



Cook Shire  
COUNCIL

# Water Asset Management Plan



V1.0

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## 1. EXECUTIVE SUMMARY

### 1.1 The Purpose of the Plan

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

The Plan has been primarily formulated to document:

- The Water assets Council owns
- Funding required to maintain the Water supply network at current levels of service
- Future demand for renewal and improvements (upgrade/ new works) to the Water network, and how to manage demand over the long term.

This plan covers Water infrastructure assets.

### 1.2 Asset Description

The Water asset network includes:

- Water supply schemes with associated water treatment plants at Coen, Cooktown, Laura and Lakeland, and
- Over 75km of water mains over the 4 networks.

These infrastructure assets have a replacement value estimated at \$49 million.

### 1.3 Levels of Service

Water supply services are an essential service largely governed, regulated and audited by the State government. Statutory requirements set the framework for minimum levels of service required, which is complemented by Cook Shire Council's *Water & Wastewater Customer Service Standards* and *Drinking Water Quality Management Plans* for each water supply scheme.

This Plan provides an outline of Customer and Technical levels of service. These levels of service are focused on maintaining regulatory standards and service response times.

Current levels of service are used as the baseline in developing the operational, maintenance, renewal and upgrade/ new funding requirements outlined in this Plan.

### 1.4 Future Demand

The main demands for new services are created by:

- Population increases
- Regulations changes
- Tourism numbers increasing.

There are works scheduled in this Plan for the Lakeland water supply scheme, with the remaining three water supply schemes being adequate and of sufficient capacity to meet demand in the medium term. It is not anticipated that demand will necessitate any significant water supply scheme expansion or new water supply schemes.

### 1.5 Lifecycle Management Plan

#### What does it Cost?

The projected outlays necessary to provide the services covered by this Asset Management Plan (AM Plan) including operations, maintenance, renewal, upgrade, and new assets over the 10-year planning period is \$2,902,000 on average per year. This amount includes an average of \$155,000 per annum for upgrade and new Water assets.

### 1.6 Financial Summary

#### What we will do

The estimated funding requirement for Water services in the coming 10 years is \$2,902,000 on average per year as per the projections outlined in this Plan. The available funding for the projected operational, maintenance, renewal/ replacement, and upgrade/ new requirements from this and other AM Plans will be considered within the Long term financial forecasting for the entire Council organisation.

The infrastructure reality is that only what is funded in the Long Term Financial Forecast can be provided. The purpose of this Asset Management Plan is to communicate the required funding to meet defined service levels, and the consequences and risks associated with not providing these funding requirements, so that decision making is "informed".

The projected funding requirement for Water services is shown in Figure 1.6 below, noting that the 'budgeted expenditure' line shown is the average expenditure required to meet these requirements.

**Figure 1.6: Projected Operating and Capital Expenditure**

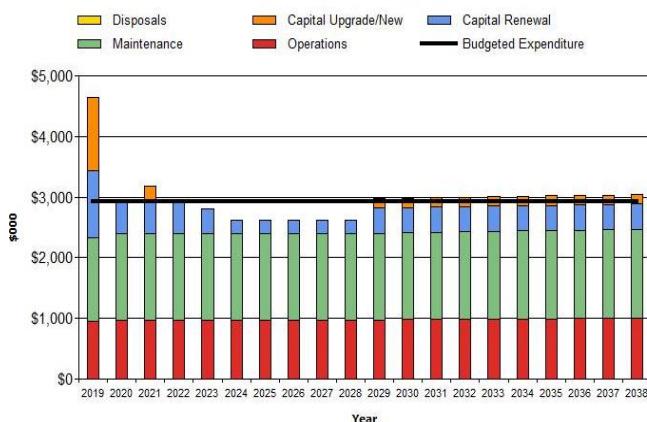


Figure Values are in current (real) dollars.

We plan to provide Water services for the following:

- Operation, maintenance, renewal and upgrade of water treatment plants and networks to meet required service levels.
- Significant renewals such as Cooktown water mains replacements, and new works such as a new water supply and associated infrastructure at Lakeland, all within the 10-year planning period.

The net lifecycle cost to Council per Water connection is significantly higher than many other Councils due to Cook Shire's water schemes being remote and widely separated, small in scale with limited connections (especially Coen, Lakeland and Laura), and impacted by cyclones and monsoonal rains. The schemes sit within a heavily regulated and compliance focussed environment with the smaller schemes in Coen, Lakeland and Laura not anticipated to ever provide a positive return i.e. they will always be a net cost to Cook Shire Council.

## What we cannot do

What we cannot do will be outlined within Council's Long Term Financial Forecast (LTFF) which uses a whole of organisation approach to prioritise funding. The LTFF will provide a 10 year financial plan for the Cook Shire Council organisation and will consider projected operational, maintenance, renewal/replacement, and upgrade/ new funding requirements from this and other AM Plans.

It should be noted that renewal and new capital works projects remain dependent on:-

- Grant funding streams such as Works for Queensland,
- Successful targeted grant funding application for water upgrade projects such as providing a new bore water supply at Lakeland.

It is anticipated that service trade-offs may well be required within the Water infrastructure area as a result of inadequate funds being available to meet the funding requirements outlined in this Plan.

## Managing the Risks

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

The main risk consequences are:

- Non-compliance with Drinking Water Quality Management Plans leading to health issues
- Water plant and equipment failures or electricity supply failure impacting water treatment and/ or supply
- Burst water mains with sections of the network down for long periods.

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

- Monitoring and reporting on relevant KPIs to the State and Council, and ensuring procedures are in place in compliance with our Drinking Water Quality Management Plans
- Stocking critical spares, undertaking periodic inspection of critical treatment plant assets to plan replacements, programmed maintenance and replacement of critical pumps, and providing generator back-up for critical operations
- Undertaking periodic planned replacement of end of life AC water mains.

## 1.7 Asset Management Practices

Our systems to manage assets include:

- Authority financial system
- Asset registers and GIS systems (MapInfo).

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template':

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Pavement Management Systems), and/ or forward works programs, and
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 2 has been used for this asset management plan.

## **1.8 Monitoring and Improvement Program**

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

1. Review, update and rationalise Council's water GIS layer to ensure accuracy and completeness
2. Formulate and implement a coordinated process to ensure water renewals, additions and disposals are recorded and GIS/ registers updated
3. Rectify service deficiencies due to poor water supply at Lakeland and renew end of life water mains in Cooktown
4. Review CRM systems and implement collection of customer service level data for specific water items to better inform service level performance
5. Review and revise *CSC Water & Wastewater Customer Service Standards 2014*
6. Implement condition inspections for critical water components
7. Continue SWIM reporting to the State, with annual Feedback to Council after release of *Queensland's Urban Potable Water & Sewerage Benchmarking Report*
8. Review and revise Community and Technical Levels of Service in this Plan in accord with specific data flows after CRM systems review
9. Review and revise renewal and upgrade/ new; works programs in this Plan annually
10. Annually compile and review Planned maintenance programs
11. Provide an integrated approach to water revaluations to ensure the Water & Wastewater team, Manager Assets, and Manager Finance have input into the process.

## 2. INTRODUCTION

### 2.1 Background

This asset management plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 20-year planning period.

The Plan has been primarily formulated to document:

- The Water assets Council owns
- Funding required to maintain the Water supply network at current levels of service
- Future demand for renewal and improvements (upgrade/ new works) to the Water network, and how to manage demand in the long term.

This asset management plan defines the forecast funding requirements for renewal/ replacement and upgrade/ new works by means of a projected 10 year forward works program. The Plan does not define the adequacy of Council funds to implement the program, with funding availability and financial planning dealt with within Council's Long Term Financial Forecast i.e. the funding demand from Council's asset management plans are used to provide the financial demand parameters within the Long term financial forecasting process.

The asset management plan is to be read with relevant Cook Shire Council planning documents. This should include the Asset Management Policy and Asset Management Strategy along with other key planning documents including:

- Corporate Plan 2017-2022
- Operational Plan
- Long Term Financial Forecast.

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide Water services.

**Table 2.1: Assets covered by this Plan (2016-17 Revaluation)**

Asset Category	Dimension/ Number of Items	Replacement Value (to nearest \$000)
Water Treatment Plant (WTP)	4 No.	\$19,033,000
Reservoirs	5 No.	\$3,842,000
Pump Stations	8 No.	\$1,568,000
Bores	10 No.	\$1,168,000
Mains/ Pipes	74,770 m	\$23,154,000
<b>TOTAL</b>		<b>\$48,765,000</b> <b>(Annual Report \$48,920,000)</b>

### 2.2 Goals and Objectives of Asset Ownership

Our goal in managing infrastructure assets is to meet the current or other ways defined level of service (as reviewed and/ or amended from time to time) in the most cost effective manner for present and future consumers. The key elements of infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure investment,
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service,
- Identifying, assessing and appropriately controlling risks, and
- **Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be allocated.**

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

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

## **2.3 Core and Advanced Asset Management**

This asset management plan is prepared as a ‘core’ asset management plan over a 20 year planning period in accordance with the International Infrastructure Management Manual<sup>3</sup>. Core asset management is a ‘top down’ approach where analysis is applied at the system or network level. An ‘advanced’ asset management approach uses a ‘bottom up’ approach for gathering detailed asset information for individual assets.

