





Community Wastewater Management Systems

Asset Management Plan

2019 to 2029

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2015-2025	04/05/2015	Initial plan prepared in conjunction with relevant staff for adoption by Council.
2017-2027	05/12/2016	Biyearly review undertaken, with major changes being update of financial information and risk management section.
2019-2029	18/03/2019	Annual review conducted, with major changes being update of financial information. Converted to new format AM Plan.

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1 EXECUTIVE SUMMARY

Context

The fundamental purpose of this Community Waste Management System Asset Management Plan (CWMS AM Plan) is to improve Council's long-term strategic management of its infrastructure CWMS assets in order to cater for the community's desired levels of service in the future, in accordance with Council's key strategic documents and demonstrate reasonable management in the context of Council's available financial and human resources. The CWMS AM Plan 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.

District Council of Grant's CWMS assets are located in the townships of Allendale East, Cape Douglas, Donovans, Pelican Point, Port MacDonnell and Tarpeena.

What does the plan Cover?

The CWMS asset portfolio comprises:

- All CWMS pipes including gravity mains, rising mains and connections;
- All CWMS manholes, inspection openings and flushing points;
- All CWMS pump stations (including associated assets such as but not limited to pumps, valves etc);
- Treatment Plants (including but not limited to ponds and associated infrastructure);
- All other structures such as tanks and valves as required to deliver CWMS.

These CWMS assets have a replacement value of \$12,685,615 as at 30th June 2018.

What doesn't the plan Cover?

- Those assets not owned by the District Council of Grant e.g. in Community Title developments; and
- Any internal drainage pipe work that exists on private property beyond the Inspection point.

What does it Cost?

There are two key indicators of cost to provide the CWMS asset portfolio :

- The life cycle cost being the average cost over the life cycle of the asset; and
- The total maintenance and capital renewal expenditure required to deliver existing service levels in the next 10 years covered by Council's long term financial plan.

The total operations, maintenance and capital renewal expenditure required to sustain the CWMS asset base over the next ten years at current service levels is estimated at \$4,485,761, an average of \$448,576 per annum. Council's planned lifecycle expenditure for year one of this AM Plan is \$544,537. This increased planned expenditure for year one is due to a high number of planned renewals compared to future years.

What we will do

Council plans to provide CWMS services for the operation, maintenance, renewal and upgrade of all assets as outlined in Section 2.2 to meet service levels set by Council within annual budget.

Managing the Risks

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

- Insufficient resources including funding and staff to replace/renew assets in accordance with renewal forecasts maintenance standards.
- Incomplete/inaccurate asset data, particularly the condition of the CWMS components. This potentially leads to poor decision making and lack of funding for maintenance and renewals.

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

- Conducting regular condition audits and site inspections to determine the remaining useful life of assets and maintenance requirements.
- Request funding for renewals as required and monitor trends of maintenance requirements.

2. INTRODUCTION

2.1 Background

This asset management plan (AM Plan) has been developed to support Council's Strategic AM Plan and communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

Much of Council's core asset management information is detailed within the Strategic AM Plan and it is therefore important that this document be read in conjunction with that Plan along with other Council key planning documents including:

- Strategic Management Plan
- Long Term Financial Plan
- Annual Business Plan
- Asset Management Policy
- Asset Accounting Policy
- Risk Management Framework
- Leases and Licences Policy

2.2 Assets Covered by this Plan

The Community Wastewater Management System (CWMS) assets covered by this AM Plan are shown in table below.

Note: All values throughout this AM Plan are shown in current (real) dollars.

Assets covered by this Plan (by asset category) as at 30th June 2018

Asset Category	Quantity	Replacement Value
CWMS Mains Includes all pipes whether they be for collection or distribution of wastewater. This includes connections (or services), gravity mains and rising mains.	39,348m	\$7,626,802
CWMS Nodes Includes all manholes and flushing points. Manholes: All manholes and access points that form a junction of two or more pipes and provide physical access to the underground pipe system to perform inspections, cleaning and repair. Flushing Points: Points where the underground pipe system is raised to the natural surface to allow inspection and flushing of the gravity main below to occur.	488 assets	\$514,253
CWMS Pump Stations Includes all mechanical, civil and electrical assets that typically can be found at pump stations. Also includes the Scada system.	652 assets	\$2,621,764
CWMS Treatments Systems Includes all lagoons and associated infrastructure required in the treatment of effluent.	109 assets	\$1,922,796
TOTAL		\$12,685,615

3. LEVELS OF SERVICE

3.1 Community Levels of Service

Service Attribute	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
Quality/ Condition	Well maintained and suitable wastewater collection and disposal system	No. of customer requests relating to CWMS maintenance	10 per annum	<i>Not Currently Measured (refer Note below)</i>
	Provide a system with minimal break downs	System works records	10 mechanical faults per annum	<i>Not Currently Measured (refer Note below)</i>
Function/ Safety	Meet SA Health Department	Compliance to approval conditions	< 1 non-compliance event	0 non-compliance issues reported
	Meet EPA standards	Compliance to approval conditions	< 1 non-compliance event	0 non-compliance issues reported
	Low level of risk to personal and environmental health	No. of overflows within the pipe network and/or at pump stations	< 10 per annum	< 4 per annum
		No. of overflows at Lagoons and the WWTP (untreated effluent)	< 1 per annum	< 1 per annum
Capacity/ Utilisation	Provide adequate effluent disposal systems to maintain public health standards and prevent environmental harm	Compliance with standards and legislation	< 1 per annum	< 5 per annum

