assetic Predictor©).

The objective of this analysis is to model the performance of the Coorong District Council's Stormwater, Water and Sewer network.

This process involved setting up:

- Remaining life profiles based on condition;

- Identifying the current treatments and unit rates to deliver these treatments;

- Setting up treatment decision matrices defined for optimal interventions for each treatment;

- Setting up treatment effects based on treatment applied;

- Data mapping to ensure all records are uniquely identified and processed through the asset lifecycle modelling to simulate the movements of asset conditions over 10 years and along the way triggers certain treatment if a specific criteria is achieved.

By utilising the above process and setting up the criteria and logic within the Assetic Predictor© modelling software, it has been possible to model the future costs of Council's Stormwater, Water and Sewer asset stock renewal requirements and also to predict the future condition of Council's Stormwater, Water and Sewer asset stock based on a certain budget.

5.1   Forecast 10-Year Funding Required

Predictive modelling and condition ratings were used to determine the following required renewal expenditure over the next 10 years.

The results of the modelling are shown below in both the predicted funding requirements and the predicted service level. The funding scenario below is the most affordable current scenario.

Year	Stormwater	Water	Sewer
2017/18	$75,210	$18,530	$125,350
2018/19	$75,210	$18,530	$23,980
2019/20	$75,210	$18,530	$25,070
2020/21	$75,210	$18,530	$119,900
2021/22	$75,210	$18,530	$104,640
2022/23	$75,210	$18,530	$341,170
2023/24	$75,210	$18,530	$9,810
2024/25	$75,210	$18,530	$17,440
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2026/27	$75,210	$18,530	$113,360
Total	**$752,100**	**$185,300**	**$994,080**

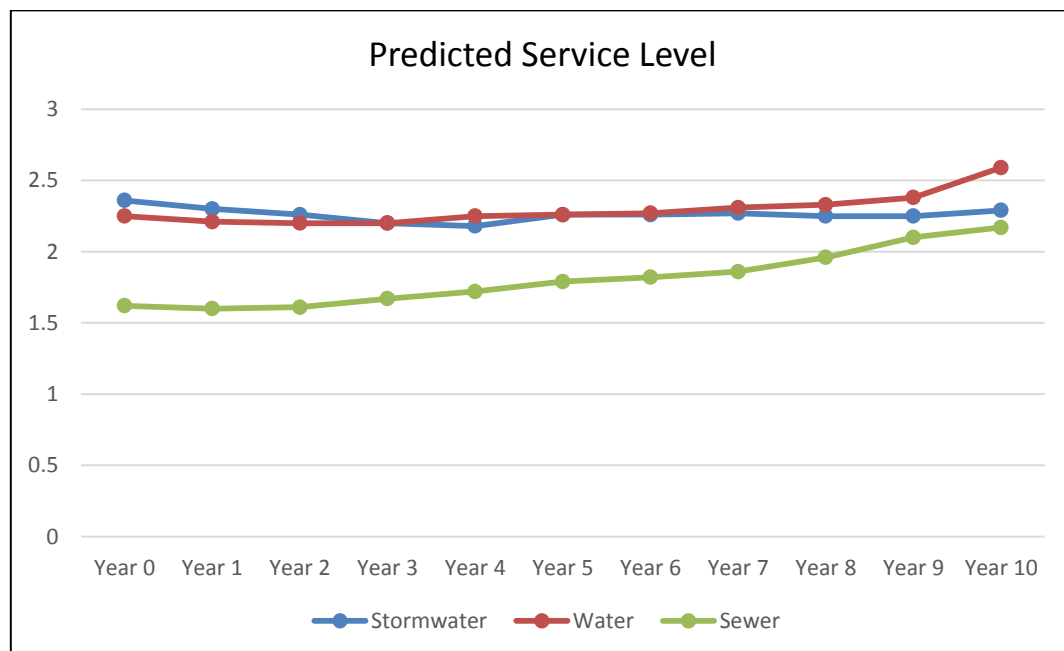**Table 11 - Capital Renewal Funding**

Figure 3 – Predicted Service Level

The concept of maximising long-term asset stock value can be applied to asset management decisions. Improved Stormwater condition will increase the asset stock value and vice versa.

