

Irrigation Price Review Submission

Appendix G

Strategic Asset Management Plan

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Strategic Asset Management Plan (November 2018)

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Delivering value through water solutions for today and tomorrow

SunWater is Queensland's largest bulk water service provider, currently owning and managing water infrastructure assets with a replacement value of around \$13 billion and supplying approximately 40 per cent of all water used commercially in Queensland.

SunWater owns and manages a regional network of bulk water supply infrastructure, supporting more than 5000 customers in the agriculture, local government, mining, power and industrial sectors.

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Key terms and abbreviations

Within the context of this document, the abbreviations and terms below are used extensively and should be understood prior to reading the document.

Table 1 - Abbreviations

Term	Definition
SAMP	Strategic Asset Management Plan
AMP	Asset Management Plan
NSP	Network Service Plan
AMS	Asset Management System

Table 2 - Terms

Service Contract	Service Contracts are specific to a particular service type and represent a group of assets that generate cash inflows largely independent of cash flows from other groups of assets. For example, a bulk water Service Contract area may include a dam, associated weirs, water accounting services, and a range of operational and maintenance services for customers in that area.
Asset Management System	This is a management system for asset management whose function is to establish the Asset Management Policy and asset management objectives. (AS ISO55000:2014)
Strategic Asset Management Plan (SAMP)	Documented information that specifies how organisational objectives are to be converted into asset management objectives, the approach for developing asset management plans and the role of the asset management system in supporting achievement of the asset management objectives (AS ISO55000:2014)
Asset Management Plan (AMP)	Documented information that specifies the activities, resources and timescales required for an individual asset, or a grouping of assets, to achieve the organisation's asset management objectives. The grouping of assets may be by asset type, asset class, asset system or asset portfolio. An asset management plan is derived from the strategic asset management plan and may be contained in, or be a subsidiary plan of the strategic asset management plan. (AS ISO55000:2014)
Asset Management Policy	The principles and mandated requirements derived from and consistent with the organisational/corporate plan, providing a framework for the development and implementation of the asset management strategic plan and the setting of the asset management objectives. (Global Forum on Maintenance & Asset Management 2014, <i>'The Asset Management Landscape: second edition'</i> , available at: http://www.gfmam.org/publications.html).
'Routine' vs 'Non-routine' works	SunWater's asset lifecycle management activities are dominated by two broad types of activities, referred to as <i>routine</i> works which scheduled work frequency of occurrence; and <i>non-routine</i> works which generally consist of asset refurbishment type works in line with the asset management program and also include emergency work such as flood repairs.

Executive summary

Previously, under the *Water Act 2000 (Qld)*, SunWater was required to prepare a Strategic Asset Management Plan (SAMP) for approval by the regulator for each of its water supply schemes. This requirement was repealed in 2008, however consistent with industry good practice and in alignment with International Organization for Standardization (ISO) 55000, asset management standards we have created a SunWater wide SAMP and separate Asset Management Plans for Service Contracts on our water supply schemes.

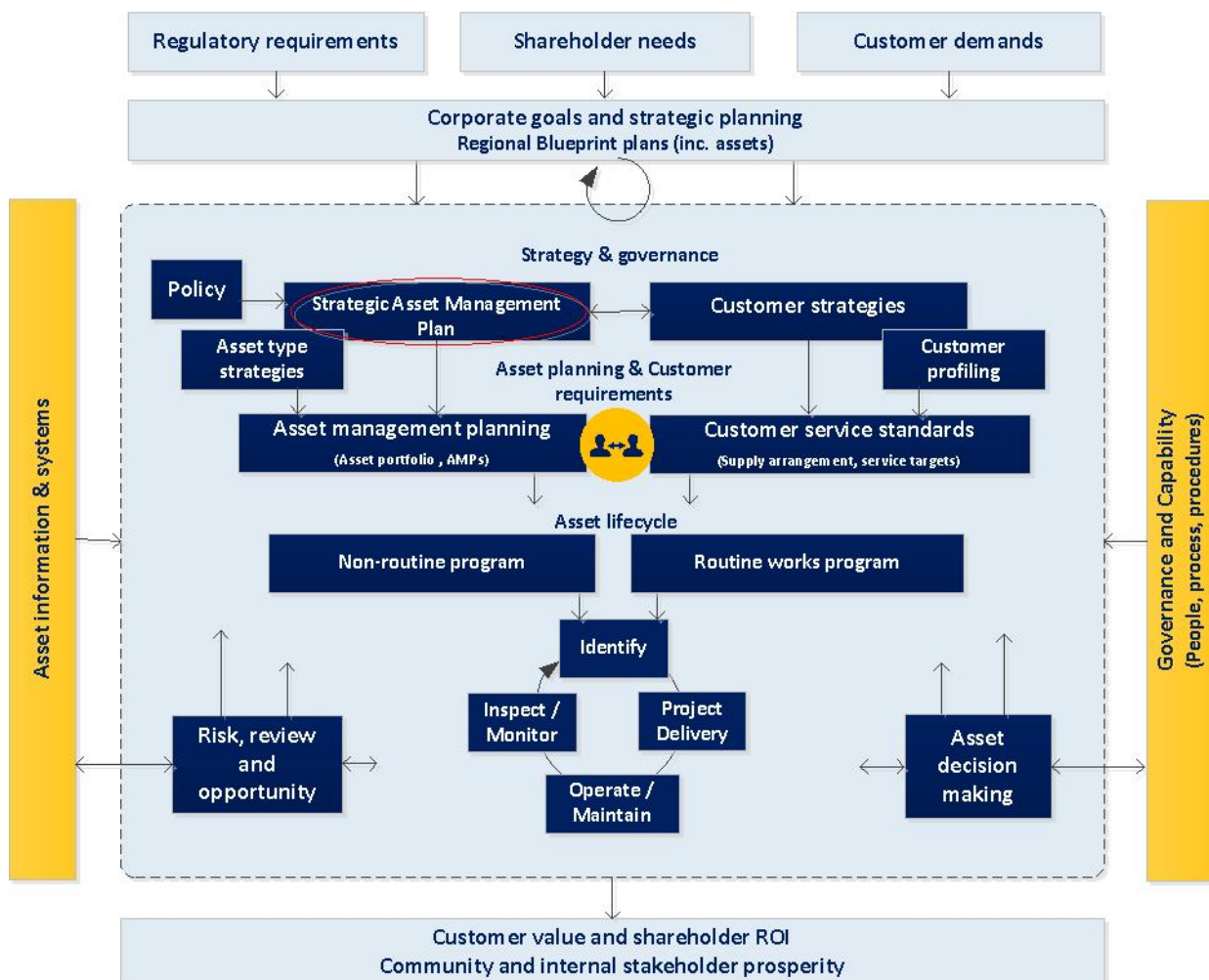
This SAMP document aims to provide asset management objectives, aligned with SunWater's strategic goals over the 2018/19 to 2022/23 strategic planning horizons, and a framework for asset management in the form of an Asset Management System (Figure 1) which will be used to achieve these objectives.

The SAMP in its current format, applies to assets used directly for the provision of water services and does not apply to non-water assets such as land, office space, plant & equipment, vehicles and housing.

Asset Management System

The Asset Management System (AMS) illustrated below (Figure 1), presents SunWater's framework for asset management which will be used to achieve our Asset Management Policy and asset management objectives. A more detailed explanation of the AMS components is provided in section 5.

Figure 1 – Asset Management System



Key components of the SAMP, include the Asset Management Policy and asset management objectives, which provide high-level governance and strategic direction for the AMS.

Asset Management Policy

The aim of our Asset Management Policy is to ensure we manage our assets in a sustainable and commercially focused manner to meet SunWater's business objectives of safeguarding asset integrity and ensuring optimal service value to our customers.

