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Final Report

Asset Management Plan – Burdekin Distribution – Service Contract A/E Financial Years 2019 to 2024



Photo of Burdekin Falls Dam

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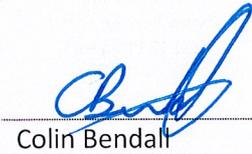
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This Burdekin Distribution Asset Management Plan supersedes all previous documents listed:

Document Control

Date	Revision	Details	Approver
Feb 2005	1	Original Plan	
Dec 2005	1.1	2006/07 Plan attached; various sections modified to reflect revised planning methods; obsolete action items and comments deleted	
Feb 2007	1.2	2007/08 Plan attached; various sections modified to reflect revised planning methods; obsolete action items and comments deleted.	
Feb 2008	1.3	2008/09 Plan attached; various sections modified to reflect revised planning methods; obsolete action items and comments deleted.	
Feb 2009	1.4	2009/10 Plan attached; various sections modified to reflect revised planning methods; obsolete action items and comments deleted.	
Feb 2010	2	Annual Update	
Feb 2018	5.12	GHD update	
July 2018	5.2	GHD final update	
October 2018	6.0	Final	Colin Bendall

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List of Abbreviations used in this report:

Abbreviation	Extension
ABB	Burdekin Supply Service Contract
AIE	Burdekin Distribution Service Contract
AMP	Asset Management Plan
AS INS	Asset and Strategy Inspection
GBA	Giru Benefitted Area
NR CIV	Non-Routine Civil
NR ELE	Non-Routing Electrical
NR MEC	Non-Routine Mechanical
NR MET	Non-Routine Metering
NR SCA	Non-routine Supervisory Control and Data Acquisitions (SCADA) Communications
NSP	Network Service Plan
PS	Pump Station
QCA	Queensland Competition Authority
RE ICR	Renewals - Improve Condition and Reduce Risk
ROL	Resource Operating Licence
ROP	Resource Operating Plan
SAMP	Strategic Asset Management Plan
WHS	Workplace Health and Safety
WMS	Works Management System

Executive Summary

This Asset Management Plan (AMP) provides a link between the assets, the current and future service levels, expenditure drivers and the forecast expenditure. It clearly establishes the relationship between corporate goals and asset management outputs.

Burdekin Distribution has assets with an estimated replacement cost of **\$590.6M** with a weighted average asset age of **30 years**.

SunWater's aim is to manage its assets in a sustainable manner to meet SunWater's business objectives of safeguarding asset integrity and ensuring continuing asset serviceability. SunWater has developed a business model for determining the set of assets due for renewal over the forecast period. This model is risk based. Assets are assessed for condition and risk which is used in combination with anticipated asset lives to determine the type of intervention strategy required and the timeframe involved. Approximately **97.5 per cent** of Burdekin Distribution assets are considered low or moderate risk.

For a summary of the financial forecasts, refer to the relevant Network Service Plan (which is available on SunWater's web site).

1. Introduction

1.1 Plan Purpose

The primary purpose of this Asset Management Plan (AMP) is to provide a clear line-of-sight from SunWater's customer service targets, through its asset strategies, to related works programs.

SunWater's business is divided into Service Contracts. Each AMP covers the operational assets associated with each SunWater Service Contract.

The Strategic Asset Management Plan (SAMP) establishes the strategic objectives for asset management and provides a framework for the generation of the AMPs.

The AMPs address a six year outlook for the area of coverage and provides a link between the assets, the current and future service levels, expenditure drivers and the forecast expenditure aligned with anticipated revenue. AMPs normally cover a five year period however it has been extended this year due to the upcoming QCA price review which covers the five years ending June 2024.

The preparation and review of such plans will provide SunWater with:

- Clarity regarding the scope of coverage for the plans;
- Consolidated technical and financial information for the assets and the services they provide to customers;
- An understanding of the issues that drive the expenditure proposed such as present and future demands, risk mitigation, asset performance and strategic initiatives;
- A current estimate of the short and long term financial commitment necessary to maintain both the assets and the services they provide;
- A clearly established link between corporate goals and asset management outputs.

1.2 Stakeholders

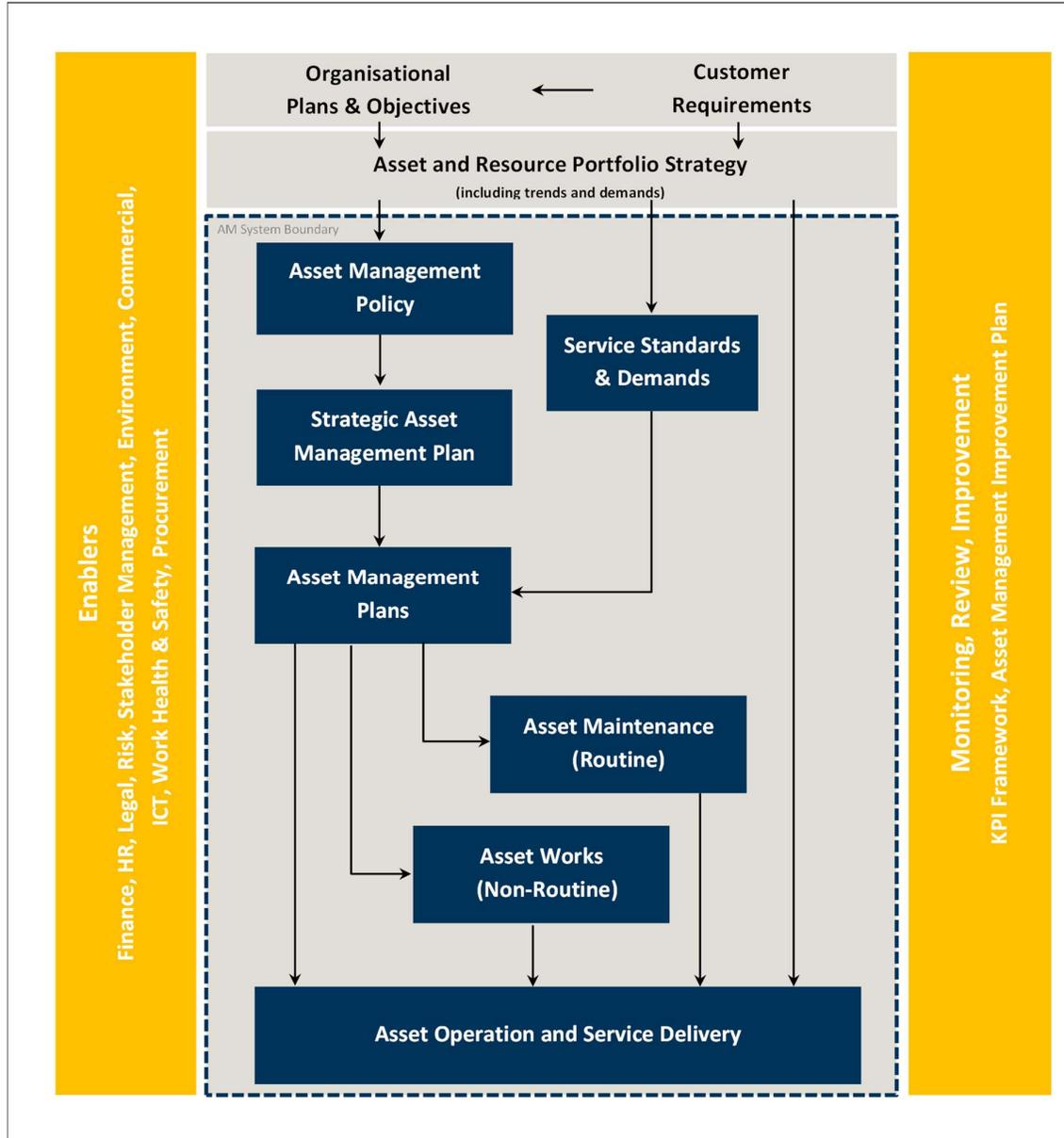
The key stakeholders who have a vested interest in the outputs of this plan are:

