

**SunWater Limited**  
Level 10, 179 Turbot Street  
PO Box 15536 City East  
Brisbane Queensland 4002  
www.sunwater.com.au  
ACN 131 034 985



## Final Report

# Asset Management Plan – Burdekin Supply – Service Contract ABB

Financial Years 2019 to 2024



Photo of Burdekin Falls Dam

**Date:** October 2018

**Project:** WBS No. R-WSSA-28-72-03

**File No:** 18-002112/001

Approved:

  
Richard Kenny  
Manager Asset Planning

Approved:

  
Colin Bendall  
Executive General Manager  
Operations

## 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 draft	
October 2018	2.0	Final	Colin Bendall

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## List of Abbreviations

Abbreviation	Extension
AIE	Burdekin Distribution Service Contract
AMP	Asset Management Plan
AMTD	Adopted Middle Thread Distance
AS DOC	Asset and Strategy Document
AS FAC	Asset and Strategy Facility
AS INS	Asset and Strategy Inspection
BP	Buildings and Plant
EM	Environmental Management
KCB	Burdekin Moranbah Pipeline
MW	Major Weir
NR MEC	Non-Routine Mechanical
NR MET	Non-Routine Metering
NSP	Network Service Plan
PAR	Persons at Risk
PS	Pump Station
QCA	Queensland Competition Authority
RE EXE	Renewals Executive Requirement
RE ICR	Renewals Improve Condition and Reduce Risk
RE PPS	Renewals Personal and Public Safety
ROL	Resource Operating Licence
ROP	Resource Operating Plan
SAMP	Strategic Asset Management Plan
UB	Urban
WHS	Workplace Health and Safety
WMS	Works Management System
WSS	Water Supply Scheme

## 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 Supply has assets with an estimated replacement cost of **\$1,165M** with a weighted average asset age of **33 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 **99.9 per cent** of Burdekin Supply assets are considered low or moderate risk. These risk ratings exclude major headworks assets as these are risk managed through a dam safety inspection program and do not have a corresponding risk rating for each asset.

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

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## 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 Queensland Competition Authority (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

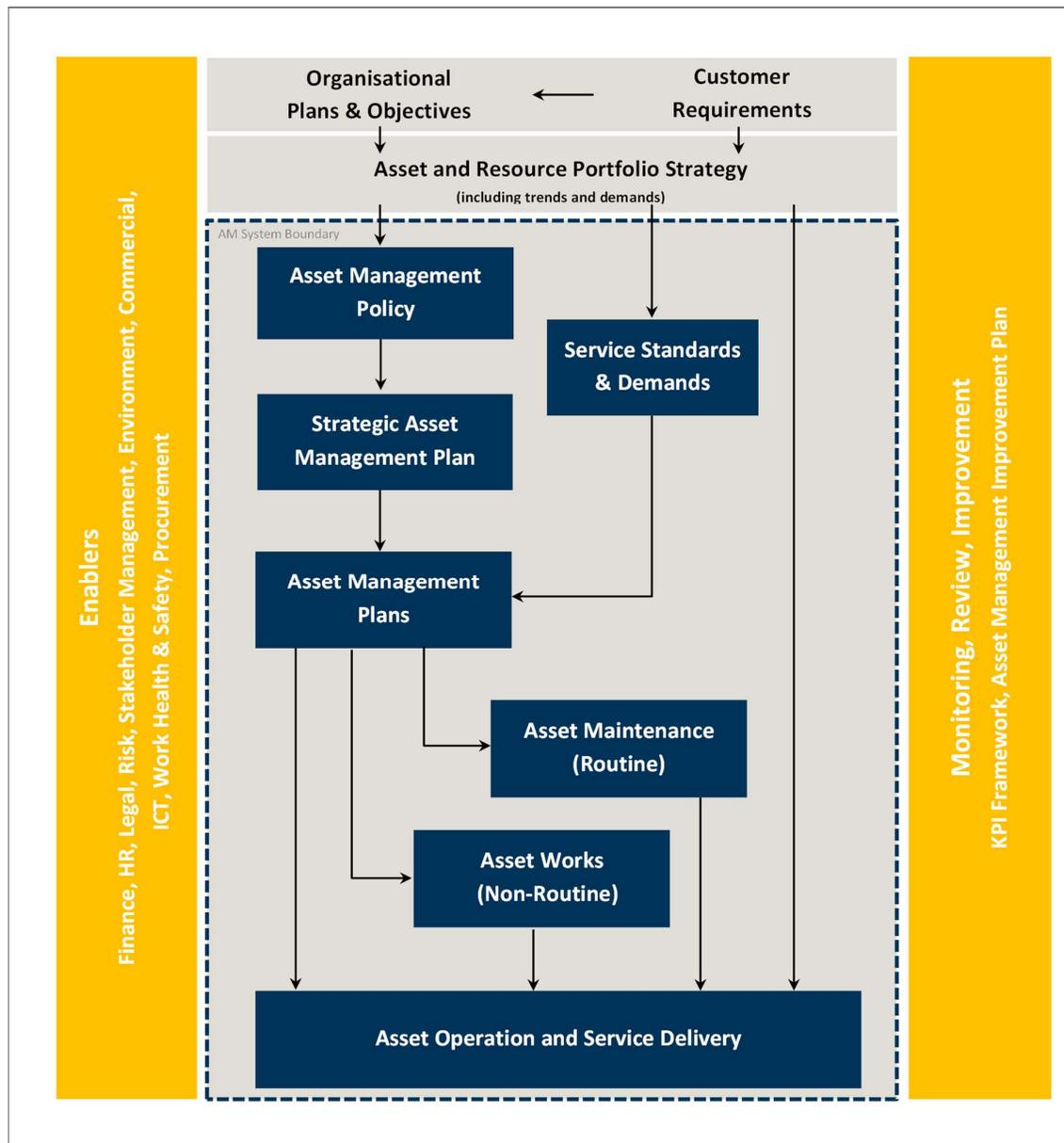
The key stakeholders who have a vested interest in the outputs of this plan are:

