Water Asset Management Plan

Infrastructure 2019-2023

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QPRC

Executive Summary

The objective of infrastructure asset management is to ensure that assets provide their required levels of services in the most cost effective manner. This Asset Management Plan focuses on the management of the Queanbeyan-Palerang Regional Council's (QPRC) water (potable) infrastructure assets. Water assets in this plan means only potable water infrastructure assets. This plan specifies the requirements for effective management of this asset group and the corresponding financial implications. This plan is reviewed annually, with a formal update completed every 4 years.

Effective asset management of the Queanbeyan-Palerang's Water (potable) infrastructure assets will contribute towards achievement of the following strategic objectives[1] :

- Maintenance of water (potable) infrastructure to allow safe (public health) and equitable delivery of potable water for communities across our region; and
- Advocacy for QPRC's Integrated Water Cycle Management (IWCM).

The contribution towards achievement of theses strategic goals and asset management objectives will be achieved by:

- Stakeholder consultation to establish and confirm service standards.
- A regular program of inspections and monitoring activities to assess asset condition and performance.
- Application of a systematic analysis to prioritise renewals and establish the most cost effective works programs.
- Continuously reviewing and improving the quality of Asset Management practices.

QPRC's water (potable) infrastructure assets comprises of:

- Pipes/mains;
- Pump Stations;
- Treatment Plants;
- Reservoirs;
- Dams;
- Bores;
- Valves – pressure reducing valves, stop valves;
- Hydrants;
- House connections/ water meters etc.

These assets have a current replacement cost of $162 Million as at 30 June 2019.

[1] QPRC Community Strategic Plan 2018-2028

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1 Introduction

1.1 Background

The Queanbeyan-Palerang Regional Council's water (potable) infrastructure assets provide valuable services to the area enabling a safe and reliable potable water supply network. These assets must be properly maintained and developed to continue to provide adequate service and benefits for generations in the future. This plan demonstrates Council's responsive management of water (potable) infrastructure assets (and services provided from these assets), compliance with regulatory requirements and proposed funding requirements to provide the required levels of service.

This plan demonstrates how Council will achieve this outcome by applying the principles of responsible Asset Management Planning, the object of which is to:

'Deliver the required level of service to existing and future customers in the most cost effective way'.

The key elements of infrastructure asset management are[2] :

- Taking a life cycle approach.
- Developing cost-effective management strategies for the long term.
- Providing a defined level of service and monitoring performance.
- Understanding and meeting the demands of growth through demand management and infrastructure investment.
- Managing risks associated with asset failures.
- Sustainable use of physical resources.
- Continuous improvement in asset management practices.

This Water (potable) Infrastructure AMP is to read with Council's Asset Management Policy, Strategic Asset Management Plan (SAMP) and the following associated planning documents:

- QPRC Community Strategic Plan 2018 – 28;
- QPRC Delivery Program 2018 – 21;
- QPRC Operational Plan 2019 – 20;
- QPRC Strategic Directions;
- QPRC Integrated Water Cycle Management Strategy.

1.2 Assets included in this Plan

Water (potable) infrastructure assets are only incorporated in this plan. Information of other asset classes should be referred to the relevant Asset Management Plan.

[2] IPWEA, 'International Infrastructure Management Manual', 2015

Under the water (potable) infrastructure, the following Asset Categories are included in this AMP:

- Customer Connections
- Pipes/mains;
- Pump Stations;
- Treatment Plants;
- Reservoirs;
- Dams;
- Bores;
- Valves – pressure reducing valves, stop valves;
- Hydrants;
- House connections/ water meters etc.

Some of these assets classes also pertain to other AMPs however, only assets assigned to service of water (potable) are included in this AMP.

1.3 Strategic and Corporate Goals

This Water (potable) Infrastructure AMP has been prepared under the direction of Council's vision, mission, goals and objectives. The community outcomes and strategic goals for the management of QPRC's water infrastructure assets are outlined in the following documents:

- QPRC Community Strategic Plan 2018 – 28;
- QPRC Delivery Program 2018 – 21;
- QPRC Operational Plan 2019 – 20;

1.4 Legislative Requirements

QPRC has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

- Local Government Act 1993;
- Local Government Amendment (Planning and Reporting) Act 2009;
- Environment Planning and Assessment Act 1979;
- Civil Liability Act 2002;
- Water Management Act 2000;
- Water Act 2007
- Public Health Act 1991;
- Environmental Offences & Penalties Act 1989;
- Protection of the Environment Operations Act 1989;
- Work Health & Safety Act 2011;
- Fisheries Management Act 1994;
- National Park & Wildlife Act 1974;
- Dangerous goods Act 1975;
- Contaminated Land Management Act 1997;
- Australian Drinking Water Guidelines 2011;
- Service Level & Pricing Agreements with Icon-Water; and

This is not a full and comprehensive list of all legislative requirements Council is required to adhere to in maintaining infrastructure assets. QPRC will exercise its duty in compliance with all legislation to the best of its ability.

2 Levels of Service

2.1 Community Level of Service

Community levels of service relate to the service outcomes that the community wants in terms of quality, reliability, responsiveness, amenity and safety.

In August 2018, a custom service survey was conducted to:

- Assess resident satisfaction; and
- Better understand the community's priorities with regard to service and facilities.

The results of the survey have been utilised as an indicator of community satisfaction with QPRC's core water (potable) infrastructure assets. The overall satisfaction rating for water (potable) infrastructure was 4.2 out of 5.

