



## **Plant Asset Management Plan (Concise)**

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### **NAMS.PLUS Asset Management Plan Templates**

NAMS.Plus offers two Asset Management Plan templates – ‘Concise’ and ‘Comprehensive’.

The Concise template is appropriate for those entities who wish to present their data and information clearly and in as few words as possible whilst complying with the ISO 55000 Standards approach and guidance contained in the International Infrastructure Management Manual.

The Comprehensive template is appropriate for those entities who wish to present their asset management plan and information in a more detailed manner.

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# 1 EXECUTIVE SUMMARY

## 1.1 The Purpose of the Plan

Asset management planning is a comprehensive process to ensure services provided by plant and equipment is provided in a financially sustainable manner.

This Plant Asset Management Plan details information about plant assets including actions required to provide an agreed level of service in the most cost effective manner while outlining associated risks. The plan defines the services to be provided, how the services are provided and what funds are required to provide the services over a 20-year planning period.

This plan covers the plant assets that provide primary service support to our Constituent Councils and commercial clients.

## 1.2 Asset Description

These assets include:

The plant assets consist:

- Major plant
- Minor plant
- Light vehicles

These plant assets have significant value with a total replacement cost estimated at \$5.37M. Please refer to Appendix 1.

## 1.3 Levels of Service

Our present funding levels are sufficient to continue to provide existing services at current levels in the medium term.

The main services from Plant & Equipment include:

- Landfill compaction
- Onsite earthworks
- Project work
- Ground maintenance

## 1.4 Future Demand

The main demands for new services are created by:

- Potential loss of tonnes to the Southern Recycling Centre (SRC) or other recovery alternatives
- Materials Recovery Facility (MRF) (Operational April 2021) increase tonnes to landfill
- Operational Hours
- Legislative changes driving diversion from landfill

These will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices include non-asset solutions, insuring against risks and managing failures.

## 1.5 Lifecycle Management Plan

### What does it Cost?

The projected outlays necessary to provide the services covered by this Plant Asset Management Plan (PAMP) includes operations, renewal and upgrade of existing assets over the 10-year planning period is \$8.2m or \$821,000 on average per year.

## 1.6 Financial Summary

### What we will do

Funding in the current Long Term Financial Plan (LTFP) for this period is \$6.7m or \$670,000 on average per year.

This leaves a theoretical shortfall of \$150,000 on average per year of the projected expenditure required to provide services in the PAMP compared with planned expenditure currently included in the LTFP.

Manufacturers preventative maintenance guidelines and recommendations for machinery, which are scheduled to arrive in second quarter 2020, will be included in the review to ensure the necessary funding requirements will be reflected in the updated LTFP.

We plan to provide the following:

- Operation, maintenance, renewal and upgrade of heavy plant to meet service levels set by in annual budgets.

### What we cannot do

SRWRA currently does **not** have sufficient allocations to provide all plant and equipment replacement at the desired levels. Please refer to Table 5.1.2.

### Managing the Risks

SRWRA's present funding levels are sufficient to continue to manage risks in the short term.

There are risks associated with providing the service and not being able to complete all identified activities and projects.

Major risks include;

- Insufficient resources including funding to replace/ renew plant & equipment in accordance with renewal forecasts
- Insufficient funding to increasing asset stocks.

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

- Request funding for renewals as required and monitor trends of maintenance

- Investigate the usefulness of remote monitoring technology with an initial focus on the heavy plant and equipment.
- Review annual budget preparation to recognise target levels of service vs condition assessments
- Monitor performance of the Plant Asset Management Plan service levels.

## 1.7 Asset Management Practices

SRWRA's systems to manage assets include:

- Asset replacement program
- Ongoing cyclical and preventative maintenance in accordance with manufactures recommendations
- Daily worksheets recording hours of utilisation, where applicable loads carried, fuel used, lubricants used
- Weekly stocktake of fuel and lubricant usage across site and a dedicated onsite fuel and lubricant truck.
- Annual review of SWMS with a Skytrust based control system

Assets requiring renewal/replacement are identified using the Asset Register data to project the renewal costs using acquisition year and useful life to determine the renewal year.

## 1.8 Monitoring and Improvement Program

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

- Define the delivered customer service levels and develop performance measures
- Regular routine inspections and minor maintenance items are carried out by SRWRA Operational staff
- Ongoing cyclical and preventative maintenance is carried out in accordance with manufactures recommendations by qualified technicians.

## 2. INTRODUCTION

### 2.1 Background

This Plant Asset Management Plan communicates the actions required for the responsive management of assets (and services provided from assets), compliance with regulatory requirements, and funding needed to provide the required levels of service over a 10-year planning period.

The Plant Asset Management Plan is to be read in conjunction with the 20120 -2026 Strategic Plan. This should include the Asset Management Policy where these have been developed along with other key planning documents:

- Landfill Environmental Management Plan
- Long Term Financial Plan
- Annual Business Plan
- Annual Budget

The plant assets covered by this asset management plan are shown in Table 2.1. These assets are used to support landfill services on site.

**Table 2.1: Assets covered by this Plan**

Asset Category	Number of units	Replacement Value
Heavy Plant	12	\$4.57M
Light Plant	4	\$0.29M
Light Vehicle	4	\$0.17M
<b>TOTAL</b>	<b>20</b>	<b>\$5.02M</b>

### 2.2 Goals and Objectives of Asset Ownership

SRWRA exists to service its Constituent Councils. Some of these services are provided by Plant. The purpose of this Plant Asset Management Plan is to:

- Improve understanding of the Plant assets and associated services;
- Improve budgeting and forecasting of asset related management options and costs, particularly in understanding the long term investment in capital renewal;
- Afford a level of confidence in forward works programs, maintenance and provide support for any business cases associated with securing the necessary funding requirements; and
- Provide the guidance to the organisation in taking positive steps toward advanced asset management planning.

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

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

The primary issues for the Plant assets are:

- Recording asset data – dimensional and condition data that can be uploaded to the Asset Register
- Increasing the strategic and tactical management of the assets and services – understanding the renewal and maintenance needs for site and actively managing both operational and financial needs;
- Documentation of the Levels of Service for Plant, expressed as Service Standards and Service Targets;
- An appreciation of the cost of provision of the services;
- Future demand for the assets and services, understanding the growth and change factors that influence the management regime;
- Forecasting the renewal and maintenance costs for the next 10+ years, and understanding the affordability and sustainability of the assets and services to the current levels.