3.2 Technical Levels of Service

Service Attribute	Level of Service Objective	Performance Measure Process	Desired Level of Service	Current Level of Service
Operations and Maintenance <i>Budget \$364,537 (Year 1)</i>	Response time to customer requests	Time taken to complete requests	> 80% of all requests adequately responded to within target time frames.	<i>Not Currently Measured (refer Note below)</i>
	Infrastructure meets user's needs	Compliance with EPA Licence reporting and monitoring requirements	Annual reporting verification and compliance	Compliant
		Remote monitoring and logging of pump stations	Remote monitoring and logging on all pump stations excluding minor pump stations	Basic telemetry on Pump Stations
		Review and update of Operation and Maintenance manuals for each scheme	Annual	Annual
		Provide a well maintained system	Pump stations inspected and maintained	Monthly
	Manholes inspected and maintained	Every two years	Every two years	
	Gravity drain flushing	To be determined	To be determined	
	Septic tank desludging program	4 yearly	3-4 yearly <i>(dependent on location)</i>	
	Pipework inspections and conditioning monitoring. Capture of CCTV footage	To be determined	On an adhoc basis	
	Renewal <i>Budget \$180,000 (Year 1)</i>	Provide a safe and compliant CWMS system	Compliance with Department of Health CWMS design criteria	All pump stations comply
Upgrade/New <i>Budget \$404,000 (Year 1)</i>	Provide a safe and compliant CWMS system	Compliance with Department of Health CWMS design criteria	All pump stations comply	All proposed pump stations will be designed to comply and budget will be allocated accordingly

Notes:

- In addition to the above community and technical levels of service, guidelines stated within the "Water Retail Code – Minor and Intermediate Retailers" as issued by ESCOSA must be adhered to.
- At this point in time, Council is unable to formerly measure current levels of service criteria except anecdotally. As the Asset Management System and Customer Request System matures, a more accurate measure of current service levels can be provided.

3.3 Maintenance Response Levels of Service

Activity	Intervention Level	Response Times				
		Hierarchy	Inspection	Make Safe	Completion	Perf Target
Flow Switch Replacement	Flow Switch Fault	All	24 hours	24 hours	24 hours	90%
Pressure Switch Replacement	Failure on Weekly Test	All	24 hours	24 hours	24 hours	90%
Pressure Release Filter Replacement	Failure on Monthly Test	All	24 hours	24 hours	24 hours	80%
Pressure Gauge Replacement	Pressure Gauge Failure	All	24 hours	24 hours	1 week	80%
Pressure Transducer Replacement	Pressure Transducer Failure	All	24 hours	24 hours	1 week	80%
Non Return Valve Replacement	Non Return Valve Failure	All	24 hours	24 hours	1 week	80%
Pump Repair	Pump Fault	Single Service	24 hours	24 hours	2 days	80%
		Redundant Services	48 hours	48 hours	1 week	80%
Battery Replacement	Low Voltage Alarm / Weekly Testing	All	24 hours	24 hours	24 hours	90%
Siphon Control Valve Repair	Failure on Weekly Test	All	2 hours	2 hours	2 hours	80%
Aeration Unit Repair	Tolerance on Weekly Test	All	24 hours	24 hours	1 week	80%
Air Valve Repair Pressure Mains	Failure on Weekly Test	All	24 hours	24 hours	2 weeks	80%
Microbe Level Regulation	Quarterly Test Results	All	24 hours	24 hours	1 week	80%
Lagoon Water Removal	Tolerance on Weekly Test	All	24 hours	24 hours	1 week	80%
Fencing Repair	On Report of Damage or Inspection	All	24 hours	24 hours	24 hours	80%
Sludge Removal	Tolerance on Weekly Check	All	24 hours	24 hours	1 week	80%
Filter Cleaning	Tolerance on Weekly Test	All	24 hours	24 hours	1 week	80%
Filter Backwash Repair	Tolerance on Weekly Test	All	24 hours	24 hours	1 week	80%
Cleaning of Level Sensors	Tolerance on Weekly Check	All	24 hours	24 hours	24 hours	80%
Flushing of Gravity Main	Tolerance on Inspection	All	24 hours	24 hours	1 week	80%
Repair to Leaking Pressure Pipes	Routine Weekly Inspection	All	24 hours	24 hours	1 week	80%
Replacement of Beacon Globe	Routine Weekly Inspection	All	24 hours	24 hours	1 week	80%
Gate Valve Repair	Routine Quarterly Inspection	All	24 hours	24 hours	2 weeks	80%
Alarm Repair	Routine Weekly Inspection	All	24 hours	24 hours	24 hours	90%

3.4 Desired Levels of Service

At present, indications of desired levels of service are obtained from various sources including residents' feedback to Councillors and staff, service requests and correspondence. Council has yet to quantify desired levels of service. This will be done as part of Councils' future community consultation process and incorporated into future revisions of this AM Plan.