To do this, we will:

- manage our assets in compliance with all relevant legislation, regulation, licences, permits, approvals and authorities
- provide effective governance and assurance within our asset management framework across the business
- set business objectives and strategies for our assets (for example customer service targets) and monitor the performance of assets against these objectives and strategies
- clearly allocate responsibilities for the management of assets at all levels within SunWater and its business associates, and build asset management capability across the business.
- know and track information about our assets and services and continually improve and strengthen our digital strategies to support optimal asset decision making
- implement procedures to cover the asset lifecycle, from asset creation, through operation, maintenance and asset renewals, to disposal; and continually optimise these processes
- manage our assets in an environmentally sustainable manner, with due regard to community values and heritage, and provide a safe working environment
- seek continuous improvement in asset management through setting up and applying processes for review and continual improvement, and supporting research and development in asset management related areas
- manage our assets with a fit for purpose mindset, considering customer needs and future requirements.

Asset management objectives

SunWater's asset management objectives (Table 3) are aligned with SunWater's strategic goals and policy statements and will be used to drive asset management strategy in the business.

- a) Our assets will be managed to provide a safe environment for our workers and the community and we will continuously reduce dam safety risk as soon as practical.
- b) Our people will be capable and engaged in asset strategy and execution of initiatives with KPI and asset management accountabilities clearly understood by the business.
- c) Asset opportunities and innovation will be continually assessed and implemented to improve our value offering.
- d) Our assets will be fit for purpose and optimally managed throughout their lifecycle to deliver customer and shareholder value.
- e) Our customer needs will be understood and our customers engaged to develop trust in our asset investments and planning decisions.
- f) We will collaborate and integrate with internal and external stakeholders to strengthen our asset services and value offering.
- g) We will continually optimise our asset lifecycle and processes to provide efficient delivery of services to customers.
- h) We will fully leverage asset opportunities and realise value improvement across the asset management value chain.
- i) We will provide asset management governance and compliance with all relevant legislation, regulation, licences, permits, approvals and authorities.

Asset management roadmap

While this SAMP provides high level asset management objectives, the initiatives to achieve these objectives will be plotted over the 2018/19 to 2022/23 strategic horizons and managed within the business's strategic work programs.

The implementation plan to achieve the asset management objectives is detailed in section 6.2.

1 Introduction

1.1 Background

This document is a SunWater wide Strategic Asset Management Plan (SAMP) which describes the asset management objectives for the business and describes how the Asset Management System (AMS) will support the achievement of these objectives. The asset management objectives are aligned with the SunWater's strategic goals and the SAMP will be updated in line with SunWater's strategic planning horizons.

The Asset Management Plans are separate from the SAMP and provide a six- year outlook of planned asset activities, expenditure drivers, service requirements and forecast expenditure for each Service Contract within our water supply schemes. The AMS processes which are defined in the SAMP document will be used to execute the activities in the Asset Management Plans and will be driven by the asset management objectives to ensure the plan is efficient and continually optimised.

1.2 Purpose

The purpose of this document is to do the following:

- describe our internal and external organisational context
- describe the scope of asset management at SunWater
- provide asset management objectives with guiding principles for our asset decision making and improvements to our AMS framework going forward
- describe the AMS framework and show how the components interact
- describe our implementation plan for the achievement of the asset management objectives using the AMS
- describe our improvement plan for the SAMP going forward.

1.3 Audience

This document has been written for the following audiences, for the reasons as described below:

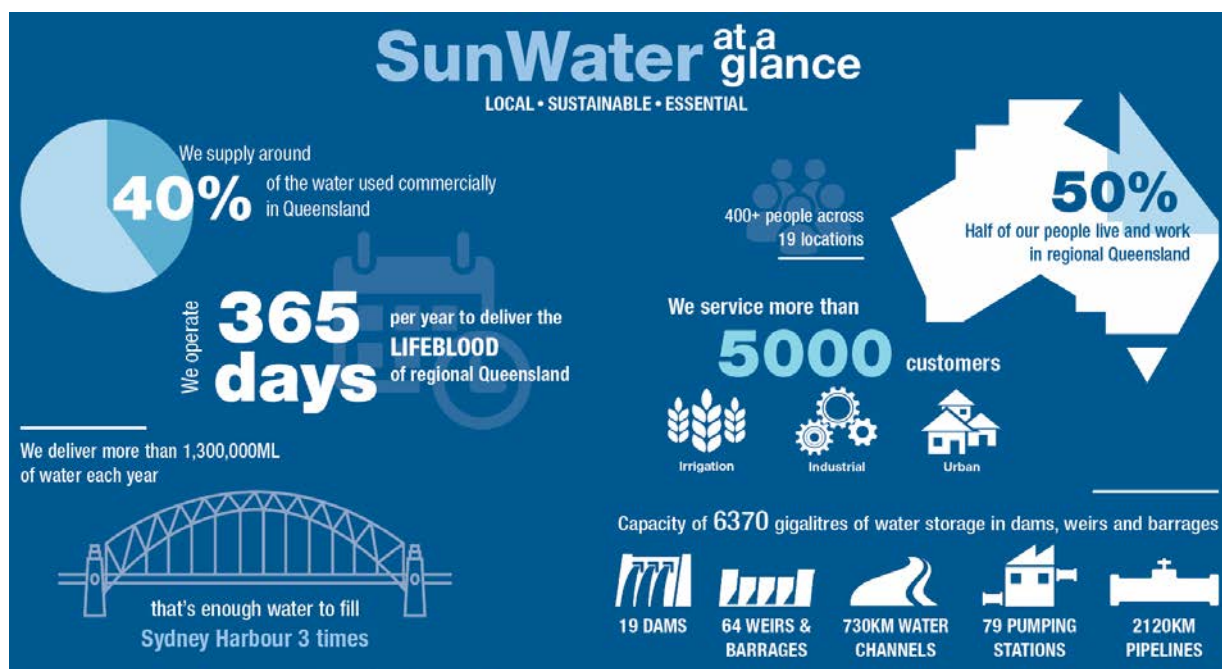
- **To our customers** – to communicate how our AMS more closely integrates customer strategy with asset management activities and to show how our asset management objectives will work towards achieving a customer value output.
- **To our board** – to provide confidence in our asset management objectives and their alignment with organisational strategy and to also demonstrate how our AMS framework going forward will meet these objectives.
- **To our shareholders** – to provide confidence that our asset decision making processes and procedures demonstrate prudence and efficiency and that we have a strong framework for continual improvement.
- **To our internal stakeholders** – to describe how we will work together within the AMS framework to collaborate and jointly achieve our asset management objectives.

2 Organisational context

2.1 SunWater at a glance

SunWater is Queensland's largest bulk water service provider. We own and manage a network of dams, weirs, barrages, pumping stations, pipes, channels and drains that are used to supply bulk water to more than 5000 customers in the agriculture, local government, mining, power and industrial sectors in Queensland. Our water infrastructure assets have an estimated replacement value of around \$13 billion and supply approximately 40 per cent of all water used commercially in Queensland.

Figure 2 – SunWater at a glance



2.2 Why do we exist?

SunWater is one of four bulk water entities owned by the Queensland Government, together with Seqwater (the bulk water service provider for South East Queensland), the Gladstone Area Water Board and the Mount Isa Area Water Board. SunWater is established under the *Government Owned Corporations Act 1993 (Qld)* and is a registered water service provider under the *Water Act 2000 (Qld)*.

Queensland's water resource planning and management framework is established in the *Water Act 2000*, including matters such as the allocation of water resources (including surface and groundwater), trading and market arrangements and management of unallocated reserves. SunWater holds Resource Operating Licences for 23 water supply schemes in Queensland, as listed in Table 4 below.