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

- International Infrastructure Management Manual 2015 1
- ISO 55002

## 2.3 Core and Advanced Asset Management

This Plant Asset Management Plan is prepared as a ‘core’ asset management plan over a 10 year planning period. It is prepared to meet legislative and user requirements for sustainable service delivery and Long Term Financial Planning and reporting.

Core asset management is a ‘top down’ approach where analysis is applied at the system or network level. This revision is an ‘advanced’ asset management plan using a ‘bottom up’ approach for gathering detailed asset information for individual assets to support the provision of activities and programs to meet agreed service levels in a financially sustainable manner.

## 3. LEVELS OF SERVICE

### 3.1 Customer Research and Expectations

This ‘core’ Plant Asset Management Plan is prepared to facilitate consultation prior to adoption by the SRWRA Board. Future revisions of the asset management plan will incorporate client / customer consultation on service levels and costs of providing the service. This will assist SRWRA Board and management team in matching the level of service required, service risks and consequences with the Constituent Councils ability and willingness to pay for the service.

The framework recorded is derived from interpretation of SRWRA’s corporate objectives and strategies, perceived customer ‘needs’ and relevant statutory requirements. To both fully understand and deliver on desired Levels of Service requires suitable asset and services management policies, guidelines, inspection regimes, condition assessment programs, customer inquiry systems and asset and services management practices and processes, plus the development and implementation of various audits to validate the outputs.

**Table 3.1: Constituent Councils Satisfaction Survey Levels**

Performance Measure	Satisfaction Level				
	Very Satisfied	Fairly Satisfied	Satisfied	Somewhat satisfied	Not satisfied
Landfill Services			√		
SRC Services			√		

Community satisfaction information is used in developing the Plant Asset Management Plan and in the allocation of resources in the budget.

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

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

### 3.2 Strategic and Corporate Goals

This Plant Asset Management Plan is prepared under the direction of SRWRA’s vision, mission, purpose and overall business objectives per the 2019-2026 Strategic Plan.

Our vision:

We are leaders in delivering innovative and sustainable waste management solutions for the benefit of our southern Adelaide communities and the environment

Our mission is:

*“We accept and process waste at a price point that balances cost, environmental outcomes and community expectations; provide information and market intelligence to assist our Constituent Councils in their waste management strategies; and respond to our Constituent Councils requests for assessment of waste management methods and/or services.”*

### 3.3 Legislative Requirements

There are many legislative requirements relating to the management of assets. These include but are not limited to:

**Table 3.3: Legislative Requirements**

Legislation	Requirement
Environmental Protection Agency Licence Number 16264	Comply with all terms and conditions of the EPA licence, commencement date 01 Aug 2019 to 31 July 2021.
Environment Protection Act 1993	an Act to provide for the protection of the environment; to establish the Environment Protection Authority and define its functions and powers
Dangerous Substances Act 1979	an Act to regulate the keeping, handling, transporting, conveyance, use and disposal, and the quality, of dangerous substances
Work Health and Safety Act 2012 Requirement for organisations and individuals to apply a duty of care to others.	Includes requirements for undertaking to ensure, so far as is reasonably practicable the provision and maintenance of safe plant and the safe use, handling and storage of plant.
Other relevant Standards and Regulations	Include, but are not limited to: ISO 3100 2009 Risk Management Standard, all other relevant State and Federal Acts & Regulations, all Local Laws and relevant policies of the organisation

### 3.4 Customer Levels of Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by Operational measures.

Customer Levels of Service measure how the customer receives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality** How good is the service ... *what is the condition or quality of the service?*

**Function** Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use** Is the service over or under used ... *do we need more or less of these assets?*

### 3.5 Technical Levels of Service

Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

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

- Operations – the regular activities to provide services (e.g. opening hours, cleansing, mowing grass, energy, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. road patching, unsealed road grading, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. road resurfacing and pavement reconstruction, pipeline replacement and building component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. widening a road, sealing an unsealed road, replacing a pipeline with a larger size) or a new service that did not exist previously (e.g. a new library).

Service and asset managers plan, implement and control technical service levels to influence the customer service levels.<sup>3</sup>

Table 3.5 shows the technical levels of service expected to be provided under this PAMP. The 'Desired' position in the table documents the position being recommended.

The current levels of service have been developed through internal consultation. It is important to monitor the service levels provided regularly as these will change. The current performance is influenced by work efficiencies and technology, and customer expectations and priorities will change over time. Review and establishment of an agreed position which achieves the best balance between service, risk and cost is essential. As such, continuous monitoring and review of levels of service will form part of the Plant Asset Management Plan.

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<sup>3</sup> IPWEA, 2015, IIMM, p 2 | 28.

**Table 3.5: Customer & Technical Level of Service**

SERVICE FACTORS	CUSTOMER LEVELS OF SERVICE	TECHNICAL LEVELS OF SERVICE
QUALITY		
SRWRA Needs	Plant and equipment item matches needs at an affordable cost.	Regular liaison with Operational staff to ascertain and confirm plant and equipment needs. Quality plant and equipment to specifications and available funding/ agreed lease cost. Plant and equipment items replacement/ renewal cycle aligned with good industry standards and affordability.
Available Resources Funding	Only essential plant and equipment is purchased.	Non capital solutions such as operating leases may be proposed for programmed plant and equipment upgrades – decreasing capital costs.
Organisational Profile and Policies	Plant and equipment are safe to use.	Plant and equipment items match SRWRA policies for performance, safety and equipment levels.
Commercial Realities	Keep plant and equipment management and operational costs as low as possible Plant and equipment item maintained by preventative maintenance/routine servicing and good operational standards.	Comparison of SRWRA ownership vs lease option for plant and equipment items. Hire rates and arrangements are consistent or better than with private market forces for equivalent plant and equipment items.
FUNCTION		
Design Standards	Plant and equipment items meets the needs of SRWRA staff and have reasonable operating costs.	Plant and Equipment meets or exceeds SRWRA’s functional specification and remains within cost parameters for purchase and operations.
Safety	Plant and equipment item provides the required degree of safety for operator and public.	Plant and equipment item conforms to manufacturer’s specifications – no unauthorised modifications. Plant and equipment item serviced and maintained according to manufacturer’s specifications. Plant and equipment item designed and maintained to relevant Workplace Health & Safety provisions. Operators maintain licences and skills through ongoing training.

