Wastewater Service

Asset Management Plan

February 2017

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1. EXECUTIVE SUMMARY

Context

The City of Kelowna provides wastewater service to approximately 95,000 of its 128,000 residents. This asset management plan covers the infrastructure assets that serve the City's wastewater costumers.

Managing our vital infrastructure assets now and into the future will ensure the economic, social and environmental well-being of our City. By using sound asset management practices, Council and the community can be confident that there is an affordable plan to maintain, operate and replace assets and that the community will continue to receive safe, reliable and environmentally responsible disposal of wastewater in the long-term.

The Wastewater Service

Kelowna's wastewater system collects, conveys, treats and disposes of domestic and industrial wastewater from homes and businesses and on a peak day wastewater treatment exceeds 42 million liters per day. Wastewater is conveyed to Kelowna's Wastewater Treatment Facility (WWTF) through a network of 595 km of wastewater mains and 35 lift stations. There is second treatment facility that treats industrial wastewater from Sunrype and Andrew Peller. The City also has a Biosolids Treatment facility located between Kelowna and Vernon where it treats biosolids from Kelowna, Vernon and Lake Country.

The Wastewater service is comprised of both linear and vertical assets which include the following:

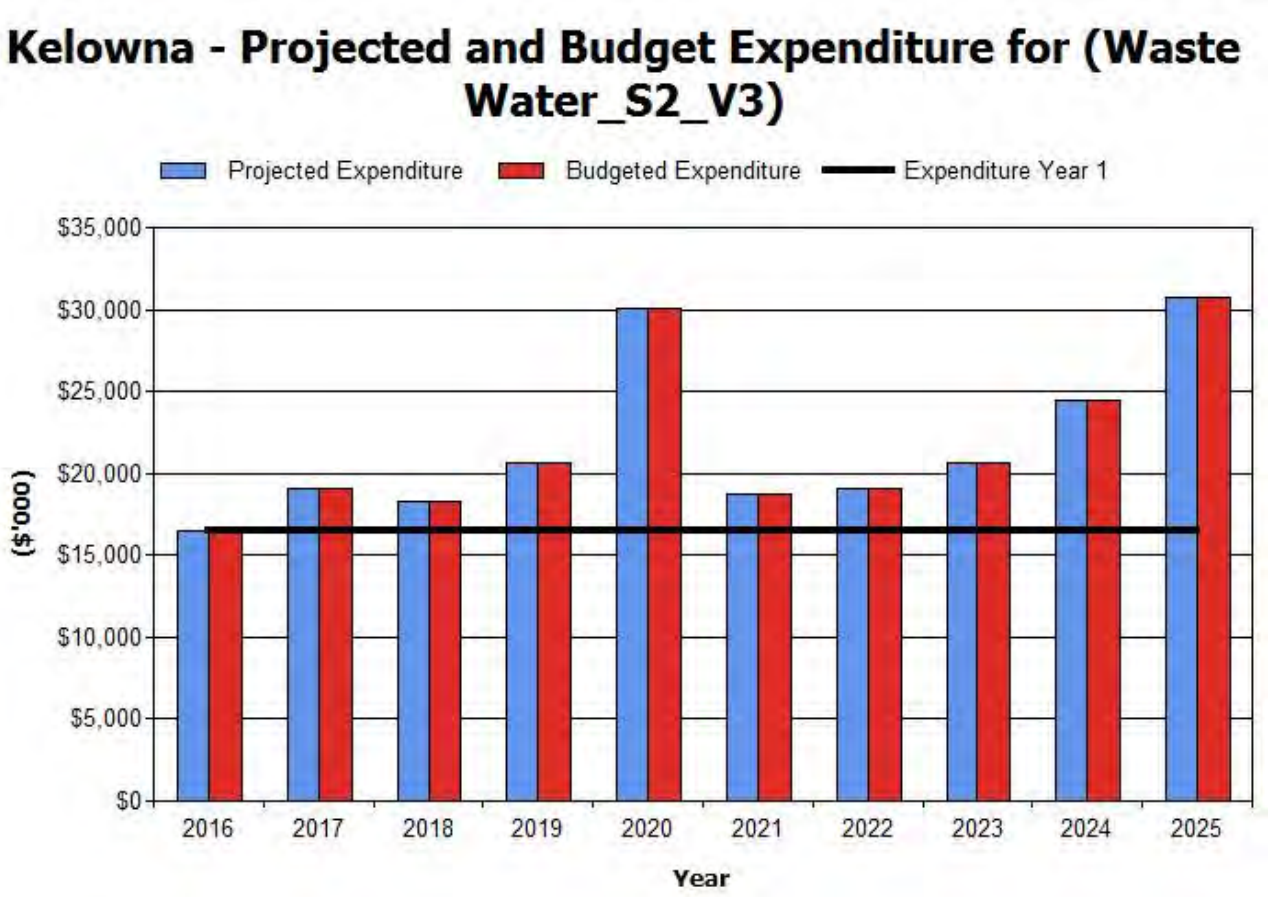
- Wastewater mains,
- Wastewater treatment facilities,
- Regional Compost Facilities
- Lift Stations,
- Auxiliary equipment.

These infrastructure assets have a replacement value of $761 million.

What does it Cost?

The projected expenditures necessary to provide wastewater service including operations, maintenance, infrastructure renewal and infrastructure to support growth over the next 10 years is $218 million. Estimated available funding for this period is balanced against projected costs and provides 100% of funding required for service delivery (see figure next page).

The expenditures and budget for providing wastewater service are consistent with the City's Wastewater Financial model which indicates that on average rate increases will need to match inflation (projected at 2% per annum) to support service delivery for the next 10-years. Long-term, as the wastewater system ages, investment in infrastructure renewal will need to increase and may require rate increases in excess of inflation.



The above Figure shows the 10-year budget and expenditures. Projected expenditures are balanced against available budget and the Waterwater Utility is 100% funded for the 10-year planning period.

What we will do?

Over the next 10-years $37 million will be invested in infrastructure renewal. Beyond 10-years, renewal investment will increase to more sustainable levels. See Appendix B for a list of renewal expenditures.

The next ten years will see wastewater asset stock increase by $56 million as a result of infrastructure required to service growth and improve service levels (Appendix C). This includes approximately $20 million in contributed assets through the development of new subdivisions. This increase in asset stock will contribute to an increase in operating and maintenance costs of approximately $1.7 million within that time frame.

What is not in the AM Plan?

Wastewater assets are depreciating on average at $10.9 million/yr and the average annual renewal expenditure for the next ten years is $3.7 million which suggest asset renewal is being under funded in the long-term. By 2035 the projected renewal expenditure is $6.5 million or 53% of the rate of depreciation. This funding short fall is acceptable in the short-term because the Wastewater system is relatively new. As our system ages, however, asset renewal funding will need to increase.

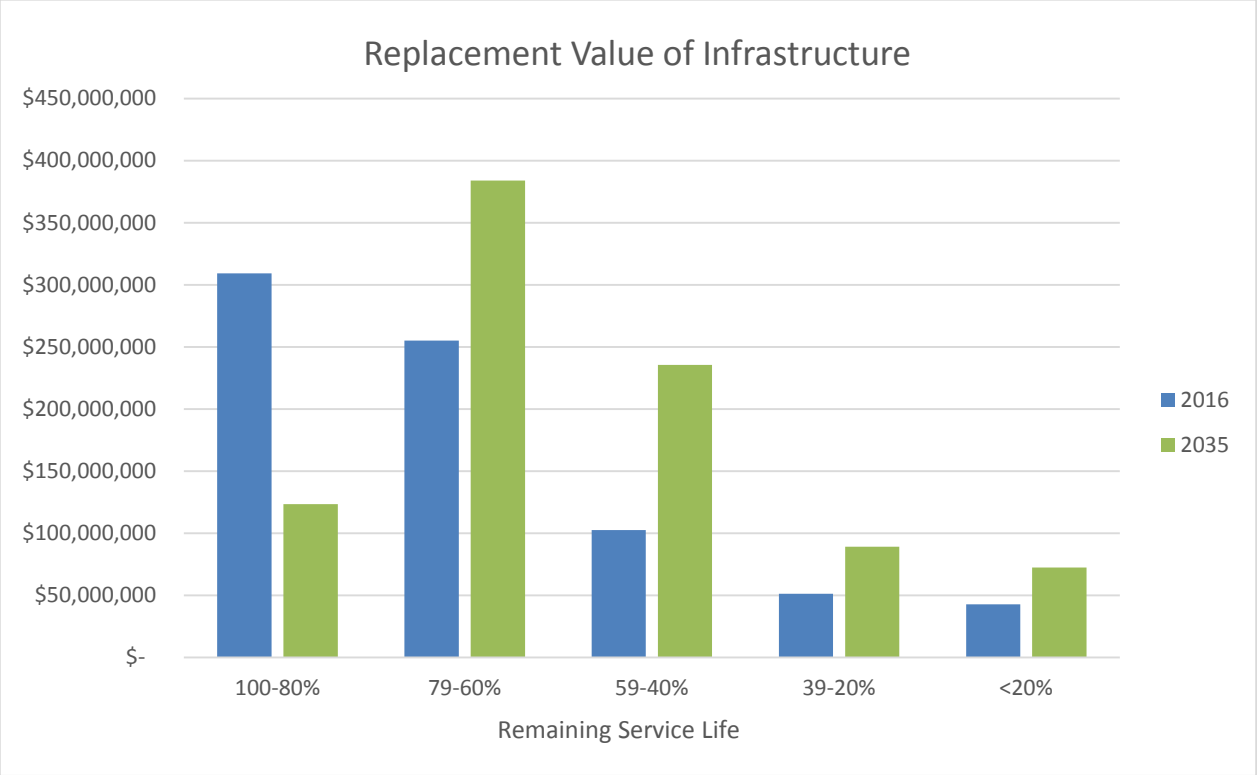
Future updates to this asset management plan will respond to these and other cost pressures so that the City is prepared to invest in infrastructure improvements while maintaining measured and predictable rates to the customer.

System Condition

The City Wastewater Utility is a resilient and robust system that is maintained in a state of good repair. Pumping and treatment facilities have backup equipment to ensure continuous service delivery when equipment breaks down.

The condition of the wastewater infrastructure is fair-to-good depending on the asset component. The wastewater system currently has $43 million worth of assets with less than 20 percent of their service life remaining (see figure below).

These older assets may be at higher risk of failure and require more maintenance and condition assessment. Over the next 20 years the water system will age and the value of those assets with less than 20% service life remaining will increase to $72 million or about 8% of the total system value. Projected renewal investment increases with time to achieve more sustainable levels by 2035.



The above Figure shows the replacement value of assets in specific age categories. The chart shows that the system will age over the next 20 years given the projected renewal investment.

Managing the Risks

As the system ages the City will need to manage the associated increased risk of infrastructure failure and service interruption. The City will manage these risks through condition assessment, regular maintenance and inspection of critical assets. The City is investing in a computerized asset management system that will improve efficiency of maintenance, track repair frequency and prioritize high risk assets for replacement.

The Wastewater Utility is fully funded for the next 10-years and well positioned to address longer term asset renewal funding needs. If we don't plan for and manage future cost pressures, however, it is likely that we will have to reduce service levels in some areas, unless new sources of revenue are found. For the Wastewater Utility, the service level reduction may include more frequent service interruptions (i.e. pipe

breaks). The regulated treatment of wastewater and biosolids should not be affected and the City is committed to exceeding regulatory standards.

Future changes in wastewater quality regulations may present a financial risk to the Wastewater Utility. The City will continue to work in with provincial regulators to understand the need and timing of any changes so that the City can plan in advance for the required infrastructure improvements.

The Next Steps

This asset management plan will be updated on a regular basis to reflect future infrastructure costs, the condition of assets and the potential impacts to service levels. Future iterations of this asset management plan will improve as the City's asset management program matures. The City is investing in systems and resources that will improve data quality and the efficiency of maintenance and asset replacement. Through continuous improvement in asset management practice the community can be confident that there is an affordable plan to maintain, operate and replace assets and that the they will continue to receive safe, reliable and environmentally responsible disposal of wastewater in the long-term.

2. INTRODUCTION

2.1 Background

This asset management plan (AMP) covers all aspects of the municipal wastewater system and is one of a family of several asset management plans comprising the complete municipal asset stock. This plan demonstrates responsive asset management, compliance with regulatory requirements, and sustainable funding to provide the required levels of service over a 20-year planning period.

The AMP follows the format recommended in the International Infrastructure Management Manual and is consistent with ISO 55000 – the internationally accepted standard for asset management practice.

This AMP developed using the following documents:

- Council Policy 352 - Sustainable Municipal Infrastructure Policy
- Council Policy 342 - Tangible Capital Asset Policy
- Wastewater Financial Model
- 2030 Infrastructure Plan
- 10-Year Capital Plan
- 5-Year Financial Plan
- 20-Year Servicing Plan & Financing Strategy
- 2030 Official Community Plan
- Liquid Waste Master Plan (1990)
- Wastewater Management Plan (1995)

The infrastructure assets covered by this asset management plan are shown in Table 2.1. These assets are used to provide all Wastewater services to the community.

Table 2.1.1: Assets covered by this Plan

Asset category	Dimension	Replacement Value
Wastewater Mains	597 km	$550 M
Lift Stations	35 Sites	$38.8 M
Brandt's Creek Trade Treatment Plant	1 Site	$13.7 M
Waste Water Treatment Facility	1 Site	$149 M
Regional Compost Facility	1 Site	$9.6 M
TOTAL		**$761 M**

Key stakeholders in the preparation and implementation of this AMP are shown in Table 2.1.1. Further improvements to the plan will require ongoing consultation with stakeholders and have been marked as "future" in the table below.