Table 3 – Water supply schemes operated by SunWater

Water supply schemes operated by SunWater			
- Barker Barambah - Bowen Broken Rivers - Boyne River and Tarong - Bundaberg - Burdekin Haughton - Callide Valley	- Chinchilla Weir - Cunnamulla - Dawson Valley - Eton - Julius Dam - Lower Fitzroy	- Lower Mary River - Macintyre Brook - Maranoa River - Mareeba-Dimbulah - Nogoa Mackenzie - Pioneer River	- Proserpine River - St George - Three Moon Creek - Upper Burnett - Upper Condamine

2.3 Our dam safety obligations

In Queensland the responsibility for dam safety rests with the dam owner. SunWater is required to maintain dam safety standards consistent with a suite of requirements including, although not limited to:

- Water Supply (Safety and Reliability) Act
- Dam Safety Condition Schedules (per individual referable dam)
- Queensland Dam Safety Management Guidelines (February 2002, Queensland Government)
- Guidelines on Acceptable Flood Capacity for Water Dams (August 2016, ANCOLD)
- Guidelines on Risk Assessment (2003, ANCOLD).

In 2003, the Bureau of Meteorology issued updated 'probable maximum precipitation' estimates, which had an impact on the calculation of the 'probable maximum flood'. These climate impacts, together with increasing population growth downstream of some dams and changes to national standards (ANCOLD) and state guidelines, mean that some of SunWater's dams built before 2003 require upgrading to maintain compliance.

The schedule for upgrade of dams is provided in the *Guidelines on Acceptable Flood Capacity for Water Dams*, with the aim that all Queensland dams meet minimum standards by 2035. SunWater has a Dam Safety Policy which describes how SunWater intends to meet its dam safety obligations.

2.4 Economic regulation

As a Government Owned Corporation, SunWater is required to operate on a commercial basis as far as practicable, consistent with the principles and framework described in the Government Owned Corporations Act. SunWater is also required to comply with directions made by the shareholding Ministers, as reflected in the Statement of Corporate Intent.

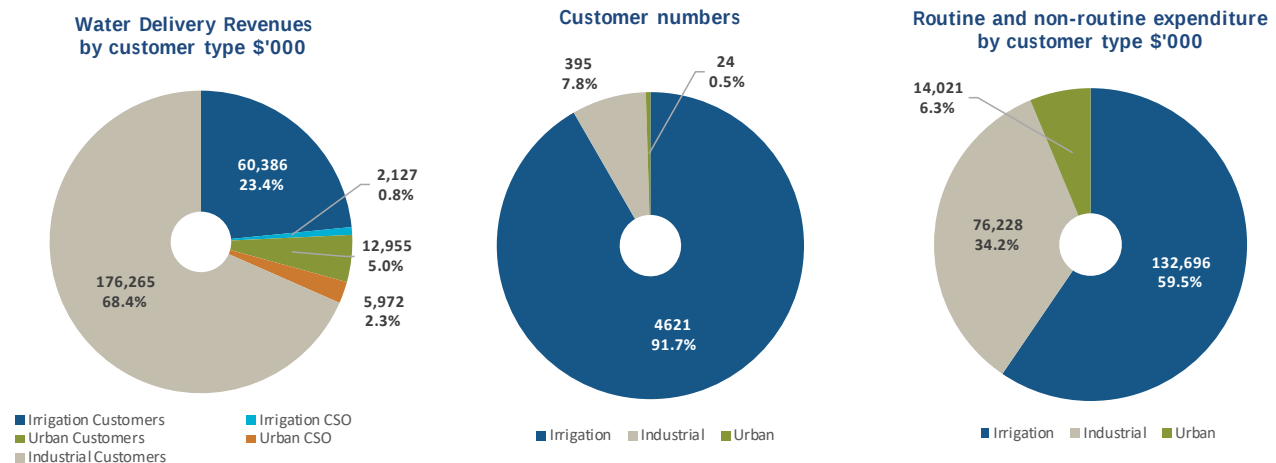
SunWater's irrigation prices are determined by the shareholding Ministers, based on advice provided by the Queensland Competition Authority (QCA). In advising the government on appropriate irrigation prices, the QCA considers a range of matters including the prudence and efficiency of SunWater's operating and capital costs. The QCA recommends irrigation prices for 22 SunWater bulk water supply schemes and six distribution systems.¹

¹ Following the 2012 Irrigation Price Review, the Queensland Government began considering in more detail local management of SunWater's eight distribution systems. At the time of publication of this document, two distribution systems had transitioned to local management arrangements (LMA). The remaining schemes are still going through the process and, at this stage, it is uncertain whether they will proceed to LMA or remain with SunWater.

2.5 Our customers

Our extensive network of water supply infrastructure supports mining, power generation, industry, urban development and irrigated agriculture throughout rural and regional Queensland. Irrigation makes up over 90 per cent of our customer base and almost 60 per cent of our costs, but less than a quarter of our revenues, as shown below.

Indicative key customer statistics for 2018/19



2.6 Our corporate structure

As a Corporation, SunWater is managed by a Board that is accountable to shareholding Ministers for the attainment of SunWater's purpose and for ensuring the ongoing performance and sustainability of the company.

The Board appoints the Chief Executive Officer who appoints the Executive Leadership Team responsible for the day to day operations of SunWater, consistent with: legislative and contractual requirements; and policies and directives established by the Board.

In addition to this, SunWater is also a Government Owned Corporation and SunWater is also required to operate consistent with a suite of guidance provided by Queensland agencies such as the *Investment Guidelines for Government Owned Corporations* (2013, Queensland Treasury and Trade).

Of particular significance to the development of this SAMP are:

- the dam safety requirements described in the *Water Supply (Safety and Reliability) Act 2008 (Qld)*
- Resource Operations Licences
- water resource management arrangements
- economic regulatory framework.

2.7 Our corporate strategies

SunWater produces a range of corporate and strategic plans and statements, including a five-year Corporate Plan and a one-year Statement of Corporate Intent for our shareholding Ministers (updated each year). SunWater's Strategic Roadmap, as at October 2018, is presented in Figure 3 below. Our focus is on delivering water for the prosperity of our customers which in turn provides prosperity for the wider community and enables SunWater's people to grow and thrive.

Figure 3 – SunWater's Strategic Roadmap



2.8 Enterprise risk and opportunity assessment

SunWater's 'Enterprise Risk Management System' is an essential element of corporate governance and supports the establishment, monitoring and maintenance of controls to support the delivery of our strategic and operational objectives.

2.9 Integration with corporate systems

SunWater's business operations are supported by a range of business management systems – one of which is the asset management system. The asset management system integrates and aligns with all the key business management systems including:

- Quality Management (ISO 9001:2015)
- Environmental Management (AS/NZS ISO 14001:2004)
- Safety Management (AS/NZS 4801:2001)
- Risk Management Framework
- Dam Safety Management Program (DSMP).

3 Scope of asset management at SunWater

3.1 Application of the SAMP

This SAMP applies to:

- physical assets owned and managed by SunWater and used directly for the provision of water services.
- physical assets owned and managed by SunWater subsidiary companies and used directly for the provision of water services:
 - Eungella Water Pipeline Pty Ltd
 - North West Queensland Water Pipeline Pty Ltd
 - Burnett Water Pty Ltd.
- all phases of the asset management lifecycle including planning, design, procurement (including acquisition and construction), operation, maintenance (including renewals, refurbishments and replacement), enhancements, monitoring, reporting, decommissioning and disposal.

This SAMP does not apply to:

- the management of assets owned by others that SunWater maintains and operates under agreed terms and arrangements
- non-water assets such as land, office space, plant & equipment, vehicles and housing.

Whilst the SAMP in its current format does not consider non-water assets, future revisions may consider including these assets as part of the asset management strategy going forward.

3.2 Asset base

SunWater owns and operates the majority of bulk water infrastructure in Queensland, outside of South-East Queensland.

We have an extensive asset base including:

- 22 referable storage structures (19 dams and 3 balancing and off-stream storages)
- 64 weirs and barrages (non-referable structures)
- 79 major pumping stations
- 2120 km pipelines
- 730 km water channels²
- 11 small licensed water and sewage treatment plants.