Availability / Reliability	Plant and equipment item is reliable and available for use.	Capacity of plant and equipment item matches or exceeds requirement for specified operating demands. Plant and equipment item quality matches capacity and operating needs and affordability. Operator is trained and experienced to optimise the performance and output from the plant and equipment item. Routine maintenance/ servicing/ Repair programs and times optimise availability and output.
Environmental Standards	Plant and equipment items match or exceeds SRWRA's current environmental standards.	Plant and equipment items design alternatives favour high environmental outcomes. Operator/driver training matches preferred environmental outcomes.
Economy	Plant and equipment item offers good operating economy, both from an ownership and an operational perspective.	Operators and drivers trained to operate/drive to optimise fuel economy, tyre and general wear and tear on plant and equipment items. Regular inspections of plant and equipment items to confirm care and attention by operators/drivers for presentation and operation.
Comfort	Plant and equipment item provides good Operator comfort consistent with plant and equipment item tasks, including long duration of operational activities.	Plant and equipment items have proper airconditioning /ventilation systems to provide good operator comfort in typical operational circumstances. Seating meets high standard/ design criteria for operator/driver and passenger comfort and support. Operator cabin/driving space properly insulated from operating/ engine noises. Industrial plant located clear of obstacles and near materials supply.
Maintenance and Operational Activities	All servicing can be done on site.	Majority of services able to be undertaken on site or in SRWRA's Maintenance workshop.
CAPACITY / USE		
Presentation / Amenity	Plant and equipment items maintained in clean and tidy condition.	Plant and equipment maintenance, operation and presentation actions contribute to higher resale values and lower operating costs – responsible manager to ensure high standards are maintained

Utilisation	Utilisation of plant meets required need or demand	Utilisation is maximised, idle hours are minimised.
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## 4. FUTURE DEMAND

### 4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

### 4.2 Demand Forecasts

The present position and projections for demand drivers that may impact future service delivery and use of assets were identified and are documented in Table 4.3.

### 4.3 Demand Impact on Assets

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

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

Demand drivers	Present position	Projection	Impact on Plant Operations
Legislative changes driving diversion from landfill	Additional cost of processing as Metropolitan Waste Levy makes it uneconomical.	Increased utilization of SRC & reduction to landfill as strategies to re-use, re-direct and re-sell are utilised.	Reduction in plant operational hours resulting in extended renewal horizons
Materials Recovery Facility	Not Operational	April 2021 - Operational	Additional 7,500 to 15,000 tons to landfill.
Operational Hours	Site is currently open from 6.30am to 5pm Monday to Friday and 8.00 to 3pm on Saturday. Closed Sundays, Christmas Day and New Year's Day.	Span of hours will reduce	Reduction in plant operational hours resulting in extended renewal horizons

### 4.4 Demand Management Plan

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and demand management. Demand management practices can include non-asset solutions, insuring against risks and managing failures.

Non-asset solutions focus on providing the required service without the need for asset ownership and management actions including reducing demand for the service or educating customers to accept appropriate asset failures.

Examples of non-asset solutions include providing services from existing plant and equipment such as hiring of plant and equipment instead of purchasing outright, and sharing plant and equipment with other joint venture partners where practical. Further opportunities will be developed in future revisions of Plant Asset Management Plan

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

**Table 4.4: Demand Management Plan Summary**

Demand Driver	Impact on Landfill Services	Demand Management Plan
Legislative changes driving diversion from landfill	Reduction in landfill tonnes & landfill plant utilisation.	Within the capacity of current operations.
Materials Recovery Facility (MRF)	An additional 7,500 to 15,000 tons to landfill.	Within the capacity of current operations.
Operational Hours	Nil	Further investigation and analysis required.
Compliance with EPA Licence regarding fire breaks	Buffer zone and EPA licence area require slashing.	Consider utilising external contractors
Crushing non-Municipal Solid Waste (non -MSW) material on site	Reduce, re-use, re-sell strategy to create margin by reducing the tonnes of dumped waste entering landfill	Consider; <ol style="list-style-type: none"> <li>1. Purchase crushing equipment</li> <li>2. Leasing / hiring</li> <li>3. Utilising a shared arrangement with JV partners or Constituent Councils.</li> </ol>

## 5. LIFECYCLE MANAGEMENT PLAN

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

Life Cycle Management is recognised by SRWRA as an essential component of the provision and management of assets and services. Life Cycle Management is primarily about using the data and processes to effectively provide, manage, maintain, renew, (and upgrade), existing plant and equipment.

Lifecycle asset management means considering all management options and strategies as part of the asset lifecycle, from planning to disposal, (whole of life analysis). The objective of managing the assets in this manner is to look at long term cost impacts, (or savings), when making asset and services management decisions.

### 5.1 Background Data

#### 5.1.1 Physical parameters

The assets covered by this asset management plan are shown in Table 5.1.2.

**Table 5.1.1: Asset Age**

Asset Group	Plant, Equipment and Motor Vehicles Assets	Acquisition Date	Estimated Life (YRS)	Expected Working Life
Light Vehicle	All-terrain John Deere 6x4 Gator Vehicle	16-Jun-09	10	1-Jan-23
Light Plant	Caterpillar 304E2 Hydraulic Excavator	12-Nov-18	10	12-Nov-28
Heavy Plant	*Caterpillar 826H Compactor(+radio)	3-Apr-13	7	10-Apr-20
Heavy Plant	Caterpillar 329E Excavator	25-Oct-16	10	25-Oct-26
Heavy Plant	Caterpillar 950H Wheel Loader	5-Oct-16	10	5-Oct-26
Heavy Plant	Finlay 393 - Mobile Screening Plant	13-May-06	8	13-May-25
Heavy Plant	Hydraulic Spreader Bar	17-May-19	10	17-May-29
Heavy Plant	Isuzu Service Truck	1-Nov-17	10	1-Nov-27
Light Plant	Jetblaster - cleaner (works shed)	14-Mar-17	6	14-Mar-23
Heavy Plant	Komatsu Articulated Dump Truck 2008	25-Aug-09	10	25-Aug-21
Heavy Plant	Komatsu D155AX-6 Bulldozer	25-Feb-09	11	01-Jan-22