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

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

<sup>3</sup> IPWEA, 2015, IIMM.

### 3. LEVELS OF SERVICE

#### 3.1 Customer Research and Expectations

Community consultation and feedback were key elements in the formulation of the Cook Shire Community Plan 2011-2021, Cook Shire Council Economic Development Plan 2016-2020 and the Cook Shire Council Corporate Plan 2016-2020. Council's Operational Plan 2018-2019 and subsequent Operational Plans are directly based on the relevant Cook Shire Council Corporate Plan.

Community consultation associated with formulation of these key documents has provided little direct feedback on Water infrastructure and services. This indicates that the Water services currently provided are generally meeting customer expectations. However, feedback has been received in recent years from the Portland Roads area requesting Council consider a water supply to their small community.

The **Cook Shire Community Plan 2011-2021** identified 10 priority issues across the Shire. The one Water related priority issue was *Liveability of townships* (priority # 9). The Community Plan also includes:

- under the theme of *Environmental Wellbeing* the strategy 'To manage water and waste responsibly and efficiently', and
- under the theme of *Infrastructure, Transport and Services* 'To extend town water supply where the community is favourable and as funds allow'.

Council completes Queensland's state Water Information Management (SWIM) reports each year which the State compiles into the annual *Queensland's Urban Potable Water & Sewerage Benchmarking Report*. This report provides significant data benchmarked against 70 other Queensland Councils, and includes the number of water and sewerage complaints per 1,000 properties serviced, and conformance with Council's *Water & Wastewater Customer Service Standards 2014*. This document provides good insight into where Cook Shire Council ranks State-wide in terms of service levels and service costs.

#### 3.2 Strategic and Corporate Goals

This asset management plan is prepared in accord with Cook Shire Council's vision, mission, goals and objectives:

**Vision:** Building sustainable communities with respect for our unique natural environment, celebrating our diverse cultures and sharing our pride in Cape York.

**Mission:** Our Mission is to understand our communities' needs and provide consistent service to enable them to flourish in a safe, sustainable manner.

Relevant goals and objectives from the Corporate Plan 2017-2022 and how these are addressed in this asset management plan (AM Plan) are detailed in Table 3.2 following.

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

Goal	Objective	How Goal and Objectives are addressed in AM Plan
<i>ECONOMY - Locality specific economic growth, appropriate to each community and the Shire as a whole.</i>	<p><i>ECO 3. - Undertake the management of Council's assets in accordance with sound practice to ensure infrastructure networks are maintained, renewed and upgraded to maximise long term benefit to all.</i></p> <p><b>Eco 3b.</b> Asset management plans are completed for major infrastructure assets.</p>	<p><b>Eco 3b. –</b> This and associated asset management plan(s) for major infrastructure assets now completed</p>
<i>GOVERNANCE – Accountable, responsible and appropriate governance and management, reflected in responsible long-term financial sustainability and clear strategic direction built around core local government business and affordable levels of service.</i>	<p><i>GOV 2. Prepare management strategies to underpin asset sustainability.</i></p> <p><b>Gov 2a.</b> Condition assessments are undertaken for major asset classes.</p> <p><b>Gov 2b.</b> Council's asset management plan is completed and informs Council's long term financial strategy.</p>	<p><b>Gov 2a. –</b> Condition assessments have been completed (above ground assets) as part of the asset management plan(s) formulation.</p> <p><b>Gov 2b. –</b>Asset management plan(s) now completed to inform Council's long term financial strategy.</p>

### **3.3 Legislative Requirements**

Statutory requirements set the framework for minimum levels of service that Water services are required to meet. In the case of Water and Sewerage services, the Water Supply (Safety and Reliability) Act 2008 sets the required levels of service for Council which are in turn monitored by the State. Legislative requirements relating to the management of Water assets are many with some of the more significant requirements outlined in Table 3.3 below.

**Table 3.3: Legislative Requirements**

Legislation	Details/ Requirement
Local Government Act 2009.	Adherence to local government principles, including: (a) transparent and effective processes, and decision-making in the public interest; and (b) sustainable development and management of assets and infrastructure, and delivery of effective services.
Local Government Regulation 2012 (168).	A local government's long-term AM plan must- (a) provide for strategies to ensure the sustainable management of the assets mentioned in the local government's asset register and the infrastructure of the local government; and (b) state the estimated capital expenditure for renewing, upgrading, and extending the assets for the period covered by the plan; and (c) be part of, and consistent with, the long term financial forecast.
Water Supply (Safety and Reliability) Act 2008.	<p>1) The purpose of this Act is to provide for the safety and reliability of water supply.</p> <p>2) The purpose is achieved primarily by –</p> <ul style="list-style-type: none"> <li>(a) Providing for – <ul style="list-style-type: none"> <li>i. a regulatory framework for providing water and sewerage services in the State, including functions and powers of service providers; and</li> <li>ii. a regulatory framework for providing recycled water and drinking water quality, primarily for, - protecting public health; - regulation of referable dams; and - flood mitigation responsibilities and protecting interests of customers of service providers.</li> </ul> </li> </ul> <p>This Act includes the requirement for service providers to provide Drinking Water Quality Management Plans (DWQMP) for each of their water schemes. DWQMPs are required to be periodically reported to the State with subsequent audit/ review by the State</p>
Land, Water and Other Legislation Amendment Act 2013.	Includes amendment of Water Act 2000.
Australian Drinking Water Guidelines 6, 2011.	The ADWG provides Australia's legislative guidelines and framework for suppliers as supply managers (Council); and States/ territories (Qld) as auditors of water supply safety.
Public health Act (2005).	The object of this Act is to protect and promote the health of the Queensland public.

### **3.4 Customer Levels of Service**

Levels of service are defined in this asset management plan in two terms, Customer Levels of Service (this section 3.4) and Technical Levels of Service (following section 3.5).

Cook Shire Council's *Water & Wastewater Customer Service Standards 2014* and *Queensland's Urban Potable Water & Sewerage Benchmarking Report Feb 2019* (for the 2017-18 year) form the basis of the customer and technical levels of service outlined in Tables 3.4 and 3.5 following. Council completes state wide Water Information Management

(SWIM) reports each year that Queensland State compiles into the annual *Queensland's Urban Potable Water & Sewerage Benchmarking Report*.

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

<b>Quality</b>	How good is the service ... <i>what is the condition or quality of the service?</i>
<b>Function</b>	Is it suitable for its intended purpose .... <i>Is it the right service?</i>
<b>Capacity/Use</b>	Is the service over or under used ... <i>do we need more or less of these assets?</i>

The current and expected customer service levels are detailed in Table 3.4 following. The expected level of service position in 10 years is based on the current budget/ actuals.

**Table 3.4: Customer Level of Service**

<b>Key Performance Measure</b>	<b>Level of Service/Expectation</b>	<b>Performance Measure Used</b>	<b>Current Performance</b>	<b>Expected Position in 10 Years based on the current Budget</b>
<i>Service Objective: Provide safe water supply networks adequate to facilitate service demand.</i>				
<b>Quality</b>	No issues experienced	(a) Customer service requests relating to water quality (b) the number of <u>water and sewerage</u> complaints per 1,000 properties – refer <i>Queensland's Urban Potable Water &amp; Sewerage Benchmarking Report Feb 2019</i> , and (c) Total <u>water and sewerage complaints</u> < 50 Shire wide - Refer CSC's <i>Water &amp; Wastewater Customer Service Standards 2014</i>	TBC  105 complaints/ 1000 properties (State median = 5.3 complaints per 1000 properties)	Significant decrease in complaints
	Good value	Typical annual residential <u>water and sewerage</u> bill is lower than State median (refer <i>Queensland's Urban Potable Water &amp; Sewerage Benchmarking Report Feb 2019</i> )	Approx. \$1,650 p.a. (State median = \$1,394 p.a.)	Annual bill increases moderately
	<b>Confidence levels</b>		Low	Medium
<b>Function</b>	Water treatment system/ network works	Customer service requests relating to network outages	TBC	Little change
	<b>Confidence levels</b>		TBC	Medium
<b>Capacity and Use</b>	Service is available where required	Customer service requests requesting that water service in a non-serviced area be made available	TBC	Little Change
	<b>Confidence levels</b>		TBC	Medium

### 3.5 Technical Levels of Service

**Technical Levels of Service** - These are technical measures related to the allocation of resources to service activities that are aimed at best achieving the desired customer outcomes and demonstrating effective performance.

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

- Operations – the regular activities to provide services (e.g. water mains scouring, meter reading);

- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. repairs to leaking water mains, pump maintenance and repairs);
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. old AC pipeline replacement, replacing a pump);
- Upgrade/New – the activities to provide a higher level of service (e.g. replacing water mains with higher diameter pipes to provide increased water flow to users and fire-fighting systems) or a new service that did not exist previously (e.g. constructing new mains to an area that did not previously have supply).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.<sup>4</sup>

Table 3.5 shows the technical levels of service expected to be provided under this Water Asset Management Plan. The ‘Desired’ position in the table documents the position being recommended in this Water Asset Management Plan.