- 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 System<sup>1</sup>



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.

Key information feeding into the AMP are:

- SunWater Corporate Plan and Statement of Corporate Intent
- Asset Management Policy
- Strategic Asset Management Plan

<sup>1</sup> Sourced from SunWater's 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.

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## 2. Service Contract Summary

### 2.1 Burdekin Scheme

The Burdekin Supply operates as part of a larger water supply scheme called the Burdekin Scheme. This 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 Falls Dam is the major Burdekin Headworks asset and is critical to water deliveries in the Burdekin Haughton Water Supply Scheme. The dam, in combination with Gorge, Blue Valley and Clare Weirs, supplies water for the Burdekin Distribution and Burdekin Moranbah Pipeline systems.

Burdekin Falls Dam is constructed of mass concrete and is approximately 876 m long. The dam has a central 504 m long ogee spillway with a crest height of EL 154.0 m AHD and four earth and rock fill saddle dams (Mt Graham North, Mt Graham South, North Abutment and Left Bank) with a combined length of approximately 4,800 m.

The dam's construction commenced in 1982, completed in 1987 and has a maximum storage volume of 1.86M ML.

The three weirs downstream of the dam enhance storage and flow control.

Gorge Weir at AMTD 127.5 km, is a mass concrete structure constructed in 1953 and provides a pumping pool for the Burdekin Moranbah Pipeline's Gorge Weir pump station.

Blue Valley Weir is a minor concrete structure completed in 1963 across a natural rock bar at AMTD 115.9km, just downstream of the confluence of the Burdekin and Bowen Rivers.

Clare Weir is located at AMTD 50.3 km and is the primary ponded section for diversion to the Burdekin Distribution system. The weir is a mass concrete structure that incorporates 150 hydraulically operated flap gates, right bank outlet works and fishlock arrangement. Tom Fenwick (Haughton/Barratta Channels), Clare A and Elliot pump stations are supplied from the ponded area.