Table 2.1.2: Key Stakeholders in the AMP

Key Stakeholder	Role in Asset Management Plan
Council	• Represent needs of community, • Ensure Corporation is financial sustainable, • Agree to levels of service and risk (future), • Approve the Asset Management Plan, • To ensure appropriate resources and funding are made available to support the Asset Management Plan.
City Manager and Senior Management	• To provide strategic advice and leadership in the management of infrastructure assets.
Infrastructure Engineering	• Develops short and long-range infrastructure capital plans. • Establish levels of service for assets and measure infrastructure performance. • Adapt to changing regulations and emerging issues as required. • Develop, implement and review the asset management program
Infrastructure Delivery	• Manage delivery of capital projects.
Civic Operations	• Maintenance and operations of City Infrastructure
Development Services	• Manages the delivery of developer built infrastructure.
Policy and Planning	• Community planning including OCP

2.2 Goals and Objectives of Asset Management

The Corporation (City of Kelowna) exists to provide services to its community. These services are supported by infrastructure assets. We have acquired infrastructure assets by purchase, through construction by the City and contributed by developers to support growth.

Our goal in managing infrastructure 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 infrastructure asset management are:

- Providing a defined level of service and monitoring performance,
- Managing the impact of growth through demand management and infrastructure 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
- Having a long-term financial plan which identifies required, affordable expenditure and how it will be financed.

2.3 Core and Advanced Asset Management

This AMP is prepared over a 20-year planning period in accordance with the International Infrastructure Management Manual. It is prepared to meet legislative requirements and the City's objectives for sustainable service delivery and long term financial planning and reporting. This AMP is considered a core asset management plan that uses a 'top down' approach where analysis is applied at the 'system' or 'network' level.

Future revisions of this AMP will move towards 'advanced' asset management using a 'bottom up' approach for gathering asset information for individual assets to support the optimization of activities and programs to meet agreed service levels. This will require more comprehensive data collection, asset maintenance and reporting. To facilitate this, the City will purchase of a computerized asset management system (AMS) in 2017 that would improve efficiency of maintenance, track repair frequency and prioritize high risk assets for replacement.

3. LEVELS OF SERVICE

3.1 Strategic and Corporate Goals

This asset management plan is prepared to align with the corporate vision, mission and goals.

Corporate Vision:

To be the best mid-sized city in North America

Corporate Mission:

Leading the development of a safe, vibrant and sustainable city

Relevant goals and objectives and how these are addressed in this AMP are shown in Table 3.2.

Table 3.1: Corporate Plan and how these are addressed in this Plan

Goal	Objective	How Goal and Objectives are addressed in AMP
Performance excellence	The City is a high-performing, accountable Corporation that delivers on its plan.	Short, long-term Capital Plans are required to deliver world class infrastructure that is financially sustainable. The AMP is a long-term plan that will guide the City's capital investment over the next 20-years.
Responsive customer service	The City understands evolving needs and ensures services are appropriate and accessible.	The AMP will establish current and future LOS and use this information to direct capital investment to support service levels.
Engaged communities	The City listens and encourages full participation for the community to clarify needs and build neighbourhood identities.	The AMP will be reviewed with Council so that it reflects community priorities.
Pioneering leadership	The City finds better ways to deliver services to the community.	Through the development of the AMP the City reviewed innovative solutions to provide those services.
Strong financial management	Kelowna delivers on a multiple bottom line, balancing community priorities with resource realities.	The AMP is affordable and considers renewal, growth and service level improvements. This 20-year AMP is developed so that we can plan ahead for future cost pressures and mitigate the impacts to rate payers.

3.2 Legislative Requirements

Table 3.2: Legislative Requirements

Legislation	Requirement
Provincial Environmental Management Act	Provides the Municipal Wastewater Regulations regarding effluent discharge.
Federal Fisheries Act	Wastewater System Effluent Regulations regarding effluent discharge.
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Workplace Health & Safety Act and Regulations	Prescribes the Organizational responsibility for occupational health and safety including individual responsibilities, systems, reporting incidents and non-conformities and corrective actions.
PSAB 3150 Accounting Standards	Tangible Capital Asset accounting standards for the public sector, including municipalities.
Community Charter	Sets out the legal framework for the powers, duties, and functions of municipal organizations. Provides municipal organizations with the authority to address existing and future community needs.

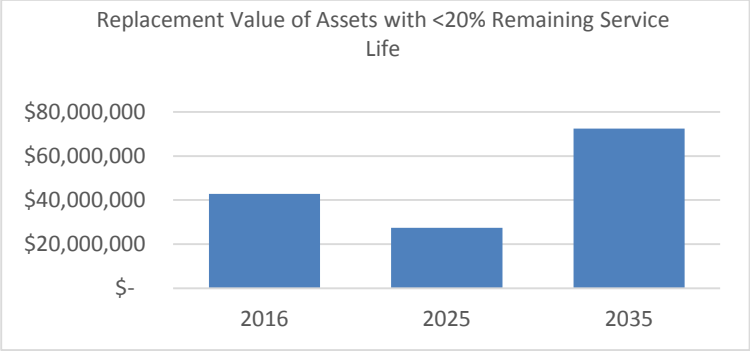
3.3 Levels of Service

Levels of service measure how the community receives the service and whether the Wastewater Utility is providing good service to its customers. The collection, treatment and disposal of wastewater is highly regulated and these regulations set (for the most part) the service levels for the Wastewater Utility. The levels of service measured in this asset management plan are:

Condition	Is the service maintained in a state of good repair?
Function/Quality	Does it meet regulatory requirements and users' needs?
Capacity	Does the service have adequate capacity?

The table below details the level of service objectives, how they are measured and the current and expected performance.

Table 3.3: Level of Service

Service Attribute	Service Objective	Performance Measure	Current Performance	Expected position in 10 years based on projected investment
Condition	Maintained in a state of good repair.	Remaining Useful Life (age based). Replacement value assets with less than 20% remaining service life.		
Function *(Fit for Purpose)*	There is minimal service interruption.	Main blockages and/or breaks	Number of wastewater main blockage removals – 13 (2014)	Remain constant over the 10-year period
	Minimal odours from network and facilities.	Service requests.	Treatment and Network -28 service complaints in (2014) Bio-Solids (Sludge composting) -43 requests in (2013)	Remain constant over the 10-year period.
		Wastewater treatment meets regulatory standards.	Meet regulatory effluent requirements.	Meet regulatory effluent requirements.
		Bio-solids composting class	Class A compost (100%)	Class A compost (100%)
Capacity/ Utilization	Wastewater network has sufficient capacity.	Number of serviceable properties without wastewater service.	3925	1925

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include changes in population, demographics, housing densities, climate, economic factors and changing regulations.

The demand drivers that may impact future service delivery and utilization of assets are outlined in Table 4.1.

Table 4.1: Demand Drivers, Projections and Impact on Services

Demand drivers	Present position	Projection	Impact on services
Population Increase	Current population 125,000	From 2014 to 2040 population increase 60,000 (~50%)	Increase wastewater flow
Unserviced properties Added	3925 unserviced properties	Provide service to 2000 properties	Increase wastewater flow
Demographic	Percentage population 65+ is 21%	Percentage population 65+ to increase to 26%	TBD
Housing Density	Single Family – 61% Multi-Family – 39%	Single Family – 43% Multi-Family – 57%	Increase in Wastewater capacity required for areas of densification
Climate Change	Rainfall infiltration contributions to Wastewater mains	More intense rainfall events resulting in infiltration spikes	Increase wastewater flow
Changing Regulation	Status Quo	Unknown	Unknown

4.2 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.

The 20 Year Servicing Plan was developed in conjunction with the 2030 OCP and accounts for most of the demand drivers except climate change.

Opportunities identified to date for demand management are shown in Table 4.2.

Table 4.2: Demand Management Plan Summary

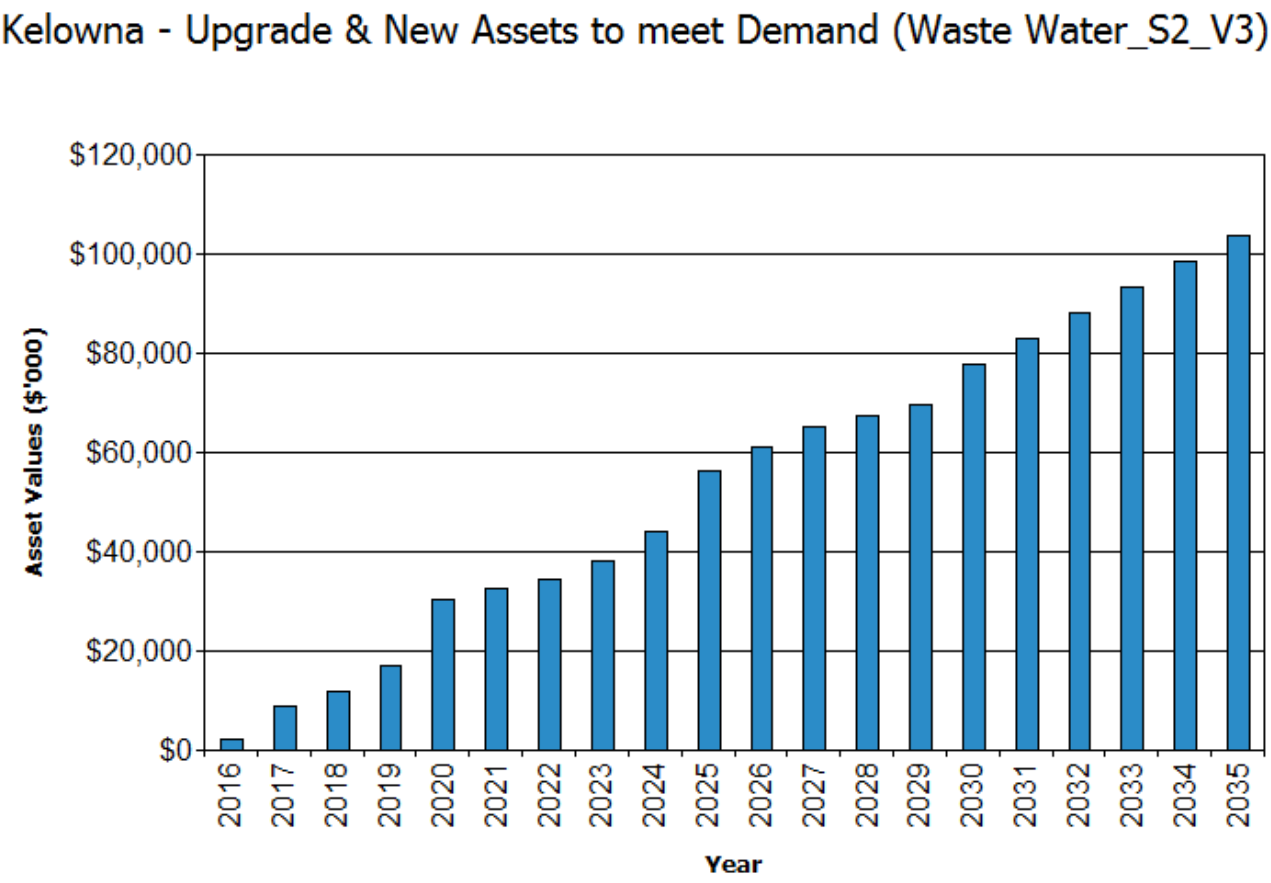
Demand Driver	Impact on Services	Demand Management Plan
Population increase	Increase in Wastewater	Upgrade existing and add new infrastructure to accommodate growth as per 20-year Servicing Plan.
Unserviced Areas Added	Increase in Wastewater	Upgrade existing and add new infrastructure to accommodate servicing existing areas that are currently serviced by onsite septic systems.
Demographic	Impact unknown at this time	Continue to assess the impacts.
Housing Density	Increase in Wastewater capacity required for areas of densification	Renewal program to consider increasing capacity to meet the needs of increased housing density and multiple dwelling in urban centres.
Climate Change	Impact unknown at this time	Impacts unknown at this time
Changing Regulation	More stringent regulations	Continue to work with Regulators to understand the need and timing of any changes.

4.3 Asset Programs to meet Demand

New wastewater infrastructure required to meet growth will be acquired from land development (contributed) and constructed by the City and developers (through our DCC program) as outlined in 20 Year Servicing and Financial Strategy. Figure 1 shows the cumulative value of new assets required to accommodate growth and/or improve service levels. A project listing is provided in Appendix C.

On average the City receives $2 million worth of contributed assets from land development. This amount is included in the totals shown in the below Figure.

Figure 1: Upgrade and New Assets to meet Demand



Over the next 20 years the Water asset stock will increase by $103 million to accommodate growth and/or improve service levels. This represents a 14% increase in asset stock from the current replacement value of $761 million. Acquiring these new assets will commit the City to fund ongoing operations, maintenance and renewal costs. These future costs are identified and considered in Section 5.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the City plans to manage and operate the assets at the agreed levels of service while optimizing life cycle costs.