3.5 Asset Hierarchy

Service Hierarchy	Description
Single Service	Single Pump at Pump Station (Cape Douglas)
Redundant Service	Pump Station with Redundant Pumps

4. FUTURE DEMAND

4.1 Demand Drivers and Impact of Services

Demand Factor	Present Position	Projection	Impact on Services
Population and Demographics *	8,203 (based on 2016 Census data) 63.3% increase in people aged 65 years and over from 2011 to 2016.	Steady increase of 0.9% per annum, with the increase expected to occur mainly in the older demographic 65+.	No impact unless growth within townships with CWMS.
Development	Development undertaken in township areas.	Expected to continue.	Existing systems may not have capacity to handle additional development.
Environment	Assets are constructed to withstand today's known environmental conditions. Higher frequency of extreme weather events.	Greater requirements related to constructing assets to suit change in conditions. Unknown at this stage, but changes likely.	Increased cost associated with renewal and upgrade of assets associated with CWMS. Additional stormwater in system from non-complying properties affecting capacity of system.
	Community awareness on environmental and sustainability issues is increasing.	Community expectation for assets to be environmentally sustainable as awareness increases.	Possible minor reduction in wastewater production due to environmental awareness.
Legislative Requirements	Assets are constructed and maintained in accordance with current legislation.	Potential for legislation to change.	Potential for higher construction, operation and maintenance costs if legislation was to impose additional requirements.

* Current population and demographical information can be found in the Strategic AM Plan.

4.2 Changes in Technology Forecast to Affect Delivery of Services

Technology changes are forecast to have little effect on the delivery of services covered by this plan in the short term, however the following table highlights areas that technology is likely to have an impact on service delivery in the medium to long term.

Technology Change	Affect on Service Delivery
Developments in communications and remote monitoring technology	Improvements in ICT equipment provide better monitoring and operating of the CWMS WWTP remotely.
Underground pipeline renewal technology	Improved replacement techniques and lower replacement costs.
Household treatment	Replacing septic tanks with Aerobic Systems to treat and reuse wastewater before it leaves the property. Due to the nature of cost to purchase and maintain, these systems by residents, Council does not currently endorse the installation of these systems where a CWMS network is available.
Treatment and filtration	New technology for treating effluent results in a higher rate of treatment and improved end product. Council keeps abreast of all new technologies and applies these as required or appropriate.
Construction methods	The use of underground boring methods when replacing or renewing these underground pipes, as opposed to trenching, can result in substantial reduction of costs when renewing existing pipes.
Renewal methods	Re-lining of cracked sewer pipes as opposed to total removal and replacement, can result in substantial reduction of costs when renewing existing pipes.
New household water devices	Household water saving devices like dual flush toilets, low-flow shower heads and front-loading washing machines which reduce water demand and hence the flow of effluent via Council's piped network and treatment plants.

4.3 Demand Management Plan

Demand Driver	Impact on Services	Demand Management Plan
Development	Existing systems may not have capacity to handle additional development.	Ensure capacity of current systems are considered during planning application process.
Environment	Increased cost associated with renewal and upgrade of CWMS due to change in construction requirements to withstand changing environmental conditions.	Costs to be monitored and considered during annual budget planning process.
Legislative Requirements	Additional stormwater in system from non-complying properties affecting capacity of system.	Ensure compliance of all properties.
	Possible minor reduction in wastewater production due to environmental awareness.	No plan required.
	Potential for higher construction, operation and maintenance costs if legislation was to impose additional requirements.	Costs to be monitored and considered during annual budget planning process.

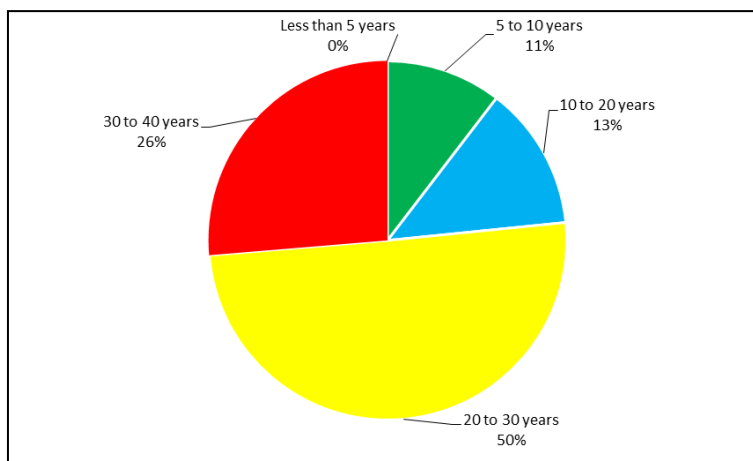
4.4 New Assets for Growth

There are no additional CWMS assets proposed during the period of the long term financial plan or this AM Plan.

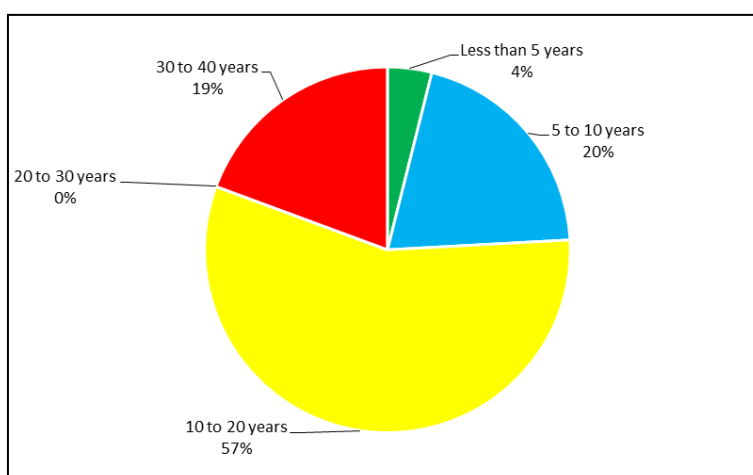
5. LIFECYCLE MANAGEMENT PLAN

5.1 Asset Age Profile

Age Profile – Pipe Assets (by length)



Age Profile – All Assets (by replacement value)



5.2 Asset Capacity and Performance

Location	Service Deficiency
Port MacDonnell CWMS	Some CWMS pipework reaches full capacity when certain scenario events occur. Going forward, work will commence in risk analysis and exploration of cost effectiveness of risk mitigation options.
Port MacDonnell and Tarpeena CWMS	A number of properties have storm water plumbing connected to their septic tanks and the CWMS. These allow large volumes of stormwater into the CWMS during storm events and which pushes the CWMS pump stations beyond pumping capacity. This is to be investigated and rectified by property owners on identification of connection issues.