**Figure 2 Burdekin Haughton Water Supply Scheme Location Plan<sup>2</sup>**

MAP PRODUCED BY:  
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Document: S 12# Asset Delivery/12# Service Delivery/ISRC/23-01-01-AA-AD Civil LMA Stage 2D/Drawings/AsMap/249538/AsMap  
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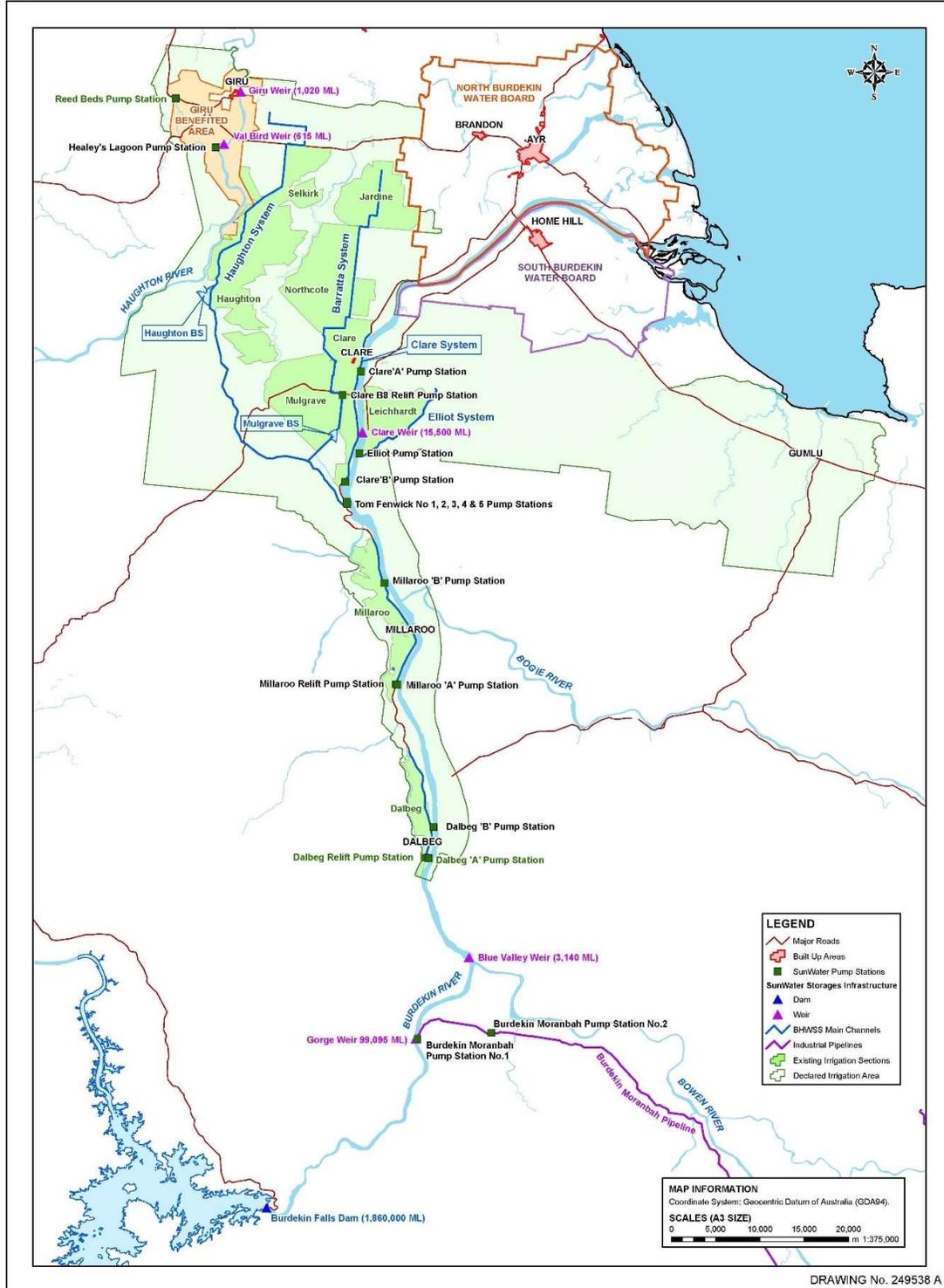
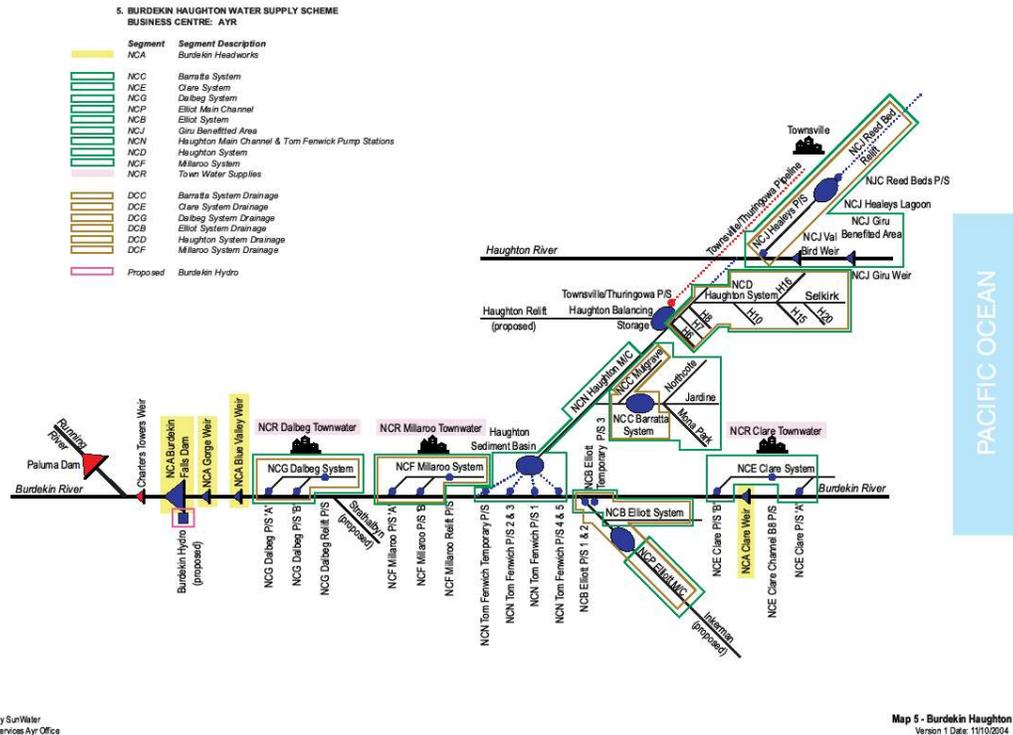