In addition to the assets owned directly by SunWater, there are also assets owned by SunWater subsidiaries as listed below:

- Eungella Water Pipeline Pty Ltd (EWP) – owns and operates a 123 km-long pipeline and associated pumping equipment that transports water from Eungella Dam near Mackay to Moranbah, principally for use by the mining industry. EWP also owns and operates 116 km of eastern and southern spur pipelines that take water from the Eungella Water Pipeline and the Burdekin-Moranbah Pipeline to coal mines and related users in the northern Bowen Basin.
- North West Queensland Water Pipeline Pty Ltd (NWQWP) – owns and operates a 113 km of pipeline and associated pumping equipment that transports water from Lake Julius near Mount Isa to the Ernest Henry Mine and a number of rural users. NWQWP also owns and operates the Cloncurry Pipeline, a 38km extension pipeline from the NWQWP to the township of Cloncurry for domestic and industrial supply.

² Some channels are leased.

- Burnett Water Pty Ltd (BW) – owns and operates Paradise Dam and Kirar Weir in the Burnett River catchment and 164,000 ML of water allocations.

Ancillary assets such as communication and control equipment, sampling and analysis equipment, switchboards and hydraulic and pneumatic systems are managed in association with their primary assets.

3.3 Our services

Our fundamental service to customers is to store and release water to satisfy customer demand. This is subject to the *Water Act 2000 (Qld)*, associated plans and operating licenses. It is also subject to the customer having an entitlement to water.

SunWater's services are delivered via *Service Contracts* associated with each of the Water Supply Schemes. These Service Contracts group assets related to common services and delivery areas in a Water Supply Scheme and include the following types:

- 23³ Bulk Supply Service Contracts – providing bulk water services that involve storing for, and delivering raw water to, customers
- 6 Irrigation Distribution and Drainage Service Contracts – diverting water from bulk water storage to the customer's own offtake using a network of SunWater owned pumps, pipes and/or channels. In addition, SunWater provides drainage services to some Service Contracts
- 11 Commercial Pipeline Service Contracts – providing raw bulk water delivery to commercial customers throughout regional Queensland
- Potable water treatment and distribution network Service Contracts – providing potable water treatment services from water supplied by our Dams; and
- 2 Hydroelectric generator Service Contracts - providing hydroelectric power generation services.

Standard customer supply contracts include clauses on supply arrangements and the schedule of fees and charges. SunWater provides information on past and forecast routine and non-routine expenditure to irrigation customers and stakeholders in the form of the annual Network Services Plan (NSP) and annual Performance Report for each Service Contract.

SunWater provides water delivery, operation and maintenance of infrastructure, and engineering consultancy services to 57 Service Contract areas.

³ Includes Julius Dam.

4 Asset management objectives & principles

4.1 Our asset management objectives

The following asset management objectives (Table 5) are intended to be consistent and aligned with our Asset Management Policy and Strategic goals; achievable and measurable; clearly articulated, understandable and useful. These objectives were developed with consideration of a number of inputs including our strategic business objectives, regulatory obligations, Statement of Corporate Intent, risk management framework, relevant corporate policies and guidance provided in the ISO 55000 standard series.

SunWater's asset management objectives will be used to drive asset management strategy in the business and the implementation plan for these objectives is described section 6.2.

Table 4 – Asset management objectives

SunWater's strategic goals		Asset management objectives
A safe high-performance culture	'Act on it' safety mindset	a) Our assets will be managed to provide a safe environment for our workers and the community and we will continuously reduce dam safety risk as soon as practical.
	Our people deliver results, and are engaged and capable	b) Our people will be capable and engaged in asset strategy and execution of initiatives with KPI and asset management accountabilities clearly understood by the business.
A sustainable business	Innovation and business improvement focus	c) Asset opportunities and innovation will be continually assessed and implemented to improve our value offering.
	Assets and resources optimised	d) Our assets will be fit for purpose and optimally managed throughout their lifecycle to deliver customer and shareholder value.
Supportive stakeholders	Our customers value us	e) Our customer needs will be understood and our customers engaged to develop trust in our asset investments and planning decisions.
	We collaborate with all stakeholders	f) We will collaborate and integrate with internal and external stakeholders to strengthen our asset services and value offering.
Commercially focused operations	Efficient service delivery to our customers	g) We will continually optimise our asset lifecycle and processes to provide efficient delivery of services to customers.
	Value improvement focused	h) We will fully leverage asset opportunities and realise value improvement across the asset management value chain.
Policy alignment		Asset management objectives
Policy & governance	See policy statements	i) We will provide asset management governance and compliance with all relevant legislation, regulation, licences, permits, approvals and authorities.

4.2 Asset management principles

The asset management principles have been developed to guide asset planning, decision-making, monitoring and improvement programs. The principles were developed with consideration of our policy statements, the ISO 55000 series and SunWater strategic information.

- We manage assets to provide value to our customers, stakeholders and shareholders.
- The system for managing assets will be an agreed, clearly articulated framework that underpins achievement of the Asset Management Policy and objectives.
- We will improve asset management efficiency through the simplification of processes, where appropriate to do so.
- We understand our assets including their purpose, criticality, capability, performance, condition and history, and operate within these bounds.
- We will collect and store accurate asset data and make it readily available to all those that require access to it.
- We will develop and implement asset plans, initiatives and standards that are required to support achievement of the objectives, in a timely manner.
- We will plan for the management of our asset portfolio over the short, medium and long term, to ensure we can deliver on our service commitments into the future, as required.
- We will consistently manage our assets to have a risk profile that aligns with the SunWater risk appetite.
- Responsibilities for the management of assets will be clearly allocated at all levels within the business, to appropriately skilled teams.
- The performance of assets and the asset management system will be monitored against objectives to inform future strategies and plans, and aid continuous improvement.
- We support analysis, research and development in asset management related areas that improves our asset management practices and contributes to achievement of our objectives.
- We will service, monitor, maintain and replace assets to ensure the ongoing operational performance and service capacity required to meet service standards.
- Assets will be refurbished through their service lives, as necessary, to extend service lives as long as economically feasible.