Heavy Plant	Komatsu WF450T-3 Compactor	24-Aug-07	6	NIL
Light Plant	Litter Master 9000	23-Jul-18	4	23-Jul-22
Light Vehicle	Massey Ferguson MF2605 Tractor	25-Nov-14	10	25-Nov-24
Light Vehicle	Mitsubishi Triton GLX 4X4	28-Sep-12	10	28-Sep-22
Light Plant	Skid Steer - Compact Track Loader	23-Oct-18	10	23-Oct-28
Heavy Plant	Tarpomatic	17-Sep-12	10	17-Sep-22
Light Vehicle	Toyota Hilux double cab utility (S322BRS)	17-Jul-17	10	17-Jul-27
Heavy Plant	*Volvo Articulated Water Cart	21-Nov-08	10	10-Apr-20
Heavy Plant	WW Aust Vehicle Wheel & Chassis Wash	13-May-06	6	30-Jun-20

\*Denotes acquisition of replacement vehicle underway

### 5.1.2 Asset capacity and performance

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

**Table 5.1.2: Known Service Limitations**

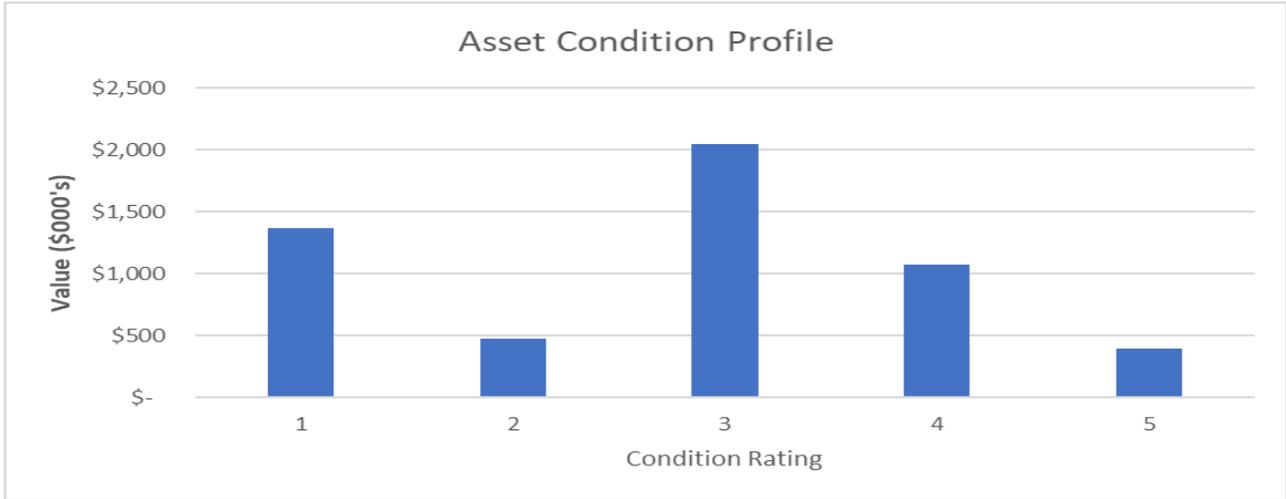
Location	Service Limitations
WW Australian Vehicle Wheel & Chassis Wash	Unable to facilitate wheel cleaning of all vehicles & failure to comply with legislative EPA requirements.
Slashing Unit	Cutting deck is insufficient width and provides poor quality cutting capability for site requirements
Massey Ferguson Tractor	Cab is not enclosed or airconditioned, which limits its operational capacity in inclement weather conditions.
John Deere 6 X 4 Gator	Cab is not enclosed or airconditioned, which limits its operational capacity in inclement weather conditions.

The above service limitations were identified from Operational staff analysis.

### 5.1.3 Asset condition

Plant condition is monitored regularly with Daily Equipment Worksheets (DEW) being completed, running hours, fuel and lubricant usage all logged daily. All heavy machinery is maintained in accordance with Manufacturers recommended service scheduling.

Following the adoption of this Plan, condition audits of plant and equipment will be undertaken over a 12 month cycle. This is to help even out inspections, budgets and workloads. This has been identified as an improvement action. As the condition rating of each of the plant and equipment elements is formally established, it is possible to attribute a whole of asset condition rating.



The condition profile of SRWRA assets is shown in Table 5.1.3 below.

Condition of assets are rated using a 1-5 rating system with 1 being new or near-new, 3 means it is currently fit for purpose and 5 represents an asset that has failed completely and cannot be used for its intended purpose. Condition is detailed in Table 5.1.4 & Criticality in Table 5.1.5.

**Table 5.1.3**

Asset Group	Plant, Equipment and Motor Vehicles Assets	Condition Rating (1 to5)	Asset Criticality (1 to 3)
Heavy Plant	Caterpillar 329E Excavator	1	2
Heavy Plant	Hydraulic Spreader Bar	1	1
Heavy Plant	Isuzu Service Truck	1	2
Heavy Plant	Tarpomatic	1	1
Heavy Plant	Caterpillar 950H Wheel Loader	2	2
Heavy Plant	Finlay 393 - Mobile Screening Plant	3	2
Heavy Plant	Komatsu Articulated Dump Truck 2008	3	2
Heavy Plant	Komatsu D155AX-6 Bulldozer	3	2
Heavy Plant	*Caterpillar 826H Compactor	4	1
Heavy Plant	*Volvo Articulated Water Cart	4	1
Heavy Plant	Komatsu WF450T-3 Compactor	5	3
Heavy Plant	WW Aust Vehicle Wheel & Chassis Wash	5	2
Light Plant	Case Skid Steer - Compact Track Loader	1	2
Light Plant	Caterpillar 304E2 Hydraulic Excavator	1	2
Light Plant	Litter Master 9000	1	2
Light Plant	Jetblaster – Water Cleaner trailer	2	2
Light Vehicle	Massey Ferguson MF2605 Tractor	1	2
Light Vehicle	Toyota Hilux double cab utility (S322BRS)	1	2
Light Vehicle	Mitsubishi Triton GLX 4X4 2.5L turbo Diesel 5Sp	2	2
Light Vehicle	All-terrain John Deere 6x4 Gator Vehicle	3	2

\*Denotes acquisition of replacement vehicle underway

**Table 5.1.4: Simple Condition Grading Table**

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

**Table 5.1.5: Simple Condition Criticality Table**

Criticality Rating	Description of Criticality
1	<b>Site operations will be heavily impacted if plant becomes unavailable for more than 48 hours.</b>
2	<b>Minor impact to Operations if plant becomes unavailable for more than 96 hours however other plant and equipment can fill the gap.</b>
3	<b>Very minor impact to Operations if plant inoperable for more than 120 hours.</b>

## 5.2 Operations and Maintenance Plan

Operations include regular activities to provide services such as public health, safety and amenity, e.g. cleaning, street sweeping, utilities costs and street lighting.