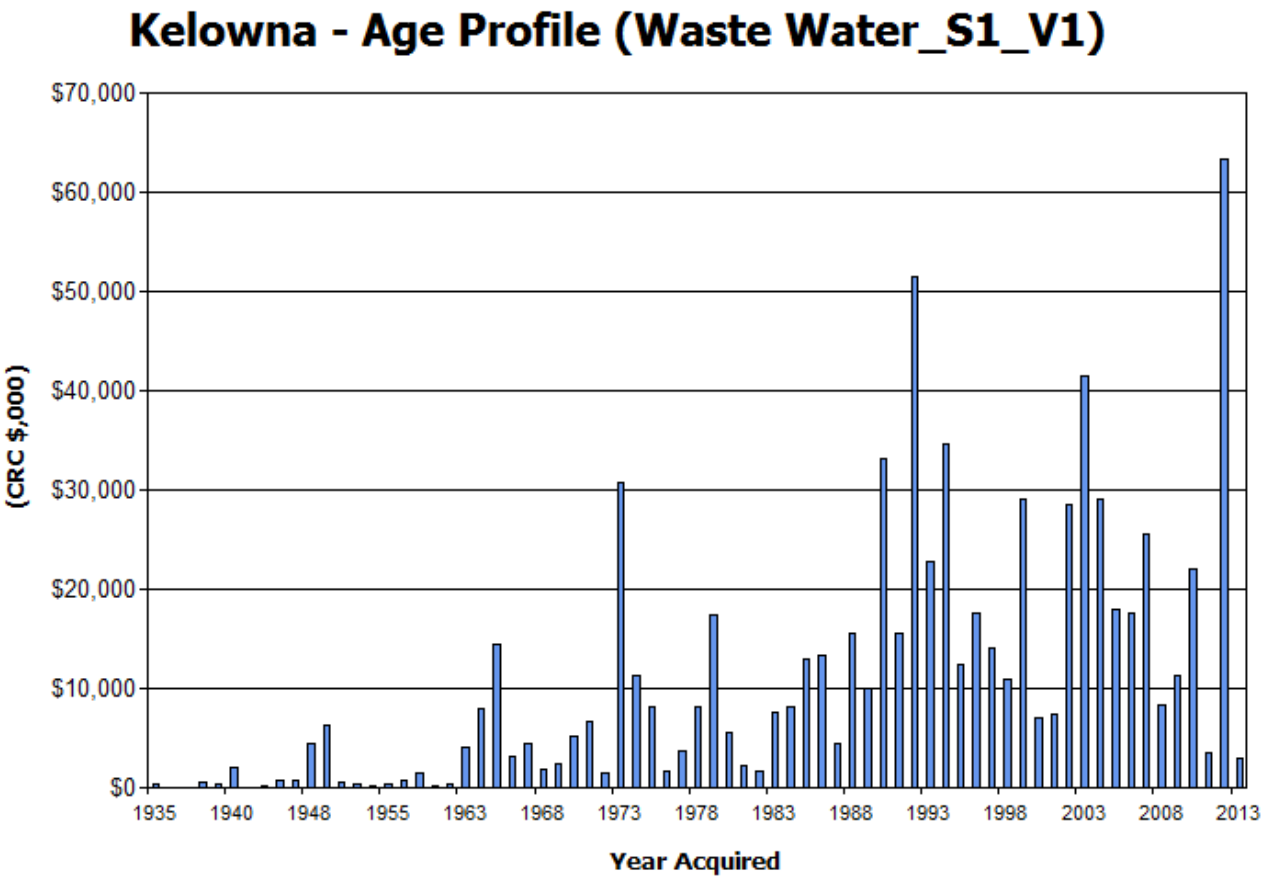
5.1 Background Data

5.1.1 Physical parameters

The infrastructure covered by this asset management plan were previously listed in Table 2.1 and include all linear and vertical assets required for Wastewater service delivery.

The age profile of the assets included in this AMP is shown in Figure 2. The graph shows the total value of assets for year acquired or last renewed in each year in current replacement values.

Figure 2: Asset Age Profile



5.1.2 Asset capacity and performance

Wastewater services are generally provided to meet design standards as set out in the Subdivision, Development and Servicing Manual.

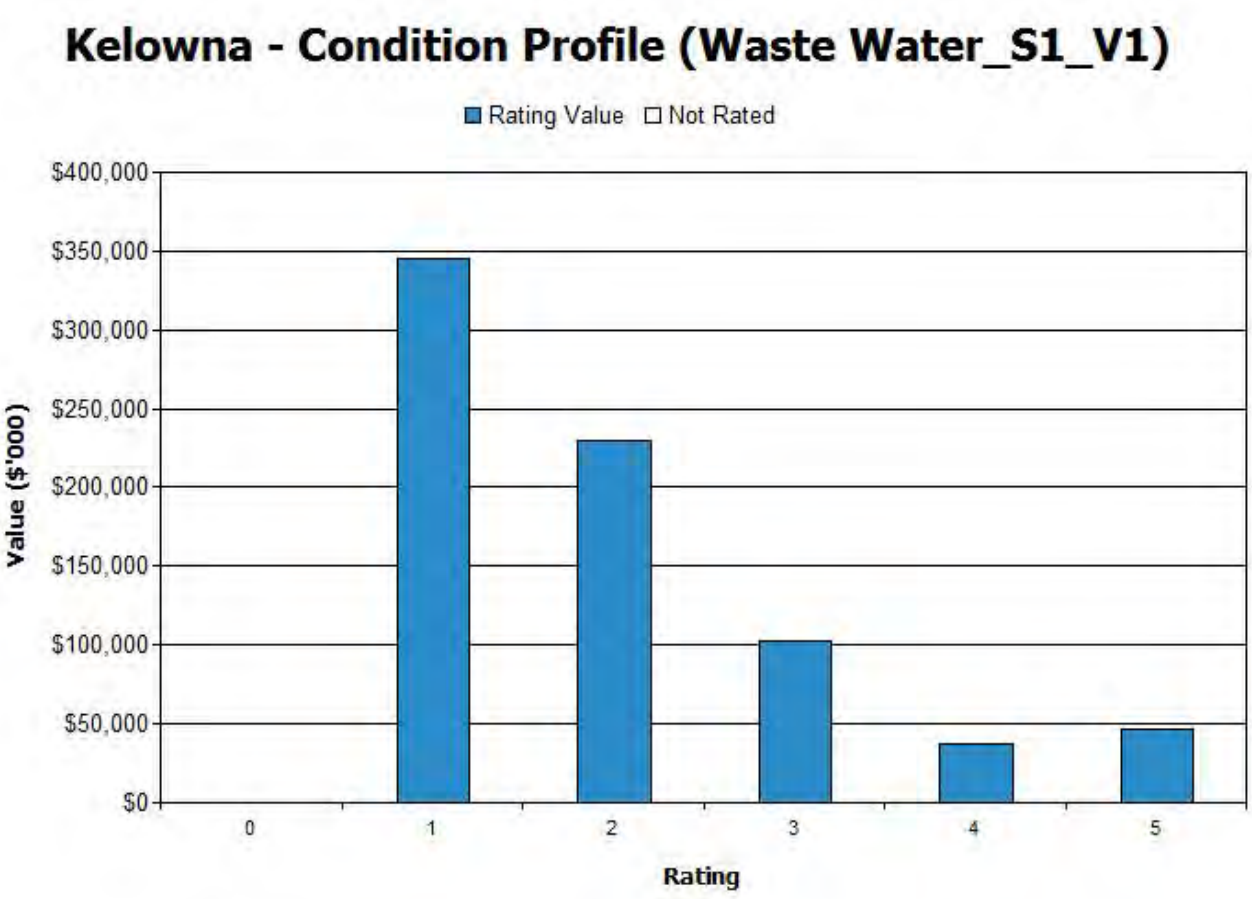
There are no known deficiencies in service performance.

5.1.3 Asset condition

The City has an annual CCTV program for assessing condition of the network mains. This is a relatively new program and to date approximately 15% of the network has been rated. Wastewater facility assets are assessed during routine maintenance. For this AMP remaining useful life is used a simple metric for assessing asset condition. This will be replaced with actual condition data once the City's condition monitoring program becomes more robust.

The percentage of remaining useful life for Wastewater linear and vertical assets is plotted below.

Fig 3: Asset Condition Profile



Condition is measured using a 1 – 5 grading system as detailed in Table 5.1.3.

Table 5.1.3: Simple Condition Grading Model

Condition Grading	% of Remaining Asset Useful Life
0	Assets not rated or unknown
1	80-100%
2	60-79%
3	40-59%
4	20-39%
5	<20%

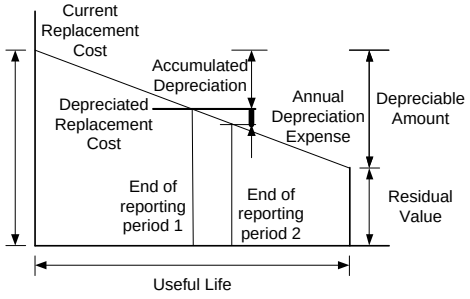
The above graph shows that most of the Wastewater assets (89%) have more than 40% of their useful life remaining and that the Wastewater system is in relatively good condition. The infrastructure that has less than 20% of its useful life remaining will be the focus of future condition assessment to plan replacement timing.

In the next 20 years the percentage of assets with less than 20% of their remaining useful life is expected to increase from 6% ($43 million) to 8% ($72 million) which suggests renewal funding will need to continue to increase beyond the 20-year planning horizon. More detailed condition assessment will also be required to confirm asset condition and optimal renewal timing.

5.1.4 Asset valuations

The value of assets covered by this asset management plan are shown below. Assets are valued at current construction costs based (where possible) on actual tendered prices. Definitions to all of the following financial terms are provided in the appendix.

Current Replacement Cost	$761 M
Depreciable Amount	$761 M
Depreciated Replacement Cost	$548 M
Annual Depreciation Expense	$10.9 M



Various ratios of asset consumption and expenditure have been prepared to help guide and gauge asset management performance and trends over time.

Rate of Annual Asset Consumption (Depreciation/Depreciable Amount)	1.4%
Rate of Annual Asset Renewal (Capital Renewal Budget (2016)/Depreciable amount)	0.4%
Rate of Annual Asset Upgrade (Including Contributed Assets) (Capital Upgrades (2016)/Depreciable amount)	0.3%
Asset Renewal as percentage of consumption (% Renewal/ % Consumption)	30.9 %
Percentage increase in asset stock	0.3%

Based on the 2016 renewal budget the City is renewing assets at 30.9% of the rate that they are being consumed. The renewal rate is adequate given the age of Wastewater assets but renewal investment will need to increase in the long term to be sustainable. By 2035 renewal investment increases to $6.5 million or 53% of the depreciable amount.

At the same time the City is increasing the Wastewater asset stock by 0.3%. The increase in asset stock to accommodate growth will contribute to high operating and maintenance costs and further renewal funding in the future. Monitoring these indicators over time will indicate whether the City's wastewater assets are being maintained (i.e. assets are being renewed as they are consumed on average).

These measures together with the sustainability measures in Section 6.1.1 provide valuable information to inform the City's strategic direction and objectives.

5.2 Infrastructure Risk Management Plan

A high level assessment of risks associated with service delivery from infrastructure assets is summarized in Table 5.2. This risk assessment identified risks that may result in loss or reduction in service from infrastructure assets or a 'financial shock' to the City.

Table 5.2: Critical Risks and Action Plans

Service or Asset at Risk	What can Happen	Risk Rating (VH, H)	Risk Action Plan	Residual Risk *	Additional Costs
Wastewater System	Increase investment for asset renewals over the longer term (year 20-60)	H	Continually update asset management plans to inform council and community of impending increases.	M	Existing Staff and Operational Resources
Bio-Solids	Reduced market for OgoGrow resulting in biosolids surplus	H	Develop plan for disposal options including marketing and sales	M	2016 and 2017 approved budget
Bio-Solids	Shortage of wood chips required for composting.	H	Develop and identify new sources for wood fibre with associated costs.	M	Source procurement and development resources Capital and Operational resources required
Wastewater Network	Contamination of wastewater collection system by illegal discharge to system.	M	Continue source control monitoring.	M	Existing Staff and Operational Resources
Wastewater Network	Gas lines cored through the pipes (directional drilling) potential for explosion.	H	Negotiating with gas companies to form agreement regarding potential drilling / pipe conflicts.	M	Existing Staff and Operational Resources
Wastewater Treatment Plant	Major system failure at wastewater treatment plant	M	Maintain operation and maintenance standards. Renewing infrastructure as required. Continue to fully fund O & M and planned renewals as required.	M	As detailed in this AMP
Wastewater System	Regulatory changes increasing effluent standards	M	Monitor regulatory changes and work with regulators to understand need and timing of any changes.	M	Existing Staff and Operational Resources
Wastewater System	Accuracy of estimate useful lives of water assets impacting renewal timing	M	Move away from age based estimates as a proxy for condition. Invest in asset management system to allow for better preventative maintenance and detailed condition assessment.	L	2017 Provisional budget approved.

Note * The residual risk is the risk remaining after the selected risk treatment plan is operational.

5.3 Operations and Maintenance Plan

5.3.1 Operations and Maintenance Plan

Operational expenses are continuous expenses required to provide the service, including power, fuel, staff, plant equipment and overhead.

Maintenance expenses include those necessary for retaining an asset as near as practicle to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Maintenance may be classified into reactive and planned work activities. Reactive maintenance is unplanned repair work carried out in response to asset failure and service requests. Planned maintenance is repair work that is identified and managed through scheduled maintenance management. Planned is preferable to reactive maintenance as it reduces costs and service disruption.