It is important to monitor the service levels provided regularly as these will change. The current performance is influenced by work efficiencies and technology, and customer priorities which change over time. Review and establishment of an agreed position which achieves the best balance between service, risk and cost is essential.

**Table 3.5: Technical Levels of Service**

Service Attribute	Level of Service/ Activity Objective	Performance Measure Process	Current Performance *	Desired Level of Service/ Optimum Lifecycle Cost **
<b>TECHNICAL LEVELS OF SERVICE</b>				
<b>Operations</b>				
	Water service meet user needs	Average response time for water incidents including mains breaks: Cooktown: 95% < 1 hrs Coen: 95% < 2 hrs Lakeland: 95% < 4 hrs Laura: 95% < 6 hrs (Refer CSC's <i>Water &amp; Wastewater Customer Service Standards 2014</i> )	Response Target met 99% of time (refer <i>Queensland's Urban Potable Water &amp; Sewerage Benchmarking Report Feb 2019</i> )	Response Target met 100% of time
		Water operating cost per property	Approx. \$1,159/ property (refer <i>Queensland's Urban Potable Water &amp; Sewerage Benchmarking Report Feb 2019</i> )	Reduction towards State median of \$638/ property for Cooktown (cost reduction at Coen, Laura and Lakeland will be difficult due to remoteness and economy of scale)
		Number of times that water supplied does not meet Drinking Water Quality standards	TBC	Nil
		<b>Budget</b>	Total \$946,000	Total \$946,000 (TBC)

<sup>4</sup> IPWEA, 2015, IIMM, p 2 | 28.

**Table 3.5: Technical Levels of Service (Cont.)**

Service Attribute	Level of Service/ Activity Objective	Performance Measure Process	Current Performance *	Desired Level of Service/ Optimum Lifecycle Cost **
<b>Maintenance</b>				
	Water service is suitable for purpose	Total water mains breaks: Cooktown: < 30 p.a. Coen: < 10 p.a. Lakeland: < 6 p.a. Laura: < 6 p.a. (Refer CSC's Water & Wastewater Customer Service Standards 2014)	20 breaks Total p.a. =24.2 breaks/ 100km main (Meets CSC's Water & Wastewater Customer Service Standards 2014 but above State median of 11.9 breaks per 100km main)	Equivalent to State median of 12 breaks/ 100km
		Incidence of unplanned water interruption: Cooktown: < 30 p.a. Coen: < 10 p.a. Lakeland: < 6 p.a. Laura: < 6 p.a. Total = <52 p.a. (Refer CSC's Water & Wastewater Customer Service Standards 2014)	64	52 p.a. (Comply with CSC's Water & Wastewater Customer Service Standards 2014)
		<b>Budget</b>	React. Maint. <b>TBC</b> Planned Maint. <b>TBC</b> Total \$1,386,000	React. Maint. <b>TBC</b> Planned Maint. <b>TBC</b> Total \$1,386,000 ( <b>TBC</b> )
<b>Renewal</b>				
	Water service is suitable for purpose	Water supply capital expenditure per property	Approx. \$518/ property (refer Queensland's Urban Potable Water & Sewerage Benchmarking Report Feb 2019)	Reduction towards State median of \$275/ property
		Economic Real Rate of Return	Approx. -1.4% (refer Queensland's Urban Potable Water & Sewerage Benchmarking Report Feb 2019)	Greater than 0% (State median is + 1.1%)
		<b>Budget</b>	\$645,000	\$415,000 av.
<b>Upgrade/New</b>				
	Upgrade SCADA, Hypo pump installation, DAF roller door access in Coen; Annan sed. Basin access, waterfront Telemetry in Cooktown	Completed on time and within budget	New works operational by 2020	
		<b>Budget</b>	\$67,000	\$155,000 av.

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

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

## 4. FUTURE DEMAND

### 4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, development growth, seasonal factors, consumer preferences and expectations, technological changes, and economic factors.

### 4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets have been documented in Table 4.3 below.

### 4.3 Demand Impact on Assets

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

*Table 4.3: Demand Drivers, Projections and Impact on Services*

Demand drivers	Present position	Projection	Impact on services
Population	4226 (2016 Census) 4,445 (2018 ABS Est.)	5,157 in 2031 (medium series est. Qld Treasury and Trade)	Increased use of water services and possible demand for new or upgraded water areas or schemes
Regulation Changes	Not all communities required to have water schemes	Potential that Portland Roads (for instance) may require a water scheme	New scheme required to meet regulatory requirements
Tourism numbers increasing	Tourism numbers to the Cape, Lakeland, Laura and Cooktown increasing year on year	Significantly increased tourists to the Cape as the PDR is sealed	Increasing demand for water services, particularly in Lakeland

### 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 can include non-asset solutions, insuring against risks, and managing failures.

Opportunities identified to date for demand management are shown in Table 4.4. Further opportunities will be developed in future revisions of this AM Plan.

*Table 4.4: Demand Management Plan Summary*

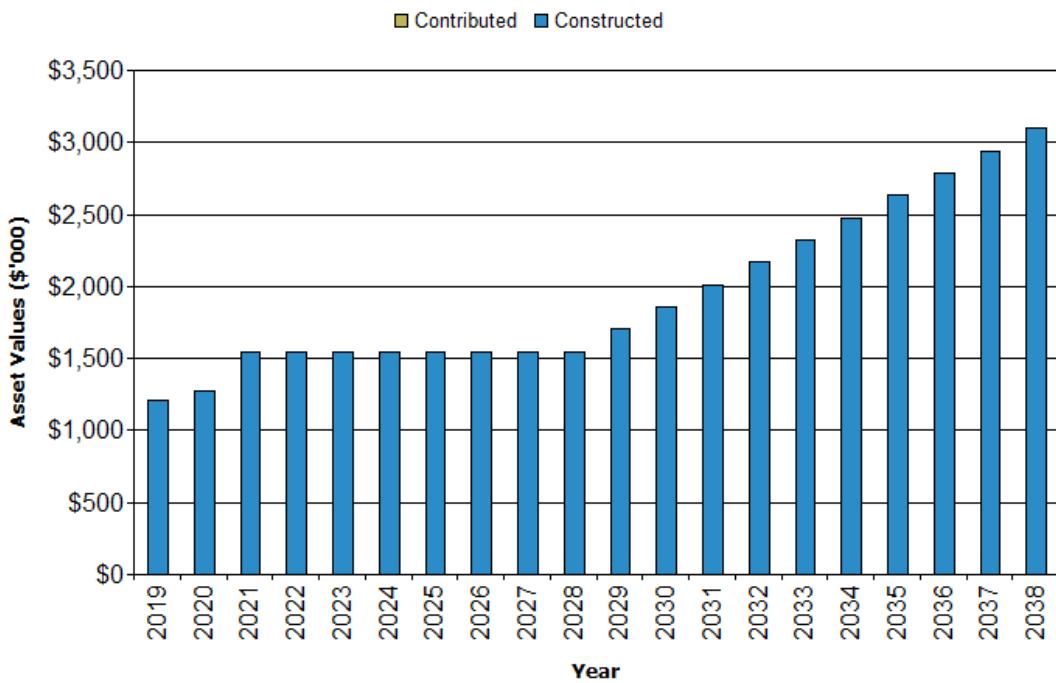
Demand Driver	Impact on Services	Demand Management Plan
Population	Increased use of water services and possible demand for new or upgraded water service areas or schemes	Monitor and review demand especially with any planned significant developments (Note that population is increasing marginally by less than 1% p.a., but centres like Lakeland have limited supply which can't always meet current demand)
Regulations Changes	New scheme required to meet regulatory requirements	Lobby/ advocate that Government fully construct any new scheme resulting from changed regulations and Government subsidise high operational costs associated with these remote/ small economy of scale schemes
Tourism numbers increasing	Increasing demand for water services, particularly in Lakeland	Undertake water strategic planning for Lakeland and provide new water supply bore(s) 2020-22

## 4.5 Asset Programs to meet Demand

The new assets required to meet demand can be acquired, donated or constructed. Additional assets are discussed in Section 5.5. The summary of the cumulative value of additional assets is shown in Figure 1 following.

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

### Cook SC - Upgrade & New Assets to meet Demand (Water\_S1\_V1)



The new/ upgrade assets to meet demand scheduled in this plan include the upgrade of Lakeland water mains, strategic planning of the Lakeland water supply, and construction of new supply bore(s) with associated infrastructure at Lakeland.