- SunWater Management and Board – strategic level information regarding the expenditure proposed over the five-year forecast period to support price path submissions and management decisions.
- SunWater Operations – alignment of expenditure forecast with revenue forecasts, monitoring implementation of agreed five-year price path and strategic direction for the operation, maintenance, renewal and growth of the asset portfolio.
- Customers – Clarity regarding the future direction for the services and assets over the five-year forecast period and how this translates into projects and programs of work.
- Queensland Competition Authority – Price path setting for monopoly based services namely Irrigation. Industrial pipelines are managed under individual customer contract and hence do not attract QCA oversight.

1.3 Context

SunWater’s Asset Management System overview is provided in Figure 1 which shows where the asset management plans fit within the key elements of the asset management system.

Figure 1 Overview of the Asset Management System¹



Asset Management Plans are tactical plans for achieving strategies resulting from the strategic planning process. The SAMP provides a more detailed roadmap as to how business processes relating to asset management planning are undertaken, whilst the AMP focuses on the outcomes of those processes.

¹ Sourced from SunWater’s Strategic Asset Management Plan

Key information feeding into the AMP are:

- SunWater Corporate Plan and Statement of Corporate Intent
- Asset Management Policy
- Strategic Asset Management Plan
- Customer service standards and performance reports
- Asset performance reporting and studies
- Demand Forecasts, Risk Studies, Compliance Requirements and any other drivers for expenditure.
- Customer Feedback

Key information informed by the AMP includes:

- Operations and Maintenance Manuals
- Price path submissions
- Annual budget preparation and works scheduling
- Business Improvement Plans

1.4 Plan Methodology

Details regarding the methodology by which this AMP has been prepared are provided in SunWater's Strategic Asset Management Plan.

The AMP's findings and forecast are based on available information at the time of preparation. Where information and knowledge gaps exist, these have been reflected in the improvement plan section of the AMP to allow an ongoing and continuous improvement to the quality of the plan.

The Asset Management Plan is a living document, reviewed on an annual basis during SunWater's budgeting cycle.

2. Service Contract Summary

2.1 Burdekin Haughton Water Supply Scheme

Burdekin Distribution operates as part of a larger water supply scheme called the Burdekin Haughton Water Supply Scheme. It consists of channel and pipeline irrigation assets which deliver water to customers. The Burdekin Haughton Water Supply Scheme incorporates the following key service contracts:

- Burdekin Supply
- Burdekin Moranbah Pipeline
- Burdekin Distribution
- Burdekin Town Water

Figure 3 provides a schematic description of the assets or systems that make up each of these service contracts.

Burdekin Falls Dam (AMTD 159.3 km) is the primary water storage facility and in combination with downstream weirs and pump stations, regulates river releases to supply water to Burdekin Distribution, townships and Burdekin Moranbah Pipeline.

2.2 Location

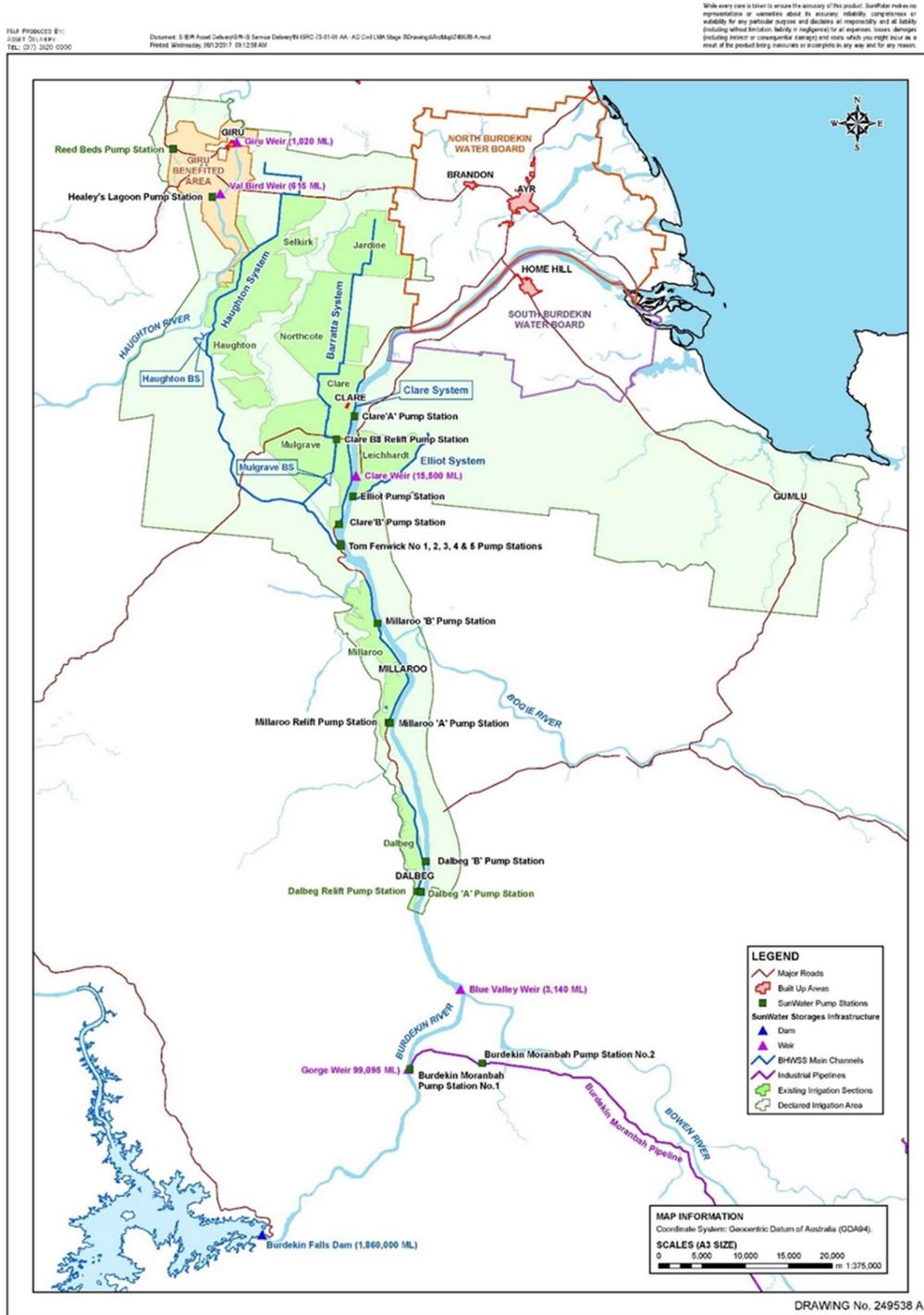
Burdekin Distribution serves agricultural lands across the Burdekin River Delta including the lower reaches of the Haughton River. Stored water is released from Burdekin Falls Dam and diverted using river pump stations at Dalbeg, Millaroo, Clare (including Tom Fenwick pump station) on the north bank, and Leichhardt (Elliot pump station) on the southern bank.