Figure 3 Burdekin Haughton Water Supply Scheme Schematic Diagram<sup>3</sup>



Note: Image last updated in 2004

### 2.3 Capacities

The following table summarises the capacities of the Burdekin Supply key infrastructure.

Table 1 Burdekin Supply Facilities<sup>4</sup>

Facility	Function	Capacity
Burdekin Falls Dam	Supplies the Burdekin River including downstream headworks such as Gorge, Blue Valley, and Clare Weirs	1,860,000 ML
Gorge Weir	Pond water downstream of Burdekin Falls Dam for Burdekin Moranbah Pipeline	9,095 ML
Blue Valley Weir	Pond water downstream of Gorge Weir	3,820 ML
Clare Weir	Ponds water downstream of Blue Valley Weir, serves Haughton, Barratta, Elliott and Clare Irrigation Areas	15,900 ML

<sup>2</sup> Image sourced from DIS

<sup>3</sup> Image sourced from DIS

<sup>4</sup> Data sourced from - ??

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## 2.4 Operational Framework

Burdekin Supply is operated and maintained from the Townsville regional office. This office is supported by a depot at Burdekin Falls Dam.

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

Note: Transition to Local Management Arrangements (LMA) is being progressed for this and other schemes. Forecast costs for this AMP are based on the existing management model and cost variations have not been considered at this time for alternatives or transitioning costs.