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

## 5. LIFECYCLE MANAGEMENT PLAN

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

### 5.1 Background Data

#### 5.1.1 Physical parameters

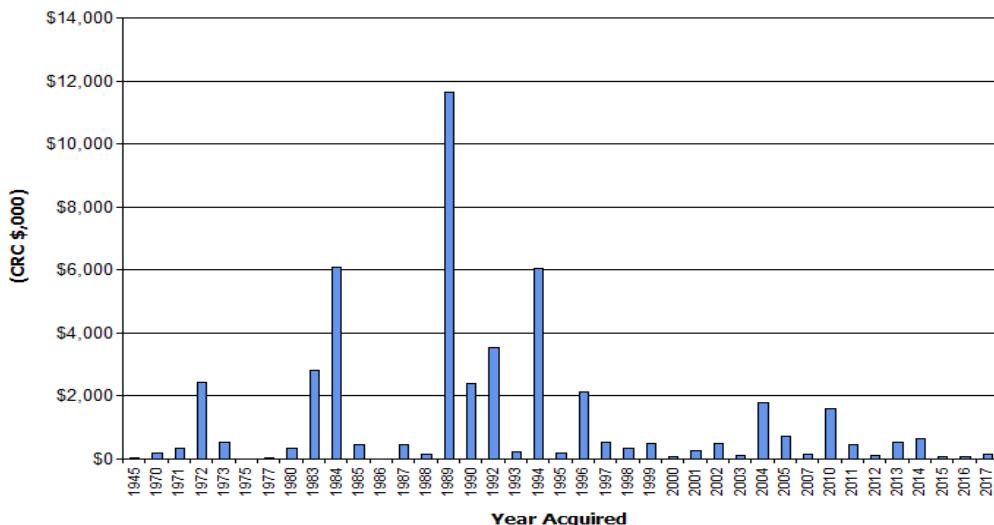
The assets covered by this asset management plan are shown in Table 2.1. These assets form a total of four water supply schemes as described below:

1. Cooktown Water Supply Scheme – The commissioning of Cooktown's water supply commenced in 1972 to service a design population of 600. The Duckfarm borefield supply was commissioned in 1984 after encountering problems with the now decommissioned Two-Mile Creek Dam. A filtration plant and an extension to the scheme's capacity were completed in 1987. In 1987 planning to upgrade the water supply to serve a population of 5,000 by 2007 commenced. The township is now supplied by Stage 1 of the Annan River Scheme which was constructed between 1989 and 1994 further to planning. The scheme consists of a mass concrete gravity weir, intake tower, pump station, water treatment plant and 2ML reservoir with a 23 km pipeline conveying the treated water to Cooktown. The scheme has 935 water connections and currently delivers approx. 400ML/ annum to commercial and residential customers.
2. Laura Water Supply Scheme – The scheme consists of two bores, treatment plant, reservoir and overhead tank. The scheme has 46 water connections and currently delivers approx. 20ML/ annum to commercial and residential customers.
3. Coen Water Supply Scheme – Coen relied on the seasonal Lankelly Creek and borefields prior to 1995. This supply was inadequate and in 1995 the Coen Dam (previously used as a water supply for gold processing) was selected as the new supply. After the installation of a suitable water treatment plant, a dissolved air flotation plant (DAF) was installed to cater for algal blooms on the dam. The scheme has 122 water connections and currently delivers approx. 45ML/ annum to commercial and residential customers.
4. Lakeland Water Supply Scheme – Lakeland's water supply is a small scheme of very basic design utilising 4 bores as its water source. The scheme has 43 water connections and currently delivers approx. 25ML/ annum to commercial and residential customers.

These four water schemes include water treatment plants (WTPs) and pump stations, with associated buildings, sheds, and offices at each site. For revaluation and asset planning purposes these buildings form part of the Water assets covered under this asset management plan, and are not included within the Building AM Plan.

The age profile of the assets included in this AM Plan are shown in Figure 2.

**Figure 2: Asset Age Profile  
Cook SC - Age Profile (Water\_S2\_V1)**



The age profile is based on asset revaluation data and clearly shows bringing on new assets after construction of the Annan water supply in 1989-1994. Figure Values are in current (real) dollars.

### 5.1.2 Asset capacity and performance

Assets are generally provided to meet design standards where these are available. Locations where deficiencies in service performance are known are detailed in Table 5.1.2.

*Table 5.1.2: Known Service Performance Deficiencies*

Location	Service Deficiency
Lakeland	Bore water supply inadequate to meet demand
Cooktown	Old AC mains deteriorated, at end of life, and require frequent repair

The above service deficiencies were identified from discussion with sewerage services staff.

### 5.1.3 Asset condition

Condition is not currently monitored in a formal way. A large proportion of water assets are hidden underground with the best indication of condition being the asset age and material type.

Condition is measured using a 1 – 5 grading system<sup>5</sup> as detailed in Table 5.1.3.

*Table 5.1.3: Simple Condition Grading Model*

Condition Grading	Description of Condition
1	<b>Very Good:</b> only planned maintenance required
2	<b>Good:</b> minor maintenance required plus planned maintenance
3	<b>Fair:</b> significant maintenance required
4	<b>Poor:</b> significant renewal/rehabilitation required
5	<b>Very Poor:</b> physically unsound and/or beyond rehabilitation

## 5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as pumping water from a bore to a reservoir.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again e.g. repairs to a broken water main.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Maintenance expenditure is shown in Table 5.2.1

*Table 5.2.1: Maintenance Expenditure Trends*

Financial Year	Maintenance Budget (to nearest \$000)
2017-18	\$2,427,000 (Actual)
2018-19	\$2,332,000 (Budget)
2019-20	\$2,332,000 (Estimated)

<sup>5</sup> IPWEA, 2015, IIMM, Sec 2.5.4, p 2|80.

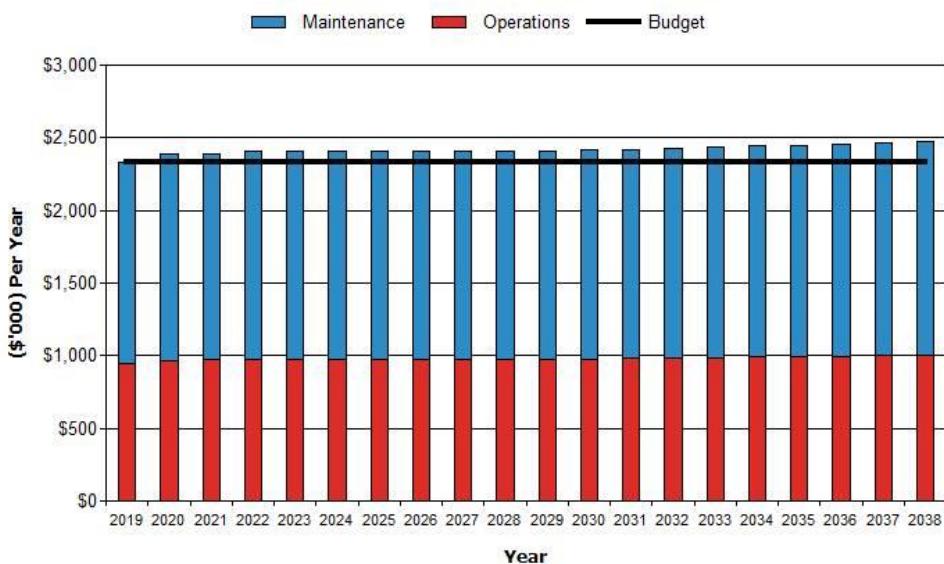
Maintenance expenditure levels are considered to be adequate to meet projected service levels, which are considered as equivalent to current service levels. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have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

#### **Summary of future operations and maintenance expenditures**

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock as shown in Figure 3. All costs are shown in current 2019 (Real) dollar values

*Figure 3: Projected Operations and Maintenance Expenditure*

#### **Cook SC - Projected Operations & Maintenance Expenditure (Water\_S1\_V1)**



Operations and Maintenance needs are not anticipated to change significantly in the medium term, with minimal (if any) change to Operations and Maintenance expense anticipated. This operations and maintenance expense will require funding consideration within the Long Term Financial Forecast (LTFF), and may potentially require deferral due to organisational funding shortfall in the next 10 year timeframe.

Maintenance is funded from the operating budget as available. This is further discussed in Section 7.

### **5.3 Renewal/Replacement Plan**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Assets requiring renewal/replacement are identified from one of three methods provided in the 'Expenditure Template':

- Method 1 uses Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year, or
- Method 2 uses capital renewal expenditure projections from external condition modelling systems (such as Pavement Management Systems) and/ or forward work programs, and
- Method 3 uses a combination of average network renewals plus defect repairs in the Renewal Plan and Defect Repair Plan worksheets on the 'Expenditure template'.

Method 2 has been used for this asset management plan.