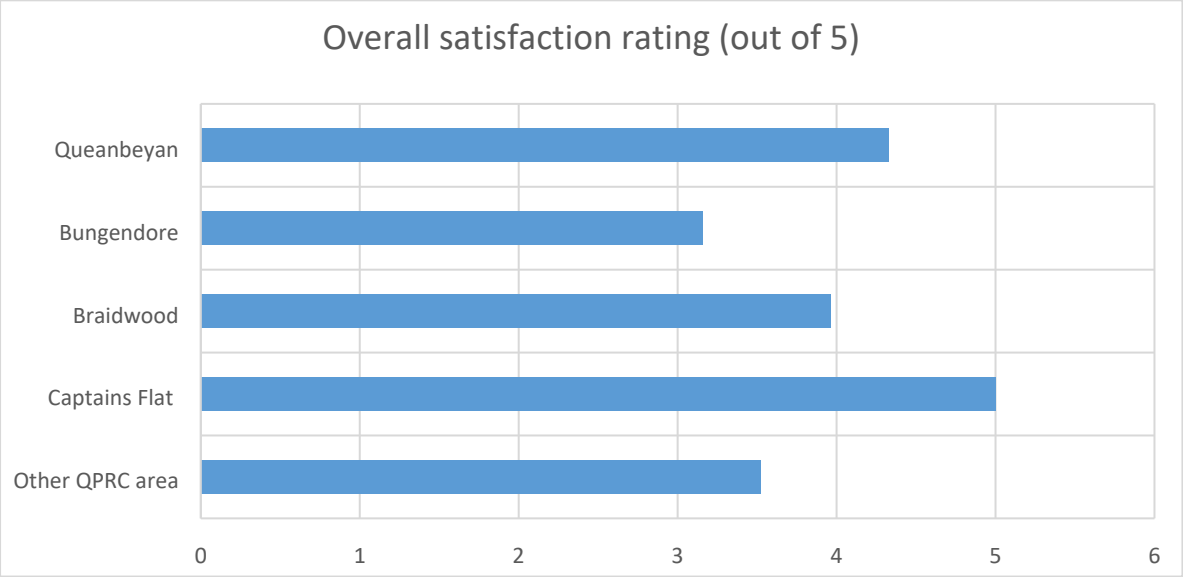

Figure 1: Community Satisfaction Survey Results

QPRC when benched marked against eight other similar sized NSW Council's received an overall satisfaction rating of 3.5/5 compared to an average satisfaction rating of 3.2/5. The bench marking also indicated QPRC was performing at the top end of community satisfaction for all services provided.

Of all the asset classes surveyed, QPRC's water (potable) assets rated the 3rd highest satisfaction rating. Water (potable) assets also rated 3rd highest on importance compared to other services provided by QPRC. When bench-marked against similar Councils, QPRC was performing at the top of the rating system.

Currently, QPRC do not have a formal process to measure community levels of service. This plan proposes using customer service requests to indicate performance against levels of service. Performance indicators have not been set within this plan and will be required to be reviewed as better data is provided.

Table 1: Community Level of Service

Service Attribute	Service Objective	Performance Measure Process	Current Performance	Expected position in 10 years based on current LTFP
COMMUNITY OUTCOMES				
• An integrated and well maintained water network to support the local community • Council ensures developed infrastructure is constructed in compliance with assessed standards and is 'fit for purpose' • Safe and well maintained built facilities meet the cultural, recreational, tourism and community service needs of all ages and abilities in our community • Plan and implement effective infrastructure to assist maximising experiences for the Council's visitors.				
COMMUNITY LEVELS OF SERVICE Customer Connections				
Quality	Water system designed to incorporate all eligible customer connections	All customer connections are metered and have adequate backflow protection	TBD	>95% Compliance
Function	Provides a dedicated connection point between customer and water network	Meter readings are undertaken quarterly and are accurate	TBD	4 meter reads per year
Capacity/ Utilisation	Every customer within the water network area is connected to the water system	Customers can expect a flow rate of 20 l/min and a minimum pressure of <10m	TBD	100%
COMMUNITY LEVELS OF SERVICE Potable water pipe network				
Quality	Water is fully contained in pipe network and is kept free from contaminants	Water quality is routinely sampled and analyses to ensure compliance with health standards	TBA	100% compliance against health standards
Function	Provides a continuous service free from interruptions	Number of main breaks	TBA	10 per 100 km reticulated water mains
Capacity/ Utilisation	Reticulation network designed to ensure minimum supply pressures and flows are provided at peak hourly flow demand periods (except		TBA	TBA

	drought restrictions)			
COMMUNITY LEVELS OF SERVICE Water Pumping Stations				
Quality	Water is fully contained in network and is kept free from contaminants	TBA	TBA	TBA
Function	Pumping stations operate trouble free all year round	Pump Station Faults recorded through SCADA system	TBA	< 2 pump station failures recorded per year.
Capacity/ Utilisation	Pumping system has adequate capacity to meet system requirements	Pump Station flows recorded through SCADA system	TBA	Pumps able to maintain minimum storage levels in service reservoirs
COMMUNITY LEVELS OF SERVICE Water Treatment Plants				
Quality	Water treated is safe, pleasant to drink and meets the ADWG	Sampling of water quality leaving treatment plant.	99%	100% compliant
Function	Treatment plant is designed to address raw water quality risks.	Water quality risk assessment and HCCP requirements	TBA	100% Compliant with DWQMP
Capacity/ Utilisation	System designed to meet peak daily demands without interruptions	Plant output performance recorded through SCADA system	TBA	TBA
COMMUNITY LEVELS OF SERVICE Water Reservoirs				
Quality	Treated water is fully contained and kept free from contaminants	Sampling of water quality leaving treatment plant.	TBA	100% compliant
Function	Tanks are leak free and vermin proof.	Weekly site inspections to identify any leakage, possible animal intrusion or vandalism.	TBA	100% of inspections undertaken and identified actions rectified within agreed time limits.
Capacity/ Utilisation	Stored water is available to balance peak hourly flows and provide emergency supply for	Plant output performance recorded through SCADA system	TBA	TBA

	firefighting requirements.			
COMMUNITY LEVELS OF SERVICE Bulk Water Supply (Bores/Dams/Icon Water Agreement)				
Quality	Water harvested is adequately monitored and meets quality objectives.	Water quality monitoring undertaken at source. Part of HCCP process and as agreed in the Icon Water Bulk Water Supply Agreement	TBA	100% compliant
Function	Ensures adequate water is available for consumption by QPRC water users	Demand and consumption trends monitored and analysed to meet forecast water usage.	TBA	TBA
Capacity/ Utilisation	Capacity of systems are sufficient to minimise the risk of water restrictions being applied.	Shoalhaven River and Molonglo River flows monitored. Storage Dam Levels Monitored. Icon Water Supply Points flow monitored. Bore field drawdowns monitored.	TBA	Water restrictions are imposed no more than 1 in 20 years

2.2 Technical Level of Service

2.2.1 Design and Construction Standards

The standard of construction of new water (potable) infrastructure assets and for enhancing, renewing and refurbishing existing water (potable) infrastructure assets will be in accordance with the standards adopted by Council in any particular instance.

Generally any design and construction work required on water (potable) infrastructure assets will be considered as Capital Work and as such, is required to comply with QPRC's Project Management Framework.

2.2.2 Maintenance Standards

Levels of service for maintenance of the water (potable) infrastructure assets take into account:

- Industry standards[3];
- The need to provide a water (potable) infrastructure network that is safe (public health) to supply potable water for all users; and
- Ability of Council to fund maintenance activities.