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

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

Maintenance expenditure is shown in Table 5.2.1.

**Table 5.2.1: Maintenance Expenditure Trends**

Year	Maintenance \$000's
FY 2018 -2019 (Actual)	\$172
FY 2019 - 2020 (YTD Actual)	\$76
FY 2020 – 2021 (Budget)	\$230

Maintenance expenditure levels are considered to be adequate to meet projected service levels, which may be less than or equal to current service levels. The 2019-2020 FY R&M Budget is 270,000. Where maintenance expenditure levels are such that they will result in a lesser level of service, the service consequences and service risks have been identified and is highlighted in this PAMP and service risks considered in the Risk Management Plan.

### Summary of future operations and maintenance expenditures

Future operations and maintenance expenditure is forecast to trend in line with current budget expectations of \$230,000 per annum.

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

### 5.3 Renewal/Replacement Plan

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

Replacement and rehabilitation of existing plant and equipment is based on the Plant Asset Register data to project the renewal costs based on the following considerations:

- a condition rating applied to each asset;
- an assumed economic life applied to each asset group;
- a replacement date for each asset;
- asset replacement cost.

#### 5.3.1 Renewal ranking criteria

Asset renewal and replacement is typically undertaken to either:

- Ensure the reliability of the existing assets to deliver the service it was constructed to facilitate, or
- To ensure the assets are of sufficient quality to meet the service requirements.

It is possible to get some indication of capital renewal and replacement priorities by identifying assets or asset groups that have;

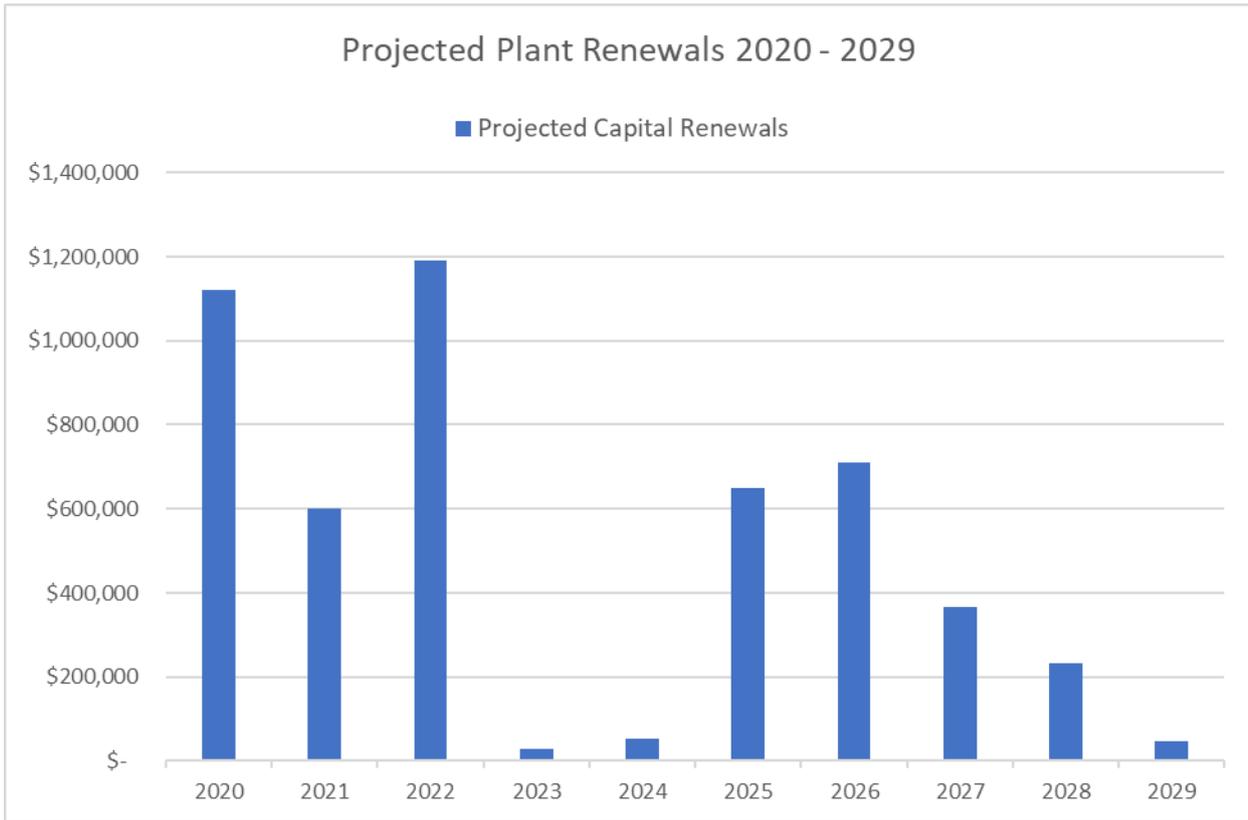
- a high consequence of failure,
- high use and subsequent impact on users would be greatest,
- a total value represents the greatest net value,
- the highest average age relative to their expected lives,
- high operational or maintenance costs, and
- replacement with a modern equivalent asset that would provide the equivalent service at a savings. The ranking criteria used to determine priority of identified renewal and replacement proposals will be incorporated into future plans.

#### 5.3.2 Summary of future renewal and replacement expenditure

Projected future renewal and replacement expenditures are forecast to increase over time when the asset stock increases. The expenditure is required is shown in Fig 5. Note that all amounts are shown in current (real) dollars.

The projected capital renewal and replacement program is shown in Figure 5.

***Fig 5: Projected Capital Renewal and Replacement Expenditure***



Note: 2020 Capital expenditure is approved.

Deferred renewal and replacement, i.e. those assets identified for renewal and/or replacement and not scheduled in capital works programs are to be included in the risk analysis process in the Risk Management Plan.

Renewals and replacement expenditure in the capital works program will be accommodated in the Long Term Financial Plan.

## 5.4 Creation/Acquisition/Upgrade Plan

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. These additional assets are considered in Section 4.4.

### 5.4.1 Selection criteria

New assets and upgrade/expansion of existing assets are identified from various sources such as community requests, proposals identified by strategic plans or partnerships with others. Candidate proposals are inspected to verify need and to develop a preliminary renewal estimate. Verified proposals are ranked by priority and available funds and scheduled in future works programmes.