#### **5.3.1 Renewal ranking criteria**

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing infrastructure to deliver the service it was constructed to facilitate (e.g. replacing a water reservoir that is leaking and at end of life), or
- To ensure the infrastructure is of sufficient quality to meet the service requirements (e.g. replacing 60 year old AC water mains that are continually requiring repair).<sup>6</sup>

Capital renewal and replacement priorities are determined by identifying assets or asset groups that:

- Have a high consequence of failure,
- Have high use and subsequent impact on users would be greatest,
- Have a total value representing the greatest net value,
- Have the highest average age relative to their expected lives,
- Are identified in the AM Plan as key cost factors,
- Have high operational or maintenance costs, and
- Have replacement with a modern equivalent asset that would provide the equivalent service at a net saving.<sup>7</sup>

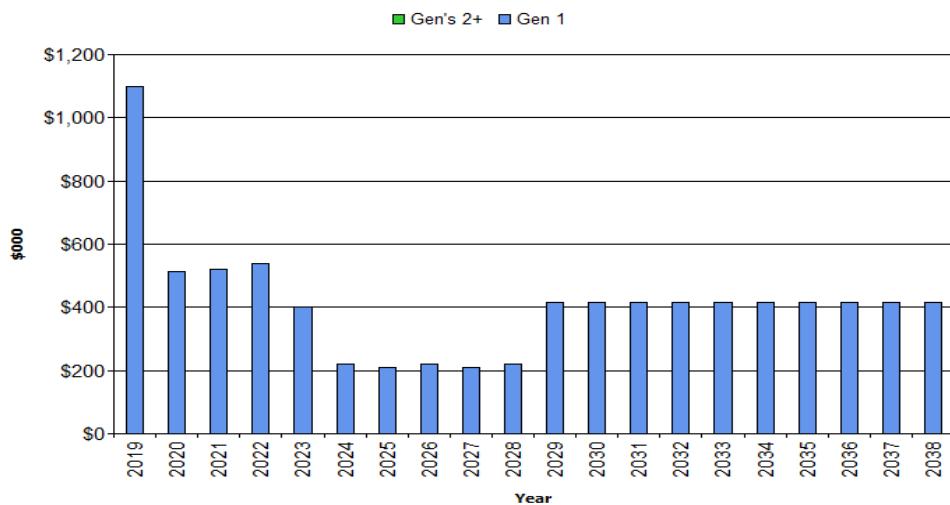
### 5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time as the asset stock increases. The expenditure required is shown in Fig 4. Note that all amounts are shown in current (real) dollars.

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

*Fig 4: Projected Capital Renewal and Replacement Expenditure*

#### Cook SC - Projected Capital Renewal Expenditure (Water\_S1\_V1)



The projected renewal expense will require funding consideration within the Long Term Financial Forecast (LTFF), with renewal requirements potentially requiring deferral due to funding shortfall in the next 10 year timeframe. This is further discussed in Section 7.

## 5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, community, regulatory or other demand factors. Assets, such as water mains and hydrants contributed by developers as part of a new subdivision, may also be acquired at no cost. These additional assets are considered in Section 4.4.

### 5.4.1 Selection criteria

<sup>6</sup> IPWEA, 2015, IIMM, Sec 3.4.4, p 3|91.

<sup>7</sup> Based on IPWEA, 2015, IIMM, Sec 3.4.5, p 3|97.

Construction of new assets and the upgrade/expansion of existing assets are identified from various sources such as:

- feedback and requests from community groups, stakeholders, and Council
- noted deficiencies within existing infrastructure
- strategic planning and master planning processes, and
- regional strategic planning frameworks (often in partnership with others).

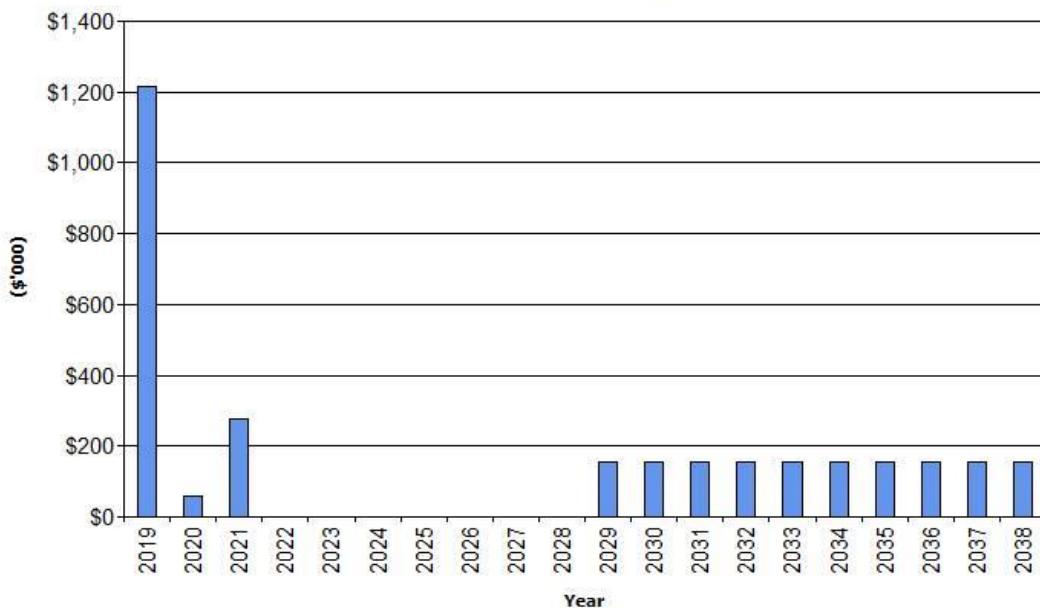
Project proposals are considered by Council in view of available funds and the Long Term Financial Forecast, with priority projects considered for inclusion in the annual capital works budget and/ or specific grant funding opportunities.

#### **5.4.2 Summary of future upgrade/new assets expenditure**

Projected upgrade/new asset expenditures are summarised in Fig 5. The projected upgrade/new capital works program is shown in Appendix B. All amounts are shown in current (real) dollars.

*Fig 5: Projected Capital Upgrade/New Asset Expenditure*

#### **Cook SC - Projected Capital Upgrade/New Expenditure (Water\_S1\_V1)**



Expenditure on new assets and services in the capital works program will be accommodated in the Long Term Financial Forecast to the extent of the available funds. Acquiring these new assets will commit the funding of ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required.

#### **5.4.3 Summary of asset expenditure requirements**

The financial projections from this asset plan are shown in Fig 6 for projected operating (operations and maintenance) and capital expenditure (renewal and upgrade/expansion/new assets). Note that all costs are shown in current (real) dollars.

Expenditure on new assets and services in the capital works program will only be accommodated in the Long Term Financial Forecast to the extent of the available funds. Acquiring these new assets will commit the funding of ongoing operations, maintenance and renewal costs for the period that the service provided from the assets is required.

*Fig 6: Projected Operating and Capital Expenditure*

## Cook SC - Projected Operating and Capital Expenditure (Water\_S1\_V1)

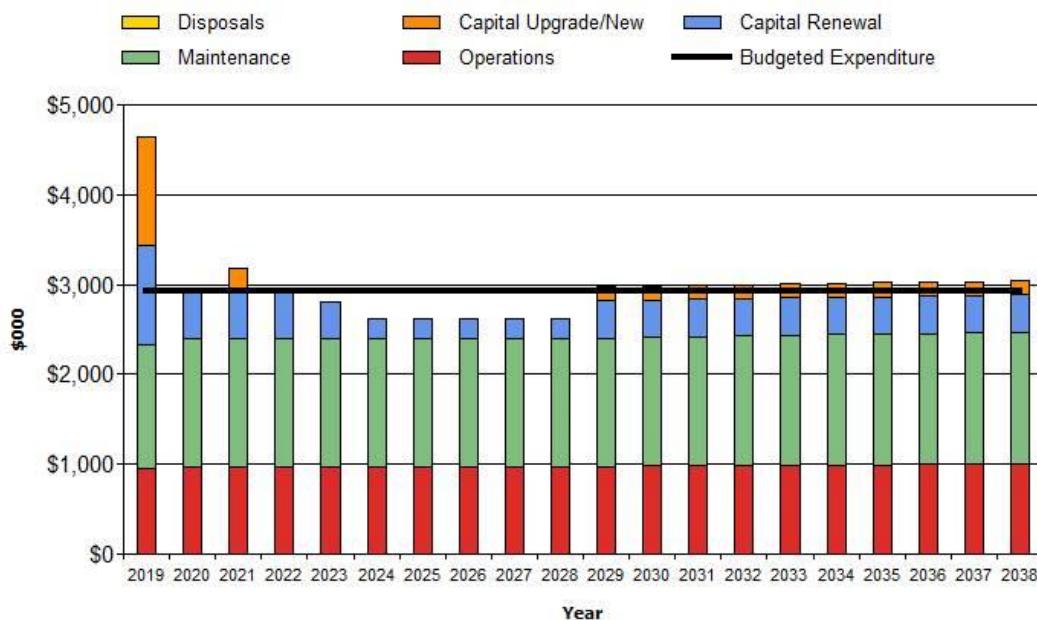


Figure Values are in current (real) dollars.

Cook Shire Council's water supply lifecycle cost for per property connection is significantly higher than many other Councils due to Cook Shire's water schemes being remote and widely separated, small in scale with limited connections (especially Coen, Lakeland and Laura), and impacted by cyclones and monsoonal rains. *Queensland's Urban Potable Water & Sewerage Benchmarking Report* (Feb 2019) for 2017-18 outlines that the Shire's water:

- Capital expenditure per property was approx. \$518 vs a State median of \$279
- Operating expenditure per property was approx. \$1,160 vs a State median of \$393
- Residential bill for water and sewerage was approx. \$1,650 vs a State median of \$1,394, and
- Economic real rate of return on sewerage was -1.4% vs a State median of + 1.1%.