Backlog is also introduced in the asset management decisions. The theory of backlog which the Coorong District Council adopted is the cost to restore all assets to a condition 3 or better. Therefore assets with condition state worse than condition 3 will be considered below Council's acceptable level of service and hence comprise the Stormwater asset stock backlog.

The estimated value of the asset backlog of works (i.e. lower than condition index 3) calculated by Predictor as at June 2017 is as follows:-

	Stormwater	Water	Sewer
Current Asset Backlog[3]	$468,414	$470,900	$299,580
Total % Stock Movement at end of 10 Years	-0.40%	-2.93%	1.29%
Total Value of Stock Movement at end of 10 Years	-$16,794	-$40,180	$234,176
Total Stock Backlog at Year 10	$451,620	$430,720	$533,756

Table 12 - Asset Stock Backlog

Stormwater- **$752.1 thousand** in Capital Renewal funding allocation over 10 years (approx. **$75.2 thousand** on average per annum). It is predicted the funding allocation will improve current asset stock network condition from 2.36 in year 0 to 2.29 out of 5 at year 10. It is predicted that the current asset stock backlog will decrease from **$468.4 thousand** to **$451.6 thousand**, which equates to **$16.8 thousand** decrease.

Water- **994.1 thousand** in Capital Renewal funding allocation over 10 years (approx. **$99.4 thousand** on average per annum). It is predicted the funding allocation will decrease current asset stock network condition from 2.25 in year 0 to 2.59 out of 5 at year 10. It is predicted that the current asset stock backlog will decrease from **$470.9 thousand** to **$430.7 thousand**, which equates to **$40.2 thousand** decrease.

Sewer - **$185.3 thousand** in Capital Renewal funding allocation over 10 years (approx. **$18.5 thousand** on average per annum). It is predicted the funding allocation will decrease current asset stock network condition from 1.62 in year 0 to 2.17 out of 5 at year 10. It is predicted that the current asset stock backlog will increase from **$299.6 thousand** to **$533.8 thousand**, which equates to **$234.2 thousand** increase. This increases is anticipated because of many short lives assets progressively move to Condition 4 over the 10 year period

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[3] Asset stock backlog is defined as the total assets value where their conditions are above the threshold Overall Condition Score (OCI) of 3.

5.2 Committed Funding

The current LTFP allows for the following funding on average per annum over 10 years.

Stormwater	Water	Sewer
$752,100	$994,080	$185,300

Table 13 – Committed Funding

5.3 Financial Ratios

Asset Consumption Ratio:

This ratio seeks to highlight the aged condition of a local government's stock of physical assets. If a local government is responsibly maintaining and renewing/replacing its assets in accordance with a well prepared asset management plan, then the fact that the Asset Consumption Ratio may be relatively low and/or declining should not be cause for concern - providing it is operating sustainably.

Asset Consumption Ratio= $\dfrac{\textit{Depreciated Replacement Cost of Depreciable Assets}}{\textit{Current Replacement Cost of Depreciable Assets}}$

Purpose: This ratio measures the extent to which depreciable assets have been consumed by comparing their written down value to their replacement cost.

Standards: Standard is met if the ratio can be measured and is 50% or greater (0.50 or >). Standard is improving if the ratio is between 60% and 75% (0.60 and 0.75).

Asset Class	Current Replacement Cost	Depreciated Replacement Cost	Ratio
Stormwater Assets	$4,161,247	$2,261,345	54.3%
Water Assets	$1,371,476	$826,819	60.3%
Sewer Assets	$18,121,918	$12,841,255	70.9%
Totals	**$23,654,641**	**$15,929,418**	**67.3%**

Table 14 - Current Asset Consumption Ratio

Asset Renewal Funding Ratio

This ratio indicates whether the local government has the financial capacity to fund asset renewal as required, and can continue to provide existing levels of services in future, without additional operating income; or reductions in operating expenses.