The pump stations serve Dalbeg, Millaroo, Clare, Barratta, Haughton and Elliot channel and pipeline distribution systems. The Haughton channel system further supplements the Haughton River using a diversion channel from Haughton Balancing Storage for the Giru Benefitted Area (GBA). The GBA consists of in-stream storage at Val Bird and Giru Weirs and a diversion at Healeys pump station (Val Bird Weir) for the Ironbark Creek/Healeys Lagoon system.

The Townsville-Thuringowa Pump station and Pipeline is supplied from Haughton Balancing Storage and diverts water into the ponded area of Ross River Dam. The pump station and pipeline is owned and operated by Townsville City Council and is used to supplement the city's treated water supply.

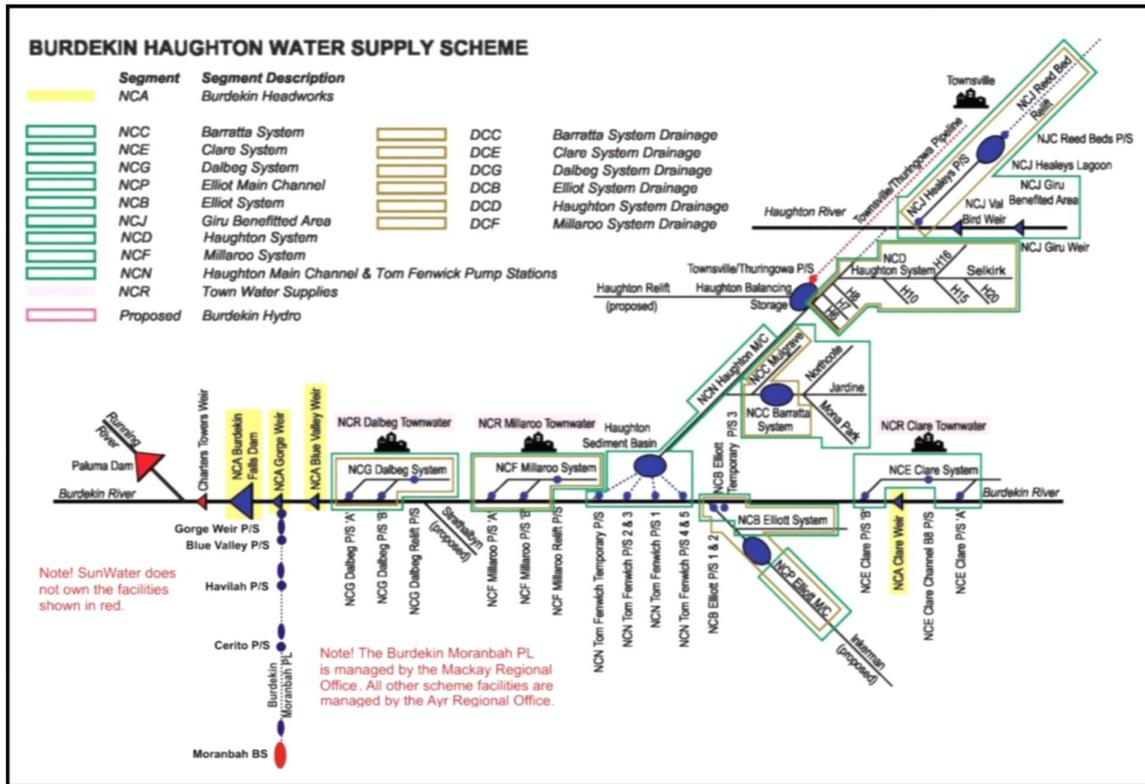
Water is also supplied to the Clare, Millaroo and Dalbeg town water systems.

Figure 2 Burdekin Haughton Water Supply Scheme Location Plan²



² Image sourced from DIS

Figure 3 Burdekin Houghton Water Supply Scheme Schematic Diagram³



Note: Image last updated in 2004

2.3 Capacities

The following table lists the capacities of key infrastructure

Table 1 Burdekin Distribution Facilities

Facility	Function	Capacity
Clare PS 'A'	Supplies Clare Channel A System	166 ML/d
Clare PS 'B'	Supplies Clare Channel B & A System	122 ML/d
Clare Channel B8 PS	Supplies Clare B8 Channel System (via Barratta Main Channel)	21 ML/d
Dalbeg PS 'A'	Supplies Dalbeg Channel A & B System	74 ML/d
Dalbeg PS 'B'	Supplies Dalbeg Channel B System	74 ML/d
Dalbeg Relift PS'	Supplies Dalbeg Channel Relift System	18 ML/d
Elliot PS 1/2	Supplies Elliot Channel System	180 ML/d
Val Bird Weir*	Supplies weir ponded area, Healeys PS, Giru Benefitted Area	2,055 ML
Giru Weir*	Supplies weir ponded area, Giru Benefitted Area	1,025 ML
Healeys PS*	Supplies Healeys/Ironbark Creek, Giru Benefitted Area	98 ML/d
Reed Beds PS*	Supplies Reed Beds system, Giru Benefitted Area	45 ML/d

³ Image sourced from DIS

Facility	Function	Capacity
Millaroo PS 'A'	Supplies the Millaroo Channel A & B System	180 ML/d
Millaroo PS 'B'	Supplies the Millaroo Channel B System	111 ML/d
Millaroo Relift PS	Supplies the Millaroo Channel Relift System	34 ML/d
Tom Fenwick PS 1	Supplies Haughton & Barratta Systems	605 ML/d
Tom Fenwick PS 2/3	Supplies Haughton & Barratta Systems	1209 ML/d
Tom Fenwick PS 4/5	Supplies Haughton & Barratta Systems	1209 ML/d
Tom Fenwick Temp PS	Supplies Haughton & Barratta Systems (decommissioned)	180 ML/d

* Note: Giru Benefitted Area (GBA) supplied from the Haughton River's natural yield and diversions from the Haughton Balancing Storage.