The technical standards for maintenance activities need to be defined in the QPRC Water (potable) Infrastructure Maintenance Plan. Currently QPRC does not have this maintenance plan; it is aimed to develop this maintenance plan and update the technical standards in future revision of this AMP.

Table 2 - Maintenance Standards

Asset Feature	Functional Requirements of Maintenance
Water (potable)	Provide safe (public health) & equitable drinking water supply

The following matters have also been taken into account with development of the maintenance standards:

- Routine maintenance standards – routine maintenance, repair functions and standards, intervention levels and actions are based on risk assessment for a particular asset element. Standards vary across the network in line with relevant risk factors such as location, source of water, asset type, the susceptibility of assets to deterioration, the cost effectiveness of repairs, and competing priorities for funding.

- Repair and maintenance works – routine maintenance and repair works are undertaken within a specified reasonable period of time having regard to intervention action priorities, and to specified standards.

- Temporary measures – temporary works to be undertaken to reduce the risk of an incident until such time as maintenance or repair works can be completed. Response times and measures (eg. warning signs, flashing lights, safety-barriers) are determined based on the risk to safety and the type, volume and nature of failure.

- Emergency works – works required to be undertaken immediately outside routine works programs to ensure the safety of the public as a result of emergency incidents. Emergency works include traffic incident management, major equipment failure, power failure, floods, storms and spillages.

The Water Maintenance Plan (Under Development) details all planned and routine maintenance schedules that are in place for this asset class. As QPRC transitions towards a more proactive maintenance planning position, this document will be amended with additional inspections and routine maintenance work orders documented. It is envisaged

[3] IPWEA NSW Guidelines and Practice Notes
Australian Drinking Water Guidelines
Water Supply Code of Australia

that proactive inspections and maintenance activities will be delivered through Councils Enterprise Asset Management system's Mobility platform.

3 Future Demand

3.1 Demand Driver

Factors affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership, consumer preferences and expectations, economic factors, agricultural practices and environmental awareness.

3.2 Population Change

Queanbeyan-Palerang's population has been growing consistently around 2% per annum in previous years and in 2018 was 59,499. Over the life of this asset management plan, population is expected to continue to grow at a rate of 1.8% per annum.

Population growth will primarily occur in residential developments in Googong, South Jerrabomberra and Bungendore. This increase in population and dwelling growth will contribute to increased demand on the existing water (potable) infrastructure assets requirements.

3.3 New Technology

Changes in technology may enable QPRC to better understand asset life and operation and maintenance requirements for its water (potable) infrastructure assets.

New technologies that may impact the water infrastructure assets include:

- Better telemetry data being available and linking hydraulic models to provide real time operational information;
- Better and more reliable instrumentation to monitor system operation;
- Improved water efficient appliances and water management techniques to reduce demand;
- Changes in water treatment systems and chemicals used to ensure the safety of the water supply system; and
- Advances in WHS and assets used within the water supply system.

3.4 Climate Change and Sustainability

Planning asset management activities will need to make allowances for potential climate change conditions. Some of the predicted impacts of climate change include:

- Lower annual rainfall – Reduced inflows into bulk supply system
- Higher average temperatures – Increase peak demands in summer periods
- More severe weather incidents (average v extreme conditions) – Storm damage may occur impacting assets

3.5 New water (potable) infrastructure assets from growth

Significant urban expansion has been planned over the life of this asset management plan that includes:

- Continued development of the Googong Township area
- Development of South Jerrabomberra/Tralee area
- Development of Bungendore

The new water (potable) infrastructure assets will be acquired from developer contributions and will be delivered directly by Council to ensure the new developments are linked to existing infrastructure. Major water (potable) infrastructure planned to be delivered by Council includes water main replacement, water connection with Jerra Business Park, water bores etc.

Additional assets will increase the obligation of ongoing maintenance & renewal costs.

Projected additional assets & their maintenance/renewal costs are summarised in section 6.

3.6 Demand Management Plan

QPRC's Asset Strategy outlines the following objectives that address demand drivers and align with cross border and regional infrastructure strategies and spatial asset planning.

- Manage asset backlog & risk
- Support connection of communities and health of the community, local economy and environment
- Sustainability cater for population growth and integrational equity
- Integrate with cross border infrastructure and align with regional infrastructure strategies
- Establish affordable and acceptable standards, including intervention levels, gifted assets from developments
- Plan assets spatially taking a corridor/network approach; and to analyse condition and failure.

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

Non-asset solutions focus on providing the required service without the need for the organisation to own the assets and management actions including reducing demand for the service, reducing the level of service (allowing some assets to deteriorate beyond current service levels) or educating customers to accept appropriate asset failures[4]. Examples of non-asset solutions include providing services from existing infrastructure such as aquatic centres and libraries that may be in another community area or public toilets provided in commercial premises.

[4] IPWEA, 2011. IIMM. Table 3.4.1

4 Lifecycle Management Plan

This section outlines asset performance and condition information, and uses Asset Management principles to develop broad strategies and works programs to achieve the required service standards.

It presents an analysis of the available information and the life cycle management plans covering the three key work activities to manage the water (potable) infrastructure asset classes:

- Operations and Maintenance Plan - Activities undertaken to ensure efficient operation and serviceability of the assets. This will ensure that the assets retain their service potential over the course of their useful life.
- Renewal Plan - Provides a program of progressive renewal of individual assets. Deteriorating asset condition primarily drives renewal needs.
- Enhancement Plan - Provides a program of system enhancements to improve parts of the system performing below target service standards and to develop the system to meet any future demand requirements. Sub-standard asset performance primarily drives asset development needs.