5 Asset Management System (AMS)

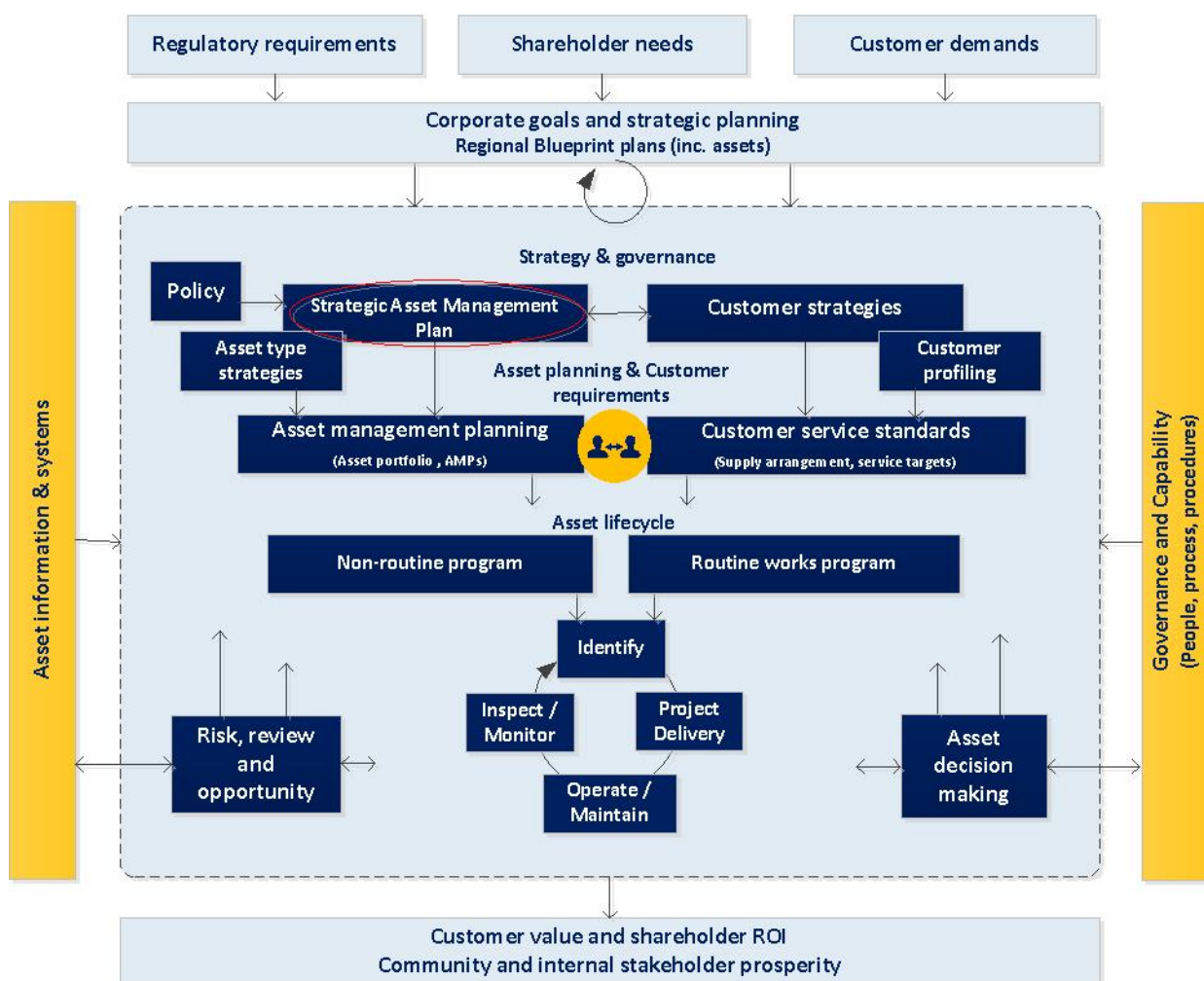
5.1 Overview

SunWater uses a 'life-cycle' approach to asset management which considers the 'whole-of-life' implications of acquiring, operating, maintaining and disposing of our assets to meet customer service targets. We have a *long term* 'whole-of-life' view of our assets and assets are maintained and refurbished to achieve the required services standards in perpetuity. In addition to this, our 2018/19 to 2022/23 strategic focus is on customer strategy and building a regional blueprint to better understand our customer's drivers. This focus will in turn provide greater influence on our asset planning and allow us to proactively prepare our assets to be fit for our customer's purpose and allow us to look beyond the original design intent of the infrastructure.

The AMS (below) provides a structured framework for SunWater's asset management processes and procedures and is strongly focused on strengthening the alignment between asset planning and customer strategy. The AMS builds on SunWater's existing processes of asset management, but provides stronger integration with all areas of the business that impact our value chain offering of asset management to achieve optimal customer value and shareholder return on investment.

The AMS will be used to drive the asset management objectives which will be actioned by initiatives in our strategic work programs.

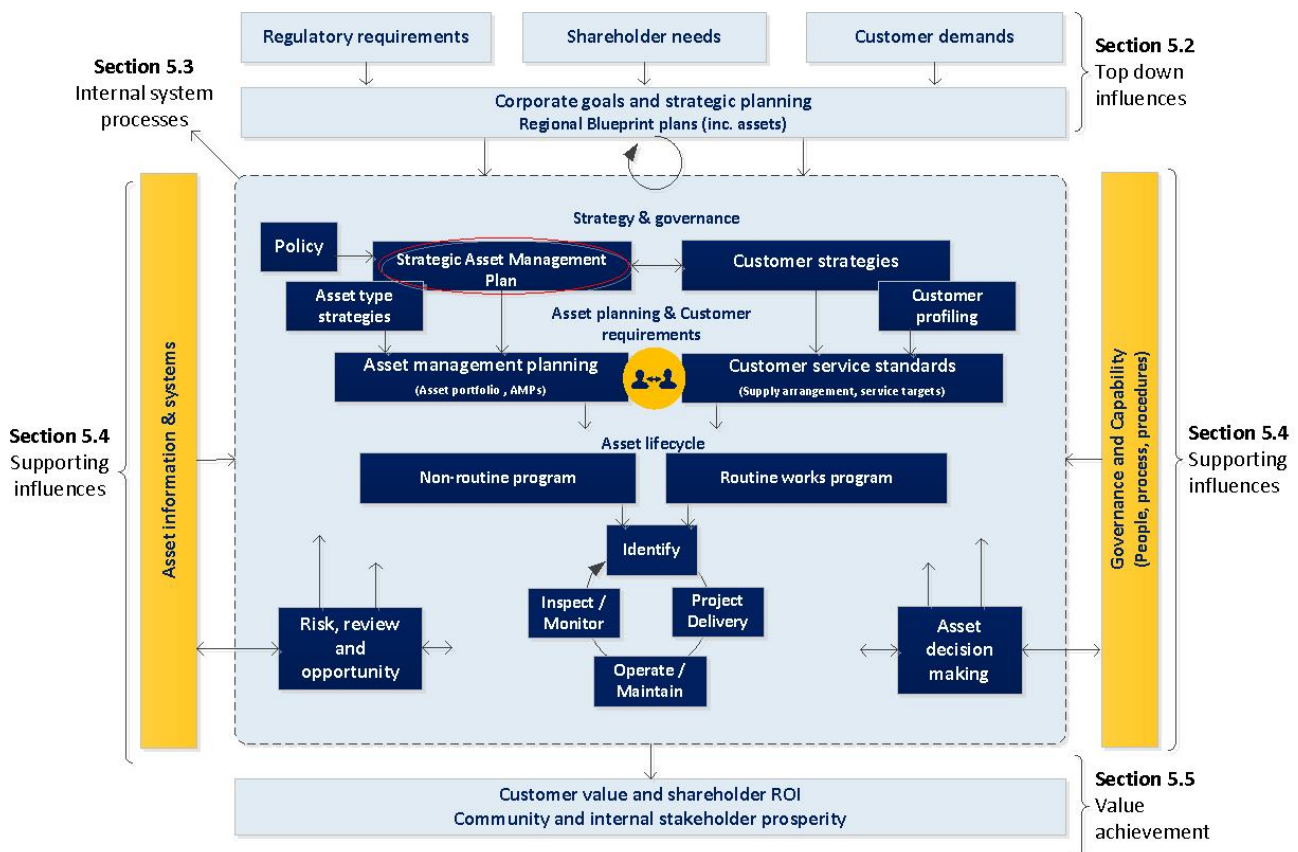
Figure 4 – Asset Management System (AMS)



In order to describe our SunWater AMS (Figure 4), the framework has been broken into components as listed and illustrated in Figure 5 below. Further detail on each of these components is detailed in the sections that follow, and a guide on the relevant sections is provided in Figure 5. The components of the AMS as follows:

- **Top down influences (section 5.2)** – represents the external stakeholder influences and the creation of corporate plans and strategies which are used to formulate the asset management objectives for the business.
- **Internal system processes (section 5.3)** – represents the activities internal to the asset management system that are interconnected in order to execute SunWater’s asset management processes, lifecycle and objectives.
- **Supporting influences (section 5.4)** – represents the business’s internal capability to strengthen and support asset management processes.
- **Value achievement (section 5.5)** – represents the targeted end state where asset management activities and objectives have been effectively delivered to provide customer value, shareholder return on investment with a flow on effect of community and internal stakeholder prosperity.

Figure 5 – Sections of the AMS



The sections below provide a more detailed explanation of these system components and the part they play in the AMS framework.

5.2 Top down influences

5.2.1 External stakeholder drivers

As describe in section 2 - Organisational Context, SunWater has a unique mix of business drivers that determine the nature of asset management in its business. Key external business drivers include: regulatory compliance and requirements; shareholder needs; and customer demands, which filter through into our corporate goals and strategic planning activities.