2.4 Operational Framework

Burdekin Distribution is operated and maintained from the SunWater Clare regional office. This office is supported by a depot at Millaroo.

Centralised support functions are provided through the SunWater head office in Brisbane.

2.5 Critical Assets

Facilities, or significant assets, considered to be critical to the operation of the Burdekin Distribution service contract are as follows:

- Tom Fenwick pump stations – combined capacity of approximately 3000 ML/day into the Haughton main channel
- Pump Stations (Clare A and B, Dalbeg A, Millaroo A and B, Elliot),
- Main channel (Haughton/Barratta),
- Transmission Feeders (ERGON),
- Balancing Storages (Haughton/Mulgrave),
- SCADA and Rubicon Gate Control,

When developing the forward program of works, as described in the Works Management System (WMS), and for prioritisation of planned and unplanned maintenance activities, the criticality of the facility is taken into account to ensure works are undertaken within an appropriate timeframe and take precedence over works associated with less critical facilities.

2.6 Asset Profile

2.6.1 Asset Replacement Values and Age Profile⁴

The following table provides a summation of the estimated replacement cost for all assets as used in the asset register for renewals planning. Non-operational assets (such as depots and offices) and externally owned assets (but managed by SunWater) have been excluded from this list.

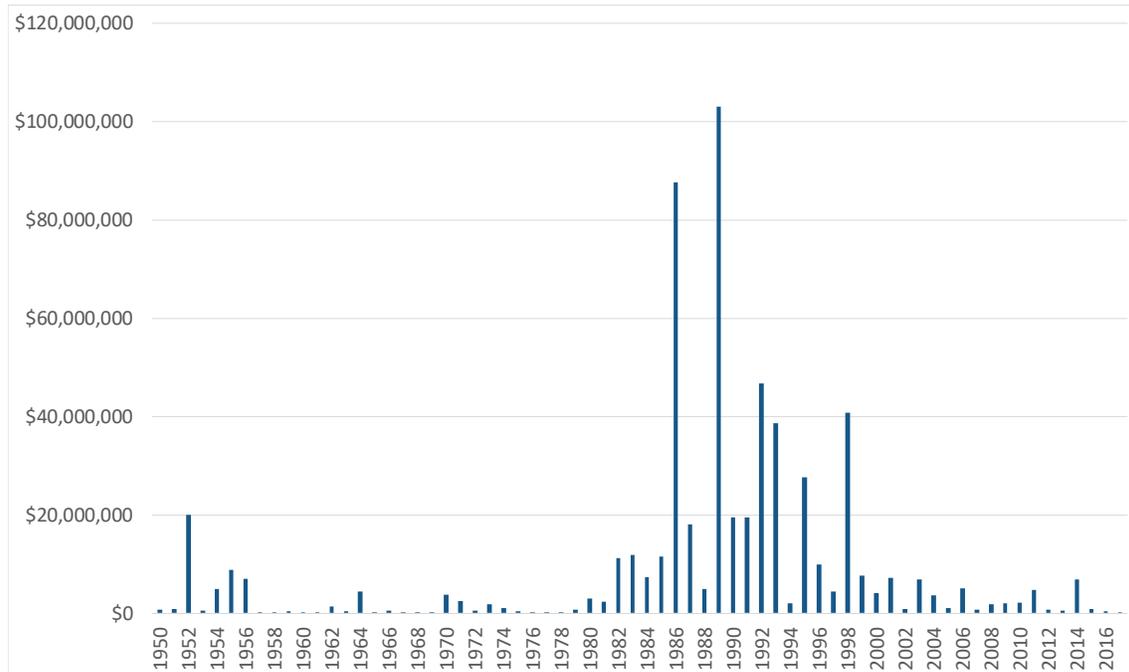
⁴ Table data sourced from Asset register as extracted on 28/11/2017

Table 2 Estimated Replacement Costs by Facility

Facility	Total
BARRATTA DRAINAGE	\$8,326,622
BARRATTA IRRIGATION DISTRIB	\$120,815,159
BURDEKIN SCADA	\$385,888
CLARE A PUMP STATION	\$3,641,409
CLARE B PUMP STATION	\$3,486,886
CLARE DRAINAGE	\$9,282,508
CLARE IRRIGATION DISTRIBUTION	\$36,285,014
CLARE RELIFT PUMP STATION	\$396,309
DALBEG A PUMP STATION	\$5,367,425
DALBEG B PUMP STATION	\$2,844,580
DALBEG DRAINAGE	\$1,256,772
DALBEG IRRIGATION DISTRIBUTION	\$13,707,773
DALBEG RELIFT PUMP STATION	\$488,924
ELLIOT DRAINAGE	\$5,827,329
ELLIOT IRRIGATION DISTRIBUTION	\$38,770,734
ELLIOT PUMP STATION	\$4,382,480
GIRU GROUNDWATER DISTRIBUTION	\$158,574
GIRU WEIR	\$5,148,244
HAUGHTON DRAINAGE	\$9,886,952
HAUGHTON IRRIGATION DISTRIB	\$42,948,976
HAUGHTON MC IRRIGATION DISTRIB	\$149,234,044
HEALEYS PUMP STATION	\$1,495,007
MILLAROO A PUMP STATION	\$7,308,468
MILLAROO B PUMP STATION	\$2,842,054
MILLAROO DRAINAGE	\$6,476,252
MILLAROO IRRIGATION DISTRIB	\$24,476,899
MILLAROO RELIFT PUMP STATION	\$581,977
MUNGINDI WEIR (MEA)	\$108,359
REED BEDS PIPELINE	\$1,145,198
REED BEDS PUMP STATION	\$271,516
TOM FENWICK PUMP STATION 1	\$24,662,871
TOM FENWICK PUMP STATION 2/3	\$19,312,993
TOM FENWICK PUMP STATION 4/5	\$27,534,813
TOM FENWICK TEMP PUMP STATION	\$675,358
TOWNSVILLE THURINGOWA	\$179,810
VAL BIRD WEIR	\$10,891,802
	\$590,605,977

The following figure provides an age profile for the Burdekin Distribution showing the years in which the majority of the assets were constructed.

Figure 4 Burdekin Distribution Age Profile



2.6.2 Risk and Condition Profile⁵

The following table provides a summary of the condition and risk profiles for the Service Contract assets.