4.1 Physical Parameters

Following are the summaries of water (potable) infrastructure assets covered in this AMP:

Table 3: Asset Inventory Summary (as at 30 June 2019)

Asset Type	Bungendore	Braidwood	Captains Flat	Queanbeyan	Googong	Total
Water Mains (Km)	59	34	9	283	35	420 Km
Water Connections	1433	769	274	22679	82	25237
Water Pump Stations	2	2	2	4	0	10
Water Reservoirs	3	3	2	13	1	22
Water Treatment Plant	2	1	1	-	-	4
Raw Water Dams	-	1	1	-	-	2
Ground Water Bores	5	-	-	-	-	5

4.2 Asset Age Profile

The age profile of the assets included in this AMP is shown in the figure below:

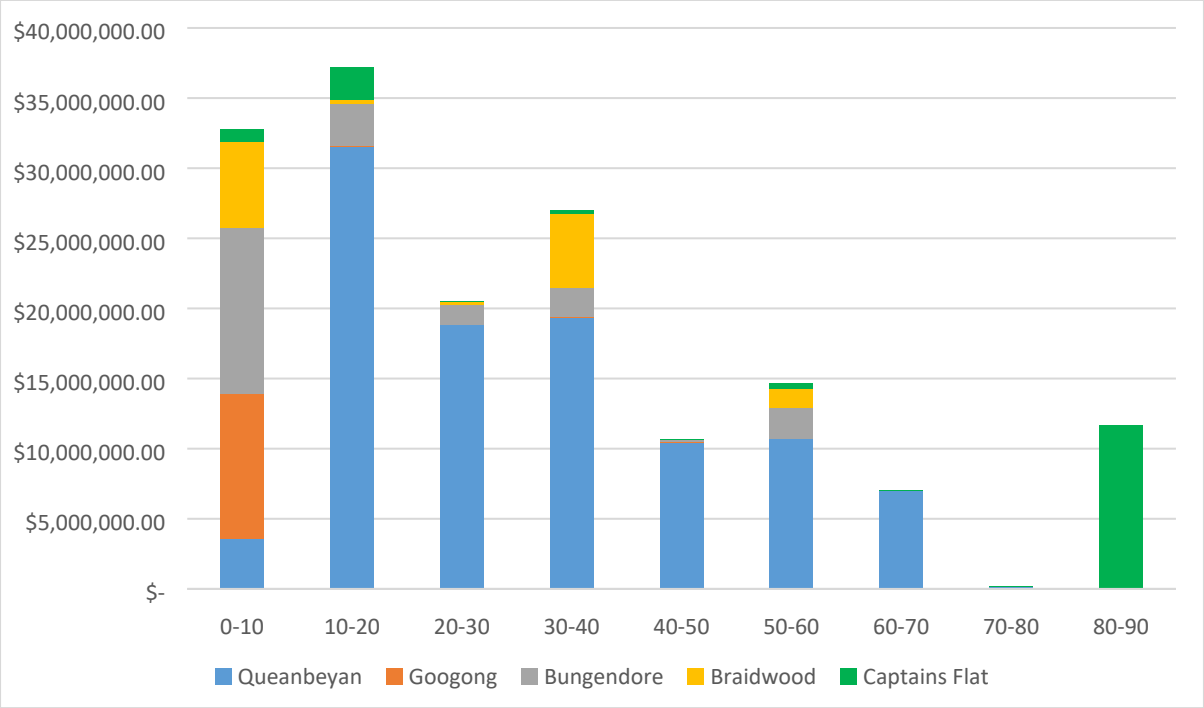

Figure 2: Asset age profile

4.3 Asset Capacity & Performance

Council's water infrastructure network services are generally provided to meet design standards and level of service.

Table 4: Known Service Performance Deficiencies

Asset Class	Service Deficiency
Customer Connections	All customer connections should be metered. There are some connections that are unmetered and these are being retrofitted as identified. Trials are underway to improve meter reading efficiency and accuracy using electronic meter reading technologies.
Water Mains	Accurate information regarding water main capacity and performance is poorly understood. Hydraulic models exist for Queanbeyan only which are out of date and have not been validated. A new hydraulic model is required to be developed and calibrated to current conditions. Initially the models are required for the purpose of strategic planning only. Operational models will be considered in future. Leaky pipes are considered to form a large proportion of non-revenue water and a program for pipe renewals needs to be developed.
Pump Stations	Most water pumping station information is current, however additional asset collection/breakdown is required to gain a better picture of capacity and performance requirements. This will also input into hydraulic models to verify if pump selection is optimal.

	There are known issues associated with some pumping station switchboard condition and compliance with current safety standards.
Water Reservoirs	Capacity and performance limitations have been identified with the following Water Reservoirs; • Jerrabomberra Reservoir is of adequate capacity to meet future water supply requirements. Inspections have identified that the reservoir has significant corrosion occurring and needs to be refurbished to meet on-going life cycle requirements. Due to the critical nature of the reservoir, there is limited opportunity to undertake this work as it would require the Reservoir being off line for a 6 month period.
Treatment Plants	Capacity and performance limitations have been identified at QPRC's 4 water treatment plants. • Currundooley Bore WTP • Bungendore Bore WTP • Braidwood WTP • Captains Flat WTP
Bulk Water Supply	Bulk water is provided into the systems via ground water, surface water extraction and Dam Storage or by a bulk water supply agreement with Icon Water. The following capacity and performance limitations have been identified: • Queanbeyan Bulk Water Supply Agreement requires review in terms of water security, peak supply rates and agreed water quality targets. This may impact on the volume of additional storage that may need to be provided within the Queanbeyan reticulation system. • Googong Bulk Water Agreement has been developed to suit the requirements of the Googong Development and as a result, will need to be reviewed similar to Queanbeyan Bulk Water Supply Agreement. • Bungendore bore fields are close to licence extraction capacity. For future growth in Bungendore to occur, additional supply will be required. A current new fractured rock groundwater supply is being developed that should meet future demand requirements. • Braidwood raw water storage capacity requires review to ensure adequate storage during times of low/no flow on Shoalhaven River.

The above service deficiencies were identified from technical knowledge and expertise through existing AM systems and staff. Capacity and performance needs to be monitored and adjustments made as it is identified.

4.4 Asset Condition

Asset condition has been determined for QPRC's assets based on a combination of inspections, age profile and staff experience with the Asset Condition stored in the Asset Register against each asset. Council is committed to regular condition data collection in order to mitigate risk and to make informed decisions in accessing the whole of life costs for the asset.

Council utilises the IIMM condition rating system of 1 – 5.