5.2.2 Corporate goals and strategic planning

Our corporate goals and strategic planning activities are driven by our external stakeholder drivers which are captured in documents such as:

- the Shareholder Mandate and Strategic Expectations – which provides an understanding of shareholder expectations.
- the SunWater Regional Blueprint – which sets the long-term vision for growth in infrastructure and increased availability of water in regional Queensland.

Our corporate level plans and strategies are captured in documents such as the Statement of Corporate Intent and Corporate Plans which are reviewed in line with SunWater’s corporate planning cycles and are executed by a strategic program of works over the following strategic horizons:

- FY19 horizon – strategic action
- FY20-22 – strategic intent
- FY23+ – strategic vision.

SunWater’s strategic goals (Figure 6), as illustrated below, underpin our asset management objectives (section 4.1) in order to drive an aligned strategy at SunWater.

Figure 6 – SunWater’s strategic goals



5.3 Internal system processes

Within the AMS, the following internal processes work together to achieve the asset management objectives and to provide governance in asset decision making and optimal value to customers.

5.3.1 Strategy and governance

Asset management Policy

Our asset management policy provides governance in our asset management processes and is used to provide direction in the creation of our asset management strategies and objectives.

Strategic Asset Management Plan

As described, this SAMP document contains our asset management objectives which are consistent with our Asset Management Policy and corporate strategies. Whilst the Asset Management Policy and asset management objectives will remain relatively fixed over the strategic planning horizons, the initiatives and executable strategy will be reviewed in line with ongoing business initiatives and Key Performance Indicators (KPI).

Customer strategies

SunWater’s Regional Blueprint, along with the Business Development Strategic Plan and Customer Strategy, will be key strategies going forward. In particular, they will define SunWater’s relationship with all our customers, the services we provide and the expected demand for those services. In addition to this, these

documents will identify strategic water solutions to manage future demand needs and supply constraints. Our customer strategies will drive our long-term asset portfolio direction and strategy.

Asset type strategies

Our asset type strategies are constantly evolving to provide fit for purpose asset management solutions to meet our customer requirements. Asset life is typically based on standard asset degradation curves and refined based on historical learnings of asset behaviour, developed through experience and the development of strong regional knowledge within our asset planning group. The asset strategies provide guidance on the maintenance and replacement activity and frequency which is applied to the whole of life plans for our assets. This will in turn provide a revised long-term forecast of an optimised asset investment portfolio.

Customer profiling

Customer profiling initiatives currently underway with our industrial customers provide the business with opportunities to understand and predict the long-term patterns and behaviours of our customers in order to make proactive asset portfolio decisions and achieve our sustainability objectives. Opportunities to strengthen the alignment of customer understanding with our asset portfolio decisions will be a part of our AMS framework improvement strategy.

5.3.2 Asset planning and customer requirements

Asset management planning

While the immediate program for the next year's budget is well defined as it is informed with known asset condition and performance data, asset portfolio becomes more uncertain as the plan moves further into the planning timeline. Consequently, the program of works is not a specific forecast of the nature and timing of individual projects, but rather it is portfolio level estimate of works required based on the best-available risk and condition information for the Service Contract as a whole.

Our Asset Management Plans for the Service Contracts on each water supply scheme provide our customers with a five-year snapshot of the asset plans forecast for the next regulatory period. The plans provide a summary of the non-routine works planned for the Service Contract and provide an age, cost, risk and condition profile for the scheme as justification for the program of work in order to achieve the service targets defined in the Water Supply Arrangements and Service Targets.

Customer service standards

The Water Supply Arrangement and Service Targets set the scheme level service arrangements between SunWater and the customers supplied on the water supply scheme. We also have Network Service Plans which summarise some of the service targets⁴ for our 28 irrigation Service Contracts and detail past and forecast costs of delivering services (routine and non-routine). The Network Service Plans also contain a five-year forecast of non-routine projects planned and a summary of the annuity expenditure and impacts over a 30-year planning period.

Customer engagement

An important strategic focus for our business is customer engagement in asset planning and service delivery. Currently, our Network Service Plans are formed in consultation with customer representative groups during regional engagement meetings. While the Network Service Plans contain service and cost details applicable to customers, our Asset Management Plans provide an overview of the scheme's asset profile and justification of future projects and expenses in order to maintain the scheme at an acceptable level of portfolio risk.

⁴ The complete list of service targets is included in each scheme's Water Supply Arrangements and Service Targets document.

5.3.3 Asset lifecycle

SunWater's asset lifecycle management activities are dominated by two broad types of activities, referred to as *routine* works which scheduled work frequency of occurrence; and *non-routine* works which generally consist of asset refurbishment type works in line with the asset management program and also include emergency work such as flood repairs.

The program of work for the routine and non-routine works, feeds into the asset lifecycle as project delivery or operations and maintenance activities.

Non-routine program

SunWater has developed whole of life strategies around the maintenance and replacement of its asset portfolio which is based on the concept of optimised life-cycle cost. Key inputs to the approach are the risk and condition of each asset. The current condition of an asset drives an estimate of the future work required to ensure an asset continues to be able to provide the required level of service into the future, at an acceptable risk. SunWater maintains a program of asset inspections and condition assessments which continually updates our knowledge of asset condition. This information feeds into the annual review of the renewals program and items requiring immediate maintenance or replacement are included in the budget for the following year and may be accepted in the finalised non-routine program of works.

The non-routine program is created by the asset planning group who has developed a strong regional knowledge of assets and asset condition based on periodic inspections and condition assessment activities carried out at SunWater facilities.

Routine works program

SunWater's routine works program includes dam safety activities, routine operations, environmental management, preventative maintenance, condition monitoring, and safety and legislative inspections. The execution and monitoring of the program is predominately carried out by SunWater's regional centres.

Identify

Once the annual program is finalised, non-routine projects are initiated and executed as per SunWater's portfolio and program management process.

Project delivery

SunWater's overall portfolio, program and projects are diverse in nature, circumstance and location and may be either capital or operational in nature. A subset of projects at SunWater is the non-routine project portfolio, determined by our asset planning processes and generally consisting of asset refurbishment type works driven by our asset type strategies and also including emergency work such as flood repairs.

This subset of projects has been incorporated into SunWater's recent and improved Portfolio, Program and Project Management Framework (P3MF) whose goal is to 'enable SunWater to improve its project lifecycle effectiveness thereby achieving its growth objectives in a safe, predictable and competitive manner'.

The P3MF framework typically consists of the project lifecycle phases of initiation, evaluation and definition, execution, closure and benefits realisation.

The benefits of this approach will help provide the following project outcomes:

- business focussed processes that address the complete lifecycle of opportunities
- movement of opportunities through defined and disciplined processes in a series of controlled steps
- structured processes for decision making including formal decision review checkpoints or gates at each significant step in the process
- clear performance targets discussed and agreed with project stakeholders
- emphasis on pragmatic and effective planning and Front-End Loading
- timely use of Value Improving Practices (VIP's)
- independent review as the opportunity moves through gated milestones of project execution and delivery
- benefits realisation and learnings reintegrated into future works programs

The program and project delivery is predominately carried out by the regional project managers within the Operations group.

Operate / maintain

The routine works program is carried out by local operator / maintainers who develop a rich understanding of the facility and the water supply scheme rules. Shutdowns and outages are planned and coordinated regionally and targeted in periods of low demand and in consultation with customers.

Inspect / monitor

SunWater carries out continual assessment of the condition of its assets through activities such as:

- periodic condition assessments carried out by engineering or regional staff according to an asset condition assessment schedule
- condition monitoring activities carried out on a routine basis by expert service providers
- performance analysis using real time tracking to monitor the unplanned downtime and performance KPI for particular assets.

The information from the inspection and monitoring activities is used to optimise the routine works program and provide priority setting to inform the non-routine program.