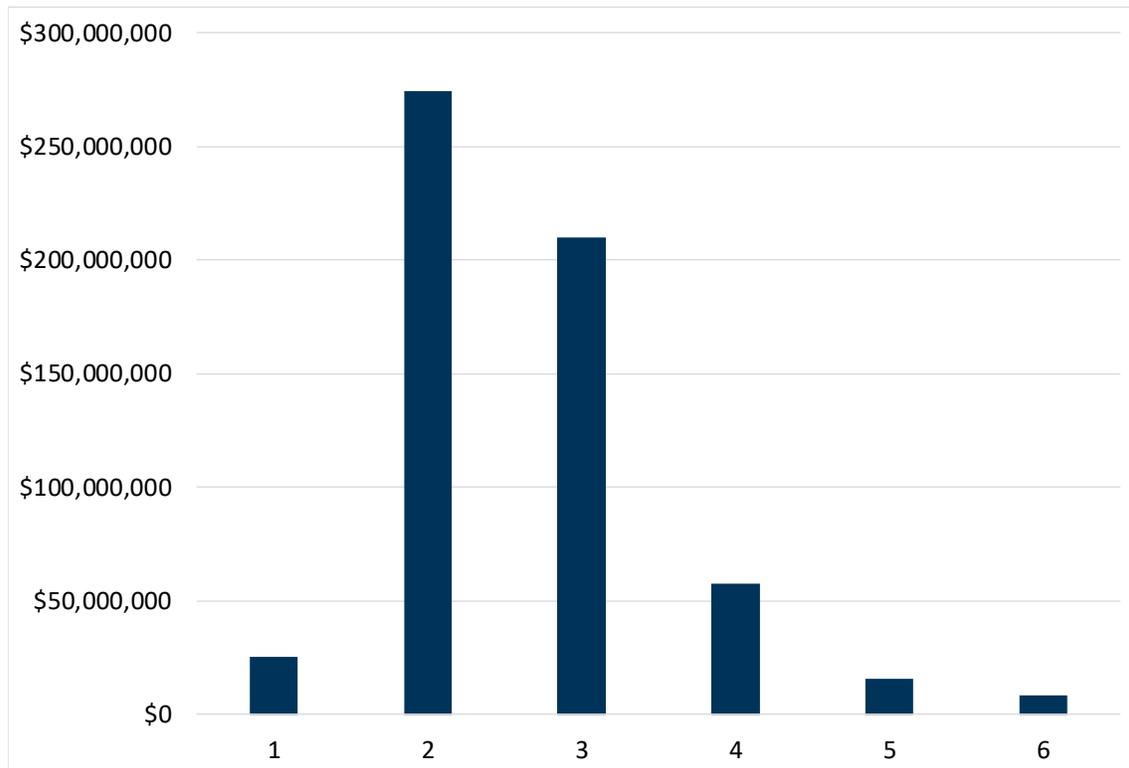
There are a number of assets that do not have a specific condition or risk score for logical reasons as described in the relevant assessment methodology manual.

Table 3 Burdekin Distribution Risk and Condition

Condition	Risk				Total
	1	2	3	4	
1	3.77%	0.21%	0.21%	0.04%	4.24%
2	45.20%	0.55%	0.66%	0.04%	46.45%
3	32.75%	2.15%	0.60%	0.05%	35.56%
4	7.13%	1.99%	0.15%	0.45%	9.73%
5	2.02%	0.29%	0.26%	0.07%	2.65%
6	1.20%	0.09%	0.10%	0.00%	1.39%
Grand Total	92.08%	5.29%	1.98%	0.65%	100.00%

⁵ Data sourced from combination of FL Register and C&R Register as at 28/11/2017

Figure 5 Condition Profile



Description of Condition Ratings are:

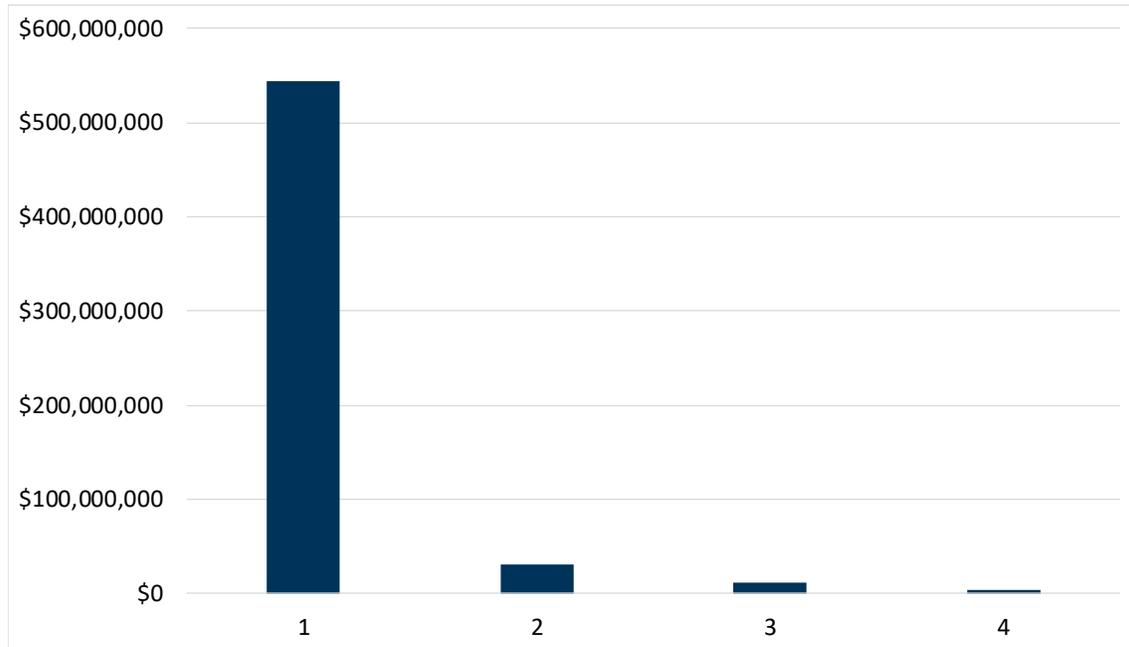
- 1 Perfect, as-new condition
- 2 Minor defects only
- 3 Moderate deterioration with minor refurbishment required to ensure ongoing reliable operation.
- 4 Significant deterioration with substantial refurbishment required to ensure ongoing reliable operation.
- 5 Major deterioration such that asset is virtually inoperable.
- 6 Asset has failed and is not operable.

Of the assets with a condition score some 86.2 per cent by value are in condition 3 or better.

There are some 2.6 per cent in condition 5 and nearing end of life in addition to the 1.4 per cent that are in condition 6 and are no longer performing their function.

Overall the Service Contract assets are in good condition and do not present a significant renewals or service delivery concerns.

Figure 6 Risk Profile



Description of risk ratings are:

- 1 Low
- 2 Medium
- 3 High
- 4 Extreme

92.1 per cent of all assets have a risk score of 1 (Low)

5.3 per cent Medium

2.0 per cent High

0.7 per cent Extreme – these primarily relate to Switchboard assets

The High and Extreme risk assets represent a small proportion, by value, of the Service Contract portfolio and do not present any significant risk exposure issues for the service contract.

2.7 Customers⁶

2.7.1 Irrigation

The Burdekin's warm winters and ample sunlight enable double-cropping of many field crops. Horticultural crops can be produced in winter for southern markets. The traditional 'dry' period from April to October also enables programmed farm management for irrigation and the harvest of many crops. For cane growers, these conditions also produce the highest yield and sugar content in Australia.