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

Projected future upgrade/new asset expenditures are the same for future renewal shown in Section 5.3.2.

## 5.5 Disposal Plan

Disposal includes any activity associated with the disposal of a decommissioned asset including sale, demolition or relocation. Assets identified for possible decommissioning and disposal are shown in Table 5.5, together with estimated annual savings from not having to fund operations and maintenance of the assets. These assets will be further reinvestigated to determine the required levels of service and see what options are available for alternate

service delivery, if any. Any costs or revenue gained from asset disposals is accommodated in the Long Term Financial Plan.

**Table 5.5: Assets Identified for Disposal**

Asset	Reason for Disposal	Timing	Disposal Expenditure	Operations & Maintenance Annual Savings
Komatsu 450 Mini Compactor	End of operational life	2020 - 21 FY	\$0	\$8,000
WW Aust Vehicle Wheel & Chassis Wash	End of operational life	2020 - 21 FY	\$0	NIL

\*Note that the wheel wash is a critical asset and will need to be replaced.

## 6. RISK MANAGEMENT PLAN

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

Risk Management is defined in ISO 31000:2009 as: ‘coordinated activities to direct and control regarding risk’.

An assessment of risks<sup>4</sup> associated with service delivery from plant assets has identified critical risks that will result in loss or reduction in service from plant assets or a ‘financial shock’. The risk assessment process identifies credible risks, the likelihood of the risk event occurring, the consequences should the event occur, develops a risk rating, evaluates the risk and develops a risk treatment plan for non-acceptable risks.

Risk management is one of the fundamentals of asset and services management, and is observed to the highest possible level using industry standard practices. It is appropriate that formal risk management processes be applied to support decision making in all areas and at all levels of the organisation. The processes need to be ingrained in the daily activities for the organisation.

Through risk management, SRWRA aims to:

- Protect the plant asset portfolio,
- Protect users of assets,
- Reduce SRWRA’s exposure to risk,
- Promote effective financial and asset management practices.

This will be achieved through:

- Identifying, decreasing the likelihood, and mitigating the consequences of, risk within the constraints of sensible commercial objectives and practices,
- Applying risk-based practices to the management of plant assets and associated decision making,
- Maintaining safe and reliable plant and equipment,
- Preparing appropriate contingencies,
- Reviewing the risk profile of the plant portfolio at appropriate intervals and when circumstances dictate,
- Regular reviews of the Plant Asset Management Plan.

### 6.1 Critical Assets

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

Critical assets have been identified and their typical failure mode and the impact on service delivery are as follows:

**Table 6.1 Critical Assets**

Critical Asset(s)	Failure Type	Impact
Caterpillar 826H Compactor	Mechanical	Unable to comply with EPA licence requirements.
Volvo Articulated Water Cart	Mechanical	Unable to comply with EPA licence requirements.
WW Aust Vehicle Wheel & Chassis Wash	Mechanical	Unable to comply with EPA licence requirements.
Tarpomatic	Mechanical	Increase in utilisation of clean spoil to cover face and reduction in airspace.

By identifying critical assets and failure modes investigative activities, condition inspection programs, maintenance and capital expenditure plans can be targeted at the critical areas.

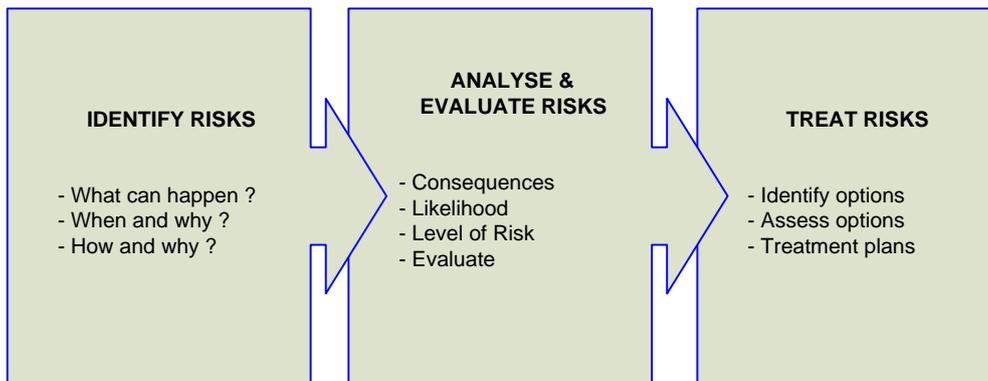
## 6.2 Risk Assessment

The risk management process used in the Plant Asset Management Plan is shown in Figure 6.2 below.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of the ISO risk assessment standard ISO 31000:2009.

**Fig 6.2 Risk Management Process – Abridged**



The risk assessment process aim to reduce risk to an acceptable level by:

- Identifying and mitigating risks to decrease the likelihood, and mitigating the consequences of risk within the constraints of sensible commercial objectives and practices
- Applying risk based practices to the management of plant assets and associated decision making
- Maintain appropriate administration controls including Safe Work Method Statements (SWMS) to ensure all equipment is regularly operated in a safe manner
- Ensuring all plant is maintained in a safe and reliable manner in accordance with Manufacturers recommendations and specifications
- Regular reviews of the Plant Asset Management Plan.

## 6.3 Service and Risk Trade-Offs

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

It has been developed by taking into consideration:

- SRWRA’s current assets and their capacity
- Existing budgets and long term financial goals and objectives
- Emerging risks and opportunities.

For a full overview of risks relating to plant please refer to the Corporate Risk

## **7. FINANCIAL SUMMARY**

This section contains the financial requirements resulting from all the information presented in the previous sections of this Plant Asset Management Plan. The financial projections will be improved as further information becomes available on desired levels of service and current and projected future asset performance.

### **7.1 Financial Statements and Projections**

#### **7.1.1 Asset valuations**

The best available estimate of the value of assets included in this Plant Asset Management Plan are shown below. Assets are valued at fair value cost to replace similar service capacity standards.