The water schemes sit within a heavily regulated and compliance focussed environment with the smaller schemes in Coen, Lakeland and Laura not anticipated to ever provide a positive return i.e. they will always be a net cost to Cook Shire Council.

## 5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. There are no water assets identified for disposal within this plan.

## 6. RISK MANAGEMENT PLAN

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

Risk Management is defined in ISO 31000:2009 as: ‘coordinated activities to direct and control with regard to risk’<sup>8</sup>.

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

Cook Shire Council adopted a *Risk Management Policy* and *Risk Management Framework 2019* in line with International Standard ISO 31000:2009 Risk management – Principles and Guidelines (March 2019). The risks outlined in this section of the AM Plan will be assessed/ considered as part of this *Risk Management Framework 2019* and collated into Council’s Risk Register as required.

### 6.1 Critical Assets

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

Critical assets have been identified and their typical failure mode and the impact on service delivery are shown in Table 6.1 below.

**Table 6.1 Critical Assets**

Critical Asset(s)	Failure Mode	Impact
Cooktown Water Treatment Plant (WTP)	Natural Disaster/ Cyclone	Water Services provided by facility cannot be delivered
Cooktown water supply main (23 km) from the Annan plant to Cooktown	Natural Disaster/ Cyclone	Water Services provided by facility cannot be delivered to Cooktown via pipework
Coen WTP Coen Dam supply	Natural Disaster/ Cyclone Dam piping/ failure	Water Services provided by facility cannot be delivered
Laura WTP	Natural Disaster/ Cyclone	Water Services provided by facility cannot be delivered
Lakeland WTP	Natural Disaster/ Cyclone	Water Services provided by facility cannot be delivered

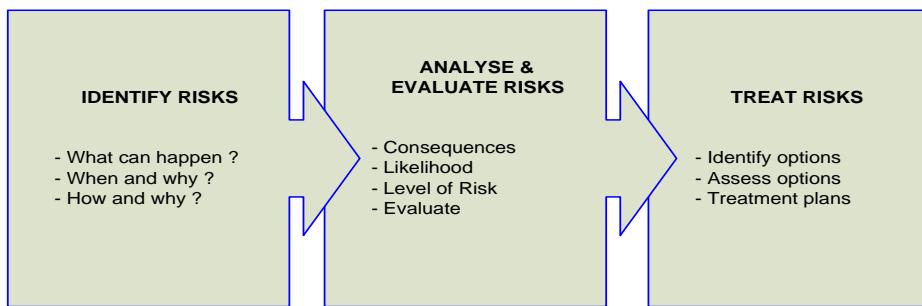
The water assets noted are the most critical in maintaining Council’s water services. Condition inspection programs, maintenance, and capital expenditure plans can be directed at crucial areas by identifying critical assets and their failure modes.

### 6.2 Risk Assessment

The risk management process used in this AM Plan is shown in Figure 6.2 below. It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks. The process is based on the fundamentals of the ISO risk assessment standard ISO 31000:2009.

<sup>8</sup> ISO 31000:2009, p 2

**Fig 6.2 Risk Management Process – Abridged**



The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

An assessment of risks associated with service delivery from infrastructure assets has identified some of the critical risks that will result in significant loss, ‘financial shock’, or a reduction in service.

Critical risks are those assessed with ‘Very High’ risk rating (requiring immediate corrective action) and ‘High’ risk rating (requiring corrective action). Critical risks, the residual risk, and treatment cost after the selected treatment plan is implemented is shown in Table 6.2.

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

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Treatment Plan	Residual Risk *	Treatment Costs
Water Supply Services	Non-compliance with Drinking Water Quality guidelines leading to health issues	VH	Monitor and report on relevant KPIs to the State and Council; Ensure procedures are in place in compliance with the relevant Drinking Water Quality Management Plans	H	Staff time
Water Supply Services	Water plant and equipment failures or electricity supply failure impacting treatment and/ or supply;  Coen Dam failure with subsequent loss of water supply	VH	Stock critical spares; Undertake periodic inspection of critical treatment plant assets to plan replacements; programmed maintenance and replacement of pumps; Provide generator back-up for critical operations;  Complete Dam Safety Inspection on Coen Dam	H	Staff time; Critical Spares - \$50,000 in 10 yr budget; Reservoir renewal - \$960,000 over next 10 year budget; New Laura back-up generator planned for 2019-21 at \$50,000; Est. \$15,000 Dam Safety Inspection and report cost (operations budget)
Water Supply Services	Burst water mains with sections of the network down for long periods	VH	Undertake periodic planned replacement of old AC water mains	H	Staff time; \$2,811,000 mains replacement program over 10 years

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

## 6.3 Infrastructure Resilience Approach

The resilience of our critical infrastructure is vital to our customers and the services we provide. To adapt to changing conditions and grow over time we need to understand our capacity to respond to possible disruptions and be positioned to absorb disturbance and act effectively in a crisis to ensure continuity of service.

Resilience is built on aspects such as response and recovery planning, financial capacity and crisis leadership.

Our current measure of resilience is shown in Table 6.3 which includes the type of threats and hazards, resilience assessment and identified improvements and/or interventions.

**Table 6.3: Resilience**

Threat / Hazard	Resilience LMH	Improvements / Interventions
Water supply from Lakeland Bores inadequate to meet required demand	L	Provide additional bores/ supply for Lakeland system
Cooktown water supply dependent on 23km pipeline from Annan WTP	M	Scope out feasibility and undertake reinstatement of Duckfarm Borefields in Cooktown as alternate water supply

## 6.4 Service and Risk Trade-Offs

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

### 6.4.1 What we cannot do

What we cannot do will be outlined within Council's Long Term Financial Forecast (LTFF) which uses a whole of organisation approach. The LTFF will provide 10 year planning for the entire Council organisation and will consider projected operational, maintenance, renewal/ replacement, and upgrade/ new funding requirements from this and other AM Plans in its formulation.

It should be noted that renewal and new capital works projects remain dependent on:-

- grant funding streams such as Works for Queensland for water projects such as the reinstatement of the Duckfram borefields water supply to Cooktown
- successful targeted grant funding application for projects such as Cooktown AC water mains replacement.

### 6.4.2 Service trade-off

Operations and maintenance activities and capital projects that cannot be undertaken will maintain or create service consequences for users. It is anticipated that service trade-offs will be required with definition of these trade-offs to be defined and documented within Council's LTFF. These trade-offs will in turn be incorporated into the next iteration of this AM Plan.

### 6.4.3 Risk trade-off

Operations and maintenance activities and capital projects that cannot be undertaken may maintain or create risk consequences. There are no identified risk trade-offs over the coming 10 years anticipated from this Plan, with actions and expenditures to manage current risks shown in *Table 6.2: Critical Risks and Treatment Plans*.

## 7. FINANCIAL SUMMARY

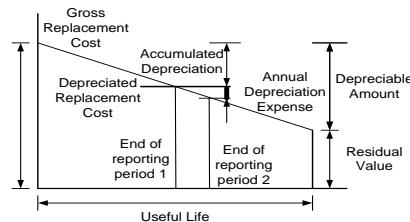
This section contains the financial requirements resulting from all the information presented in the previous sections of this asset management plan. The financial projections are best estimates only and subject to improvement as further information becomes available on desired levels of service and current and projected future asset performance.

### 7.1 Financial Statements and Projections

#### 7.1.1 Asset valuations

The best available estimate of the value of assets included in this Asset Management Plan are shown below. Assets are valued at Fair Value, with the following values applicable at 30 June 2018 (to nearest \$1000):

Gross Replacement Cost	\$49,100,000
Depreciable Amount	\$49,100,000
Depreciated Replacement Cost <sup>9</sup>	\$28,574,000
Annual Average Asset Consumption	\$962,000.



#### 7.1.1 Sustainability of service delivery

Two key indicators for service delivery sustainability used for analysis of services provided by this asset category are the:

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

#### Asset Renewal Funding Ratio

Asset Renewal Funding Ratio<sup>10</sup>: % N.A. (Available Renewal Funding for Transport assets to be confirmed in the LTFF)

The Asset Renewal Funding Ratio is the most important indicator and indicates what % of the funds required for the optimal renewal and replacement of Water assets over the next 10 years will be available within the LTFF budget. The benchmark or target is to have the renewal funding requirement 100% funded within the LTFF allowing optimal renewal of assets.

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

This asset management plan identifies the projected operations, maintenance and capital renewal expenditures required to provide an agreed level of service to the community over a 10 year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall.

The projected operations, maintenance and capital renewal expenditure required over the 10 year planning period is \$2,902,000 on average per year. The projected funding requirement excludes upgrade/ new assets.

Estimated available operations, maintenance and capital renewal funding is to be confirmed within the Long term financial forecasting process which will take into consideration funding demands across the organisation, including projected requirements from Transport, Building, and Sewer assets.

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

<sup>9</sup> Also reported as Written Down Value, Carrying or Net Book Value.