The Burdekin's expanding horticultural sector produces a variety of out-of-season winter vegetables and fruit with crops such as capsicums, eggplant, rockmelons, squash, pumpkins, watermelons and sweet corn being grown in the area.

The Burdekin mango industry has been established for a number of years. The fruit is picked from mid-November to early January for the fresh fruit and processing markets. Several central packing sheds operate during this season.

2.7.2 Urban Water Supplies

In 1988 the Townsville/Thuringowa Water Supply Board (NQ Water) completed construction of a pumping station and pipeline from the Haughton Balancing Storage to the headwaters of the Ross River Dam near Townsville.

2.7.3 Water Boards

A significant proportion of the water from the Burdekin Falls Dam is released from Clare Weir and is directed to the North and South Burdekin water boards to supplement groundwater supplies.

2.7.4 Industrial

SunWater has a number of industrial users including quarries and sugar mills.

2.7.5 Burdekin Distribution Water Entitlements⁷

The following table identifies the water entitlements as published in the 2018/19 Burdekin Distribution NSP.

Table 4 Burdekin Distribution Customer Entitlements

Customer Segment	Total Water Entitlements (ML)	High Priority Water Entitlements (ML)	Medium Priority Water Entitlements (ML)
Irrigation	321,377	0	321,377
Urban	10,000	10,000	0
Industrial	550	0	550
SunWater (excluding distribution loss)	110,017	17	110,000
SunWater distribution loss	206,737	16,260	190,477
Other	6	0	6
Service Contract Total	648,686	26,277	622,410

SunWater entitlements relate to channel system distribution losses.

⁶ Customer details extracted from website. <http://www.sunwater.com.au/schemes/burdekin-haughton>

⁷ Sourced from 2018/19 NSP, 20 June 2018 version

2.8 Service and Asset Standards

Water is stored and distributed by SunWater within the Burdekin Haughton Water Supply Scheme in accordance with the Burdekin Basin Resource Operations Plan (ROP) 2009 and Water Act. SunWater Ltd is the Resource Operations License (ROL) under the ROP and holds water supply contracts with allocation holders.

The Burdekin Distribution and Burdekin Supply operate under a single set of irrigation supply arrangements; those for the Burdekin Moranbah Pipeline are aligned with individual customer contracts.

2.8.1 Water Supply Arrangements and Service Targets

Water distribution arrangements for the Burdekin Distribution and Burdekin Supply are set out in the *Burdekin Haughton Water Supply Scheme - Water Supply Arrangements and Service Targets* document (refer <http://www.sunwater.com.au/schemes/burdekin-haughton/scheme-information/rules-and-targets>).

These arrangements detail how water is to be distributed throughout the Burdekin Haughton Water Supply Scheme and considers channel and river customers, supply rates, water ordering, planned shutdown timing, notices and durations, unplanned shutdowns and dispute resolution. The arrangements have been developed in consultation with customer representatives and are aimed at achieving sustainable, efficient and equitable delivery of water allocations.

Of relevance to the Asset Management Plan and the potential need for capital intervention works is the following target:

- Channels and River customers – No customer will experience more than **10 unplanned interruptions** per water year.

Performance reporting against these service targets will identify any below target performances which will be investigated for possible rectification works.

2.8.2 Risk Management

SunWater has developed a business model for determining the set of assets due for renewal over the forecast period. This model is risk based; assets are assessed for condition and risk which is used in combination with anticipated asset lives to determine the type of intervention strategy required and the timeframe involved.

This risk model and SunWater's acceptable risk threshold drives the majority of asset renewals and refurbishment based works.

Details of this risk based model are provided in the SunWater Documents:

- ***Doc#956033 - Whole of Life Maintenance Strategy & Object Codes***
- ***AM20 Methodology for Risk Assessment of Infrastructure Assets***
- ***AM21 Asset Refurbishment Planning Methodology for Condition Assessments of Assets***

2.8.3 Compliance Requirements

2.8.3.1 Resource Operating Plan (ROP)

The Burdekin Basin Resource Operations Plan 2009 (ROP) implements the provisions of the *Water Resource (Burdekin Basin) Plan 2007* and is intended to drive water resource innovation and efficiency to benefit the region's community. The ROP sets out rules to guide supplemented water management in the Burdekin Water Supply Scheme and implements strategies to support a number

of ecological outcomes including monitoring requirements to assess performance against the water resource plan.

SunWater Ltd has been granted the Resource Operating Licence (ROL) for the Burdekin Haughton Water Supply Scheme under the Burdekin Basin Resource Operations Plan (ROP) December 2009.

As the Burdekin Haughton Water Supply Scheme ROL holder, SunWater is required to operate the scheme in accordance with attachment 8 of the ROP which covers the following:

- Operating and environmental management rules;
- Water sharing rules;
- Dealing with water allocations;
- Seasonal water assignment rules;

Provisions are made under Chapter 11 of the Burdekin ROP to make amendments to the plan in accordance with the *Water Resource (Burdekin Basin) Plan 2007* and/or relevant sections of the *Water Act*.

2.8.3.2 Queensland Competition Authority (QCA)

The Queensland Government sets the water prices SunWater charges irrigators for water supply. The Queensland Competition Authority (QCA) undertakes the price reviews as directed by the Government.

In May 2012, QCA released its 'SunWater Irrigation Price Review: 2012-17' final Report. The recommendations of the report were subsequently approved by the Queensland Government where the *Rural Water Pricing Direction Notice (No1) 2012* was issued under section 999 of the *Water Act 2000*. The current irrigation price paths set for SunWater apply until 30 June 2017.

In 2016, the Government decided to delay the next QCA price review by two years to allow prioritisation of the local management reform of SunWater's channel schemes (Local Management Arrangements). In the interim, the QCA proposed to set the price path for the period 1 July 2017 to 30 June 2019 by continuing the current irrigation pricing policies. This approach used the QCA recommendations (from the last review) as the cost target for each scheme or tariff group and reflect the minimum costs of supply for operating costs and asset maintenance costs, but excludes a commercial rate of return.

Water pricing for Burdekin Moranbah Pipeline customers are commercial arrangements and not subject to QCA review.

2.8.3.3 Workplace Health and Safety

SunWater is required by law to comply with the *Work Health and Safety Regulation 2011*. This regulation states that a duty holder managing risks to health and safety must eliminate risks so far as is reasonably practicable. If it is not reasonably practicable to eliminate the risks, the duty holder must minimise those risks so far as is reasonably practicable. The regulation also states that risks greater than significant to be mitigated/ controlled.

As such, SunWater has a robust system in place to provide a duty of care to its employees, customers, contractors and visitors. Operating costs are invested annually to ensure this duty remains up to date and relevant.

Where the assets present a Workplace Health and Safety (WHS) risk, or where legislative changes require it, programs of safety improvements may be rolled out to protect the operators, visitors, customers and contractors.