The ratio is calculated from information included in the local government's Long Term Financial Plan and Asset Management Plan; not the Annual Financial Report. For the ratio to be meaningful, a consistent discount rate should generally be applied in Net Present Value (NPV) calculations

Asset Renewal Funding Ratio = $\dfrac{\textit{NPV of Planned Capital Renewals over 10 years}}{\textit{NPV of Required Capital Expenditure over 10 years}}$

Purpose: This ratio is a measure of the ability of a local government to fund its projected asset renewal / replacements in the future.

Standards: Standard is met if the ratio is between 75% and 95% (or 0.75 and 0.95). Standard is improving if the ratio is between 95% and 105% (or 0.95 and 1.05), and the ASR falls within the range 90% to 110%, and ACR falls within the range 50% to 75%.

Asset Class	Planned Capital Renewals over 10 years	Required Capital Expenditure over 10 years	Ratio
Stormwater Assets	$752,100	$752,100	100%
Water Assets	$185,300	$185,300	100%
Sewer Assets	$994,080	$994,080	100%
Totals	**$4,254,398**	**$2,934,840**	**145.0%**

Table 15 - Asset Renewal Funding Ratio

This ratio is meaningful because it allows Council to see the gaps and redistribute planned funding from asset classes that possess surpluses for example Sewer Treatment Facilities and Sewer P&E into asset classes that require the fund most for example Stormwater P&E, Water Mains and Water P&E.

6 Asset Management Practices

This section outlines the decision-making tools Council currently uses, to determine long term maintenance, renewal and upgrade expenditure for its Stormwater, Water and Sewer assets. Asset management systems are generally categorised as follows:

- **Asset Management Systems** - The information support tool used to store and manipulate asset data.

- **Data** - Data available for interrogation by information systems to produce outputs.

6.1 Accounting / Financial Systems

The Council utilises a standard computerised general ledger system for all of its accounting operations.

The system allows for separately capturing capital and maintenance expenditure, and various sources of revenue.

The chart of account used within the general ledger is structured to facilitate the ease of data extraction required for various financial reporting requirements (e.g. annual budget, internal management reporting, monthly reporting to Council, Annual Financial Statements).

The Manager Financial Service has accountability and responsibility for this system.

6.2 Asset Management Systems

Coorong District Council currently utilises the 'myData' software system for asset management purposes. The system stores inventory, attribute, condition, financial and historical data.

All information pertaining to location, type, dimensions, materials, known construction dates and where available, condition of these Stormwater, Water and Sewer assets are recorded and stored in Council's Asset Register which is myData. At the time of preparing this Water & Sewer AMP, it is estimated that Council's Asset Register is 98% up to date.

The Financial Services Unit and the Engineering Division share accountability and responsibility for this system.

Assetic Predictor was used for the prediction analysis to determine the future strategies and capital expenditure (Capex) plans contained in Section 5 of this Plan.

Coorong also utilises MapInfo Professional and Exponare as its Geographical Information System (GIS). The GIS system stores asset and other information spatially.

6.3 Accounting Framework

The following Accounting Framework applies to Local Government in South Australia:

- Local Government Code of Accounting Practice and Financial Reporting

- AASB 13 Fair Value Measurement - prescribes fair value measurement of assets

- AASB 116 Property, Plant & Equipment - prescribes requirements for recognition and depreciation of property, plant and equipment assets

- AASB 136 Impairment of Assets - aims to ensure that assets are carried at amounts that are not in excess of their recoverable amounts

- AASB 108 Accounting Policies - specifies the policies that Council is to have for recognition of assets and depreciation

The Council's asset materiality threshold limit has been set at $3,000.

Council may consider different threshold values being adopted for different classes of assets

6.4 Information Flow for Stormwater, Water and Sewer and Process

The key information flows into this Water & Sewer AMP are:

- The asset register data on material types, design data such as dimensions, replacement cost, age, remaining life of the asset;
- The unit rates for categories of work/material;
- The adopted service levels;
- Projections of various factors affecting future demand for services;
- Historical maintenance and capital works treatments;
- Correlations between maintenance and renewal, including decay models; and
- Data on new assets acquired by Council.