Actual past operational and maintenance expenditure is shown in Table 5.3.1. These costs include debt service costs for past operational expenditures

Table 5.3.1: Operating and Maintenance Expenditure Trends

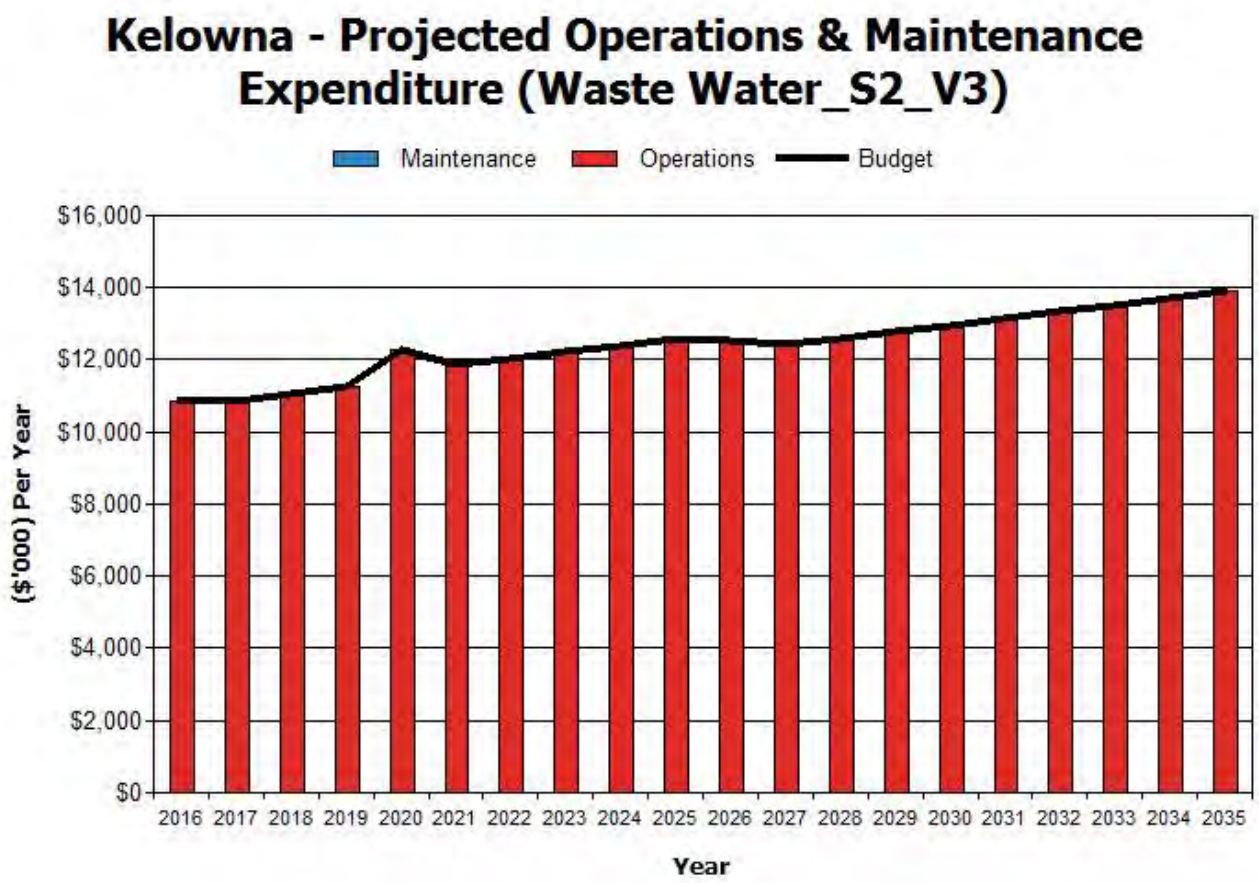
Year	Operating and Maintenance Expenditure
2016	$10,858,000
2015	$9,225,000
2014	$9,377,000
2013	$9,461,000

Operating and Maintenance expenditures have increased 14.7% over the past 4 years or about 3.7% on average annually.

5.3.2 Summary of future operations and maintenance expenditures

Future operation and maintenance (O&M) expenditures are forecast to increase to maintain the additional infrastructure required to service growth and improve service levels (Figure 4). The Wastewater system will increase asset stock by approximately $103 million to support growth or improve service levels in the next 20-years. The annual operating budget will need to increase by $3.0 million to support this new infrastructure. The Wastewater Utility Financial model adequately funds the expected O&M increase for the next ten years assuming an annual growth rate ranging between 1.38– 1.58%. Debt servicing for capital improvements is carried in the O&M budget.

Figure 4: Projected Operations and Maintenance Expenditure



Note: All costs are reported in current dollars (net of inflation).

5.4 Asset Renewal

Renewal 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 or lesser required service potential. Work over and above restoring an asset to original service potential is new/upgrade works expenditure.

5.4.1 Asset Renewal

The cost and timing of asset renewal was determined from the Asset Register by using the asset acquisition year and useful life to determine the renewal year. The asset renewal timing in this AMP is based on the assets theoretical expected service life and as such the actual renewal timing may differ depending on asset condition, risk and coordination with other infrastructure projects. Using asset age as a proxy for condition tends to be conservative and more detailed condition assessment is required to determine actual asset condition and renewal timing. Collection of this information will be made easier with the computerized asset management system.

Renewal costs were determined from industry standards and best practice. Where asset historic costs were available, these costs were escalated to the current year using the Engineering New Record.

The useful lives of assets used to develop projected asset renewal expenditures are shown in Table 5.4.1.

Table 5.4.1: Useful Lives of Waste Water Assets

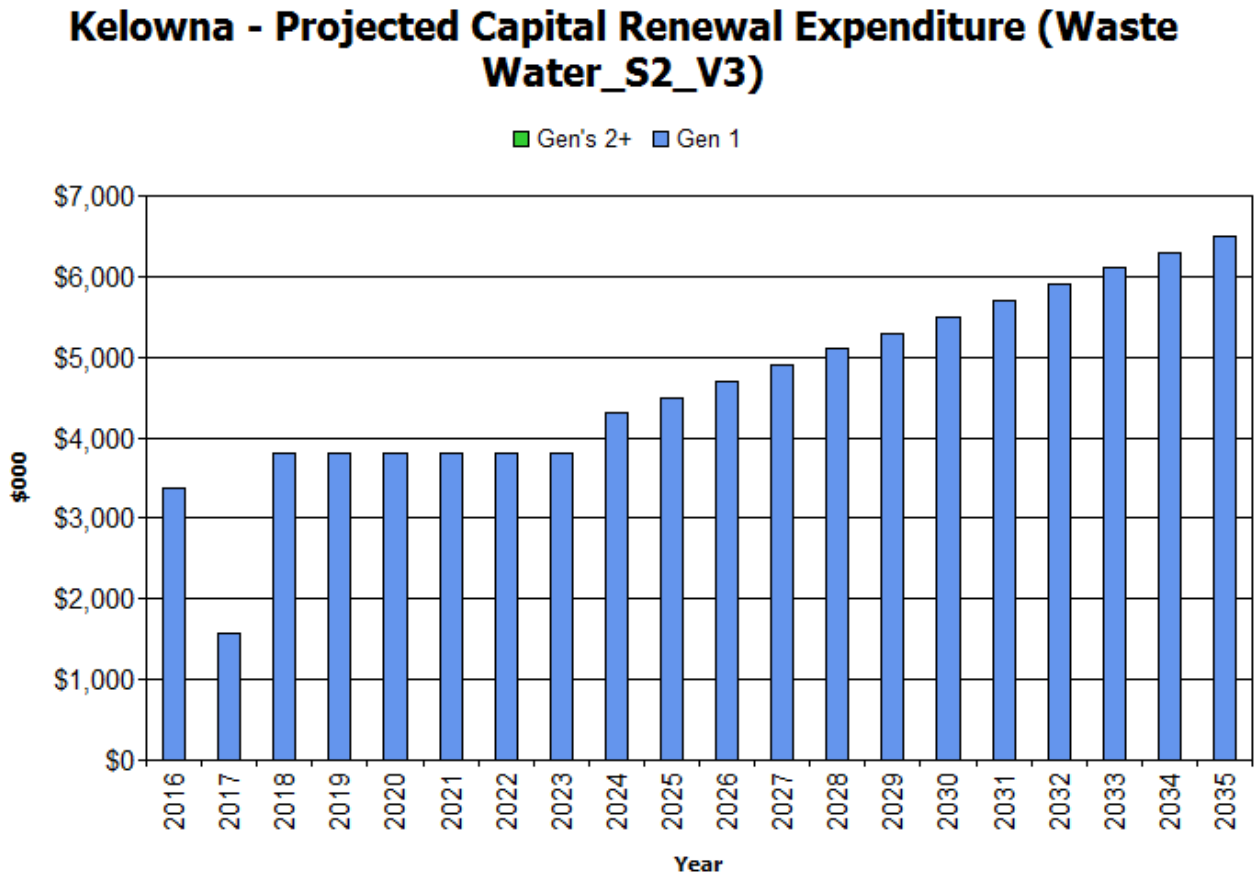
Asset	Asset Type	Material/Component	Useful Life
Network	Main	*AC*	80
		CONC	80
		WS	80
		RC	80
		DI	80
		HDPE	80
		PVC	100
		STEEL	80
		VIT	80
	Connection	ALL	*
	Manhole	ALL	*
	Valve	ALL	*
Facility	Wastewater Treatment Facility Brant's Creek Trade Treatment Plant Lift Station	*Building*	80
		Structural	80
		Mechanical	25
		Electrical	25

*Assumed to be same and inclusive with main.

5.4.2 Summary of future renewal and replacement expenditure

Projected future renewal expenditures are forecast to increase over time as the Wastewater assets near the end of their useful lives. There were peaks in development in the 1960's and 1970's and the supporting wastewater infrastructure constructed at that time is now 40-50 years old and is past the mid-way point of its useful life. Figure 5 shows the projected average capital renewal expenditures over the 20-year planning period.

Fig 5: Projected Capital Renewal and Replacement Expenditure



Note: All costs are reported in current dollars (net of inflation).

Over the next 20 years the funding required for asset renewal is $92 million.

On average there is approximately $3.8 million per year needed for asset renewal between 2016 and 2024. Renewal expenditures are expected to increase to approximately $6.5 million by 2035 and will need to increase further to replace aging infrastructure.

These costs have been accounted for in the City's Wastewater Financial model based on a 2% annual increase to the Wastewater utility rate.

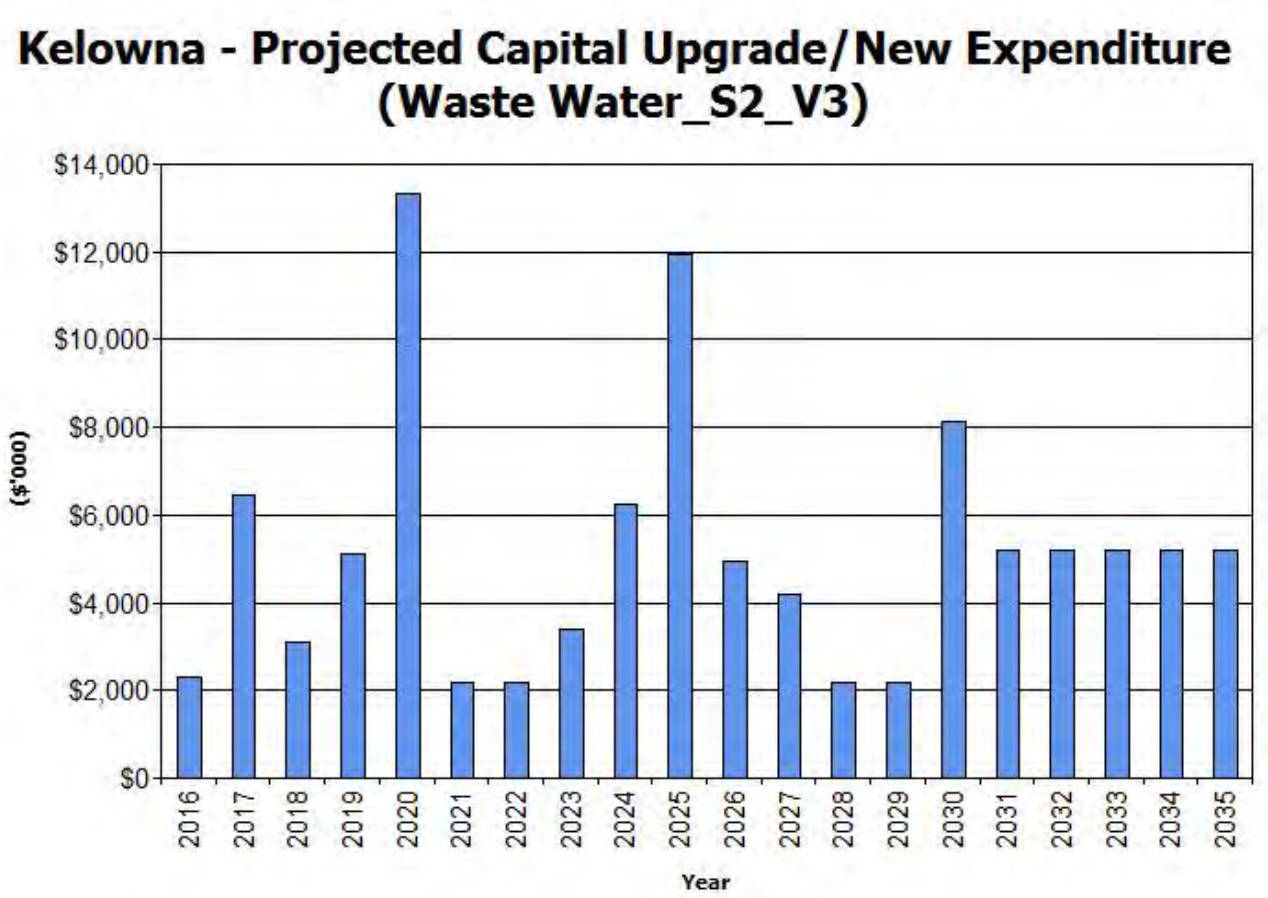
5.5 Creation/Acquisition/Upgrade Plan

Upgrade/New assets 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 or from an improvement to service levels (i.e. odour control facilities). Assets may also be contributed to the City from land development.

5.5.1 Summary of future upgrade/new assets expenditure

Projected Upgrade/New asset expenditures are summarized in Figure 6. The project list is provided in Appendix C. In total $103 million worth of new asset expenditures are planned in the next 20 years. Approximately $40 million are from developer contributed assets and $63 million is required to accommodate growth as per the City's 10-Year Capital Plan.