Table 5 - Condition Rating Table

Condition Rating	Description of Condition
1	Excellent – As New
2	Good – Minor Defects Only
3	Average – Maintenance Required to Return to Acceptable Level of Service
4	Poor – Consider Renewal
5	Very Poor – Approaching Unservicable and Requires Replacement

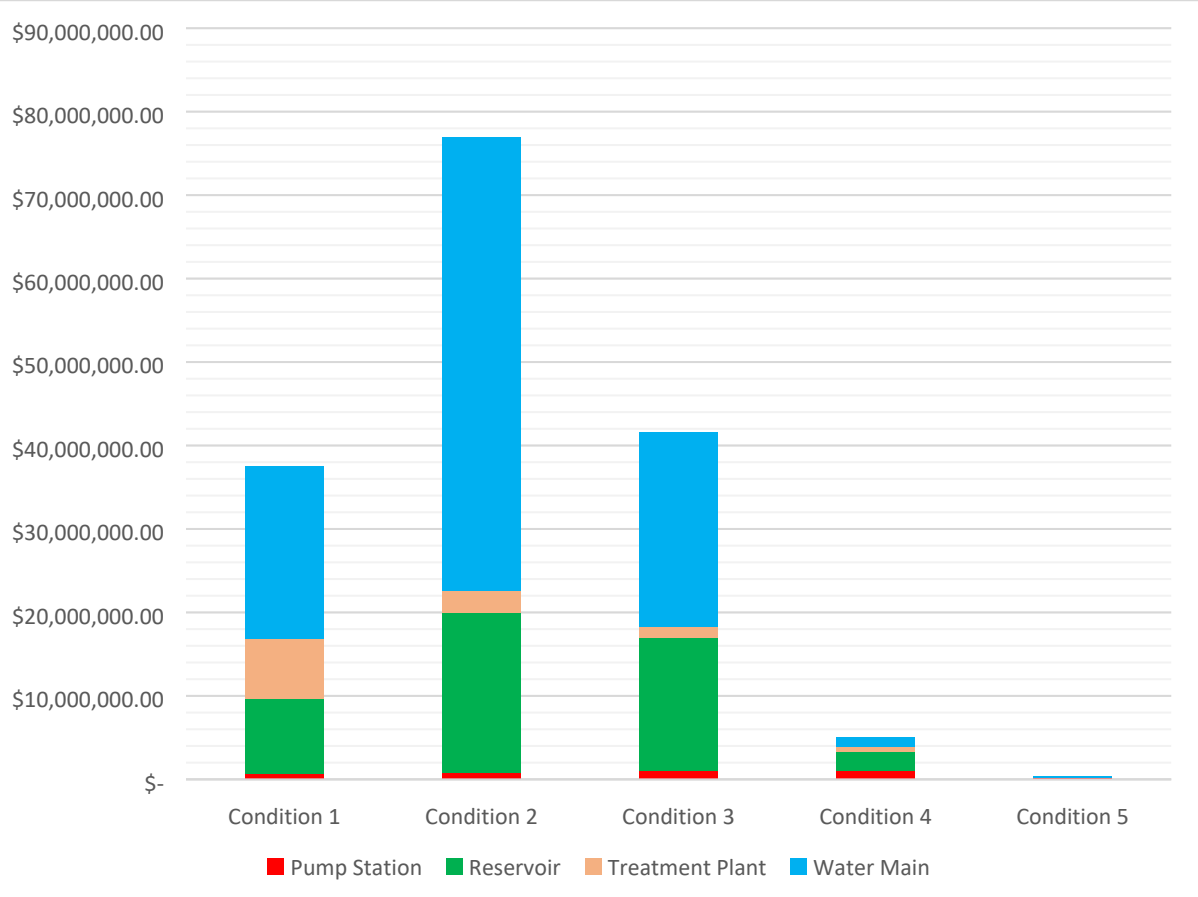

Figure 3: Asset condition

4.5 Asset Valuation

QPRC water (potable) infrastructure assets were valued as at 12 May 2016. An external valuation company conducted the asset valuation. Water (potable) infrastructure assets are also indexed annually in between revaluations in accordance with NSW Reference rates manual provided by Department of Industry, NSW. The asset valuations as at 30 June 2019 are as follows:

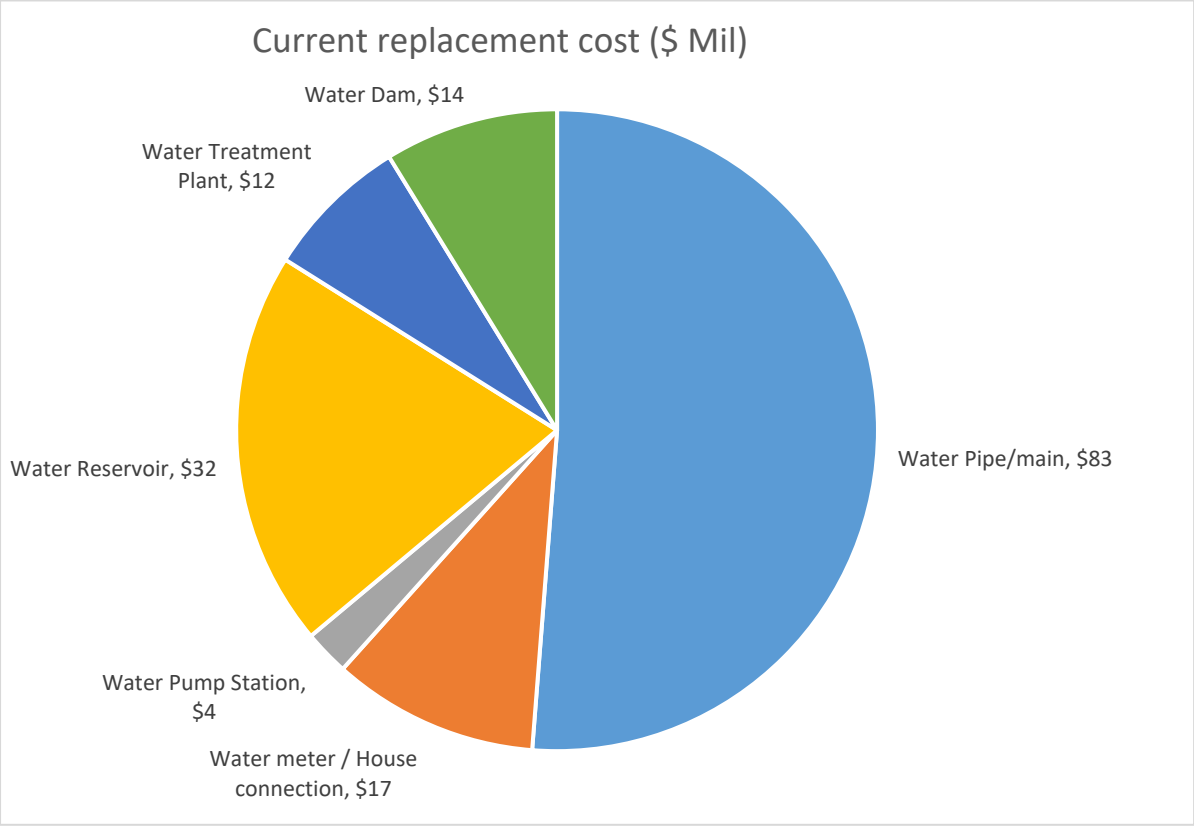

Figure 4: Asset valuation

4.6 Maintenance Plan

Maintenance planning is required to ensure that council are adequately managing its asset base in an optimal manner. The average expenditure on operational and maintenance activities for the water (potable) infrastructure asset base was **$1.8M (1.09% of Depreciable Value)**. Due to the current financial accounting system in operation, a reliable breakdown of operational verses maintenance costs is not available. Similarly, a spilt of maintenance costs for the various asset classes not fully understood.