2.8.3.4 Other Legislation

There are many standards and regulations which SunWater is required to comply with regarding specific asset types. Examples include: ramps and ladders, lifting equipment, access and egress, lighting, fire and electrical.

SunWater ensures all assets are compliant with current codes, legislations and standards and monitors for changes and updates that may require further asset investment to achieve compliance.

2.8.4 Continuous Improvement

SunWater undertakes a number of studies and investigations each year in order to identify opportunities to improve the efficiency or effectiveness of the service contract. Projects are identified on an as needs study and may apply across multiple service contracts or be specific to a service contract or specific assets. Such investigations and studies include:

- Energy usage and efficiency improvements for pump stations
- Water loss studies for channel and pipeline systems

2.9 Current and Future Demand

2.9.1 Current Demand

Burdekin Dam provides the supply for irrigation and urban customers. The river height is also regulated down stream by the Clare weir. The Clare, Millaroo and Dalbeg schemes are manually regulated to keep an operating height in the channels as almost all outlets are gravity fed. Crops in each area include:

- Dalbeg- 90% sandalwood, 10% sugar cane
- Millaroo- 80% sugar, 20% sandalwood
- Clare- 75% sugar, 25% seasonal crops (melons, vegies, corn etc.)

Peak irrigation runs from November through to March depending on the wet season. During this period there are times when irrigators are restricted to take only their Peak Flow Entitlements because of capacity restraints in sections of the system. For the rest of the year demand is fairly consistent running at approximately 50 per cent capacity. Demand requirements have remained reasonably consistent as the area remains predominantly sugar cane.

Water capacity constraints can be due to weed build up in the channels or purely demand requirements.

Usage patterns have remained consistent since the scheme was introduced although the introduction of crops such as rice means there are some areas where the availability of water at certain times of year are more critical than others.

2.9.2 Future Demand

Due to the current focus on ground water levels, extra allocations are unlikely to be released over the next 5-10 years

2.10 Water Availability and Reliability

Water allocations for Burdekin Distribution are split approximately 10 per cent High priority and 90 per cent Medium priority.

Records from 2005 onwards show 100 per cent of high priority entitlements have been allocated at the start of each water year (1 July). For most years, 100 per cent of medium priority entitlements have also been allocated on 1 July. The years where this hasn't occurred, the full allocation has been announced later in the water year as listed below:

- 1 Sept 2010 – 2 months
- 1 Sept 2013 – 2 months
- 1 Sept 2014 – 2 months
- 1 Feb 2016 – 7 months
- 21 July 2016 – 0.75 months
- 1 Oct 2017 – 3 months

For these years the initial allocation for medium priority on 1 July has been 80 per cent or higher except for 1 July 2016 where it was 63 per cent.

The water supply has been able to cater for all customer allocation with some management of medium allocations and is considered a highly reliable supply.

The year 2015/16 appears to have presented the greatest challenges to the irrigation sector with only 80 per cent of medium priority allocated during the peak summer period.

3. Lifecycle Management Plans

3.1 Asset Planning Methodology

The following text provides an overview of the approach SunWater takes to planning for routine and non-routine asset expenditure. Details of each methodology are provided in relevant controlled documents for a more thorough understanding of the approach.

3.1.1 Routine Works

SunWater plans asset work on a routine (preventive) and non-routine basis. Routine work is currently defined as recurring work with a frequency of 12 months or less.

Routine work plans are developed based on industry specifications for each asset, SunWater experience, compliance requirements and improvements in technology. The program consists of inspections, surveillance, condition monitoring and servicing of assets. The purpose of the program is to monitor the performance and condition of assets to ensure they continue to meet the agreed service standards and to detect when assets are operating outside of acceptable parameters so corrective action can be taken or scheduled.

Each asset type has a standard maintenance strategy that prescribes the frequency and timing of each type of maintenance activity. For example, a guard valve will have three monthly and twelve monthly operational and maintenance tasks prescribed to ensure it is kept in an acceptable condition for operational reliability and reduces the need for non-routine work or unplanned routine work.

Assets and systems have undergone a risk assessment to determine the criticality of the asset to the function of servicing the customer. As a result, maintenance strategies are tailored to align with this risk. Higher risk assets will typically have an increased frequency of activities, whilst very low risk assets may be run to failure. Likewise, response times to unplanned events are aligned with these risk levels.

These maintenance strategies have undergone extensive analysis to ensure the required function, performance, safety and compliance is achieved at the lowest cost to the end user.

This asset management plan focuses on the outcomes of the routine works planning process and the potential implications or issues at a scheme level.

3.1.2 Non-Routine Works

SunWater has an extensive asset register including a structured asset hierarchy of assets or systems, such as pump stations, so key items such as condition, risk rating, replacement value and remaining life can be recorded against individually replaceable parts. The model SunWater applies to this data provides a draft plan of works over the forecast period. While this AMP refers to the next six years, the QCA looks at the next 30 years for price path considerations. Both however, draw on the same data. The identification of non-routine work is initially driven by a combination of the asset condition and risk.

As this information is presented at the asset or equipment level, the asset planner considers a number of factors in order to translate this into a set of proposed projects for the next financial year. Factors taken into account include:

- Is the work really required? Can it be deferred? Will deferring it result in a low risk of failure or poorer customer service?
- What is the best option for the work? Refurbishment, replacement, modified maintenance etc?

- Can the work be aggregated into a larger project for the facility or an asset type program to deliver economies of scale?
- Does the work generally align with the lifecycle strategy for the asset?
- Can the project or aggregate of projects be achieved within the financial year?
- Does the overall expenditure forecast align with the agreed QCA price path? Rationalisation of projects may be required in order to fit within the price path however where appropriate or necessary the price path can be exceeded giving due consideration to the past overall expenditures and future years forecasts.

Ongoing updates and improvements to the proposed non-routine works plan occur throughout the year in the lead up to the budget submission phase. An updated project list is maintained in SunWater's SAP Works Management System (WMS) and undergoes continual refinement and change. The financial forecast presented in this AMP represents a point in time view of the proposed works and will likely to have undergone a number of changes before and possibly after budget approval.

Year 2 and beyond proposed works are typically not translated into projects for the following reasons:

- The environment has a significant impact on the achievement of the proposed works plan. For example, times of flood may require projects to be extended or deferred into the following year.
- Major climatic events such as Cyclones may require a complete change to the proposed works plan.
- Unplanned asset failures may require planned projects to be deferred.

As there are a number of significant issues that can largely undo any planned works for Years 2 and beyond, it is considered by SunWater good business practice to keep this primarily as a forecast of overall expenditure rather than agreed projects.

In addition to the consideration of risk and condition to developing the non-routine works plan other expenditure drivers exist that may generate works.

These include:

- Performance reports identifying assets or systems below the desired target. For example, pump efficiency, reliability of supply, unplanned outage costs, etc.
- Service and Asset Initiatives may arise from the Corporate plan, Statement of Corporate Intent or other sources that define a project
- Growth and future demand may drive the need for augmentation or expansion projects as possible disposal or rationalisation projects
- Compliance based projects may be required to meet changes in legislation such as WHS, regulator requirements or equipment compliance standards.