Fig 6: Projected Capital Upgrade/New Asset Expenditure



Note: All costs are reported in current dollars (net of inflation).

Expenditure on new assets in the City's capital works program are accommodated in the Wastewater Utility financial model.

5.6 Asset Disposal

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or abandonment. For the most part, assets are disposed at the time of asset renewal and the disposal information is tracked and recorded in the asset registry.

For this AMP it is assumed that all disposed assets have no residual value.

5.7 Service Consequences and Risks

5.7.1 What is not in this asset management plan

There are no unfunded O&M activities or capital projects within the next 10 years.

Wastewater assets are depreciating faster than they are being renewed. This funding short fall is acceptable in the short-term because the wastewater system is relatively new. Given current re-investment, however, the wastewater system will age and this may increase the risk of infrastructure failure.

Future updates to this AMP will respond to these and other changes so that the City is prepared to invest in the right infrastructure at the right time.

5.7.2 Service consequences

In the next 10 years there are no anticipated consequences for service levels. Over the longer-term if renewal funding levels do not increase there may be service consequences. These are unknown at this time but may include:

- More frequent asset failure and service interruption,
- More reactive maintenance leading to higher costs.

5.7.3 Risk consequences

Over the next 10-years there is adequate funding for renewal projects. This AMP is developed without actual asset condition data, however, and there is risk that this "high level" plan may have missed infrastructure that is in poor or failing condition. This may create risk consequences for the City. These are unknown at this time but may include:

- Wastewater main failure and service interruption,
- Property damage related to flooding from sewer backups.

Future iterations of this AMP will benefit from improved processes and systems for collecting condition data and quantifying risk. Continuous improvement in the City's asset management practices will improve efficiency of service delivery and reduce risk of service interruption and/or deterioration.

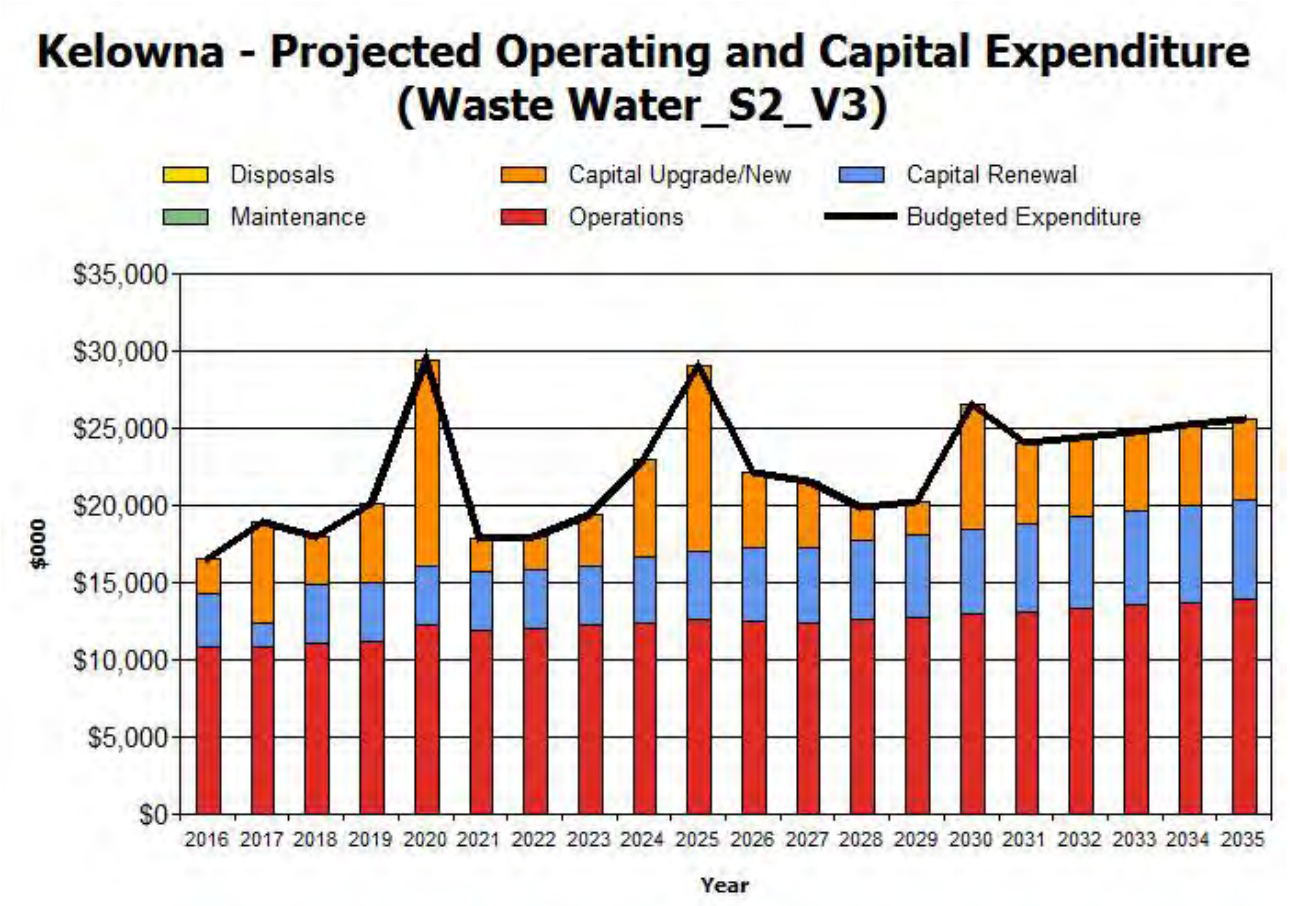
6. FINANCIAL SUMMARY

This section contains the financial requirements resulting from all the information presented in the previous sections of this AM Plan.

6.1 Financial Statements and Projections

The financial projections for operations, maintenance and capital expenditures for the next 20-year along with the projected budget are shown in Fig. 7. Figure 7 indicates that over the next 20 years there is adequate budget to fund operations, maintenance and capital expenditures assuming wastewater rates increase with inflation which is projected to be 2% annually. Beyond 10 years the projections become less certain but the Wastewater service is fully funded assuming there are no changes in regulatory requirements and the asset renewal requirements are as forecasted. This AMP will be update on a regular basis so that it captures emerging issues and leverages the best available data.

Fig 7: Projected Operating and Capital Expenditure



Note: All costs are reported in current dollars (net of inflation).

6.1.1 Sustainability of service delivery

There are four 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, long term life cycle costs/expenditures and medium term projected/budgeted expenditures over 5 and 10 years of the planning period.

Asset Renewal Funding Ratio

Asset Renewal Funding Ratio **100%**

The Asset Renewal Funding Ratio is the most important indicator and reveals that over the next 10 years, the City is forecasting that it will have budget to fully fund asset renewal.

Long term - Life Cycle Cost

Life cycle costs (or whole of life costs) are the average costs that are required to sustain the service levels over the asset life cycle. Life cycle costs include operations and maintenance expenditures and asset consumption (depreciation expense). The life cycle cost for the services covered in this asset management plan is $23.0 million per year (average operations and maintenance expenditure plus depreciation expense projected over 10 years).

Life cycle costs can be compared to life cycle expenditure to give an initial indicator of affordability of projected service levels when considered with age profiles. Life cycle expenditure includes operations, maintenance and projected capital renewal expenditure. Life cycle expenditure will vary depending on the timing of asset renewals. The life cycle expenditure over the 10-year planning period is $15.4 million per year (average operations and maintenance plus capital renewal budgeted expenditure over 10 years).

A shortfall between life cycle cost and life cycle expenditure is the life cycle gap. The life cycle gap for services covered by this asset management plan is $7.6 million per year.

Life cycle expenditure is 67% of life cycle costs.

The life cycle costs and life cycle expenditure comparison highlights the difference between present outlays and the average cost of providing the service over the long term. The cycle expenditure is less than the life cycle cost and as such is probable that rates will need to be increased beyond inflation in the long-term.

Knowing the extent and timing of any required increase in rates will assist the City in providing services to the community in a financially sustainable manner. This is the purpose of the asset management plans and long term financial plan.

Medium term – 10 year financial planning period

Projected operations, maintenance and capital renewal expenditure over the 10-year planning period provides more reliable data for the assessment of service and financial sustainability as this based on best estimate projections in the AMP. This AMP identifies the projected operations, maintenance and capital renewal expenditures required to provide Wastewater service to the community over a 10-year period.

The projected operations, maintenance and capital renewal expenditure required over the 10-year planning period is $15.4 million on average per year. The estimated budget available for operations, maintenance and capital renewal funding is $15.4 million on average per year. This indicates that the City expects to have 100% of the projected expenditures needed to provide Water service.

Medium Term – 5 year financial planning period

The projected operations, maintenance and capital renewal expenditure required over the first 5 years of the planning period is $14.5 million on average per year.

Estimated (budget) operations, maintenance and capital renewal funding is $14.5 million on average per year. This indicates that the City expects to have 100% of projected expenditures required to provide Wastewater service.

Asset management financial indicators

Figure 7a compares the asset management financial indicators over the next 5 and 10 years and over the long-term life cycle of the asset category. Ideally, the financing indicators should be 100% for the first 5 years and close to 100% over the 10 year period. Anything less than this in the 5-10 year period would suggest funding levels below that required to sustain existing service levels.

The Wastewater service has adequate budget to support service levels over the next 5 to 10 years. Surplus funds should be placed in a reserve to accommodate funding deficits beyond 10-years.

The Long Term indicator suggests that rates may need to be increased beyond inflation to manage the increasing cost pressures from an aging system. This AMP projects an increase in renewal funding in anticipation of the future cost pressures to minimize rate impacts to the customers.

Figure 7A: Asset Management Financial Indicators

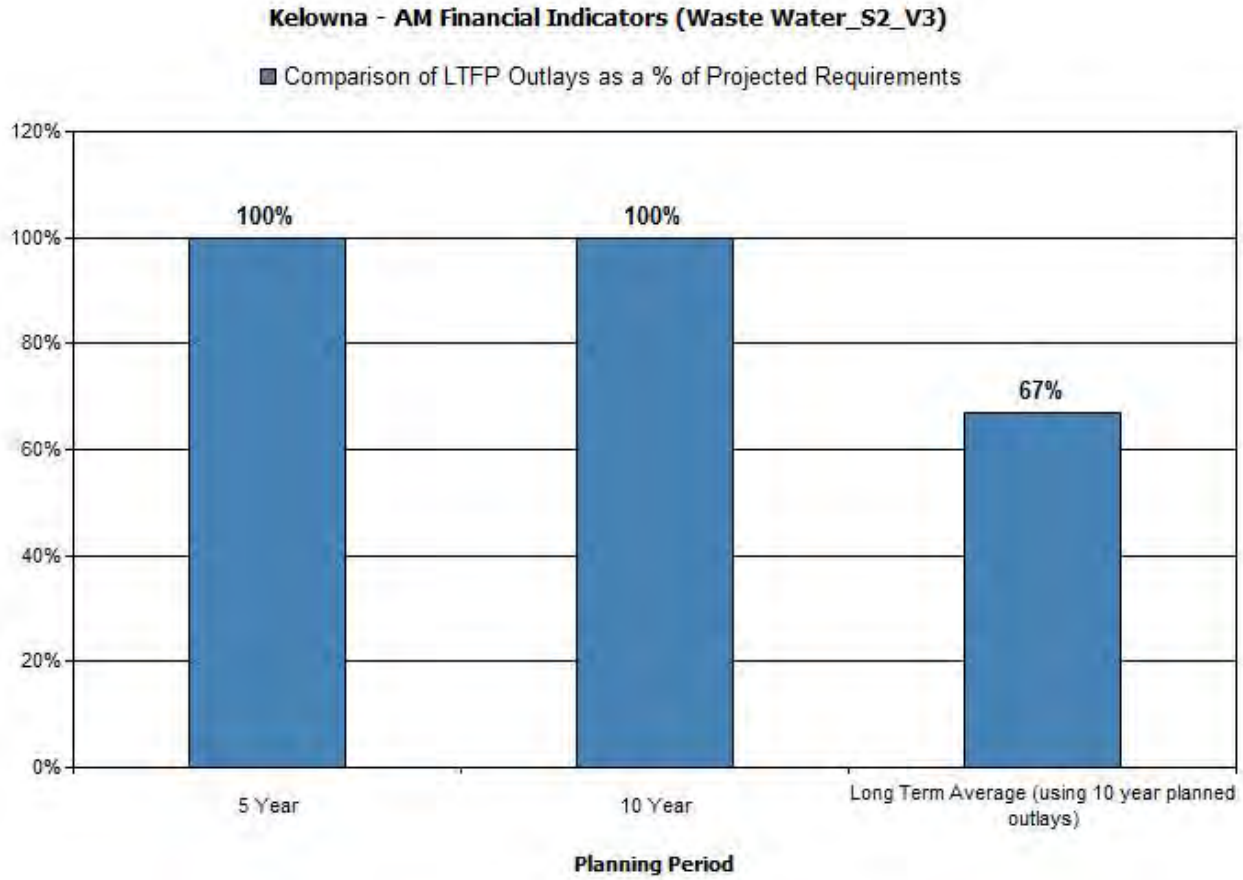
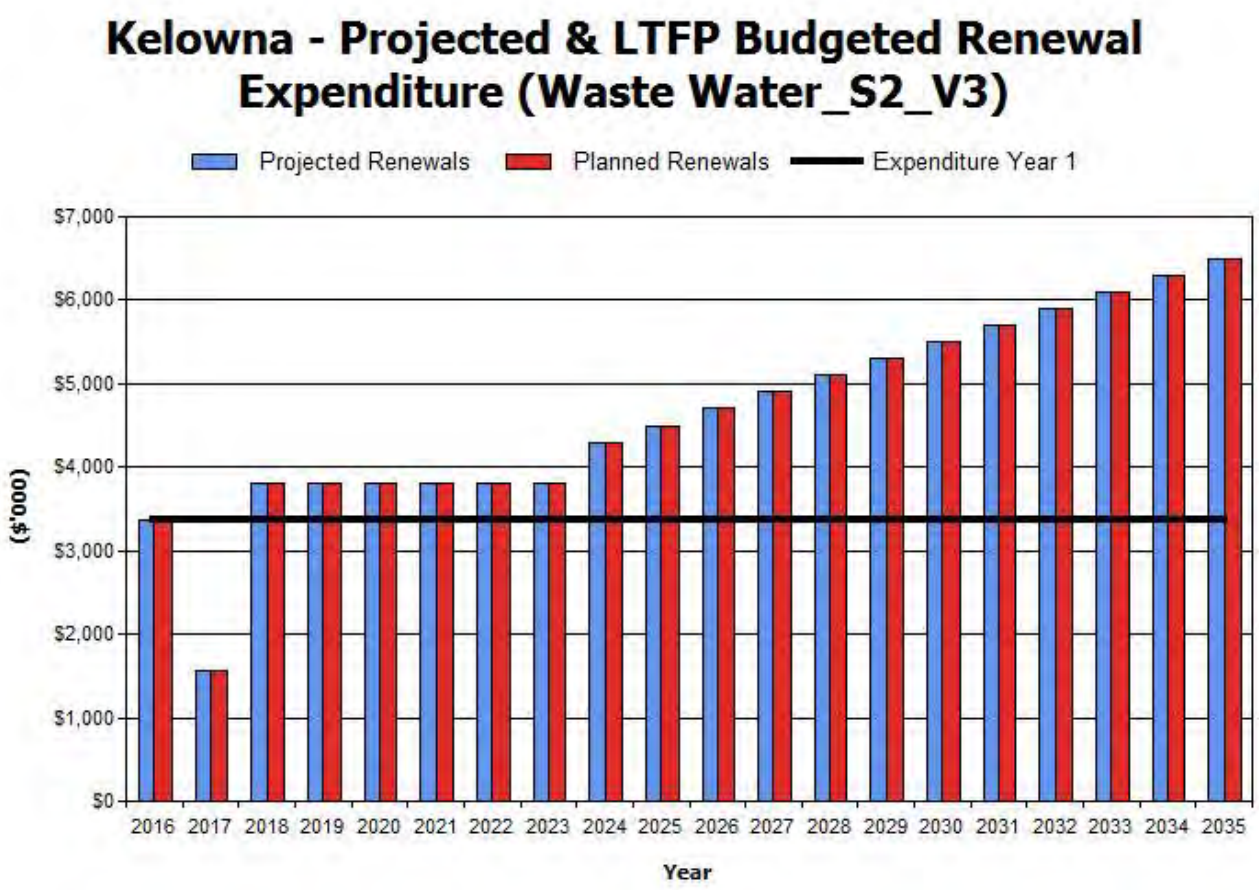