In future, Council is moving towards a work-order system that will allow maintenance costs to be more accurately captured directly against the assets which will enable a more transparent view of costs to be provided.

QPRC is endeavouring to improve its asset management practices to include more preventative maintenance activities. This includes developing scheduled inspections and maintenance tasks to reduce expensive reactive repair work.

As the work-order system develops, additional scheduled inspections and maintenance activities will be added further assisting in understanding maintenance requirements and reducing reliance on reactive repair work.

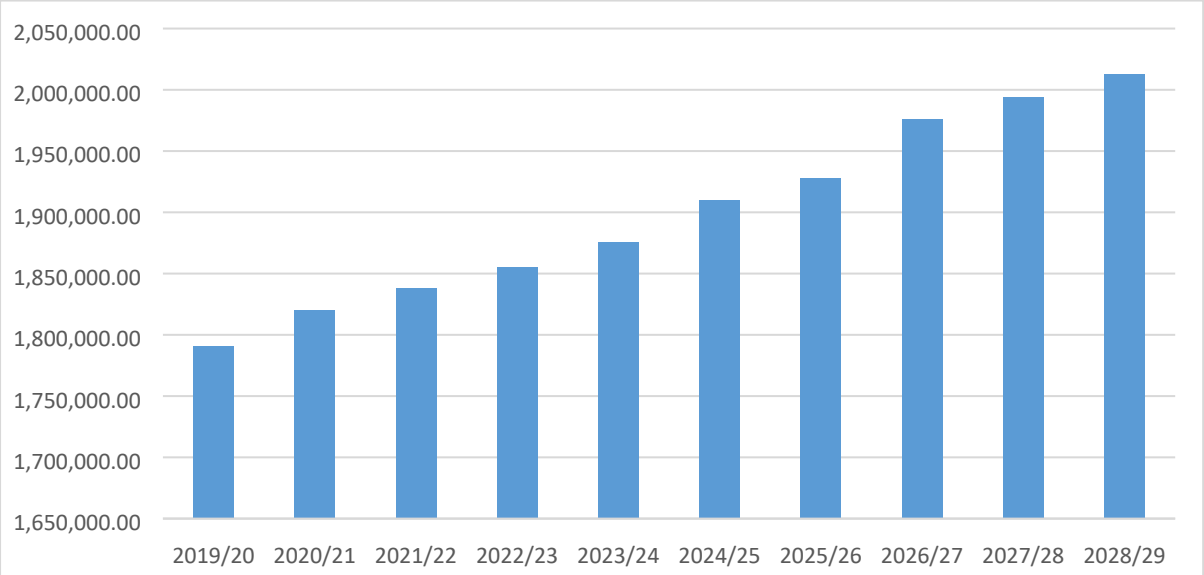

Figure 5: Forecast O & M Expenditure

Until a holistic picture can be provided on maintenance costs, future maintenance budgets will be increased between **2% - 3%** of depreciable value as a base figure.

If maintenance levels are decreased, there is a possibility that additional asset deterioration will occur and result in increased backlog of rehabilitation and/or replacement requirements to meet level of service requirements.

4.7 Renewal Plan

Renewal expenditure is major work that 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 enhancement or new works expenditure.

Assets requiring renewal are identified from the following:

- Projected from the condition based remaining life calculation.
- Where condition data is not available; age & remaining useful life has been used to calculate.

Prioritisation of the renewal plan is based on an assessment of assets criticality in terms of importance and related risk. At present, QPRC determines priority based on past experience and knowledge of the asset networks.

Renewal works identified in terms of renewal strategies may be deferred if the cost (or aggregate cost) is beyond the current financial ability to fund it. This can occur when there are short term renewal profile peaks, or higher priority works are required on other infrastructure asset groups. When renewal works are deferred, the impact of the deferral on the assets ability to still provide the required level of service will be assessed. Although the deferral of some renewal works may not impact significantly on the short-term operation of the assets, repeated deferral will create a liability (backlog) in the longer term, which may impact on QPRC's ability to achieve an overall asset backlog of less than 2%.

Table 6- Renewal Forecasting Method

Asset Class	Predictive Criteria Used	Model Used
Customer Connections	No predictive renewals undertaken	Not applicable
Water Mains	Asset age and breakage history	Remaining life
Water Pumping Stations	Asset age and visual condition inspection	Remaining life and identified pump issues/failures
Water Treatment Plants	Asset age and visual condition inspection	Remaining life and identified pump issues/failures
Reservoirs	Asset age and visual condition inspection	Remaining life and identified pump issues/failures
Bulk Water Supplies	Asset age and visual condition inspection	Remaining life and identified pump issues/failures, dam risk assessment

Major water (potable) renewal projects identified to occur over the next 4 year period include:

- Bungendore water bores
- Queanbeyan water main replacement program

4.8 Creation / Acquisition / Upgrade Plan

New works are those works that create a new asset that did not previously exist, or works which upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be required at no cost to the organisation from land development, or through 'gifts' provided to Council.

New assets and upgrade/expansion of existing assets are identified from various sources such as councillor or community requests, proposals identified by strategic plans or partnerships with other organisations.

All new assets created through Capital Project Work must have a business case developed justifying the requirement of the need as documented in QPRC's Capital Project Management Framework.

With the increased "Greenfield" land development that is occurring in Googong, Tralee, Braidwood and Bungendore, the value of new water assets gifted to Council is expected to be approximately $1.80M average per year.

4.9 Disposal Plan

Disposal includes any activity associated with disposal of a decommissioned asset, including sale, demolition or relocation. During the course of renewal projects, some assets may be demolished, decommissioned and replaced with a new asset. This occurs during a water replacement project where the existing water main is completely decommissioned and replaced with a new water main asset.

During asset capitalisation, any decommissioned assets or partially decommissioned assets will be identified and the financial values adjusted in-line with the approved accounting practices.