## 2.5 Critical Assets

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

- Burdekin Falls Dam Main Dam - Category 2 referable dam; “Extreme” Sunny Day failure category under ANCOLD guidelines; stores 1.86 GL
- Burdekin Falls Dam Left Bank Saddle Dam - Stores water above EL119 m to EL135 m AHD. Without it, the dam FSL would be 19 m lower than current.
- Burdekin Falls Dam Outlet - Critical to maintain to release irrigation water to customers.
- Clare Weir Outlet - Critical to maintain to release irrigation water to customers.
- Clare Weir flap gates and hydraulic system - Critical to maintain in optimum condition to retain storage level above EL18.1 m for pump stations and to collapse during flood events which minimises upstream flooding.
- Gorge Weir - Forms the pumping pool for Burdekin Moranbah Pipeline.
- Electrical System at Burdekin Falls Dam - Supplies electricity to cranes, hoists, winches; radial gate hydraulics; lighting all critical to operating and maintaining the outlet works

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 Scheme Asset Profile

### 2.6.1 Asset Values and Age Profile<sup>5</sup>

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.

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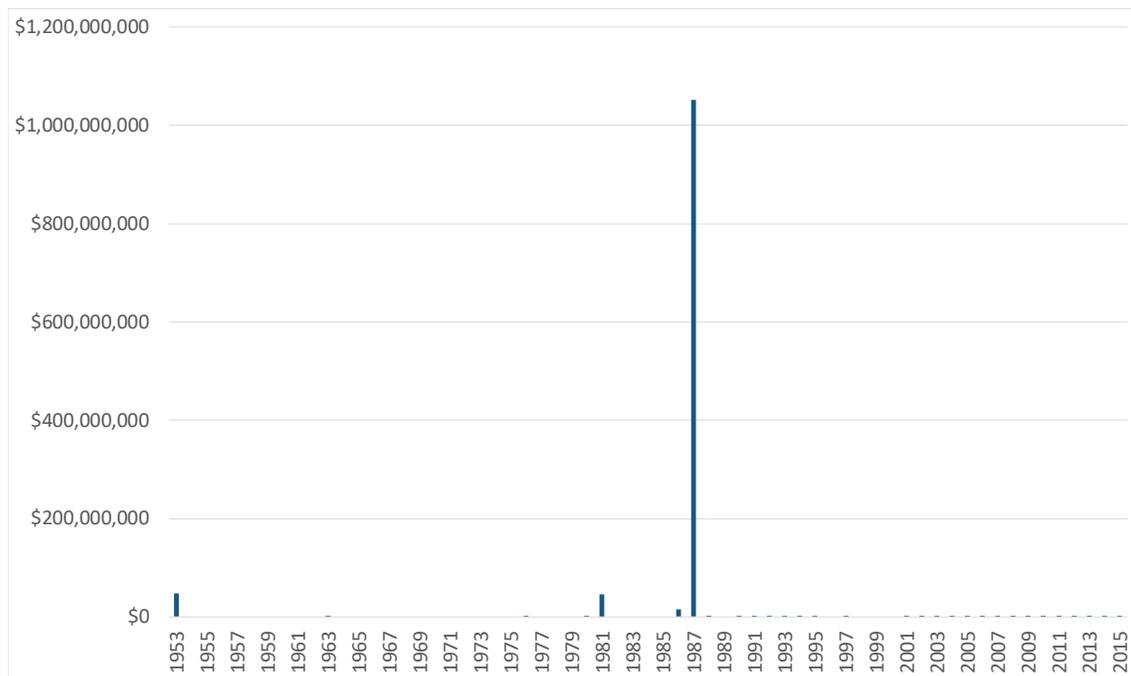
<sup>5</sup> Table data sourced from SunWater Asset register as extracted on 28/11/2017

**Table 2 Estimated Replacement Costs by Facility**

Facility	Total
BLUE VALLEY WEIR	\$218,653
BURDEKIN FALLS DAM	\$1,051,829,159
BURDEKIN FALLS DAM WTP	\$194,489
BURDEKIN RIVER DISTRIBUTION	\$230,824
CLARE WEIR	\$66,153,558
GORGE WEIR	\$46,804,298
	<b>\$1,165,430,980</b>