The key information flows from this infrastructure and asset management plan are:

- The assumed Capital Works Program and trends;
- The resulting budget, valuation and depreciation projections; and
- The useful life analysis.

These will impact the Long Term Financial Plan, Council Plan, annual budget and departmental business plans and budgets.

As the 'myData' system maintains core asset data and financial data, the flow of information is entered directly into this one system.

Information is updated within 'myData' on an as required basis.

7 Action Plan

7.1 AM Document Register

Document	Adopted	Proposed Revision	Comment
Coorong District Council Infrastructure & Asset Management Policy - AR16/5291	Effective Date: February 2008 Revision Number: 3 Last Revision Date: February 2008	April 2018	
Coorong District Council Water & Sewer AMP - Version 1.0			
Coorong Water & Sewer Business Process Manual - Version 1.0			

Table 16 - Asset Document Register

7.2 AM Practice Improvements

7.2.1 Performance Measures

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

- The degree to which the required cash flows identified in this AMP are incorporated into Council's Long Term Financial Plan and Strategic Management Plan;

- The degree to which the detailed works programs, budgets, business plans and organisational structures take into account the 'global' works program trends provided by the AMP; and

- The performance of Council against the Strategic Levels of Service documented in the Water & Sewer Business Process Model.

7.2.2 Improvement Plan

The asset management improvement plan generated from this Asset Management Plan shown in the following table.

Note: Importance, Urgency and Risk - 1 = Low, 5 = High
         DE = Director Engineering
         DCS=   Director Corporate Services

Task No	Task	Importance	Urgency	Risk	Responsibility	Resources Required	Start Date	End Date
1.	Obtain Council approval of this Plan.	5	5	5		In-house	2017	2017
2.	Obtain Council approval to the Water & Sewer Business Process Model.	4	4	3		In-house	2017	2017
3.	Integrate the Asset Management and GIS Systems to provide for easy identification of the location of the assets, including provision of maps of asset condition.	4	3	2		In-house	2017	2018
4.	Confirm the condition and remaining life of assets identified for renewal over the next 10 years and investigate alternatives for renewal or extension of the asset lives.	4	3	3		In-house	2017	2018
5.	Establish ongoing condition inspections for all Stormwater, Water and Sewer assets on 3 to 4 yearly cycle, coinciding with Council's revaluation cycle.	5	4	4		In-house and Contract	Ongoing	Ongoing
6.	Update and revise the prediction modelling parameters and inputs for all Stormwater, Water and Sewer assets once new condition data is collected	5	4	4		In-house and Contract	Ongoing	Ongoing
7.	Utilise the predictive modelling of Stormwater, Water and Sewer assets for financial modelling and development of annual and long term capital works programs.	5	4	4			2017	Ongoing

Task No	Task	Importance	Urgency	Risk	Responsibility	Resources Required	Start Date	End Date
8.	Test the current levels of service to determine if they are achievable for current budgets. Test the current levels of service, to determine 'a confidence level' for reasonableness. Review response levels of service for reactive maintenance.	3	3	3		In-house	2017	2018
9.	Modify/Review finance system to capture expenditure against all types of maintenance - whether proactive or reactive	3	3	3		In-house	2017	2019
10.	Pilot effective works management, asset inspection (works and AM) integrated with spatial, finance and AM systems.	4	3	3		In-house	2017	2019

Table 17 - Improvement Plan

7.2.3 Monitoring and Review Procedures

This Asset Management Plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process.

This AMP has a life of 4 years and is due for revision and updating within 2 years of each Council election.

An asset management plan is a dynamic document, reflecting and responding to changes over time. Monitoring of this asset management plan is required to:

- Ensure compliance with the proposed improvement program milestones.
- Ensure compliance with adopted standards and procedures for condition and performance.

A full review of this asset management plan should be undertaken every three to five years to document progress and set out proposals for the next five years.