The above service deficiencies were identified from records of faults and emergencies.

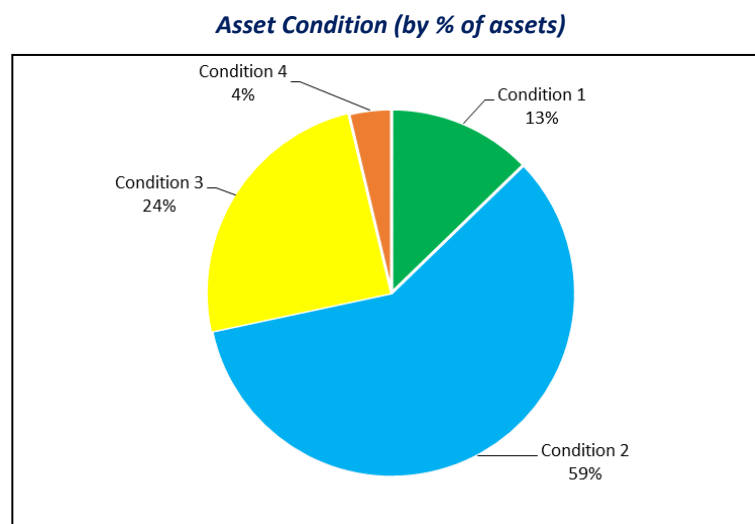
5.3 Asset Condition

Township areas have an extensive network of pipes, manholes and flushing points that are largely buried underground and out of sight. The only evidence of an underground wastewater network in most cases is where manholes and flushing points are raised to the surface to enable inspection and maintenance to occur more readily. As such, the condition of underground assets is difficult to ascertain without the use of Closed Circuit Television (CCTV) technology which is both expensive and time consuming.

Typically a wastewater drainage network comprises a number of connections to households and business, a series of gravity mains that collect the effluent and one or more pump stations that carry effluent from the lower parts of the catchment to higher ground or to the treatment plant.

Gravity mains (pipes) can vary in diameter and material depending on when they were constructed and for what design inflow. The majority of the wastewater network is constructed from PVC pipe. The anticipated useful life of these pipe assets is estimated to be between 80-100 years but this is yet to be confirmed. Council will continue to monitor the condition of these pipes over time and will review its assumptions on a regular basis.

A full condition assessment of all CWMS assets was undertaken by HDS Australia in November 2017. The assessment comprised a combination of visual, age and history of failure. A detailed condition assessment manual can be found in the Appendices.



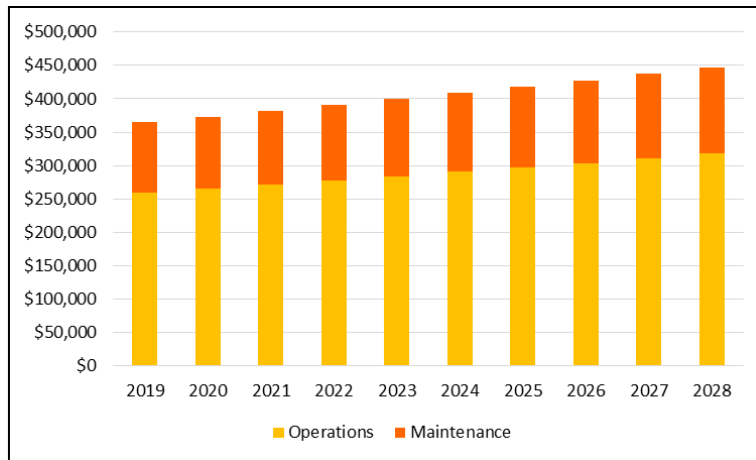
5.4 Operations and Maintenance

5.4.1 Operations and Maintenance Expenditure Trends

Year	Operations \$	Maintenance \$
2018 Actual	\$263,983	\$107,209
2019 Budget	\$259,250	\$105,286
2020 Estimate	\$263,917	\$107,181

5.4.2 Future Operations and Maintenance

Operations and Maintenance Expenditure



5.5 Renewal Plan

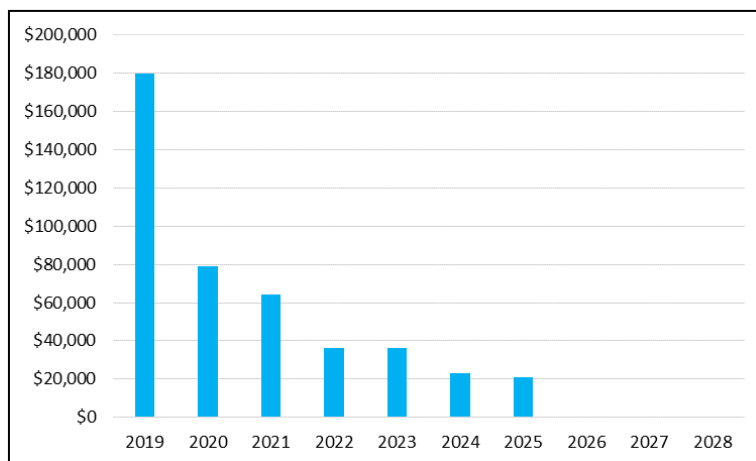
5.5.1 Ranking Criteria

Criteria	Weighting
Deficiency / Fault Reports	50%
Risk Assessment	30%
Non-Compliant Design/Age	20%
Total	100%

5.5.2 Renewal expenditure

The renewal program is shown in the Appendices.