Figure 8 shows the Projected Renewal expenditure from Figures 5 compared to planned renewal expenditure from the long-term financial plan and current (year 1) expenditure. These renewal expenditures are accounted for in the Wastewater Financial Model and are fully funded.

Figure 8: Projected and LTFP Budgeted Renewal Expenditure



Note: All costs are reported in current dollars (net of inflation).

Table 6.1.1 shows that there is no shortfall between projected renewal expenditures and expenditure accommodated in the Wastewater Financial Model.

Table 6.1.1: Projected Expenditures and Budgeted Renewals and Financing Shortfall

Year	Projected Renewals ($000)	Renewal Budget ($000)	Renewal Financing Shortfall ($000) (-ve Gap, +ve Surplus)	Cumulative Shortfall ($000) (-ve Gap, +ve Surplus)
2016	$3,373	$3,373	$0	$0
2017	$1,570	$1,570	$0	$0
2018	$3,800	$3,800	$0	$0
2019	$3,800	$3,800	$0	$0
2020	$3,800	$3,800	$0	$0
2021	$3,800	$3,800	$0	$0
2022	$3,800	$3,800	$0	$0
2023	$3,800	$3,800	$0	$0
2024	$4,300	$4,300	$0	$0

2025	$4,500	$4,500	$0	$0
2026	$4,700	$4,700	$0	$0
2027	$4,900	$4,900	$0	$0
2028	$5,100	$5,100	$0	$0
2029	$5,300	$5,300	$0	$0
2030	$5,500	$5,500	$0	$0
2031	$5,700	$5,700	$0	$0
2032	$5,900	$5,900	$0	$0
2033	$6,100	$6,100	$0	$0
2034	$6,300	$6,300	$0	$0
2035	$6,500	$6,500	$0	$0

Note: A negative shortfall indicates a financing gap, a positive shortfall indicates a surplus for that year.

6.1.2 Projected expenditures for long term financial plan

Table 6.1.2 shows the projected expenditures for this AMP. O&M and capital for renewal and growth is fully funded.

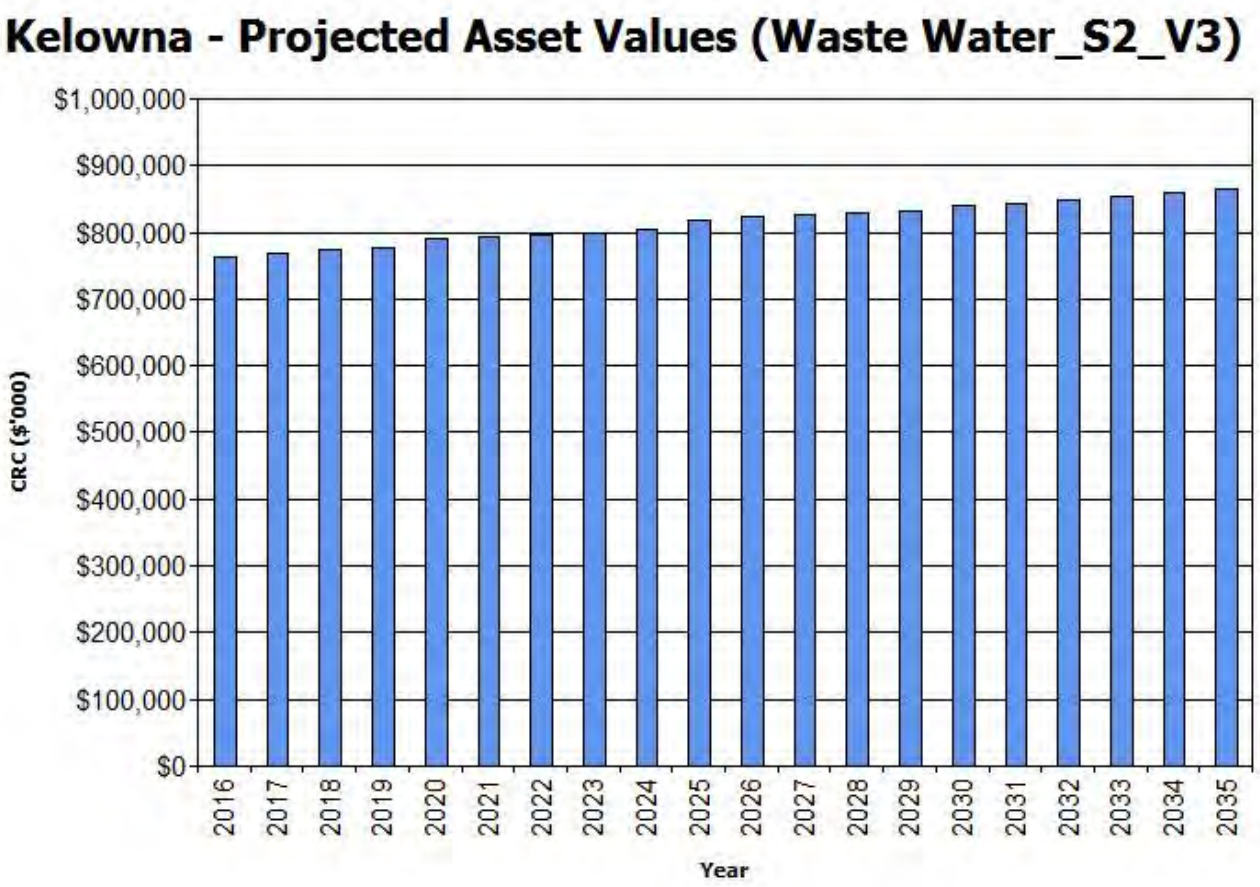
Table 6.1.2: Projected Expenditures for the Wastewater AMP

Year	Operations & Maintenance ($000)	Projected Capital Renewal ($000)	Capital Upgrade/ New ($000)
2016	$10,858	$3,373	$2,285
2017	$10,861	$1,570	$6,440
2018	$11,048	$3,800	$3,104
2019	$11,237	$3,800	$5,119
2020	$12,295	$3,800	$13,332
2021	$11,862	$3,800	$2,160
2022	$12,036	$3,800	$2,160
2023	$12,213	$3,800	$3,405
2024	$12,390	$4,300	$6,248
2025	$12,571	$4,500	$11,965
2026	$12,525	$4,700	$4,927
2027	$12,411	$4,900	$4,200
2028	$12,589	$5,100	$2,160
2029	$12,770	$5,300	$2,160
2030	$12,954	$5,500	$8,152
2031	$13,139	$5,700	$5,188
2032	$13,328	$5,900	$5,188
2033	$13,519	$6,100	$5,188
2034	$13,713	$6,300	$5,188
2035	$13,909	$6,500	$5,188

Note: All values are reported in current dollars (net of inflation).

6.2 Valuation Forecasts

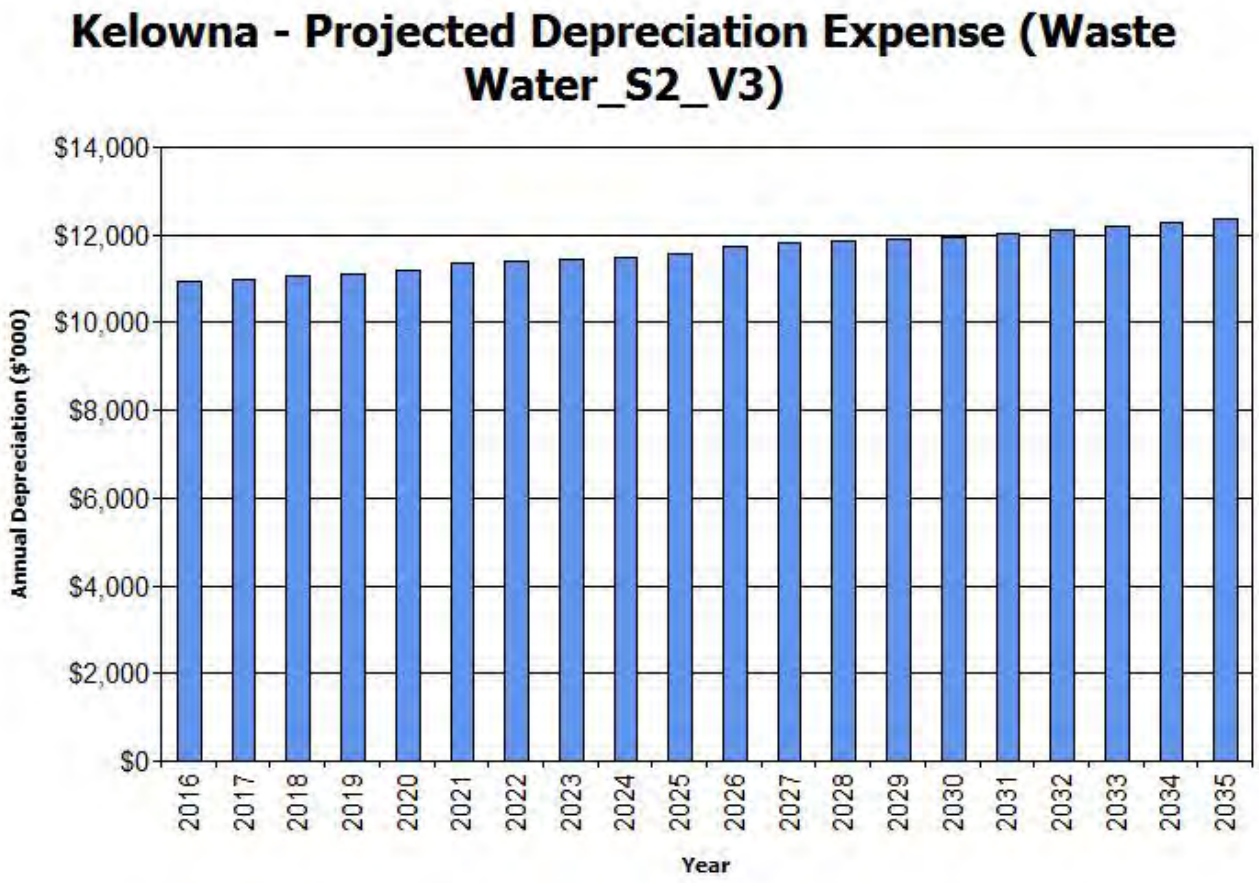
Asset values are forecast to increase as additional assets are added to accommodate growth or improve service levels. The projected current replacement cost of Wastewater assets is expected to increase by $103 million to $864 million over the planning period.



Note: All costs are reported in current dollars (net of inflation).

Figure 10 shows the projected depreciation expense for assets over the 20-year planning period. The increase in annual depreciation ($1.6 million) is a result of contributed assets from developers and the construction of new assets and upgrade of existing assets to accommodate growth or improve service levels.