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

**Figure 4 Burdekin Supply Age Profile**



## 2.6.2 Risk and Condition Profile

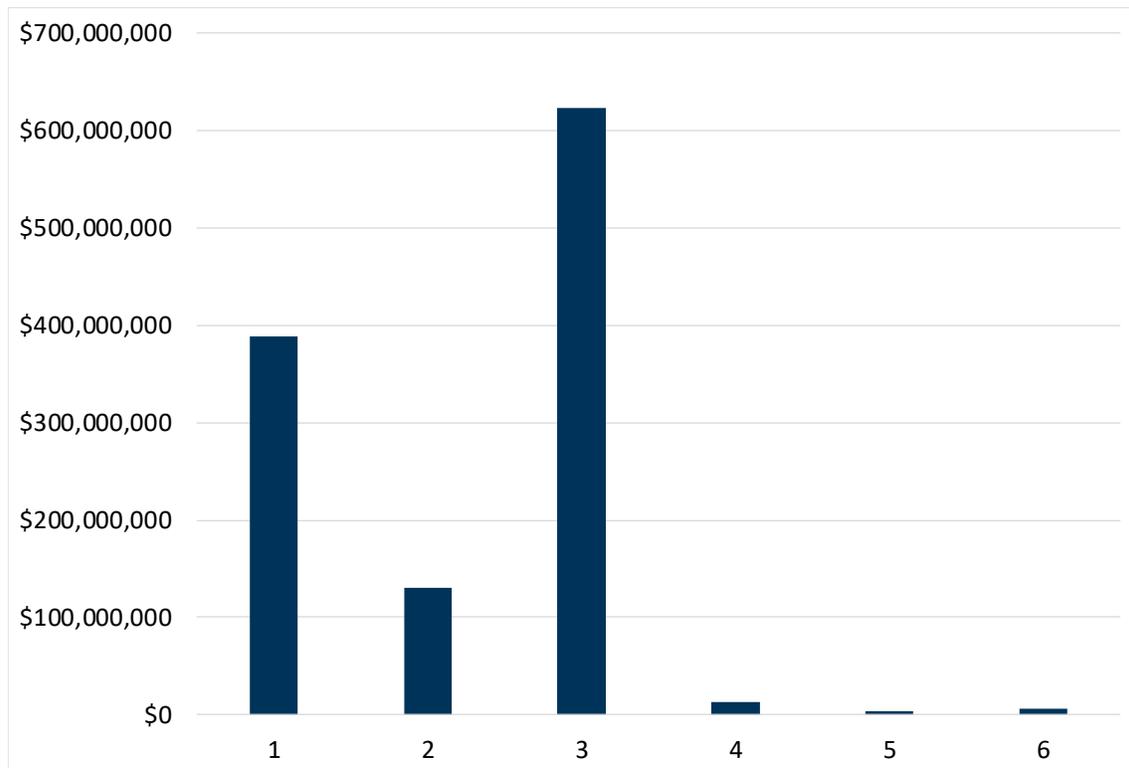
The following table provides a summary of the condition and risk profile for the Service Contract assets.

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 Supply Risk and Condition**

Condition	Risk				Total
	1	2	3	4	
1	0.29%	33.07%	0.00%	0.00%	<b>33.36%</b>
2	3.07%	8.11%	0.02%	0.0%	<b>11.19%</b>
3	0.35%	53.09%	0.04%	0.00%	<b>53.49%</b>
4	0.97%	0.10%	0.00%	0.00%	<b>1.07%</b>
5	0.28%	0.01%	0.06%	0.00%	<b>0.35%</b>
6	0.53%	0.01%	0.00%	0.00%	<b>0.54%</b>
<b>Grand Total</b>	<b>5.48%</b>	<b>94.40%</b>	<b>1.98%</b>	<b>0.00%</b>	<b>100.00%</b>