There are also 2 disused Water Reservoirs located in Queanbeyan that have been identified for demolition. Costs for the demolition of these assets will form part of the Operational and Maintenance expenditure during the year work is undertaken.

There are no large value assets currently identified for disposal during this Asset Management Plan period.

5 Risk Management Planning

5.1 Critical Assets

A critical asset is an asset for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets. Although critical assets have a high consequence of failure, they don't necessarily have a high likelihood of failure. Asset criticality information has been used for prioritising maintenance and renewal work. Mainly asset hierarchy has been considered as criticality ranking for this AMP. A further review of the asset criticality need to be conducted in the future revisions of this AMP.

Table 7 - Risk Management Plan

Asset Class	Critical Assets	Probable Event	Likelihood of Occurrence	Consequence	Risk Rating
Water Network	Trunk mains servicing large pressure zones	Failure of pipe leading to inability to deliver water to residents	Possible	Extreme	Very High
Water Pumping Stations	All	Complete failure of pumping station leading inability to transfer water to other reservoirs	Rare	Extreme	Very High
Water Treatment Plants	All	Partial failure of assets leading to major breach of licencing conditions	Possible	High	High
Bulk Water Supply	All	Inability to meet daily water demand requirements without restrictions	Probably	High	Very High

5.2 Infrastructure Risk Management Plan

Currently Water (potable) Infrastructure Risk Management Plan is unavailable and will be developed in future revisions of this Water (potable) Infrastructure AMP.

6 Financial Summary

This section contains the financial requirements resulting from all the information presented in the previous sections of this Water (potable) Infrastructure AMP. The financial projections will be improved as further information becomes available on agreed level of service and current & projected future asset performance. The projections are based on the best available information and are aimed at giving a direction for the Long Term Financial Planning (LTFP).

6.1 Financial Statements and Projections

The financial history & projected expenditures (Operation, maintenance, renewal and new/ enhancement) are shown below. Note that all costs are 2018/19 values.

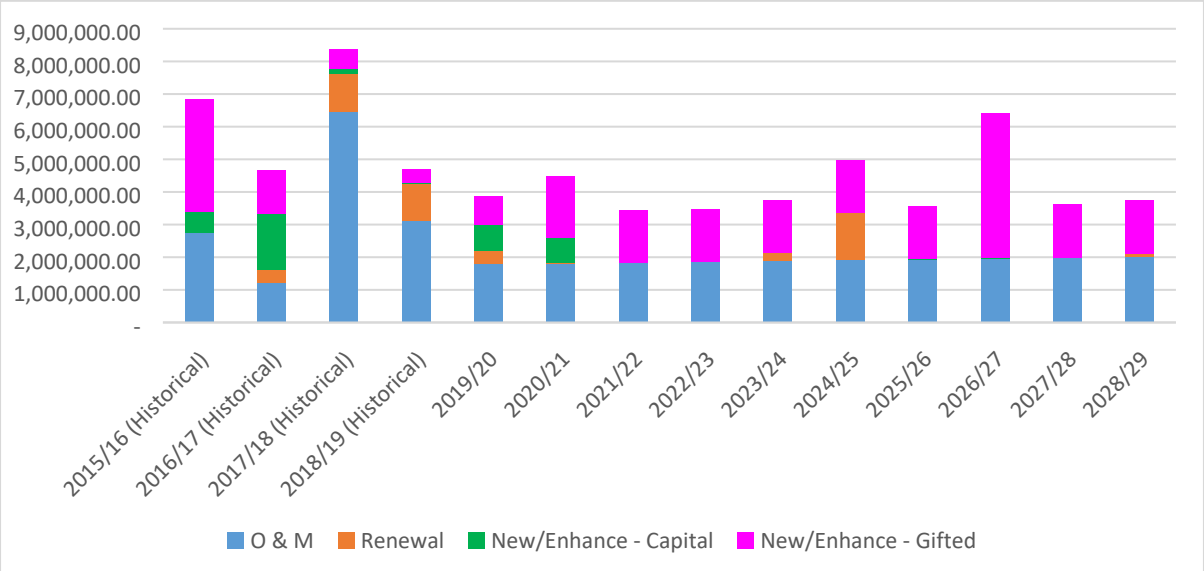

Figure 6: Summary of asset expenditure & gifted value (historical & predicted)

6.2 Funding Requirements – Asset Replacement

In order to maintain a sustainable asset base, the funding required to replace aging and deteriorated assets should be sufficient to deliver an overall backlog of less than 2%. This will require Council to maintain an asset renewal expenditure ratio of 100%.

Table 8: Renewal expenditure trends:

	Renewal Expenditure ($ '000)			
	2015/16	2016/17	2017/18	2018/19
Total Renewal expenditure (a)	0	408	1,145	1,122
Total Annual depreciation (b)	2,746	2,071	2,045	2,107
Renewal Expenditure Ratio (a/b)%	**0%**	**20%**	**56%**	**53%**

Further financial indicators obtained through Council's requirements for reports against Special Schedule 7 in the Annual report provide indicator ratios on any asset funding gaps (backlog) and maintenance ratios.

Table 9: SS7 Reporting

SS7 Reporting ($ '000)				
	2015/16	2016/17	2017/18	2018/19
Estimated Cost to bring to satisfactory standard	3,415	1,700	1,121	4544
Net carrying amount	115,991	92,993	102,431	104,799
Capital Funding Gap Ratio	**2.9%**	**1.8%**	**1.1%**	**4.3%**
Required maintenance	2,626	701	2,999	2845
Actual maintenance	1,109	521	2,025	1903
Maintenance Expenditure ratio	**42%**	**74%**	**68%**	**67%**

QPRC's renewal expenditure has fluctuated as a result of the merger of Queanbeyan City Council and Palerang Council and the different methodologies used to record and monitor renewal costs. Generally, the adopted renewal ratio will be 100%. Renewal ratios will be monitored over the life of this Asset Management Plan and reported annually with the Financial Statements.

6.3 Funding Strategy

After reviewing service levels, as appropriate to ensure ongoing financial sustainability, projected expenditure in section 6.1 need to be accommodated in Council's LTFP.

Potential funding sources include, but are not limited to:

- Operating revenue;
- Grants;
- Developer contributions; and
- Loans.

6.4 Valuation Forecast

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from asset constructed by land developers and others and donated to Council.

The figure below shows the projected water (potable) infrastructure asset replacement cost, depreciated expense and depreciated replacement cost for the next 10 years in current 2019 dollar values. The valuation forecasts include developer contributions for Googong, South Jerrabomberra & Bungendore Development.