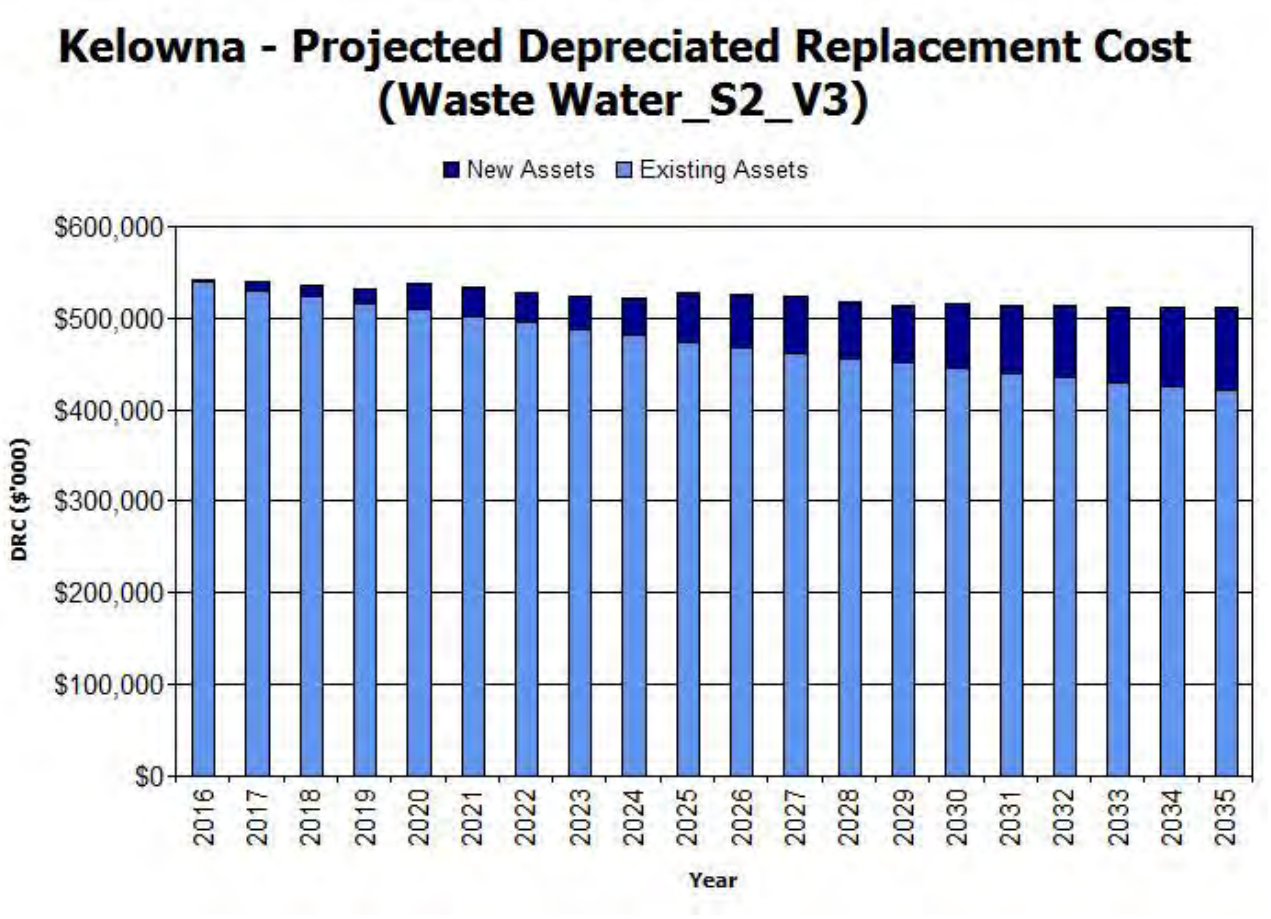
Figure 10: Projected Depreciation Expense



Note: All costs are reported in current dollars (net of inflation).

The depreciated replacement cost will vary over the forecast period depending on the rates of addition of new assets, disposal of old assets and consumption and renewal of existing assets. Figure 11 shows the projected replacement cost (carrying amount) for assets over the 20-year planning period. The depreciated replacement cost of contributed and new assets is shown in the darker colour and the depreciated replacement cost of existing assets is shown in the lighter colour. This figure shows that existing assets are being consumed faster than they are replaced and even with the addition of new assets the depreciated replacement cost of the Wastewater assets will decrease by 2035.

Figure 11: Projected Depreciated Replacement Cost



6.3 Key Assumptions made in Financial Forecasts

This section details the key assumptions made in presenting the information contained in this AMP.

Table 6.4: Key Assumptions made in AM Plan and Risks of Change

Key Assumptions	Risks of Change to Assumptions
Asset replacement timing is based on asset age and the theoretical asset useful life.	Asset replacement timing may be overly conservative and replacement timing may be sooner than projected.
Asset condition is based on percent of theoretical asset useful life remaining.	Actual condition of assets may be worse than anticipated and this may affect asset performance.
Replacement costs are based on industry cost estimates.	Actual replacement costs may be more or less.

Regulatory compliance will remain constant.	Changes in legislation & regulation may increase operating and maintenance expenditures and trigger additional capital investment.
Asset registry is accurate and comprehensive.	Missing or inaccurate asset information may cause and underestimation of future O&M and Capital costs.

6.4 Forecast Reliability and Confidence

The expenditure and valuations projections in this AMP are based on best available data. Accuracy of data is critical to effective asset and financial management. Data confidence is classified on a 5 level scale[1] in accordance with Table 6.5.

Table 6.4: Data Confidence Grading System

Confidence Grade	Description
A Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ± 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 ± 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 ± 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 ± 40%
E Unknown	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 6.4.1.

Table 6.4.1: Data Confidence Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand drivers	B	Based on local corporate knowledge, OCP, 20-yr Servicing Plan, Asset Registry.
Growth projections	B	Population projections from Policy and Planning
Operations & Maintenance expenditures	B	Municipal records – historically, operations expenditure and maintenance expenditure not separately identified.
Projected capital costs	B	Asset values based on industry standards
Asset residual values	B	Municipal assets are generally used to the end of their useful life and would not have a residual value of a material amount.
Asset useful lives	B	Useful lives based on industry standards.
Condition modelling	D	Condition modeling not yet undertaken
Network renewals	C	Based on asset inventory registers and capital project expenditures
Upgrade/New expenditures	B	Program expenditure projections are based on growth projections and 20-year Servicing Plan
Disposal expenditures	N/A	Not considered as part of this AM PLAN

Over all data sources, the data used in the preparation of this AMP is assessed at a Reliable (B) confidence level, but there is room for improvement especially in the area of Condition modelling.

[1] IPWEA, 2011, IIMM, Table 2.4.6, p 2|59.

7. PLAN IMPROVEMENT AND MONITORING

7.1 Improvement Program

An improvement plan was developed so that future iterations of this AMP are more accurate and reliable.

Table 7.2: Improvement Plan

Task No	Task	Responsibility	Resources Required	Timeline
1	Implement Agresso FA for better financial reporting	Financial Services	Exiting staff	2016-17
2	Improve asset data collection	Infrastructure/Development Engineering	Existing Staff	2016-17
3	Implement Asset Management System to improve operational efficiency, track asset maintenance and condition, and optimize life cycle costs.	Infrastructure	Identified in 2017 Provisional Budget	2017-18

7.2 Monitoring and Review Procedures

This AMP will be reviewed regularly and amended to recognize any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

8. REFERENCES

Council Policy 352 - Sustainable Municipal Infrastructure Policy

Council Policy 342 - Tangible Capital Asset Policy

2030 Infrastructure Plan (April 2016)

2015 Financial Plan 5-Year Financial Plan

20-Year Servicing Plan and Financial Strategy (amended 2016)

2030 Official Community Plan

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.

IPWEA, 2009, 'Australian Infrastructure Financial Management Guidelines', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMG.

IPWEA, 2011, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM

9. APPENDICES

Appendix A Projected 10-year Capital Renewal and Replacement Works Program

Appendix B Projected 10-year Capital Upgrade/New Works Program

Appendix C Abbreviations

Appendix D Glossary

Appendix A Projected 10-year Capital Renewal and Replacement Program

($000)

Year	Item	Description	Estimate
2016		Network Renewals	
	1	Renewals	$3,373
2016		Total	$3,373

2017		Network Renewals	
	1	Cassiar Sewer Lift Station Upgrade	$100
	2	Edwards Sewer Lift Station Upgrade	$200
	3	Lane North of Fuller Sanitary Replacement	$440
	4	Lane North of Stockwell Sanitary Replacement	$450
	5	Sanitary Projects, Designs	$20
	6	Wastewater Treatment Plant Roof Replacement	$160
	7	WWTP, Control Systems Replacement	$200
2017		Total	$1,570

($000)

Year	Item	Description	Estimate
2018		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$3,800
2018		Total	$3,800

2019		Network Renewals	Estimate
	1	Renewal - Wastewater mains and facilities	$3,800
2020		Total	$3,800

2021		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$3,800
2021		Total	$3,800

($000)

Year	Item	Description	Estimate
2022		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$3,800
2022		Total	$3,800

2023		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$3,800
2023		Total	$3,800

($000)

Year	Item	Description	Estimate
2024		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$4,300
2024		Total	$4,300

2025		Network Renewals	
	1	Renewal - Wastewater mains and facilities	$4,500
2025		Total	$4,500

Appendix B Projected Upgrade/New 10-year Capital Program

($000)

Year	Item	Description	Estimate
2016	1	Offsite & Oversize	$60
	2	Hollywood 7 / Sexsmith Sewer	$225
	3	Contributed Infrastructure from Development (est.)	$2,000
2016		Total	$2,285

($000)

Year	Item	Description	Estimate
2017	1	Offsite & Oversize	$60
	2	Morrison Ave - Sanitary Main	$150
	3	Contributed Infrastructure from Development (est.)	$2,000
	4	Airport Gravity - (Bulman - Airport)	$4,230
2017		Total	$6,440

($000)

Year	Item	Description	Estimate
2018	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Water St FM	$944
	4	Contributed Infrastructure from Development (est.)	$2,000
2018		Total	$3,104

($000)

Year	Item	Description	Estimate
2019	1	Emerging Issues	$100
	2	Offsite & Oversize	$60
	3	Contributed Infrastructure from Development (est.)	$2,000
	4	KLO - (KLO - Swordy)	$853
	5	Gyro Force Main	$2,106
2019		Total	$5,119

($000)

Year	Item	Description	Estimate
2020	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Existing Compost Plant Expansion	$7,237
	4	Glenmore Connection - Glenmore Rd from Cross Rd to 200 m north of Scenic Rd	$2,010
	5	Rose Avenue Lift Station	$1,925
	6	Contributed Infrastructure from Development (est.)	$2,000
2020		Total	$13,332

($000)

Year	Item	Description	Estimate
2021	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Contributed Infrastructure from Development (est.)	$2,000
2021		Total	$2,160

($000)

Year	Item	Description	Estimate
2022	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Contributed Infrastructure from Development (est.)	$2,000
2022		Total	$2,160

($000)

Year	Item	Description	Estimate
2023	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Rutland Trunk	$1,245
	4	Contributed Infrastructure from Development (est.)	$2,000
2023		Total	$3,405

($000)

Year	Item	Description	Estimate
2024	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Contributed Infrastructure from Development (est.)	$2,000
	4	Lakeshore Trunk - (Gyro - KPCC (Swordy - Casorso))	$2,040
	5	Gyro Lift Station	$2,048
2024		Total	$6,248

($000)

Year	Item	Description	Estimate
2025	1	Offsite & Oversize	$60
	2	Emerging Issues	$100
	3	Byrns Baron Trunk Phase 2	$9,805
	4	Contributed Infrastructure from Development (est.)	$2,000
2025		Total	$11,965

Appendix C Abbreviations

AAAC	Average annual asset consumption
AM	Asset management
AMP	Asset management plan
ARI	Average recurrence interval
ASC	Annual service cost
BOD	Biochemical (biological) oxygen demand
CRC	Current replacement cost
CWMS	Community Wastewater management systems
DA	Depreciable amount
DRC	Depreciated replacement cost
EF	Earthworks/formation
IRMP	Infrastructure risk management plan
LCC	Life Cycle cost
LCE	Life cycle expenditure
LTFP	Long term financial plan
MMS	Maintenance management system
PCI	Pavement condition index
RV	Residual value
SoA	State of the Assets
SS	Suspended solids
vph	Vehicles per hour
WDCRD	Written down current replacement cost

Appendix D Glossary

Annual service cost (ASC)

1) Reporting actual cost
   The annual (accrual) cost of providing a service including operations, maintenance, depreciation, finance/opportunity and disposal costs less revenue.
2) For investment analysis and budgeting
   An estimate of the cost that would be tendered, per annum, if tenders were called for the supply of a service to a performance specification for a fixed term. The Annual Service Cost includes operations, maintenance, depreciation, finance/ opportunity and disposal costs, less revenue.

Asset

A resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity. Infrastructure assets are a sub-class of property, plant and equipment which are non-current assets with a life greater than 12 months and enable services to be provided.

Asset category

Sub-group of assets within a class hierarchy for financial reporting and management purposes.

Asset class

A group of assets having a similar nature or function in the operations of an entity, and which, for purposes of disclosure, is shown as a single item without supplementary disclosure.

Asset condition assessment

The process of continuous or periodic inspection, assessment, measurement and interpretation of the resultant data to indicate the condition of a specific asset so as to determine the need for some preventative or remedial action.

Asset hierarchy

A framework for segmenting an asset base into appropriate classifications. The asset hierarchy can be based on asset function or asset type or a combination of the two.

Asset management (AM)

The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner.

Asset renewal funding ratio

The ratio of the net present value of asset renewal funding accommodated over a 10 year period in a long term financial plan relative to the net present value of projected capital renewal expenditures identified in an asset management plan for the same period [AIFMG Financial Sustainability Indicator No 8].