**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.

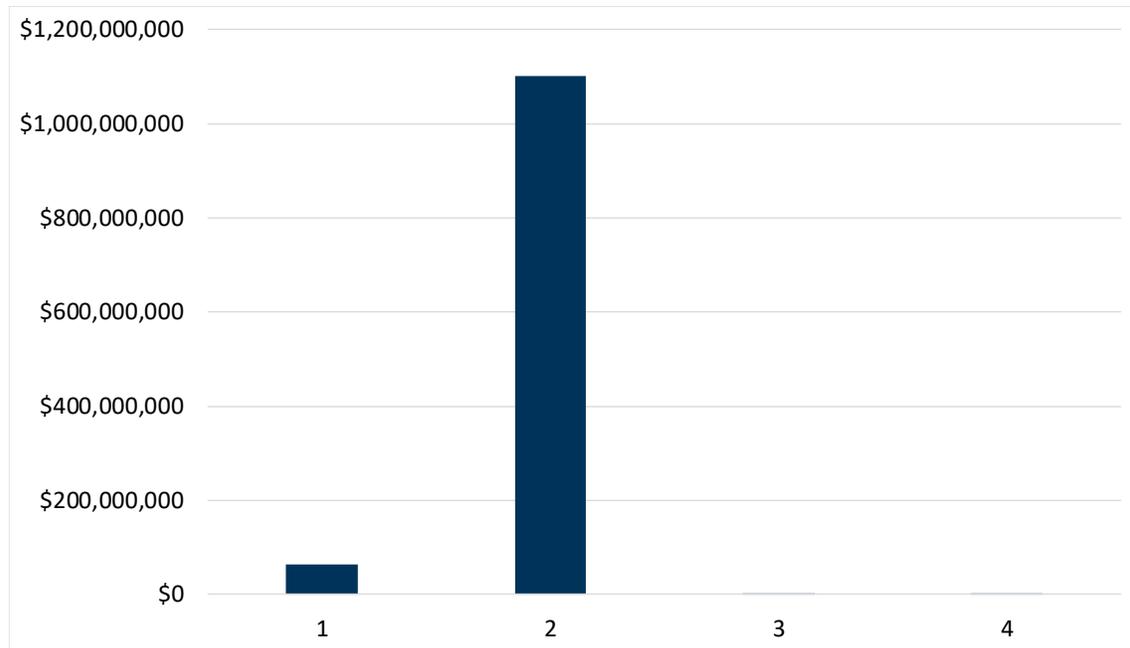
- 5 Major deterioration such that asset is virtually inoperable.
- 6 Asset has failed and is not operable.

Of the assets with a condition score some 98 per cent by value are in condition 3 or better.

There are some 0.3 per cent in condition 5 and nearing end of life in addition to the 0.5 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

The main asset, being Burdekin Falls Dam, does not have risk data recorded as it undergoes regular Dam Safety inspections via a legislated procedure.

Of the assets that have been risk assessed:

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

94.4 per cent Medium

<0.1 per cent High

<0.1 per cent Extreme – these primarily relate to ladders, handrails and platform assets.

## 2.7 Customers

Burdekin Supply customers are summarized as follows:

- Burdekin Distribution – customer primarily irrigation and domestic users (see separate AMP)

- Burdekin Moranbah Pipeline – customers primarily coal mines and townships (see separate AMP)
- Environmental releases – Queensland government.
- River offtakes – customers primarily irrigation and domestic

### 2.7.1 Service Contract ABB Customers<sup>6</sup>

The following table identifies the water entitlements as published in the 2018/19 Burdekin Bulk Water Network Service Plan (NSP).

**Table 4 Burdekin Supply Customer Entitlements**

Customer Segment	Water Entitlements (ML)	High Water Priority (ML)	Medium Water Priority (ML)
Irrigation	313,836	0	313,836
Urban	480	480	0
Industrial	691	200	491
SunWater	96,262	53,405	42,857
<b>Total</b>	<b>411,269</b>	<b>54,085</b>	<b>357,184</b>

SunWater entitlements relate to channel system distribution losses.

## 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 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.

<sup>6</sup> Sourced from 2018/19 NSP, 20 June 2018 version

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 2000*.

### 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 Dam Safety Management**

Burdekin Falls Dam is a referable storage under the *Water Supply (Safety and Reliability) Act 2008 and Water Act 2000*. Burdekin Falls Dam is a Category 2 dam with a Persons at Risk (PAR) of greater than 100. SunWater's management of the storage is governed by a Dam Safety Condition Schedule issued by the Dam Safety Regulator.