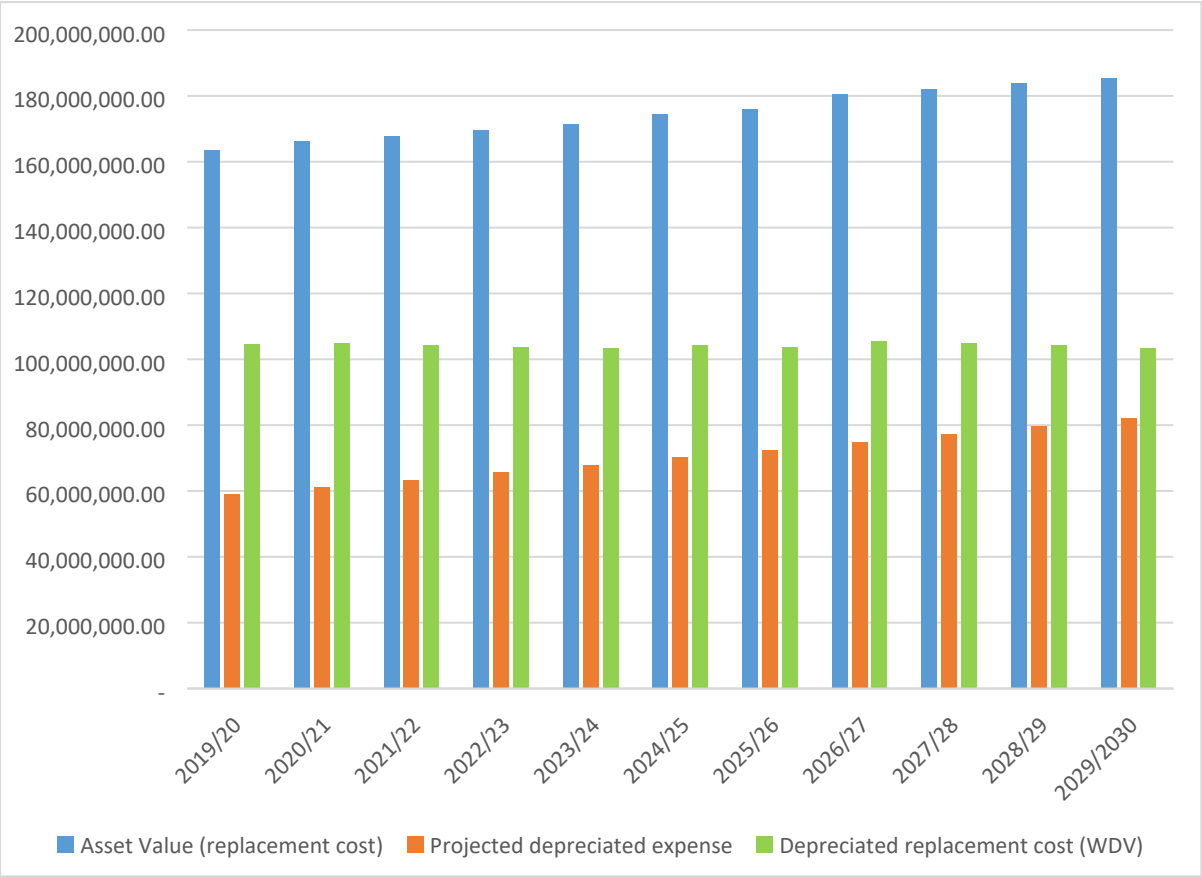

Figure 7: Projected value, depreciated expense and depreciated replacement cost

6.5 Key Assumptions made in Financial Forecasts

Key assumptions made in the preparation of the financial information in this water (potable) infrastructure AMP are:

- All predicted costs stated are in current 2019 dollar values;
- Maintenance forecasts are based on maintaining current level of expenditure
- Renewal forecasts have been calculated based on available asset condition data, remaining life and asset criticality.
- Useful lives have been considered based on industry practice and IIMM guidelines.
- 12 May 2016 Valuation figures and thereafter indexation were adopted.

6.6 Forecast Reliability and Confidence

QPRC is a newly formed council from the amalgamation of two former councils. Two former councils had two different asset management information systems. After amalgamation we are having new asset management information system; where we are continuously refining our data.

The accuracy of the future financial forecasts may be improved in future revisions of this water (potable) infrastructure AMP by the following actions:

- Improve asset condition data;

- Determine asset construction date;
- Refine intervention levels;
- Review and improve asset criticality;
- Implementing mobility system across all water (potable) infrastructure assets will allow better prediction modelling

7 Plan Improvement and Monitoring

7.1 Improvement Plan

This asset management plan is to be continually reviewed and improvements made into how QPRC manages its asset base. The following actions have been identified in developing this asset management plan:

Table 10: Water asset management improvement plan

Identified gap	Priority (High: 1 – 2 years; Medium: 2 – 4 years; Low: above 4 years)
Refine community levels of service including gaining community agreement to standard and key performance measurement	High
Review technical level of standards and ensure the standards reflect service levels, quadruple bottom line decision making and meets asset management requirements	Medium
Review business processes and update the Sewerage Maintenance Plans based on agreed community, technical and maintenance service standards	High
Develop a Sewerage Risk Management Plan and identify critical assets and response times	High
Review maintenance activities and develop schedules for inspections/routine maintenance tasks as required and document in maintenance plans.	Medium
Review asset register data structure and identify asset attribute data gaps	High
Continue to synchronise Asset Registers with GIS mapping functionality. This includes refining and harmonising GIS layers	High
Formalise condition assessment/inspection framework for all asset classes. Ensure condition data is less than 4 years old.	Medium
Ensure Gifted Assets correctly recorded and valued in Asset Registers	High

7.2 Monitoring and Review Procedures

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

Information used to support the AM Plan will be updated 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 organisation's long term financial plan.

This Water (potable) Infrastructure AMP has a life of 4 years (Council Election Cycle) and is due for revision and updating within 12 months of each Council election.

7.3 Performance Measures

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

- The degree to which the required projected expenditures identified in this Water (potable) Infrastructure AMP are incorporated into council's long term financial plan,
- The degree to which 1-5 years detail work programs, budgets, business plans and organisational structures take into account the overall works program trends provided by this Water (potable) Infrastructure AMP.
- Sufficient asset renewal funding (ratio with annual depreciation expense to be above 1.0) to target infrastructure backlog ratio of less than 2.0% is achieved by 2026.

8 References

IPWEA, 2015, International Infrastructure Management manual (IIMM), Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org.au/IIMM

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