Report to Council

Date: August 10, 2020

To: Council

From: City Manager

Subject: 20 Year Servicing Plan Update – Water, Wastewater, Stormwater

Department: Infrastructure Engineering

Recommendation:

THAT Council receives, for information, the report from the Infrastructure Engineering Department dated August 10, 2020, with regard to the 20 Year Servicing Plan Update – Water, Wastewater, Stormwater;

AND THAT Council supports the recommended Water and Wastewater Future Levels of Service as identified in the report from the Infrastructure Engineering Department dated August 10, 2020;

AND THAT Council directs staff to report back with a recommended Stormwater Future Level of Service;

AND FURTHER THAT Council directs staff to report back with a financing strategy for the 20 Year Servicing Plan

Purpose:
To update Council on the proposed Future Service Levels for required to address the growth projections proposed for the 2040 Official Community Plan.

Background:
The Water, Wastewater and Stormwater systems will continue to expand to support the endorsed Growth Scenario for the 2040 OCP, which shifts growth from suburban areas to the City's Urban Centres and Core Area. From the Water and Wastewater utility perspective, increased infrastructure servicing in existing urbanized areas is more efficient and cost-effective. Existing facilities can also be expanded effectively to add resiliency to systems, such as additional pumping and transmission, to allow seamless operation when key components fail. Additional stormwater and flood mitigation infrastructure will be required to achieve the development intensification planned in the growth areas, as many of these areas are within established flood plains in the City. Managing natural assets, where possible, to relieve the additional stresses from major storm events, can also lead to improved stormwater quality into Okanagan Lake.

This analysis expands on an earlier Report to Council (March 16, 2020) that examined possible utility service levels based on three possible funding models. Based on Council direction, the service levels have been fine tuned to minimize increases to the Development Cost Charge Program (DCC Program), except where new Level of Service needs are warranted. These costs will be further refined to be included in the financial impact analysis to be completed in the fall as part of the 20 Year Servicing Planning process.

Below is the rationale for future levels of service for the self-funded wastewater and water utilities, as well as for an enhanced stormwater program that is currently funded only through General Revenue.

Wastewater

The City Wastewater Utility provides basic collection, transmission, treatment, biosolids management, operations and maintenance of all sanitary system assets. The treated effluent produced meets or exceeds regulatory requirements needed to discharge to Okanagan Lake. The biosolids are managed to meet the Organic Matter Management Regulation (OMRR at the compost facility shared with the City of Vernon. The Wastewater Treatment Facility (WWTF) on Raymer Road has an anticipated life or capacity to around the Year 2060.

The Regional Compost Facility produces Class A compost; a safe and productive soil amendment marketed as OgoGrow. In its current configuration, the facility is nearing capacity. To accommodate growth, a new or additional biosolids management process is required. Staff have reviewed various options, which will be presented to Council in more detail later this summer.

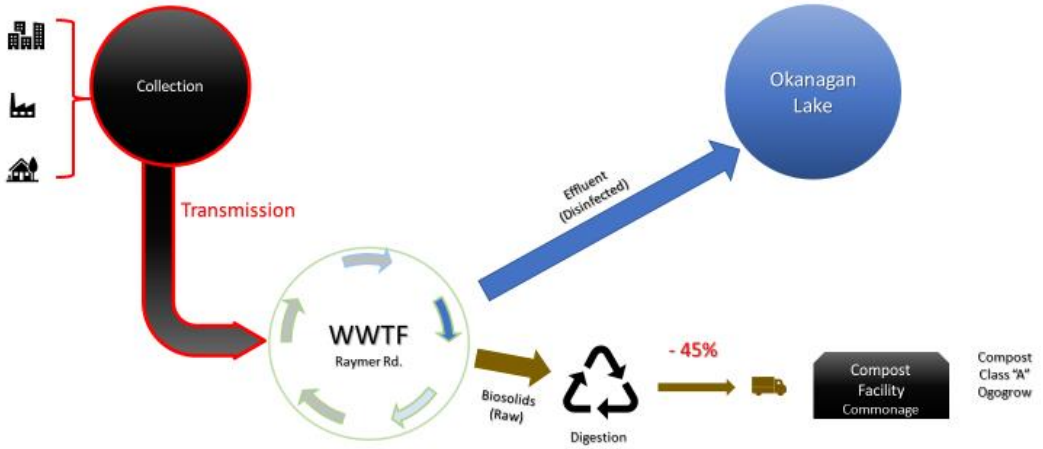
The new projects are anticipated to result in a significant net reduction of the City's greenhouse gas footprint. The digestion process alone will reduce biosolids volumes by approximately 45 percent, producing biogas which can be scrubbed and converted to natural gas.