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

### 7.1.2 Projected expenditures for Long Term Financial Forecast

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

Expenditure projections are in 2018-19 real values.

**Table 7.1.2: Projected Expenditures for Long Term Financial Forecast (\$000)**

Year	Operations (\$000)	Maintenance (\$000)	Projected Capital Renewal (\$000)	Capital Upgrade/ New (\$000)	Disposals (\$000)
2019	\$946	\$1,386	\$1,098	\$1,214	\$0
2020	\$946	\$1,386	\$515	\$60	\$0
2021	\$946	\$1,386	\$520	\$275	\$0
2022	\$946	\$1,386	\$540	\$0	\$0
2023	\$946	\$1,386	\$400	\$0	\$0
2024	\$946	\$1,386	\$220	\$0	\$0
2025	\$946	\$1,386	\$210	\$0	\$0
2026	\$946	\$1,386	\$220	\$0	\$0
2027	\$946	\$1,386	\$210	\$0	\$0
2028	\$946	\$1,386	\$220	\$0	\$0

## 7.2 Funding Strategy

Funding for assets is provided within the annual budget with funding amounts linked to projections within the Long Term Financial Forecast and as verified/ reviewed annually. The financial strategy of the Council determines how funding will be provided, whereas the asset management plan communicates renewal requirements along with the service and risk consequences of not fully funding these requirements.

## 7.3 Valuation Forecasts

Asset values are forecast to increase as additional assets are added. With the current capacity of all water supply schemes except for Lakeland to meet medium term demand, there are few additional assets planned.

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

## 7.4 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this asset management plan are:

- Budget funding of projected renewal and upgrade/ new requirements are to be considered within the formulation of the Long Term Financial Forecast. The availability of budget funds is heavily dependent on continuation of grant funding streams such as Works for Queensland and success in winning targeted grant funding opportunities for projects such as lightning resiliency works at the Coen Water treatment plant.
- Operational and maintenance expenditure remains static as shown in *Table 7.1.2* and *Appendix C: Long Term Budgeted Expenditures Accommodated in AM Plan*.
- The 10 year capital works program for renewal/ replacement and new/ upgrade is reliable, and is a reliable indication of average expenditure on capital works in years 10-20, noting that planning for major water main renewal works as part of the Charlotte Street Revitalisation project are in a preliminary detailed planning and scheduling phase.

## 7.5 Forecast Reliability and Confidence

The expenditure and valuations projections in this AM Plan are based on best available data. Currency and accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale<sup>11</sup> in accordance with Table 7.5.

**Table 7.5: Data Confidence Grading System**

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C Uncertain	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D Very Uncertain	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete and most data is estimated or extrapolated. Accuracy ± 40%
E Unknown	None or very little data held.

The reliability of data used in this AM Plan is estimated as 'B Reliable', with sample condition assessment of water treatment plants and inventory completed in the field as part of this AM Plan compilation.

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<sup>11</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2|71.

## 8. PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Asset Management Practices<sup>12</sup>

#### 8.1.1 Accounting and financial data sources

Council uses Authority as its financial management system with annual reporting in the Water area informed by periodic asset revaluations, the most recent being prepared for Cook Shire Council by Cardno (QLD) Pty Ltd for the 2016-17 financial year.

#### 8.1.2 Asset management data sources

Asset management data for this AM Plan has been based on in-field data review of inventory outlined in the most recent water revaluation spreadsheets and desk-top review of Council's GIS water system data. In-field work was completed in March-May 2019 and consisted of inventory verification and enquiry, and itemised WTP condition assessment. This work provided a broad overview of the nature and condition of Council assets and has informed commentary in this Plan.

### 8.2 Improvement Plan

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

*Table 8.1: Improvement Plan*

Task No.	Improvement Plan Task	Responsibility	Resources Required	Timeline
1	Review, update and rationalise Council's water GIS layer to ensure accuracy and completeness of underground asset networks for all schemes	Mgr Assets/ GIS Officer	Staff Time	2019-2020
2	Formulate and implement a coordinated process to ensure water renewals, additions and disposals are recorded, GIS/ registers updated, and all relevant staff are fully informed	Mgr Assets	Staff Time	2019-2020
3	Rectify service deficiencies: 1. Construct new water supply bore(s) and infrastructure at Lakeland & increase current water mains capacity 2. Renew end of life water mains in Cooktown	Mgr Water & WW	1.\$449,000 2. \$2,811,000 next 10 years	1. 2019-2020 2. 2019-20 to 2028-29
4	Review CRM systems and implement collection of customer service level data for specific water items: 1. Water quality; 2. Network outages; 3. Inclusion of an un-serviced property in a serviced area	Dir OBS, Mgr Water & WW	Staff Time	2019-2020
5	Review and revise <i>CSC Water &amp; Wastewater Customer Service Standards 2014</i>	Mgr Water & WW	Staff Time	2019-2020
6	Implement condition inspections for critical water components such as reservoirs, supply mains and networks on a 4 yearly periodic basis	Mgr Assets Mgr Water & WW	Staff Time	2020-2021 & on-going 4 yearly
7	Continue SWIM reporting to the State, with annual Feedback to Council after release of <i>Queensland's Urban Potable Water &amp; Sewerage Benchmarking Report</i>	Mgr Water & WW	Staff Time	2019-2020 & on-going annually
8	Review and revise Community and Technical Levels of Service in this Plan in accord with data from Task 4	Mgr Assets	Staff Time	2020-21

<sup>12</sup> ISO 55000 Refers to this the Asset Management System

**Table 8.1: Improvement Plan (Cont.)**

Task No.	Improvement Plan Task	Responsibility	Resources Required	Timeline
9	Review and revise:- 1. Renewal; and 2. upgrade/ new; works programs in this Plan	Mgr Water & WW Mgr Assets	Staff Time	2020-2021 & on-going annually
10	Annually compile and review Planned maintenance programs	Mgr Water & WW	Staff Time	2020-2021 & on-going annually
11	Provide an integrated approach to waterrevaluations to ensure Water & wastewater team, Manager Assets and Manager Finance have input into the process	Mgr Assets, Mgr Finance	Staff Time	2020-2021

### **8.3 Monitoring and Review Procedures**

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

The AM Plan is to be assessed annually in terms of current service level; asset values; projected operations, maintenance, capital renewal/ replacement, capital upgrade/new, and asset disposal expenditures; and projected expenditure values incorporated into the Long Term Financial Forecast.

The AM Plan has a life of 4 years and is due for complete revision and updating within 3 years of each Council election.

### **8.4 Performance Measures**

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

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the Long Term Financial Forecast,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into strategic planning and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

## 9. REFERENCES

- 'Cook Shire Council Corporate Plan 2017-2022', Cook Shire Council
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- 'Valuation of Water and Sewer Assets 2016-2017', prepared for Cook Shire Council by Cardno (QLD) Pty Ltd
- 'Water & Wastewater Customer Service Standards - 2014', Cook Shire Council
- 'Coen Drinking Water Quality Management Plan 2017-18', Cook Shire Council
- 'Laura Drinking Water Quality Management Plan 2017-18', Cook Shire Council
- 'Lakeland Drinking Water Quality Management Plan 2017-18', Cook Shire Council
- 'Cooktown Drinking Water Quality Management Plan 2017-18', Cook Shire Council
- 'Queensland's Urban Potable Water & Sewerage Benchmarking Report – Released February 2019', Queensland Water Directorate
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney
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- IPWEA, 2012 LTFF Practice Note 6 PN Long Term Financial Forecast, Institute of Public Works Engineering Australasia, Sydney.

## **10. APPENDICES**

- Appendix A: Projected 10 year Renewal/ Replacement Capital Works Program
- Appendix B: Projected 10 Year New/ Upgrade Capital Works Program
- Appendix C: Long Term Budgeted Expenditures Accommodated in AM Plan