Capital Renewal Expenditure Program



5.6 New/Upgrade Plan

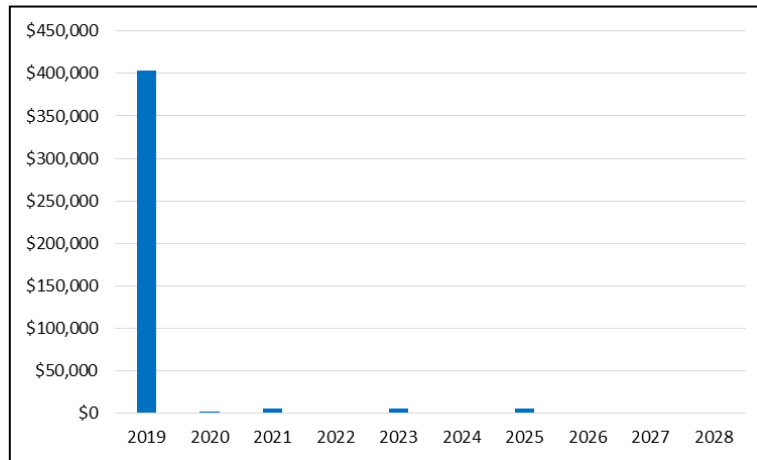
5.6.1 Ranking Criteria

Criteria	Weighting
Legislative Compliance	50%
Service Deficiency	50%
Total	100%

5.6.2 New/Upgrade expenditure

The new/upgrade program is shown in the Appendices.

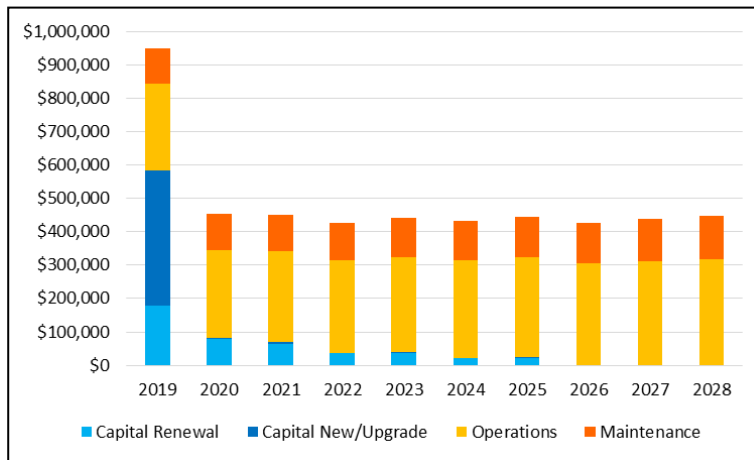
Capital New/Upgrade Expenditure Program



5.7 Summary of asset expenditure requirements

The financial projections from this asset plan are shown below for projected operating (operations and maintenance) and capital expenditure (renewal and new/upgrade assets).

Asset Expenditure Requirements



5.8 Disposal Plan

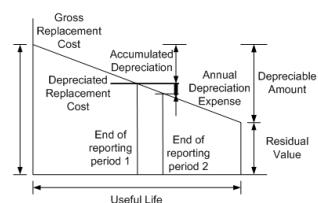
Asset	Reason for Disposal	Timing	Disposal Expenditure	Operations & Maintenance Annual Savings
No planned disposals.	-	-	\$0	\$0

6. FINANCIAL SUMMARY

6.1 Asset valuations

The value of assets recorded in the asset register as at 30th June 2018 covered by this AM Plan are shown below. Assets are valued at fair value at cost to replace service.

Gross Replacement Cost	\$12,685,616
Depreciable Amount	\$12,685,616
Accumulated Depreciation	\$4,855,378
Depreciated Replacement Cost ¹	\$7,830,238
Annual Average Asset Consumption ²	\$262,518



A formal revaluation of all CWMS assets was undertaken by HDS Australian Pty Ltd as at 1st July 2017.

Council's applied depreciation method and estimates for asset useful lives, for the purposes of calculating depreciation, are contained in the appendices.

6.2 Sustainability

Council's sustainability reporting reports the rate of annual asset consumption and compares this to asset renewal and asset upgrade and expansion. Note that these ratios are based on year one of this AM Plan.