New or expanded wastewater collection and transmission components will also be required to accommodate growth particularly the urban core areas.

Recommended Future Level of Service:

Customers can expect an efficient, reliable and sustainable wastewater collection, transmission and treatment with minimal impact to the environment.

2040 Growth Scenario



Cost and Rate Implications - Wastewater

The revenue for the new projects required for this growth is anticipated to follow current revenue projections and rate patterns. The digester, which forms the largest cost component of the plan, will require a loan/payback model. Loan payments are consistent with major treatment components costs, and therefore no utility rate increases will be required. The growth component funded by the DCC Program has yet to be determined and will be incorporated into the upcoming 20-Year Servicing Plan financial analysis. It is assumed, at this stage, that no government funding or grant program is applied.

Wastewater		Current Program to 2040		Increase Funding by 20%		Accelerated	
Category		Funding	Service Level	Funding Increase	Service Level	Funding Increase	Service Level
2040 Infrastructure Plan	Collection	BAU	⟷	Moderate	↑	High	↑
	Treatment	BAU	⟷	Moderate	↑	High	↑
Growth Cost*		$102 million		$130 million		$147 million	

* Estimates only based on preliminary analysis.

Water:

The City of Kelowna's Water Utility is going through some significant changes. The City has responded to the need from its agricultural and rural communities in the southeast Kelowna to provide high quality potable water for domestic use and a non-potable supply for irrigation and agricultural use.

The City potable supply comes from four deep intakes out of Okanagan Lake. Today, the raw lake water is of excellent quality, but still requires disinfection using chlorination and ultraviolet light to meet regulations and ensure public safety. Costly filtration has been avoided to date, and City staff have been trained to address operational and maintenance issues. The non-potable supply to agricultural properties in southeast Kelowna comes from upland watersheds east of the City which are operated and maintained by staff. All areas of the City serviced by the City Water Utility have systems that can provide fire flow protection, which includes adequate supply, storage and conveyance to the customer with its highest need.

Customers outside of the City utility are supplied water through purveyors, private water systems, groundwater wells, or through end-user agreements with the District of Lake Country. Purveyors are each responsible for the quality and supply to City residents within their area of operation, and are allowed to charge fees for maintenance, renewal, treatment, and administration of their systems. These systems are regulated by various agencies within the Province.

The City's ultimate goal is for all residents and customers to be supplied with a safe and reliable supply of high quality water, consistent with the Kelowna Water Integration Plan established in 2017. Over the next 20 years, the City Water Utility will be incorporating more resiliency options that result in improved interconnectivity and water quality improvements along with the other purveyors supplying water within the City limits.

From a servicing perspective, growth areas supplied by the Kelowna Water Utility will require additional capacity to meet demand. A key focus will be on the transmission of water from Poplar Point to service the City's growth areas and downtown core. A series of transmission projects will provide supply flexibility to move water efficiently and cost-effectively across the City. This strategy succeeds the previous servicing plan which focused on resiliency and improved supply conditions in the south. This earlier plan was enhanced with the conversion of the South East Kelowna Irrigation District (SEKID) system into the utility.

The Integration Plan's goal will be to extend filtration avoidance as long as possible. The City is also working on an Area Based Water Management Plan, which looks more holistically at the water cycle and the risk associated with using the Okanagan Lake for drinking water, wastewater, stormwater, source water protection, environmental and natural asset management practices. For the Area Based Water Management to be successful, other communities and the Province need to be in line with the same initiatives.

Recommended Level of Service

It is recommended that the City of Kelowna level of service apply to all customers within the City limits, to provide a cost-effective, resilient and sustainable supply of safe and high-quality water to its citizens. Water quality will be consistent and available in emergency to all users using a multi-barrier approach, which assures adequate water treatment, source water protection, operator certification, a secure distribution system, regular monitoring and a strong governance structure. The City Utility provides a non-potable and disinfected water source where possible for agricultural purposes from upland watersheds.

Cost and Rate Implications - Water

Overall, the water utility will need to increase rates to achieve the future level of service expectations (see table below). To meet the goals of the Kelowna Water Integration Plan, existing and future users will need to contribute more through either increased rates or modified use of the Water Quality Enhancement Fund currently being charged to City utility customers. DCC Program funding will likely see an increase in size to accommodate some of the major "brownfield" work required to accommodate downtown growth, costs to avoid an even more expensive water filtration plant, and accommodate operational enhancements in the agricultural system to meet growth. We foresee a 20 percent increase in DCC Program size to meet the new minimum level of service requirement under the current DCC Program methodology which is under review.