The following section on expenditure drivers identifies the reasons for the proposed routine and non-routine works.

Further details on SunWater's approach to the preparation and scheduling of non-routine works can be found in the following SunWater documents:

- ***#1587501-Asset Management System Manual***
- ***#1599118-Asset Management Planning Methodology Paper***

3.2 Drivers of Expenditure

The following section draws out the key issues for the service contract regarding performance, compliance, growth and risk that are driving the proposed works program for the next six years.

3.2.1 Network Services Plans

Stemming from the QCA's 2012 review of irrigation prices, SunWater publishes annual Network Service Plans (NSPs) based on service contracts as required by the QCA's pricing practices recommendation. The documents are published in advance of the QCA recommendations to provide customer review and comment. The NSPs aligned to the Burdekin Haughton Water Supply Scheme are Burdekin Distribution (AIE), and Burdekin Supply (ABB).

SunWater reviews the NSPs annually and prepares performance reports for customer representative bodies. The NSPs and the Annual Operations Reports can be found on the SunWater website <http://www.sunwater.com.au/schemes/burdekin-haughton/scheme-information/pricing>.

The NSPs primarily measures and reports on financial performance against budget and QCA targets. As the financial year progresses it may be necessary to defer some projects, modify budgets for some and bring others forward into the current year.

At the time of preparing this AMP there are no material changes to the proposed works program that will influence the six-year forecast.

3.2.2 Water Supply Service Targets

The following table provides performance reporting against the Water Supply Agreement and Service Targets for the entire scheme. This includes the service contracts for Burdekin Distribution, Burdekin Supply and the Burdekin Moranbah Pipeline.

The two unplanned shutdowns that exceeded the 48 hour timeframe for restoration of service (Peak Demand Period) were on the Elliot system. The outages were around 56 hours each and related to the repair of leakage to the Elliot pump station rising main.

Consideration has been given to treatment of the Elliot pump station rising main to address the service delivery failures however no project has been identified at this stage in the forecast period.

All other performance measures were within the bounds of the water supply agreement and hence are not driving any specific projects.

Table 5 Water Supply Performance Measures 2017/18

	Planned Shutdowns		Unplanned Shutdowns		Meter Repairs	Max No. of Interruptions	Complaints & Enquiries		
	No. of Events	No. of Notification Failures for Planned Events	No. of Events	No of Duration Failures for Unplanned Events	Faults causing restriction to supply will be repaired within	No. of Customers Exceeding Target	No. of Complaints	No. of Complaints Exceeding Target (initial)	No. of Complaints Exceeding Target (resolution)
July 2017	0	0	2	0	0	0	0	0	0
August 2017	2	0	0	0	0	0	0	0	0
September 2017	2	0	2	0	0	0	0	0	0
October 2017	0	0	0	0	0	0	0	0	0
November 2017	0	0	2	2	0	0	0	0	0
December 2017	0	0	2	0	0	0	0	0	0
January 2018	0	0	2	0	0	0	0	0	0
February 2018	0	0	2	0	0	0	0	0	0
March 2018	1	0	1	0	0	0	0	0	0
April 2018	0	0	0	0	0	0	0	0	0
May 2018	3	0	0	0	0	0	0	0	0
June 2018	0	0	0	0	0	0	0	0	0
Total YTD for 2017/18	8	0	13	2	0	0	0	0	0

3.2.3 Corporate Driven Projects

Strategic level projects defined and driven by the Corporate Business Plan or Statement of Corporate Intent are identified here.

For the Corporate Plan 2017-22 strategic level projects have only been identified for headworks assets including Dam Safety Upgrades and Flood Repair Works.

3.2.4 Compliance Related Works

A number of compliance driven programs have been established in the WMS. These include programs such as:

- Electrical switchboard inspections, testing and tagging
- Lifting equipment inspections, testing and tagging
- Bridge inspections

3.2.5 Growth and Future Demand

No growth or future demand related projects have been identified for the Burdekin Distribution service contract.

3.3 Strategic Direction for Scheme

No strategic direction statement is provided. Assumption for forecasting is existing services will continue as per current arrangements.

4. Financial Forecast

For a summary of the financial forecasts, refer to the relevant Network Service Plan (which is available on SunWater's web site).

5. AMP Improvement Plan

The following describes potential improvements that may be considered for implementation. Corporate level improvements apply across all AMPs whilst others are specific to this AMP.

5.1 Corporate Level Improvements

- Enhance the WMS to include a data field for each project to identify the work type, namely new asset, upgrade existing, replace, refurbish, disposal, study, investigation.
- Enhance WMS to include a data field to identify the primary driver for the works, namely compliance, service enhancement, condition and risk.
- Develop more asset related technical performance standards to guide and potentially drive the non-routine asset replacement and refurbishment programs. Implement procedures to measure these performance standards to feed into the planning process.
- Continuous improvement to current condition and risk based model to confirm the proposed timing of works generated is an acceptable starting point for the next year's works program development.
- Enhance the Functional Location asset register so condition and risk scores can be presented at a parent or facility level. At present, they are only provided at the asset or equipment level.
- Develop and document a strategic direction for each scheme and service contract to identify a more tangible understanding of how assets and services may change into the future so the more significant asset investment decisions can be made in the context of the anticipated life and function anticipated from the investment. In addition, clarify the goals and objectives for the scheme, systems or service contracts to support this future vision.

5.2 Improvements for this AMP

- Locality map and schematics at Service Contract level
- Improved performance reporting that links to the proposed works program (i.e. better demonstrate why the work is needed)
- Future AMPs should address feedback from customers
- Future AMPs should contain more accurate information. This requires SunWater to review AMP sources and update them to ensure relevant and up-to-date information.

5.3 Monitoring and Review Procedure

- This AMP shall be reviewed and updated annually in line with the NSP and Budget Cycle.
- Responsibility for review and update of this AMP rests with the Manager Strategy and Assurance in consultation with the other signatories at the front of this document.

6. References

- Strategic Asset Management Plan (SAMP)
- Burdekin Haughton Water Supply Scheme - Water Supply Arrangements and Service Targets
- Burdekin Basin Resource Operations Plan 2009 (ROP)
- Water Resource (Burdekin Basin) Plan 2007
- Rural Water Pricing Direction Notice (No1) 2012
- Work Health and Safety Regulation 2011
- Burdekin Haughton Water Supply Scheme – Scheme Operations Manual
- #1587501-Asset_Management_System_Manual
- #1599118-Asset_Management_Planning_Methodology_Paper
- #1800010-Bulk_Water_Assets_Strategic_Plan_2015
- #2320093-v6-2019 Network Service Plan – Burdekin Bulk Water Service Contract
- #2320095-v5-2019 Network Service Plan – Burdekin Distribution Service Contract