Asset Consumption 2.07%
(*Depreciation ÷ Depreciable amount*)

Asset Sustainability Ratio 68.57%
(*Capital renewal ÷ Annual depreciation*)

6.3 Projected expenditures for long term financial plan

Year	Operations	Maintenance	Projected Capital Renewal	Capital Upgrade/ New	Disposals
2019	\$259,250	\$105,286	\$180,000	\$404,000	\$0
2020	\$265,213	\$107,708	\$79,000	\$2,000	\$0
2021	\$271,313	\$110,185	\$64,000	\$5,000	\$0
2022	\$277,553	\$112,719	\$36,000	\$0	\$0
2023	\$283,937	\$115,312	\$36,000	\$5,000	\$0
2024	\$290,467	\$117,964	\$23,000	\$0	\$0
2025	\$297,148	\$120,677	\$21,000	\$5,000	\$0
2026	\$303,983	\$123,453	\$0	\$0	\$0
2027	\$310,974	\$126,292	\$0	\$0	\$0
2028	\$318,127	\$129,197	\$0	\$0	\$0

¹ Also reported as Written Down Value, Carrying or Net Book Value.

² Also reported as Annual Depreciation.

7. RISK MANAGEMENT

7.1 Critical Risks and Treatment Plans

Service at Risk	What can Happen	Risk Rating	Risk Treatment Plan
Pressure Mains and Gravity Mains Integrity	Rupture of pressure mains due to build up of debris and or fats in pipe work.	High	Continued inspection of lines and line flushing program to maintain pressure and gravity line integrity.
Treatment Lagoon	Overflow of treatment lagoon.	High	Weekly monitoring of lagoon levels to ensure required freeboard, if found to be in breach of freeboard levels, emergency dewatering as per DEH and EPA requirement.

8. PLAN IMPROVEMENT AND MONITORING

8.1 Improvement Plan

Action	Responsibility	Timeline
Completed and Ongoing Actions		
Develop risk management plan.	MOD/WM	Framework Completed
Review desludging program to ensure over-service is not occurring.	EHM	Completed
Investigate options to allow for differentiation of maintenance expenditure as planned and un-planned.	WM/AMC2	Completed
Monitor ongoing legislative changes (ie. ESCOSA requirements).	EHM	Ongoing
Undertake an annual assessment of all CWMS Schemes and review of charges to ensure future sustainability of the Schemes.	DCEO/EHM	Ongoing
Continue to develop a uniform, componentised asset register for CWMS assets that satisfies Australian Accounting Standards and Works Department operational requirements.	AMC	Ongoing
Council's Works Department to review its current processes and continue to develop a ranking matrix to assist in determining a priority list for capital works across all asset classes.	WM/AMC2	Ongoing
Current and Outstanding Actions		
Implement inspection program and review maintenance practices to ensure alignment with service level requirements.	WM/AMC2	December 2018
Investigate properties in Port MacDonnell and Tarpeena for non-compliant connections and follow protocol to bring connections up to compliance.	DES/EHM	June 2019
Conduct community research into desired levels of service for community used assets.	WM/DES	Not Currently Scheduled

8.2 Monitoring and Review Procedures

This AM Plan will be updated annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values.

9. APPENDICES

Appendix A Projected 10 year Capital Renewal Works Program

Appendix B Projected 10 year Capital Upgrade/New Works Program

Appendix C Condition Assessment Manual

Appendix D Assets Included in this Plan

Appendix E Asset Useful Lives and Valuation Matrices

Appendix A Projected 10 Year Capital Renewal Program

Site	Capital Works	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Allendale East	Pump Replacement	\$12,000	\$6,000	\$6,000								
	Pump Controller Enclosure Replacement	\$10,000		\$5,000	\$5,000							
	Vent Pipe Replacement	\$39,000					\$13,000	\$13,000	\$13,000			
	Treatment Plant Shed Replacement	\$15,000			\$15,000							
Cape Douglas	Pump Replacement	\$7,000	\$7,000									
	Pump Station Controllers and Enclosure Replacement	\$110,000	\$110,000									
Donovans	No works programmed	\$0										
Pelican Point	Security Shed Replacement	\$8,000							\$8,000			
	Pump Replacement	\$16,000		\$8,000	\$8,000							
Port MacDonnell	Vent Pipe Replacement	\$52,000	\$13,000	\$13,000	\$13,000	\$13,000						
	Pump Replacement	\$60,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000				
	Shed Replacement	\$44,000	\$22,000	\$22,000								
Tarpeena	Pump Replacement	\$27,000	\$12,000	\$15,000								
	Vent Pipe Replacement	\$39,000			\$13,000	\$13,000	\$13,000					
Total		\$439,000	\$180,000	\$79,000	\$64,000	\$36,000	\$36,000	\$23,000	\$21,000	\$0	\$0	\$0

Appendix B Projected 10 Year Capital Upgrade/New Program

Site	Capital Works	Total	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Allendale East	No works programmed	\$0										
Cape Douglas	No works programmed	\$0										
Donovans	Installation of Treatment System and Irrigation	\$250,000	\$250,000									
Pelican Point	No works programmed	\$0										
Port MacDonnell	Construction of a Bio-solids depot at Port MacDonnell old landfill site	\$134,000	\$134,000									
	Installation of Scouring System in Main Lines	\$20,000	\$20,000									
	Flush Point Installation	\$15,000			\$5,000		\$5,000		\$5,000			
	Non Return Value Installation	\$2,000		\$2,000								
Tarpeena	No works programmed	\$0										
Total		\$421,000	\$404,000	\$2,000	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$0	\$0

Appendix C Condition Assessment Manual

The primary purpose of this manual is to act as a guide for assessing, determining and assigning a condition rating to Council's CWMS assets in a systematic and consistent manner. The condition assessment enables Council to determine the overall condition of its CWMS assets for valuation purposes as well as identify those assets that require additional maintenance or renewal in future years.