As such, SunWater is obligated to implement a formalised dam safety program to monitor and manage the safety of this and other headworks structures, inspections, studies and asset renewals and refurbishments as typically driven by these dam safety compliance requirements.

### **2.8.3.4 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.

### **2.8.3.5 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

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## 2.9 Current and Future Demand

For the Burdekin Supply the demand for water is governed by the demand for water by the various users, the environment and water losses.

This includes SunWater for the irrigation, industrial and domestic water supplies and the environmental releases required by legislation to maintain a healthy waterway.

At the time of preparing this plan the utilization of water on the Burdekin Moranbah Pipeline was significantly lower than the system's capacity and customer entitlements (20,820)<sup>7</sup>. It was approximately 50 per cent but varied from year to year, however this is a small proportion when compared with the irrigation releases. This is discussed further in the Burdekin Moranbah Pipeline AMP.

The demand for water for irrigation is discussed in its own Burdekin Distribution AMP however in summary the key points are:

- Demand is consistent at approximately 50%
- 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.

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<sup>7</sup> 2017/18 NSP

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## **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 and its components 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 if appropriate. 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 or modified maintenance?
- Can the work be aggregated into a larger project for the facility or an asset type program to deliver economies of scale?

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- 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***
- ***#1800010-Bulk Water Assets Strategic Plan 2015***

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## 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 Service 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 service delivery failures reported relate to the distribution system, therefore Burdekin Supply has no performance measures which fall outside of the water supply agreement and is 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
<b>Total YTD for 2017/18</b>	<b>8</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 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 Burdekin Supply, the following strategic projects have been identified as listed in the Corporate plan:<sup>8</sup>

<sup>8</sup> Data extracted from WMS extract 29/06/2018

**Table 6 Corporate Plan Projects**

Corporate Plan Projects	2019	2020	2021	2022	2023	2024	Grand Total
<b>DS Dam Safety Upgrade</b>							
10BRI07 DSIP Burdekin Falls Dam Foundation Drainage Improvement	\$99,996						\$99,996
17BDK04 DSIP: Burdekin Falls Dam Saddle Dam & Monolith Improvement Project	\$7,275,892	\$9,489,401	\$20,589,413	\$106,886,052	\$116,692,159	\$8,372,402	\$269,305,319
17BDK04C DSIP: Burdekin Falls Dam - Saddle Dam & Monolith Improvement Project (Contingency)	\$399,996						\$399,996
17BDK04C DSIP: Burdekin Falls Dam Saddle Dam & Monolith Improvement Project (Contingency)		\$615,000	\$5,253,129	\$32,306,719	\$37,529,634	\$11,314,078	\$87,018,559
<b>Dam Safety Upgrade Total</b>	<b>\$7,775,884</b>	<b>\$10,104,401</b>	<b>\$25,842,542</b>	<b>\$139,192,771</b>	<b>\$154,221,793</b>	<b>\$19,686,479</b>	<b>\$356,823,870</b>

These projects have presently been included in the WMS forecast and tagged under the Dam Safety Upgrade funding program.

### 3.2.4 Compliance Related Works

Dam Safety inspections and resulting works are compliance driven works to ensure the maintenance of safe and reliable headworks assets.

Dam Safety Upgrades are a significant expense and are intended to bring the Spillway and other assets into line with the latest design standards. As such, this program of work is funded separately by government and does not form part of the annuity calculation.

These Dam Safety Upgrades are also listed above as Corporate Plan listed projects and hence have a high focus from a corporate level that they are completed on time.

Other compliance driven works include programs such as installing compliant walkways, ladders and handrails for Workplace Health and Safety compliance and registered plant inspections and work.

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
- Dam Safety Inspections
- Weir Inspections
- 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.

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## 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).

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## 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.

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## 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-v1-Asset\_Management\_System\_Manual,
- #1599118-v1-Asset\_Management\_Planning\_Methodology\_Paper.
- #1800010-v8-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