Appendix A - Long Term Financial plan

Proposed 10 year Capital Works Funding

Year	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Stormwater	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210	$75,210
Water	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530	$18,530
Sewer	$125,350	$23,980	$25,070	$119,900	$104,640	$341,170	$9,810	$17,440	$113,360	$113,360	$125,350
Totals	**$781,573**	**$78,207**	**$424,233**	**$142,484**	**$175,560**	**$86,284**	**$124,312**	**$534,778**	**$220,196**	**$367,213**	**$2,934,840**

GLOSSARY

Asset class	Grouping of assets of a similar nature and use in an entity's operations (AASB 166.37).
Asset condition assessment	The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.
Asset management	The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset stock backlog	Asset stock backlog is defined as the total assets value where their conditions are above the threshold Overall Condition Score (OCI) of 3.
Assets	Future economic benefits controlled by the entity as a result of past transactions or other past events (AAS27.12). Property, plant and equipment including infrastructure and other assets (such as furniture and fittings) with benefits expected to last more than 12 month.
Backlog Works***	Estimated cost to bring infrastructure, buildings and other structures and depreciable land improvements to a satisfactory standard, measured at a particular point in time
Capital expenditure	Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.
Capital funding	Funding to pay for capital expenditure.
Capital new expenditure	Expenditure which creates a new asset providing a new service to the community that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operating and maintenance expenditure.
Capital renewal expenditure	Expenditure on an existing asset, which returns the service potential or the life of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it has no impact on revenue, but may reduce future operating and maintenance expenditure if completed at the optimum time, e.g. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.
Capital upgrade expenditure	Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretional and often does not result in additional revenue unless direct user charges apply. It will increase operating and maintenance expenditure in the future because of the increase in the Council's asset base, e.g. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.
Carrying amount	The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.
Class of assets	See asset class definition
Component	An individual part of an asset which contributes to the composition of the whole and can be separated from or attached to an asset or a system.
Cost of an asset	The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, plus any costs necessary to place the asset into service. This includes one-off design and project management costs.
Current replacement cost (CRC)	The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Current Replacement Cost "As New" (CRC)	The current cost of replacing the original service potential of an existing asset, with a similar modern equivalent asset, i.e. the total cost of replacing an existing asset with an as NEW or similar asset expressed in current dollar values.
Depreciable amount	The cost of an asset, or other amount substituted for its cost, less its residual value (AASB 116.6)
Depreciated replacement cost (DRC)	The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset
Depreciation / amortisation	The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.
Economic life	See useful life definition.
Expenditure	The spending of money on goods and services. Expenditure includes recurrent and capital.
Fair value	The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arm's length transaction.
Level of service	The defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost).
Life Cycle Cost	The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises annual maintenance and asset consumption expense, represented by depreciation expense. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.
Life Cycle Expenditure	The Life Cycle Expenditure (LCE) is the actual or planned annual maintenance and capital renewal expenditure incurred in providing the service in a particular year. Life Cycle Expenditure may be compared to Life Cycle Expenditure to give an initial indicator of life cycle sustainability.
Overall Condition Index (OCI)	An Overall Condition Index (C) is a numerical score given to an asset to represent its condition. This index which is an output from Predictor will take into account all of the condition parameters and averages them to provide a score out of 5 with 5 being the worst.
Remaining life	The time remaining until an asset ceases to provide the required service level or economic usefulness. Age plus remaining life is economic life.
Renewal	See capital renewal expenditure definition above.
Residual value	The net amount which an entity expects to obtain for an asset at the end of its useful life after deducting the expected costs of disposal.
Risk management	The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.
Service potential	The capacity to provide goods and services in accordance with the entity's objectives, whether those objectives are the generation of net cash inflows or the provision of goods and services of a particular volume and quantity to the beneficiaries thereof.
Service potential remaining	A measure of the remaining life of assets expressed as a percentage of economic life. It is also a measure of the percentage of the asset's potential to provide services that are still available for use in providing services (DRC/DA).

Useful life	Either:
	  (a) the period over which an asset is expected to be available for use by an entity, or
	  (b) the number of production or similar units expected to be obtained from the asset by the entity.
	It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Council. It is the same as the economic life.