5.4 Supporting influences

Whilst the supporting influences are represented as interfacing with the AMS's internal system processes, they are closely linked to and interact with key internal system processes such as asset decision making and risk, review and governance processes. These interactions provide the: asset governance, risk mitigation, asset optimisation, efficiency and value improvement opportunities that are key to achieving our asset management objectives. These interactions ensure that our asset strategy, planning and asset lifecycle processes are informed and optimised in a way that aims to deliver maximum customer value.

The asset management objectives aim to strengthen the value offering from our asset information and management systems and also our governance and capability from people, process and procedures. Our current strategic initiatives to strengthen our digital strategy, provide asset management and assurance and develop capability and leadership, will help drive the achievement of our asset management objectives.

5.5 Value achievement

In achieving of our asset management objectives through a strong AMS framework of asset management, our value achievement objectives can be improved, monitored and achieved. The figure below shows the measures, and values we aim to achieve for our customers, shareholders, community and internal stakeholders.



6 Implementation and monitoring

In order to establish the AMS and to provide an implementation plan for the achievement of the asset management objectives, the roles and responsibilities within the AMS framework have been established and an implementation plan provided describing how the AMS will achieve the asset management objectives.

6.1 Roles and responsibilities

SunWater Operations are organised into regions to locate our staff as close as practicable to our customers and assets while maintaining efficiencies. The four operating regions are North, Central, South, and Burnett & Lower Mary. These regional locations are supported by centralised head office services for asset planning and asset strategy.

Within the context of the AMS, clearly defined roles and responsibilities are essential to the achievement of objectives and the translation of these into asset management objectives. Within the AMS the roles and responsibilities which are applicable are described below.

Table 5 – Roles and responsibilities

Role	Core Asset-Related Responsibilities
The Board	• Endorse corporate vision, strategy and values • Set risk appetite within parameters set by shareholder • Provide guidance regarding risk appetite
CEO / Executive Leadership Team	• Set vision and purpose in accordance with company objectives and purpose • Develop Strategy, Corporate Plan and Statement of Corporate Intent • Monitor progress of strategy implementation • Advise board on risk impacts to enable setting of risk appetite • Approve policies in accordance with GOC Policy requirements and other compliance obligations • Approve operation and capital expenditure annual budgets, monitor budgets • Develop and implement stakeholder engagement strategy
Manager Asset Strategy & Governance	• Develop and implement Asset Management Policy • Prepare and manage the Strategic Asset Management Plan • Ensure asset standards are established and documented • Maintain and improve the asset management suite of Methodologies • Provide governance oversight and assurance for implementation of the Asset Management System • Prepare and implement an Asset Management Improvement program
Manager Asset Planning	• Prepare and manage the individual asset management plans • Manage the Asset Portfolio Investment Program • Engage with customers regarding asset planning • Perform asset condition and risk assessments • Maintain the Asset Management System Manual • Undertake asset performance assessments • Support asset condition and risk assessments • Develop and implement routine maintenance plans • Establish and maintain asset information • Ensure maintenance costs are justified and supported by pricing frameworks

Role	Core Asset-Related Responsibilities
	Continue development of technical drawing and Geographical Information System (GIS) standards
Regional Program Delivery Managers	- Manage the non-routine program execution - Prepare detailed program/project business cases - Ensure renewals projects meet established asset standards - Ensure renewals program aligns with established Asset Management Plans - Develop fit-for-purpose renewals project solutions that achieve SunWater's strategic asset management and business objectives - Deliver the renewals works program within budgetary and business parameters - Work with Operations to define the renewals project objectives, scope, customer impacts, constraints and budgets
Major Projects & Technical Services	- Initiate, plan, deliver and closeout the Major Projects program of works in accordance with all agreed project specific metrics - Delivery, closure and operationalisation
Manager Technical Services	- Establish technical services support frameworks across the business - Manage technical assurance and skills including governance/review capability (including Registered Professional Engineer Queensland (RPEQ) supervision) to support dam management and management of pumps and distribution assets - Develop and further establish engineering standards frameworks - Continue development of technical drawing standards across the business
Principal Dam Safety Engineer	- Manage DIP - Dam Safety Management Program (portfolio risk assessment, comprehensive risk assessment, 20-year dam safety reviews) - Dam safety technical decision-making
Corporate Strategy	- Create customer strategies - Create the Regional Blueprint for long term customer strategies

6.2 Implementation plan

An implementation plan for how the AMS will achieve the asset management objectives has been provided in the table below, as a mechanism to connect to the strategic initiatives within our strategic programs for work in order to drive the execution of the asset management objectives.

These initiatives aligned to this plan will be will be planned across SunWater's strategic horizons and monitored as part of the Key Performance Indicator (KPI) performance review process. New initiatives will be added, as required, in order to achieve these objectives.

Table 6 - Initiatives to achieve the Strategic Asset Management Objectives

SunWater's strategic goals		Asset management objectives	Our AMS will provide:
A safe high-performance culture	'Act on it' safety mindset	a) Our assets will be managed to provide a safe environment for our workers and the community and we will continuously reduce dam safety risk as soon as practical.	- procedures in place for management of high risk assets - strong culture of dam safety management and compliance - safe work procedures for high risk assets - assets designed with a safety mindset.
	Our people deliver results, and are engaged and capable	b) Our people will be capable and engaged in asset strategy and execution of initiatives with KPI and asset management accountabilities clearly understood by the business.	- asset strategy linked to business goals - KPI's and targets clearly communicated by line managers - asset management capability developed across asset management roles - responsibilities and accountabilities clearly understood within business units.
A sustainable business	Innovation and business improvement focus	c) Asset opportunities and innovation will be continually assessed and implemented to improve our value offering.	- continual improvement in our digital strategies and information management capabilities - governance and continual review and improvement of our processes and procedures - our strategic initiatives connected across the business to improve asset management across the board
	Assets and resources optimised	d) Our assets will be fit for purpose and optimally managed throughout their lifecycle to deliver customer and shareholder value.	- asset lifecycle integrated across project and program planning - continual feedback of condition and risk information to optimise asset maintenance and service delivery.
Supportive stakeholders	Our customers value us	e) Our customer needs will be understood and our customers engaged to develop trust in our asset investments and planning decisions.	- stronger alignment with customer strategy in asset management strategy and planning - customer profiling and demand understood and used to optimise asset type strategies - communication strategies created for customers to achieve engagement, transparency and trust.

SunWater's strategic goals		Asset management objectives	Our AMS will provide:
	We collaborate with all stakeholders	f) We will collaborate and integrate with internal and external stakeholders to strengthen our asset services and value offering.	- stakeholder engagement in operational issues such as shutdown planning - customer engagement in service and non-routine program delivery - leverage strategic initiatives across the business to achieve improvement asset management outcomes.
Commercially focused operations	Efficient service delivery to our customers	g) We will continually optimise our asset lifecycle and processes to provide efficient delivery of services to customers.	- asset strategies continually revised to meet customer service requirements - options studies leveraged and informing future plans - energy efficient strategies in new and existing assets - efficient routine and non-routine planning and execution.
	Value improvement focused	h) We will fully leverage asset opportunities and realise value improvement across the asset management value chain.	- opportunities and partnerships explored to improve value offering - assess and implement value adding opportunities across the asset lifecycle.
Policy alignment		Asset management objectives	Our AMS will provide:
Policy & governance	See policy statements	i) We will provide asset management governance and compliance with all relevant legislation, regulation, licences, permits, approvals and authorities.	- asset governance and assurance in effective and efficient policies and procedures - safety and legislation considered in our procedures and work instructions - engineering standards maintained and design / review / signoffs undertaken by qualified personnel - strong dam safety management program.

6.3 Monitoring

Due to the overall strategic alignment of the asset management objectives with SunWater's strategic goals and strategic work programs, the initiatives within these programs will be leveraged to strengthen the establishment of the AMS framework across SunWater and to monitor the achievement of the asset management objectives by establishing a series of improvement KPI.