Due to the underground nature of some CWMS assets, visual assessment can be cost prohibitive. For this reason, the network condition can also be intuitively determined via a desktop assessment utilising age and failure history.

CWMS PLANT AND EQUIPMENT (LONG LIFE)			
Visual Assessment		Capacity Assessment	
Rating	Description	Rating	Description
0	Asset is brand new	0	-
1	No corrosion, cracking or deformation and/or connections as-new	1	Good capacity and functionality
2	Minor or insignificant corrosion, cracking or deformation and/or minor connection deterioration	2	Unsure, however capacity is not identified as deficient at present
3	Significant corrosion, cracking or deformation or leakage, however, no maintenance required	3	-
4	Major corrosion, cracking or deformation or leakage, can be repaired to keep in service but asset needs replacing in 2 to 4 years	4	Asset will need to be upgraded with a bigger or better asset within 5 years to cater for demand or as a result of obsolescence
5	Major defects and asset needs to be immediately replaced	5	Not adequate or performing at its intended capacity at present
Intuitive/Desktop Assessment Using Age		Intuitive/Desktop Assessment Using Failure History	
Rating	Description	Rating	Description
0	Asset is brand new	0	Asset is brand new
1	Asset is less than 2 years old	1	No history of failures
2	Asset is between 3 and 8 years old	2	One failure in the past year
3	Asset is between 9 and 13 years old	3	One failure in the past two years
4	Asset is between 14 and 18 years old	4	Greater than two failures in the past two years
5	Asset is greater than 19 years old	5	Greater than three failures in the past two years

CWMS PLANT AND EQUIPMENT (SHORT LIFE)			
Visual Assessment		Capacity Assessment	
Rating	Description	Rating	Description
0	Asset is brand new	0	-
1	No corrosion, cracking or deformation and/or connections as-new	1	Good capacity and functionality
2	Minor or insignificant corrosion, cracking or deformation and/or minor connection deterioration	2	Unsure, however capacity is not identified as deficient at present
3	Significant corrosion, cracking or deformation or leakage, however, no maintenance required	3	-
4	Major corrosion, cracking or deformation or leakage, can be repaired to keep in service but asset needs replacing in 2 to 4 years	4	Asset will need to be upgraded with a bigger or better asset within 5 years to cater for demand or as a result of obsolescence
5	Major defects and asset needs to be immediately replaced	5	Not adequate or performing at its intended capacity at present
Intuitive/Desktop Assessment Using Age		Intuitive/Desktop Assessment Using Failure History	
Rating	Description	Rating	Description
0	Asset is brand new	0	Asset is brand new
1	Asset is less than 2 years old	1	No history of failures
2	Asset is between 3 and 5 years old	2	One failure in the past year
3	Asset is between 6 and 7 years old	3	One failure in the past two years
4	Asset is between 8 and 9 years old	4	Greater than two failures in the past two years
5	Asset is greater than 10 years old	5	Greater than three failures in the past two years

CWMS MAINS (PIPES)			
Visual Assessment		Capacity Assessment	
Rating	Description	Rating	Description
0	Not defined	0	-
1		1	Good capacity and functionality
2		2	Unsure, however capacity is not identified as deficient at present
3		3	-
4		4	New development occurring upstream and pipe will need to be replaced within five years
5		5	Not adequate or performing at its intended capacity at present ie. pipe is too small to service properties on line
Intuitive/Desktop Assessment Using Age		Intuitive/Desktop Assessment Using Failure History	
Rating	Description	Rating	Description
0	All pipes are brand new	0	All pipes are brand new
1	All pipes are less than 8 years old	1	No history of bursts, breaks or leaks
2	All pipes are between 9 and 20 years old	2	One burst, break or leak in the pipeline in the past year
3	All pipes are between 21 and 50 years old	3	One burst, break or leak in the pipeline in the past two years
4	All pipes are between 51 and 65 years old	4	Greater than two bursts, breaks or leaks in the pipeline in the past two years
5	All pipes are greater than 66 years old	5	Greater than three bursts, breaks or leaks in the pipeline in the past two years

CWMS NODES (MANHOLES)			
Visual Assessment		Capacity Assessment	
Rating	Description	Rating	Description
0	Not defined	0	Not defined
1		1	
2		2	
3		3	
4		4	
5		5	
Intuitive/Desktop Assessment Using Age		Intuitive/Desktop Assessment Using Failure History	
Rating	Description	Rating	Description
0	All nodes are brand new	0	All nodes are brand new
1	All nodes are less than 10 years old	1	Near as new condition with no defects. Node is fully serviceable. Irrespective of age
2	All nodes are between 11 and 25 years old	2	Superficial deterioration of node. Tree roots starting to protrude into node
3	All nodes are between 26 and 50 years old	3	Deterioration of node. Minor sedimentation in node or tree roots protruding into node and/or minor settlement of inlet and outlet pipes
4	All nodes are between 51 and 65 years old	4	Node shows signs of imminent failure. Node is between 30% to 50% blocked by sedimentation/sludge or tree root infestation and/or inlet or outlet pipe has settled creating some obstruction to flow of waste discharge
5	All pipes are greater than 66 years old	5	Node has failed. Node is more than 50% blocked by sedimentation/sludge or tree root infestation and/or inlet or outlet pipe has settled creating some obstruction to flow of waste discharge. Node is being attacked by acid