## Appendix A: Projected 10-year Renewal/Replacement Capital Works Program

### Cook SC

#### Projected Capital Renewal Works Program - Water\_S1\_V1

Year	Item	Description	Estimate (\$000)
<b>2019</b>		<b>Network Renewals</b>	
	1	Replace 80mm water main Helen Street (Furneaux to Howard), Furneaux St (Charlotte to Adelaide), Pryde Street (Cooktown)	\$360
	2	1. Replace 80mm AC Charlotte St / Endeavour Valley Rd (Racecourse Rd to Ambrust St) (\$461k)                    2. Replace pipe on 2 Mile Bridge (30k) (Cooktown)	\$491
	3	1. Design for Replacing 80mm water main in Furneaux Street (Hope to May) (\$15k)                    2. Assessment and design on Cooktown High Level Reservoir roof and platform (\$20k) (Cooktown)	\$35
	4	Valve / Fire Hydrant Replacement - Cooktown/Lakeland/Coen	\$30
	5	Walkway around sedimentation basin - Annan WTP	\$22
	6	Replace roof/ building at new Pump Station (Cooktown)	\$80
	7	New Lakeland Bore inside compound	\$80
<b>2019</b>		<b>Total</b>	<b>\$1,098</b>
<b>2020</b>		<b>Network Renewals</b>	
	1	Replace 80mm water main in Furneaux Street (Hope to May) (Cooktown)	\$125
	2	Design for Replacing 80mm AC Hogg Street (John to Helen St), Hogg St (Charlotte to Adelaide) and Adelaide Street (Cooktown)	\$20
	3	Valve / Fire Hydrant Replacement - Cooktown/Lakeland/Coen	\$30
	4	Designs for Recoating internally of 1. Cooktown HL Reservoir and 2. Annan Reservoir	\$30
	5	Replace roof on High level reservoir including platform on top of ladder and rescue point (seal roof around ladder)	\$300
	6	Annan WTP Critical Spares	\$10
<b>2020</b>		<b>Total</b>	<b>\$515</b>
<b>2021</b>		<b>Network Renewals</b>	
	1	Replace 80mm AC Hogg Street (John to Helen St), Hogg St (Charlotte to Adelaide) and Adelaide Street (Cooktown)	\$140
	2	Design for Replacing 80mm AC Ida Street and May Street and Boundary (Cooktown)	\$20
	3	Valve / Fire Hydrant Replacement - Cooktown/Lakeland/Coen	\$30
	4	Recoat internally Annan Reservoir	\$230
	5	Replace Laura Low Level Reservoir	\$100
<b>2021</b>		<b>Total</b>	<b>\$520</b>
<b>2022</b>		<b>Network Renewals</b>	
	1	Replace 80mm AC Ida Street and May Street and Boundary (Cooktown)	\$190
	2	Design for Replacing AC Mains Adelaide Street (Hogg to Walker) (Rest to Charlotte) (Cooktown)	\$20
	3	Valve / Fire Hydrant Replacement - Cooktown/Lakeland	\$20

	4	Recoat internally Cooktown HL Reservoir	\$300
Year	Item	Description	Estimate (\$000)
<b>2022</b>		<b>Network Renewals (Continued)</b>	
	5	Annan WTP Critical Spares	\$10
<b>2022</b>		<b>Total</b>	<b>\$540</b>
<b>2023</b>		<b>Network Renewals</b>	
	1	Replace AC Mains Adelaide Street (Hogg to Walker) (Rest to Charlotte) (Cooktown)	\$180
	2	Valve / Fire Hydrant Replacement - Cooktown/Lakeland	\$20
	3	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2023</b>		<b>Total</b>	<b>\$400</b>
<b>2024</b>		<b>Network Renewals</b>	
	1	Annan WTP Critical Spares	\$10
	2	Valve / Fire Hydrant Replacement - Cooktown	\$10
	3	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2024</b>		<b>Total</b>	<b>\$220</b>
<b>2025</b>		<b>Network Renewals</b>	
	1	Valve / Fire Hydrant Replacement - Cooktown	\$10
	2	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2025</b>		<b>Total</b>	<b>\$210</b>
<b>2026</b>		<b>Network Renewals</b>	
	1	Annan WTP Critical Spares	\$10
	2	Valve / Fire Hydrant Replacement - Cooktown	\$10
	3	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2026</b>		<b>Total</b>	<b>\$220</b>
<b>2027</b>		<b>Network Renewals</b>	
	1	Valve / Fire Hydrant Replacement - Cooktown	\$10
	2	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2027</b>		<b>Total</b>	<b>\$210</b>
<b>2028</b>		<b>Network Renewals</b>	
	1	Annan WTP Critical Spares	\$10
	2	Valve / Fire Hydrant Replacement - Cooktown	\$10
	3	Staged AC Water Mains Replacement as part of road reconstruction associated with Charlotte St Revitalisation project Cooktown	\$200
<b>2028</b>		<b>Total</b>	<b>\$220</b>

## Appendix B: Projected 10-year Upgrade/ New Capital Works Program

### Cook SC

#### Projected Capital Upgrade/New Works Program - Water\_S1\_V1

Year	Item	Description	Estimate (\$000)
2019	1	Borefield Reinstatement/ Upgrade, including Fencing backwash Dam (Cooktown)	\$1,010
	2	Replace Cyril St Lakeland 63mm poly with 100mm BB approx. 290m	\$114
	3	Install Generator at Laura to operate all Water Infrastructure with auto Start up on power failure	\$50
	4	PLC upgrade for Laura WTP	\$15
	5	Fence Bore 10 Coen	\$15
	6	New Large Pressure Vessel for Coen WTP	\$10
<b>2019</b>		<b>Total</b>	<b>\$1,214</b>

Year	Item	Description	Estimate (\$000)
2020	1	Masterplanning for Lakeland Water Supply Upgrade/ Expansion, including location/ details of new Bore supply (potential near airport on Basalt country)	\$60
	2		
<b>2020</b>		<b>Total</b>	<b>\$60</b>

Year	Item	Description	Estimate (\$000)
2021	1	Construct New Bore on Basalt country with associated pipework/ infrastructure	\$275
	2		
<b>2021</b>		<b>Total</b>	<b>\$275</b>

Year	Item	Description	Estimate (\$000)
2022	1		
	2		
<b>2022</b>		<b>Total</b>	<b>\$0</b>

Year	Item	Description	Estimate (\$000)
2023	1		
	2		
<b>2023</b>		<b>Total</b>	<b>\$0</b>

Year	Item	Description	Estimate (\$000)
2024	1		
	2		

2024		Total	\$0
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(\$000)			
Year	Item	Description	Estimate
2025	1		
	2		
2025		Total	\$0

(\$000)			
Year	Item	Description	Estimate
2026	1		
	2		
2026		Total	\$0

(\$000)			
Year	Item	Description	Estimate
2027	1		
	2		
2027		Total	\$0

(\$000)			
Year	Item	Description	Estimate
2028	1		
	2		
2028		Total	\$0

## Appendix C: Long Term Budgeted Expenditures Accommodated in AM Plan

NAMS.PLUS3 Asset Management		Cook SC																				
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Water_S1_V1		Asset Management Plan	IPWEA INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA																			
Water	First year of expenditure projections	2019 (financial yr ending)	JRA																			
	Asset values at start of planning period																					
Current replacement cost	\$49,100 (000)	Calc CRC from Asset Register																				
Depreciable amount	\$20,526 (000)	This is a check for you.																				
Depreciated replacement cost	\$28,574 (000)																					
Annual depreciation expense	\$962 (000)																					
Planned Expenditures from LTFP																						
20 Year Expenditure Projections	Note: Enter all values in current	2019 values																				
Financial year ending	2019 \$000	2020 \$000	2021 \$000	2022 \$000	2023 \$000	2024 \$000	2025 \$000	2026 \$000	2027 \$000	2028 \$000	2029 \$000	2030 \$000	2031 \$000	2032 \$000	2033 \$000	2034 \$000	2035 \$000	2036 \$000	2037 \$000	2038 \$000		
Expenditure Outlays included in Long Term Financial Plan (in current \$ values)													Average of first 10 year Expenditure Outlays from LTFP									
<b>Operations</b>																						
Operations budget	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	\$427	
Management budget	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519	\$519
AM systems budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total operations</b>	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946	\$946
<b>Maintenance</b>																						
Reactive maintenance budget	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693
Planned maintenance budget	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693	\$693
Specific maintenance items budget	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total maintenance</b>	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	\$1,386	
<b>Capital</b>																						
Planned renewal budget	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450	\$450
Planned upgrade/new budget	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150	\$150
<b>Non-growth contributed asset value</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Asset Disposals</b>																						
Est Cost to dispose of assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Carrying value (DRC) of disposed assets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Additional Expenditure Outlays Requirements (e.g from Infrastructure Risk Management Plan)													Average of first 10 years Expenditure Outlays required from IRMP									
Additional Expenditure Outlays required and not included above	2019 \$000	2020 \$000	2021 \$000	2022 \$000	2023 \$000	2024 \$000	2025 \$000	2026 \$000	2027 \$000	2028 \$000	2029 \$000	2030 \$000	2031 \$000	2032 \$000	2033 \$000	2034 \$000	2035 \$000	2036 \$000	2037 \$000	2038 \$000		
Operations Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Renewal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capital Upgrade	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
User Comments #2																						
Forecasts for Capital Renewal using Methods 2 & 3 (Form 2A & 2B) & Capital Upgrade (Form 2C)													Average of first 10 years Capital Renewal & Upgrade Forecasts									
Forecast Capital Renewal from Forms 2A & 2B	2019 \$000	2020 \$000	2021 \$000	2022 \$000	2023 \$000	2024 \$000	2025 \$000	2026 \$000	2027 \$000	2028 \$000	2029 \$000	2030 \$000	2031 \$000	2032 \$000	2033 \$000	2034 \$000	2035 \$000	2036 \$000	2037 \$000	2038 \$000		
Forecast Capital Upgrade from Form 2C	\$1,098	\$515	\$520	\$540	\$400	\$220	\$210	\$220	\$210	\$220	\$415	\$415	\$415	\$415	\$415	\$415	\$415	\$415	\$415	\$415	\$415	\$415
	\$1,214	\$60	\$275	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$155	\$155	\$155	\$155	\$155	\$155	\$155	\$155	\$155	\$155	\$155	\$155