Gross Replacement Cost	\$5.0M
Depreciable Amount	\$0.5M
Written down Value	\$1.1M
Annual Average Asset Consumption	\$0.67M

#### **7.1.2 Sustainability of service delivery**

Two key indicators for service delivery sustainability that have been considered in the analysis of the services provided by this asset category, these being the:

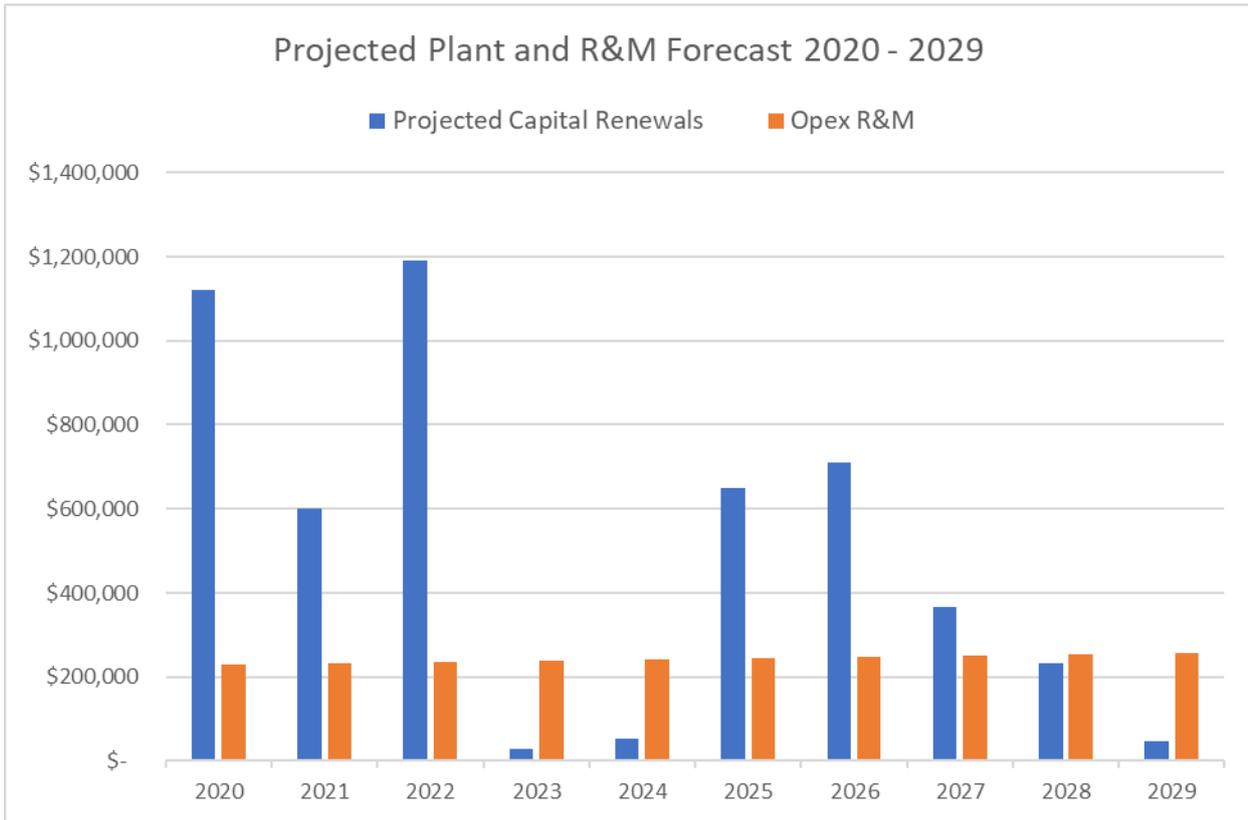
- asset renewal funding ratio, and
- medium term budgeted expenditures/projected expenditure (over 10 years of the planning period).

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

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

These projected expenditures may be compared to budgeted expenditures in the 10 year period to identify any funding shortfall. In a core asset management plan, a gap is generally due to increasing asset renewals for ageing assets.

The projected operations, and capital renewal expenditure required over the 10 year planning period is outlined below.



Note: 2020 Capital expenditure is approved.

### 7.1.4 Projected expenditures for Long Term Financial Plan

This Plant Asset Management Plan will contribute to the Long Term Financial plan which is current being developed.

## 7.2 Funding Strategy

Funding for assets is provided from the budget and Long Term Financial Plan.

The financial strategy of the entity determines how funding will be provided, whereas the Plant Asset Management Plan communicates how and when this will be spent, along with the service and risk consequences of differing options.

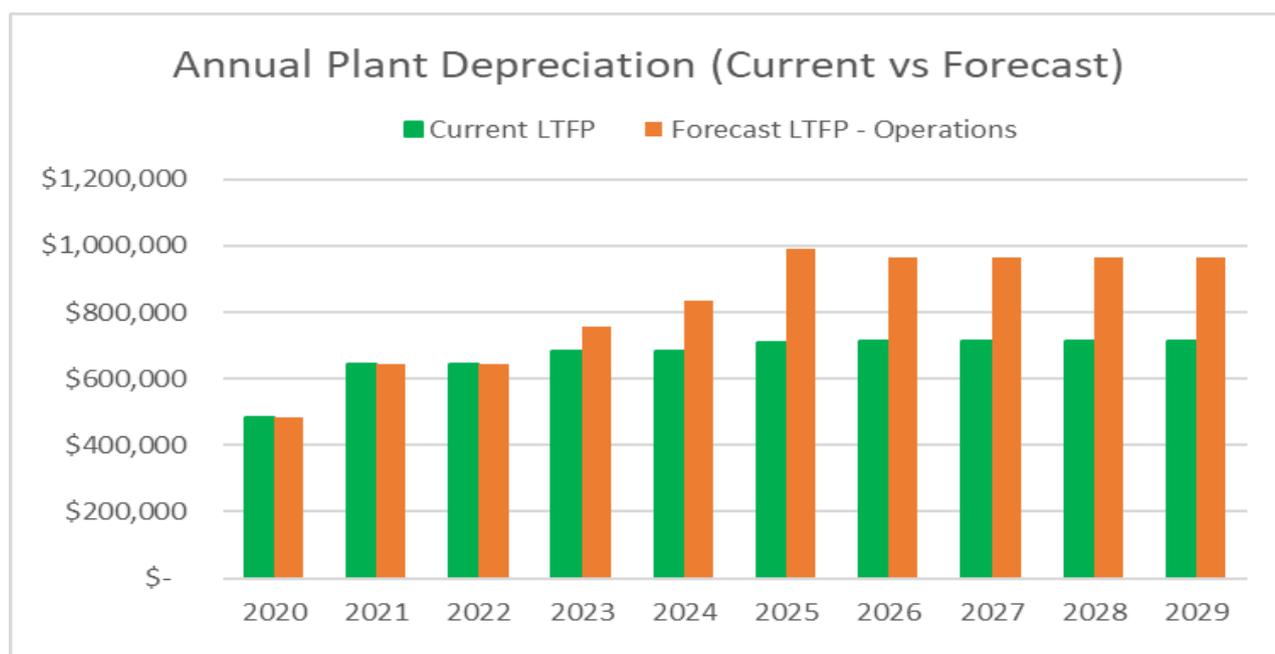
## 7.3 Valuation Forecasts

Funding in the current Long Term Financial Plan (LTFP) for this period is \$6.7m or \$670,000 on average per year.