Appendix D Assets Included in this Plan

Location	Asset Type	Qty of Assets	Replacement Value
Allendale East	Disposal-Reuse System	4	\$336,451
	Flushing Points	68	\$0
	Gravity Mains	75	\$739,879
	Manholes	5	\$38,575
	Pressure Mains	8	\$130,066
	Pump Stations	53	\$291,368
	Treatment Systems	60	\$443,679
	Total		\$1,980,017
Cape Douglas	Disposal-Reuse System	5	\$279,369
	Pump Stations	208	\$472,497
	Rising Main	1	\$75,153
	Total		\$827,019
Donovans	Flushing Points	46	\$0
	Gravity Mains	58	\$712,935
	Manholes	11	\$85,114
	Pressure Mains	3	\$80,522
	Property Connections	2	\$267,124
	Pump Stations	36	\$294,973
	Treatment Systems	5	\$331,246
	Total		\$1,771,913
Pelican Point	Disposal-Reuse System	1	\$22,000
	Flushing Points	14	\$0
	Gravity Mains	15	\$181,656
	Manholes	1	\$7,715
	Pressure Mains	1	\$38,443
	Pump Stations	31	\$132,781
	Treatment Systems	30	\$233,102
	Total		\$615,697
Port MacDonnell	Flushing Points	234	\$0
	Gravity Mains	252	\$2,727,192
	Manholes	9	\$69,435
	Pressure Mains	11	\$952,848
	Pump Stations	241	\$1,044,781
	SCADA	3	\$54,259
	Total		\$4,848,516
Tarpeena	Disposal-Reuse System	4	\$276,950
	Flushing Points	92	\$0
	Gravity Mains	112	\$1,353,008
	Manholes	6	\$46,290
	Pressure Mains	3	\$635,100
	Pump Stations	83	\$331,105
	Total		\$2,642,453
TOTAL			\$12,685,616

Appendix E Asset Useful Lives and Valuation Matrices

Asset Type/Sub Type		Useful Life	Valuation Matrix
CWMS Mains			
Gravity Main		80	CWMS Pipes (Condition Based Method)
Pressure Main		80	
Rising Main		50	
CWMS Nodes			
Flushing Point		Not Valued	-
Manhole		80	CWMS Nodes (Condition Based Method)
Property Connection		80	
CWMS Pump Stations			
Pump Station	Enclosure – Control	15	CWMS (Condition Based Method)
	Enclosure – Meter	20	
	Enclosure – Switchboard	15-25	
	Fitting – Access Lid	50	
	Fitting – Chain	25	
	Fitting – Pipe	64-80	
	Fitting – Safety Grid	25	
	Pump – Gear Box	20	
	Pump – Gear Box (Motor)	20	
	Pump – Helical Rotor	15-25	
	Pump – Motor	20-25	
	Pump – Submersible	10-25	
	Pump Control – Motor	25	
	Pump Control – Power Supply	25	
	Pump Control – Starter Motor	8	
	Pump Control – Switchboard	5-15	
	Pump Control – Switchboard (Power Supply)	20	
	Sensor – Float Switch	10-20	
	Sensor – Flow/Level/Pressure	16	
	Structure – Boundary Kit	10	
	Structure – Gatic Cover	20	
	Structure – Guard Rail	50	
	Structure – Shed	32-40	
	Structure – Sump Cover	25	
	Structure – Tank/Tank Slab	40-50	
	Structure – Vent	40-50	
	Valves – Gate Valve	20-25	
	Valve – Gate Valve (Ball)	20-25	
	Valve – Gate Valve (Knife)	25	
	Valve – Non Return	20-25	
SCADA	Pump Control – Router	8	
	Pump Control – Software	3	
	Pump Control – Station Control	5	

Asset Type/Sub Type		Useful Life	Valuation Matrix
CWMS Treatment Systems			
Disposal Reuse System	Dripper Line	80	CWMS (Condition Based Method)
	Structure – Fence/Gate	20-40	
	Structure – Lagoon	200	
	Structure – Liner	50	
	Structure – Tank	30	
Treatment System	Electrical Device - Aerator (Motor)	25	
	Electrical Device - Alarm Component	20-25	
	Electrical Device - Clamp (Pipe)	80	
	Electrical Device - Control (Waste Water)	20	
	Electrical Device - Meter	20	
	Electrical Device - PLC (Control Panel)	20	
	Electrical Device - PLC (Other)	20	
	Electrical Device - PLC (Touch Screen)	20	
	Electrical Device - Power Supply	25	
	Electrical Device - Sensor	20	
	Electrical Device - Telemetry	20-25	
	Electrically Driven - Motor Starter (DOL)	20	
	Electrically Driven - Pump (Aerator)	25	
	Electrically Driven - Pump (Other)	25	
	Electrically Driven - Pump (Pressure)	25	
	Electrically Driven - Pump (Submersible)	25	
	Mechanical Device - Filter (Sand)	25-50	
	Mechanical Device - Filter (Spin)	50	
	Mechanical Device - Other	25	
	Mechanical Device - Pipe	80	
	Mechanical Device - Valve (Air)	25	
	Mechanical Device - Valve (Ball)	25	
	Mechanical Device - Valve (Non Return)	25	
	Mechanical Device - Valve (Other)	25	
	Structure - Bore	20	
	Structure - Enclosure	20	
	Structure - Fence	40	
	Structure - Gate	40	
	Structure - Lagoon	200	
	Structure - Liner	50	
	Structure - Other	Individually Determined	
	Structure - Shed	32-40	
Structure - Tank	30-50		