Average annual asset consumption (AAAC)*

The amount of an Corporation's asset base consumed during a reporting period (generally a year). This may be calculated by dividing the depreciable amount by the useful life (or total future economic benefits/service potential) and totalled for each and every asset OR by dividing the carrying amount (depreciated replacement cost) by the remaining useful life (or remaining future economic benefits/service potential) and totalled for each and every asset in an asset category or class.

Borrowings

A borrowing or loan is a contractual obligation of the borrowing entity to deliver cash or another financial asset to the lending entity over a specified period of time or at a specified point in time, to cover both the initial capital provided and the cost of the interest incurred for providing this capital. A borrowing or loan provides the means for the borrowing entity to finance outlays (typically physical assets) when it has insufficient funds of its own to do so, and for the lending entity to make a financial return, normally in the form of interest revenue, on the funding provided**.**

Capital expenditure

Relatively large (material) expenditure, which has benefits, expected to last for more than 12 months. Capital expenditure includes renewal, expansion and upgrade. Where capital projects involve a combination of renewal, expansion and/or upgrade expenditures, the total project cost needs to be allocated accordingly.

Capital expenditure - expansion

Expenditure that extends the capacity of an existing asset to provide benefits, at the same standard as is currently enjoyed by existing beneficiaries, to a new group of users. It is discretionary expenditure, which increases future

operations and maintenance costs, because it increases the Corporation's asset base, but may be associated with additional revenue from the new user group, eg. extending a drainage or road network, the provision of an oval or park in a new suburb for new residents.

Capital expenditure - new
Expenditure which creates a new asset providing a new service/output that did not exist beforehand. As it increases service potential it may impact revenue and will increase future operations and maintenance expenditure.

Capital expenditure - renewal
Expenditure on an existing asset or on replacing an existing asset, which returns the service capability of the asset up to that which it had originally. It is periodically required expenditure, relatively large (material) in value compared with the value of the components or sub-components of the asset being renewed. As it reinstates existing service potential, it generally has no impact on revenue, but may reduce future operations and maintenance expenditure if completed at the optimum time, eg. resurfacing or resheeting a material part of a road network, replacing a material section of a drainage network with pipes of the same capacity, resurfacing an oval.

Capital expenditure - upgrade
Expenditure, which enhances an existing asset to provide a higher level of service or expenditure that will increase the life of the asset beyond that which it had originally. Upgrade expenditure is discretionary and often does not result in additional revenue unless direct user charges apply. It will increase operations and maintenance expenditure in the future because of the increase in the Corporation's asset base, eg. widening the sealed area of an existing road, replacing drainage pipes with pipes of a greater capacity, enlarging a grandstand at a sporting facility.

Capital funding
Funding to pay for capital expenditure.

Capital grants
Monies received generally tied to the specific projects for which they are granted, which are often upgrade and/or expansion or new investment proposals.

Capital investment expenditure
See capital expenditure definition.

Capitalisation threshold
The value of expenditure on non-current assets above which the expenditure is recognised as capital expenditure and below which the expenditure is charged as an expense in the year of acquisition.

Carrying amount
The amount at which an asset is recognised after deducting any accumulated depreciation / amortisation and accumulated impairment losses thereon.

Class of assets
See asset class definition

Component
Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.

Core asset management
Asset management which relies primarily on the use of an asset register, maintenance management systems, job resource management, inventory control, condition assessment, simple risk assessment and defined levels of service, in order to establish alternative treatment options and long-term cashflow predictions. Priorities are usually established on the basis of financial return gained by carrying out the work (rather than detailed risk analysis and optimised decision-making).

Cost of an asset
The amount of cash or cash equivalents paid or the fair value of the consideration given to acquire an asset at the time of its acquisition or construction, including any costs necessary to place the asset into service. This includes one-off design and project management costs.

Critical assets
Assets 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 noncritical assets.

Current replacement cost (CRC)

The cost the entity would incur to acquire the asset on the reporting date. The cost is measured by reference to the lowest cost at which the gross future economic benefits could be obtained in the normal course of business or the minimum it would cost, to replace the existing asset with a technologically modern equivalent new asset (not a second hand one) with the same economic benefits (gross service potential) allowing for any differences in the quantity and quality of output and in operating costs.

Deferred maintenance
The shortfall in rehabilitation work undertaken relative to that required to maintain the service potential of an asset.

Depreciable amount
The cost of an asset, or other amount substituted for its cost, less its residual value.

Depreciated replacement cost (DRC)
The current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

Depreciation / amortisation
The systematic allocation of the depreciable amount (service potential) of an asset over its useful life.

Economic life
See useful life definition.

Expenditure
The spending of money on goods and services. Expenditure includes recurrent and capital outlays.

Expenses
Decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or increases in liabilities that result in decreases in equity, other than those relating to distributions to equity participants.

Fair value
The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties, in an arms length transaction.

Financing gap
A financing gap exists whenever an entity has insufficient capacity to finance asset renewal and other expenditure necessary to be able to appropriately maintain the range and level of services its existing asset stock was originally designed and intended to deliver. The service capability of the existing asset stock should be determined assuming no additional operating revenue, productivity improvements, or net financial liabilities above levels currently planned or projected. A current financing gap means service levels have already or are currently falling. A projected financing gap if not addressed will result in a future diminution of existing service levels**.**

Heritage asset
An asset with historic, artistic, scientific, technological, geographical or environmental qualities that is held and maintained principally for its contribution to knowledge and culture and this purpose is central to the objectives of the entity holding it.

Impairment Loss
The amount by which the carrying amount of an asset exceeds its recoverable amount.

Infrastructure assets
Physical assets that contribute to meeting the needs of Corporations or the need for access to major economic and social facilities and services, eg. roads, drainage, footpaths and cycleways. These are typically large, interconnected networks or portfolios of composite assets. The components of these assets may be separately maintained, renewed or replaced individually so that the required level and standard of service from the network of assets is continuously sustained. Generally the components and hence the assets have long lives. They are fixed in place and are often have no separate market value.

Investment property
Property held to earn rentals or for capital appreciation or both, rather than for:
(a) use in the production or supply of goods or services or for administrative purposes; or
(b) sale in the ordinary course of business.

Key performance indicator
A qualitative or quantitative measure of a service or activity used to compare actual performance against a standard or other target. Performance

indicators commonly relate to statutory limits, safety, responsiveness, cost, comfort, asset performance, reliability, efficiency, environmental protection and customer satisfaction.

Level of service
The defined service quality for a particular service/activity against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental impact, acceptability and cost.

Life Cycle Cost *
1. **Total LCC** The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.
2. **Average LCC** The life cycle cost (LCC) is average cost to provide the service over the longest asset life cycle. It comprises average operations, maintenance expenditure plus asset consumption expense, represented by depreciation expense projected over 10 years. The Life Cycle Cost does not indicate the funds required to provide the service in a particular year.

Life Cycle Expenditure
The Life Cycle Expenditure (LCE) is the average operations, maintenance and capital renewal expenditure accommodated in the long term financial plan over 10 years. Life Cycle Expenditure may be compared to average Life Cycle Cost to give an initial indicator of affordability of projected service levels when considered with asset age profiles.

Loans / borrowings
See borrowings.

Maintenance
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, eg road patching but excluding rehabilitation or renewal. It is operating expenditure required to ensure that the asset reaches its expected useful life.

- **Planned maintenance**
  Repair work that is identified and managed through a maintenance management system (MMS). MMS activities include inspection, assessing the condition against failure/breakdown criteria/experience, prioritising scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.
- **Reactive maintenance**
  Unplanned repair work that is carried out in response to service requests and management/ supervisory directions.
- **Specific maintenance**
  Maintenance work to repair components or replace sub-components that needs to be identified as a specific maintenance item in the maintenance budget.
- **Unplanned maintenance**
  Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

Maintenance expenditure *
Recurrent expenditure, which is periodically or regularly required as part of the anticipated schedule of works required to ensure that the asset achieves its useful life and provides the required level of service. It is expenditure, which was anticipated in determining the asset's useful life.

Materiality
The notion of materiality guides the margin of error acceptable, the degree of precision required and the extent of the disclosure required when preparing general purpose financial reports. Information is material if its omission, misstatement or non-disclosure has the potential, individually or collectively, to influence the economic decisions of users taken on the basis of the financial report or affect the discharge of accountability by the management or governing body of the entity.

Modern equivalent asset
Assets that replicate what is in existence with the most cost-effective asset performing the same level of service. It is the most cost efficient, currently available asset which will provide the same stream of services as the existing asset is capable of producing. It allows for technology changes and, improvements and efficiencies in production and installation techniques

Net present value (NPV)
The value to the Corporation of the cash flows associated with an asset, liability, activity or event calculated using a discount rate to reflect the time value of money. It is the net amount of discounted total cash inflows after deducting the value of the discounted total cash outflows arising from eg the

continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.

Non-revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are not expected to generate any savings or revenue to the Corporation, eg. parks and playgrounds, footpaths, roads and bridges, libraries, etc.

Operations
Regular activities to provide services such as public health, safety and amenity, eg street sweeping, grass mowing and street lighting.

Operating expenditure
Recurrent expenditure, which is continuously required to provide a service. In common use the term typically includes, eg power, fuel, staff, plant equipment, on-costs and overheads but excludes maintenance and depreciation. Maintenance and depreciation is on the other hand included in operating expenses.

Operating expense
The gross outflow of economic benefits, being cash and non cash items, during the period arising in the course of ordinary activities of an entity when those outflows result in decreases in equity, other than decreases relating to distributions to equity participants.

Operating expenses
Recurrent expenses continuously required to provide a service, including power, fuel, staff, plant equipment, maintenance, depreciation, on-costs and overheads.

Operations, maintenance and renewal financing ratio
Ratio of estimated budget to projected expenditure for operations, maintenance and renewal of assets over a defined time (eg 5, 10 and 15 years).

Operations, maintenance and renewal gap
Difference between budgeted expenditures in a long term financial plan (or estimated future budgets in absence of a long term financial plan) and projected expenditures for operations, maintenance and renewal of assets to achieve/maintain specified service levels, totalled over a defined time (e.g. 5, 10 and 15 years).

Pavement management system (PMS)
A systematic process for measuring and predicting the condition of road pavements and wearing surfaces over time and recommending corrective actions.

PMS Score
A measure of condition of a road segment determined from a Pavement Management System.

Rate of annual asset consumption *
The ratio of annual asset consumption relative to the depreciable amount of the assets. It measures the amount of the consumable parts of assets that are consumed in a period (depreciation) expressed as a percentage of the depreciable amount.

Rate of annual asset renewal *
The ratio of asset renewal and replacement expenditure relative to depreciable amount for a period. It measures whether assets are being replaced at the rate they are wearing out with capital renewal expenditure expressed as a percentage of depreciable amount (capital renewal expenditure/DA).

Rate of annual asset upgrade/new *
A measure of the rate at which assets are being upgraded and expanded per annum with capital upgrade/new expenditure expressed as a percentage of depreciable amount (capital upgrade/expansion expenditure/DA).

Recoverable amount
The higher of an asset's fair value, less costs to sell and its value in use.

Recurrent expenditure
Relatively small (immaterial) expenditure or that which has benefits expected to last less than 12 months. Recurrent expenditure includes operations and maintenance expenditure.

Recurrent funding
Funding to pay for recurrent expenditure.

Rehabilitation
See capital renewal expenditure definition above.

Remaining useful life
The time remaining until an asset ceases to provide the required service level or economic

usefulness. Age plus remaining useful life is useful life.

Renewal
See capital renewal expenditure definition above.

Residual value
The estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

Revenue generating investments
Investments for the provision of goods and services to sustain or improve services to the community that are expected to generate some savings or revenue to offset operating costs, eg public halls and theatres, childcare centres, sporting and recreation facilities, tourist information centres, etc.

Risk management
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

Section or segment
A self-contained part or piece of an infrastructure asset.

Service potential
The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset. A measure of service potential is used in the not-for-profit sector/public sector to value assets, particularly those not producing a cash flow.

Service potential remaining
A measure of the future economic benefits remaining in assets. It may be expressed in dollar values (Fair Value) or as a percentage of total anticipated future economic benefits. It is also a measure of the percentage of the asset's potential to provide services that is still available for use in providing services (Depreciated Replacement Cost/Depreciable Amount).

Specific Maintenance
Replacement of higher value components/sub-components of assets that is undertaken on a regular cycle including repainting, replacement of air conditioning equipment, etc. This work generally falls below the capital/ maintenance threshold and needs to be identified in a specific maintenance budget allocation.

Strategic Longer-Term Plan
A plan covering the term of office of councillors (4 years minimum) reflecting the needs of the community for the foreseeable future. It brings together the detailed requirements in the Council's longer-term plans such as the asset management plan and the long-term financial plan. The plan is prepared in consultation with the community and details where the Council is at that point in time, where it wants to go, how it is going to get there, mechanisms for monitoring the achievement of the outcomes and how the plan will be resourced.

Sub-component
Smaller individual parts that make up a component part.

Useful life
Either:
(a) the period over which an asset is expected to be available for use by an entity, or
(b) the number of production or similar units expected to be obtained from the asset by the entity.

It is estimated or expected time between placing the asset into service and removing it from service, or the estimated period of time over which the future economic benefits embodied in a depreciable asset, are expected to be consumed by the Corporation.

Value in Use
The present value of future cash flows expected to be derived from an asset or cash generating unit. It is deemed to be depreciated replacement cost (DRC) for those assets whose future economic benefits are not primarily dependent on the asset's ability to generate net cash inflows, where the entity would, if deprived of the asset, replace its remaining future economic benefits.

Source: IPWEA, 2009, AIFMG Glossary

Additional and modified glossary items shown *