In addition to this, the maturity of the AMS will be benchmarked and assessed using *the Self-Assessment Methodology* for ISO 55000 which reviews the asset management maturity of a business against an established set of asset management standards provided in the ISO 55000, standard of asset management.

SunWater has a well-established framework for measuring KPI and monitoring progress against defined targets. Monitoring and improvement activities against this SAMP and other aspects of the Asset Management System will be integrated with the existing KPI framework, using the existing approach and methodologies.

Appendix A

Documentation, glossary and acronyms

A.1 Documentation suite

Document
AS&D FY18 KPIs
AS&D Group Business Plan
AS&D Strategic Plans
Asset Condition Users Manual
Asset Management Policy
Asset Management System Manual
Asset Refurbishment Planning Methodology
Corporate Plan
Dam Safety Management Plan
Dam Safety Policy
Environment Policy
Fees and Charges Schedule
Guide to SAP PM Asset Hierarchy Development
Methodology for Risk Assessment of Infrastructure Assets
Non-Routine Works delivery Methodology
Options Analysis Guidelines – Non-Regulatory Period
Options Analysis Guidelines – Regulatory Period
Procedure Map – Asset Strategy & Development
Quality Management Compliance Policy
Risk Management Policy
Routine Works Planning & Delivery Methodology
Statement of Corporate Intent
SunWater Dam Improvement Plan
Supply Contract Standard Conditions
Water Supply Arrangements and Service Targets
Work Health, Safety and Well-Being Policy

A.2 Glossary and acronyms

Asset – is an item, thing or entity that has potential or actual value to an organisation and is realised by a balancing of costs, risk, opportunities and performance. Value can be tangible or intangible, financial or non-financial, and includes consideration of risks and liabilities. It can be positive or negative at different stages of the asset life. Physical assets usually refer to equipment, inventory and properties owned by the organisation. Physical assets are the opposite of intangible assets, which are non-physical assets such as leases, brands, digital assets, use rights, licences, intellectual property rights, reputation or agreements. A grouping of assets referred to as an asset system could also be considered as an asset. (AS ISO55000:2014)

Asset Hierarchy – the structure within an asset register that establishes the dependency or interrelationship of functional locations and equipment for the purpose of effective asset management. (*A Guide to SAP PM Asset Hierarchy Development - AM40_G3*)

Asset Integrity – is a standard of operating that aims to protect equipment, health, safety and environment. It applies to all stages of the equipment life cycle. (Inspectioneering 2018, ‘*Overview of Asset Integrity Management*’, <<https://inspectioneering.com/tag/asset+integrity+management>>)

Asset Life – is the period from asset creation to asset end-of-life. (AS ISO55000:2014)

Asset Management – is a coordinated activity of an organisation to realise value from assets. Activity can also refer to the application of the elements of the asset management system, the approach, the planning, the plans and their implementation. (AS ISO55000:2014)

Asset Management Plan (AMP) – documented information that specifies the activities, resources and timescales required for an individual asset, or a grouping of assets, to achieve the organisation’s asset management objectives. The grouping of assets may be by asset type, asset class, asset system or asset portfolio. An asset management plan is derived from the strategic asset management plan and may be contained in, or be a subsidiary plan of the strategic asset management plan. (AS ISO55000:2014)

Asset Management Policy – the principles and mandated requirements derived from and consistent with the organisational/corporate plan, providing a framework for the development and implementation of the asset management strategic plan and the setting of the asset management objectives. (Global Forum on Maintenance & Asset Management 2014, ‘*The Asset Management Landscape: second edition*’, available at: <http://www.gfmam.org/publications.html>)

Asset Management Strategy is the strategic plan for the management of the assets of an organisation that will be used to achieve the organisational/corporate objectives. Long-term approach to management of the physical assets. Includes a set of strategic statements that describe current and future service levels the organisation is planning to deliver and current and future asset management capabilities that the organisation needs in order to sustainably deliver these outcomes. (Global Forum on Maintenance & Asset Management 2014, ‘*The Asset Management Landscape: second edition*’, available at: <http://www.gfmam.org/publications.html>)

Asset Management System – is a management system for asset management whose function is to establish the Asset Management Policy and asset management objectives. It is a subset of asset management. (AS ISO55000:2014)

Asset Type – is the grouping of assets having common characteristics that distinguish those assets as a group or class. For example: physical assets, information assets, intangible assets, critical assets, enabling assets, linear assets, information and communications technology assets, infrastructure assets, moveable assets. (AS ISO55000:2014)

Life Cycle – is the stages involved in the management of an asset. The naming and number of the stages and the activities under each stage usually vary in different industry sectors and are determined by the organisation. (AS ISO55000:2014)

Maintenance Policy – a set of organisational rules that define the thresholds and basis for making decisions about the activities required to conserve the service potential of an asset without extending its life.

(Victoria State Government 2017, *'Asset management Accountability Framework'*, Department of Treasury and Finance, Melbourne)

Monitoring – is determining the status of a system, a process or an activity. (AS ISO55000:2014)

Objective – result to be achieved. An objective can be strategic, tactical or operational. They can relate to different disciplines (health and safety, environmental goals) and can apply at different levels (such as strategic, organisation-wide, project, process). An objective can be expressed in other ways, e.g. as an intended outcome, a purpose, an operational criterion, an asset management objective or by the use of other words with similar meaning. In the context of asset management systems, asset management objectives are set by the organisation, consistent with the organisational objectives and Asset Management Policy to achieve specific measurable results. (AS ISO55000:2014)

Organisational Objective – are overarching objectives that set the context and direction for an organisation's activities. Organisational objectives are established through the strategic level planning activities of the organisation. (AS ISO55000:2014)

Policy – is intentions and direction of an organisation as formally expressed by its top management. (AS ISO55000:2014)

Risk – the effect of uncertainty on objectives. An effect is a deviation from the expected and can be either positive or negative. Risk is often characterised by reference to potential 'events' and 'consequences', or a combination of these. (AS ISO55000:2014)

Risk Management – the coordinated activities to direct and control an organisation with regard to risk. (Victoria State Government 2017, *'Asset management Accountability Framework'*, Department of Treasury and Finance, Melbourne)

Stakeholder – a person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity. (AS ISO55000:2014)

Strategic Asset Management Plan (SAMP) – documented information that specifies how organisation objectives are to be converted into asset management objectives, the approach for developing asset management plans and the role of the asset management system in supporting achievement of the asset management objectives. A strategic asset management plan is derived from the organisation plan and may be contained in, or be a subsidiary plan of the organisation plan. (AS ISO55000:2014)

Sustainable Asset Management is the amount and timing of investment in resources and systems necessary to make sure our assets can make the social, economic and environmental contribution that we need or want at the least cost, risk and impact in a sound governance and decision-making framework (Waverly Council 2013, *'Strategic Asset Management Plan'*)

Acronym	Extension
AM	Asset Management
AMP	Asset Management Plan
AMS	Asset Management System
ANCOLD	Australian National Committee on Large Dams
BW	Burnett Water Pty Ltd
DIS	Drawing Information System
DIP	Dam Improvement Program
DSMP	Dam Safety Management Program

EAP	Emergency Action Plan
ERP	Enterprise Resource Planning
EWP	Eungella Water Pipeline Pty Ltd
GIS	Geographical Information System
GOC	Government Owned Corporation
ISO	International Organization of Standardization
KPI	Key Performance Indicator
NSP	Network Service Plan
NWQWP	North West Queensland Water Pipeline Pty Ltd
OEM	Original Equipment Manufacturer
QCA	Queensland Competition Authority
ROL	Resource Operations Licence
RPEQ	Registered Professional Engineer Queensland
SAMP	Strategic Asset Management Plan
SAP PM	SAP Plant Management
SCADA	Supervisory Control and Data Acquisition
SCI	Statement of Corporate Intent
SWIMS	SunWater Information Management System
WHS	Workplace Health and Safety