Asset values are forecast to increase as additional assets are added, age and slated for future renewal. Additional assets will also add to future depreciation forecasts.

The projected outlays necessary to provide the services covered by this Plant Asset Management Plan (PAMP) includes operations, renewal and upgrade of existing assets over the 10-year planning period is \$8.2m or \$821,000 on average per year.

Manufacturers preventative maintenance guidelines and recommendations for machinery, which are scheduled to arrive in second quarter 2020, will be included in the review to ensure the necessary funding requirements will be reflected in the updated LTFP.



## 7.4 Key Assumptions Made in Financial Forecasts

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

Key assumptions made in this asset management plan are below in Table 7.4.

**Table 7.4: Key Assumptions made in PAMP and Risks of Change**

Key assumptions	Description
Financial	Deposit interest rates are currently in the 1.00% (ANZ/LGFA cash rate) to 1.21% (LGFA 12-month term rate quoted 25 November 2019) range depending on the deposit term. Rate increases are difficult to forecast at this stage and for budget purposes a deposit rate of 1.21% is proposed.
Waste Volumes	Waste volumes are re-assessed at each quarter. Volumes are currently under assessment in line with the data provided from the Joint Venture, Constituent Councils and major customers and in line with the updated Strategic Plan / Long Term Financial Plan.
Waste Prices	The waste prices will be consistent with the prices contained in the Long Term Financial Plan (LTFP). The majority of SRWRA's waste is contracted with annual fixed increases. The Long Term Financial Plan will be reviewed in line with the Strategic Plan. Constituent Councils benefit from lower gate base rates in lieu of annual distributions. A minimum CPI increase will be applied.
Waste Levy	The State Government reviews the Waste Levy on an annual basis. As at the time of preparing this Report, the State Waste Levy is \$140 per tonne for (\$70 per tonne for Adelaide non-metropolitan waste volumes). SRWRA in its Long Term Financial Plan has assumed that the Waste Levy will annually increase by 2.5%.  Accordingly, for the purposes of preparing an initial budget, and in the absence of any additional information on the expected increase, it is assumed for 2020 – 2021 that the Waste Levy will be \$143.50 per tonne (\$71.75 per tonne for Adelaide non-metropolitan waste volumes).
Joint Venture	The Southern Recycling Centre (SRC) continues to produce sustainable results in relation to recycling volumes and shared costs. Projections reflected in the SRWRA budget are to be based on the adopted budget and Long-Term Financial Plan of the SRC which has been ratified by the SRC Advisory Committee.

Key assumptions	Description
Staff & Labour Costs	Given the introduction of the MRF operations in 2020 - 2021, it is expected that an increase of additional staff will need to be employed.  All staff are on individual contracts and any wage increases are based on merit. For budgeting purposes, the Adelaide Consumer Price Index (CPI) figures for the year ending 31 December 2019 will be used when reviewing staff contracts
Competitive Environment	SRWRA has implemented effective and proven solutions in sustainable resource recovery, landfill management and waste management amidst the current environmental challenges and market competition and will continue to develop this strategic vision into the future.

## 7.5 Forecast Reliability and Confidence

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

**Table 7.5: Data Confidence Grading System**

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

The estimated confidence level for and reliability of data used in this PAMP is considered to be A.

<sup>5</sup> IPWEA, 2015, IIMM, Table 2.4.6, p 2 | 71.

## 8. PLAN IMPROVEMENT AND MONITORING

### 8.1 Status of Plant Asset Management Practices<sup>6</sup>

#### 8.1.1 Accounting and financial data sources

SRWRA’s financial system is MYOB and Tipsite. Tipsite records all vehicles that enter the SRWRA site and accurately records, dates, times, weights and takes digital photographs of the vehicle, vehicle number plates and loads.

#### 8.1.2 Plant Asset management data sources

SRWRA’s assets database utilises Microsoft Excel based upon daily entry of hours of plant utilisation, loads carted, fuel and lubricants used. These then tie into SRWRA’s maintenance plan which is based on operational best practice and manufacturers maintenance service standards.

### 8.2 Improvement Plan

The Plant Asset Management Improvement Plan generated from this PAMP is shown in Table 8.1.

**Table 8.1: Improvement Plan**

Task No	Task	Responsibility	Resources Required	Timeline
1	Align the Plant Asset Management Plan with the Workforce Management Plan once it has been completed.	Operations Manager	Internal	Ongoing
2	Define and monitor the Plant Asset Management Plan’s levels of service.	Operations Manager	Internal	Ongoing
3	Identify opportunities to extend the operational service life of machines with appropriate risk treatment plan where required.	Operations Manager	Internal	Ongoing
4	Monitor and record plant and equipment condition assessments as part of scheduled maintenance program	Operations Manager	Internal	Ongoing
5	Investigate opportunities for alternative solutions to investing in new machines including the leasing of machines, campaign style work campaigns and possible utilising external contractors to supply minor services – such as weed slashing.	Operations Manager	Internal	Ongoing
6	Investigate the usefulness of remote monitoring technology with an initial focus on the heavy plant and equipment.	Operations Manager	Internal	Ongoing

### 8.3 Monitoring and Review Procedures

This Plant Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

<sup>6</sup> ISO 55000 Refers to this the Asset Management System

The PAMP will be reviewed annually to ensure it represents the current service level, asset values, projected operations, maintenance, capital renewal and replacement, capital upgrade/new and asset disposal expenditures and projected expenditure values incorporated into the Long Term Financial Plan.

## 8.4 Performance Measures

The effectiveness of the Plant Asset Management Plan can be measured in the following ways:

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

## 9. REFERENCES

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- SRWRA 'Strategic Plan 2019 – 2026',
- SRWRA 2019-2020 Annual Business Plan.