DCC Program projects and costs are currently being defined, reviewed and incorporated into an upcoming 20 Year Servicing Plan financial impacts analysis exercise which will inform the DCC rates required to support the growth scenario. It is assumed, at this stage, that no government funding or grant program is available.

Water		Current Program to 2040		Increase Funding by 20%		Accelerated	
Category		Funding	Service Level	Funding Increase	Service Level	Funding Increase	Service Level
2040 Infrastructure Plan	Distribution	BAU	↔	Moderate	↑	High	↑
	Treatment	BAU	↔	Moderate	↑	High	↑
Growth Cost*		$73 million		$90 million		$112 million	

* Estimates only based on preliminary analysis.

Stormwater:
Stormwater infrastructure is used to convey water ultimately to Okanagan Lake that would otherwise flood critical areas in the City. The stormwater system, as defined in the City's Subdivision and Servicing Bylaw 7900, consists of minor, major and natural systems.

- Minor systems are the surface infrastructure we have added to efficiently collect runoff from our City development, and typically consists of buried infrastructure such as pipeline, manholes, catch-basins and road ditches flowing to a Major or Natural system. Minor systems are typically installed through development and subdivision projects, and are acquired by the City through transfer. Minor systems are usually operated privately or maintained by City staff, are typically designed for a 1 in 5 year storm event.
- Major systems are man-made conveyances such as roads, ditches, channels, storm ponds, culverts and dams that are designed to handle larger events (typically 1 in 100 or 200 years) and prevent major damage to natural features. Major systems are usually operated and maintained by City staff.
- Natural systems are the creeks, ponds, streams, riparian areas, forests and lakes that make up the eco-system. Natural systems are typically NOT maintained infrastructure, and fall under Provincial Regulation for streamflow activities and federal regulation for Fish habitat.

Climate change patterns and an over-reliance on ground-infiltration as a conveyance put many of our existing minor and major systems under pressure during storm events, as they are unable to handle more frequent but high intensity events. Our major and natural systems are being overwhelmed more regularly, resulting in increased damage and consistently poor-quality stormwater entering Okanagan Lake.

Stormwater quality and flood protection improvements are expected to be major goals moving forward. This requires a greater focus on natural asset management; particularly stormwater assets (creeks, streams) whose key natural protections for flooding and riparian habitat have been squeezed by urban development. Policy enhancements will be required to invest further in recovering some natural asset setbacks. Mill Creek will be the main focus area in the next 10 years, where additional flood capacity, diversion upgrades, channel improvements and riparian improvements are needed to route the anticipated increase in municipal storm flows and freshet events.

To service growth, stormwater infrastructure is required. This 20 year servicing plan includes:

- Renewal, redesign and upsizing of major outlets and stormwater ponds.
- Increased capacity and operational improvements for storm outfalls in the downtown core during high lake level events.
- Increased riparian area on Mill Creek leads to improve flood capacity, stormwater quality and fish passage. Focus is on major system conveyance from the Sexsmith-Appaloosa area, Rutland and Brandts Creek.
- Flood impacts from Mill Creek and Brandts Creek need to be mitigated by rebuilding flood capacity. Projects include upgrades to the existing diversion to Mission Creek, reduce debris flow and pluggage, and temporary storage solutions. All of this requires land purchase and acquisition, channel enhancements, replacement or removal of inadequate bridge or culverts crossings, and a floodway diversion option down Clement Avenue for extreme events.

Suggested Level of Service

The City provides efficient and reliable stormwater collection systems that convey stormwater and flood waters safely to natural water courses with minimal impact to infrastructure and the environment.

Cost and Rate Implications

Flood management issues must be managed in order to achieve the area development expectations outlined in the 2040 Growth Plan. Currently, stormwater funding is limited to covering minor system replacement and some major system renewal. Major systems are expensive, and their failure can lead to catastrophic impacts. Much of this work will occur in "brownfield" conditions, where a combination of existing works, historical excavation issues and environmental permitting form much of the cost risk associated in this sector. As these components are both shared by existing users and growth, establishing a self-funded stormwater utility and DCC reserve makes sense as it is consistent with Kelowna's funding strategy for the existing water and wastewater utilities.

To meet the revenue targets needed, a new DCC Program could be proposed to fund a portion of the costs of flood protection and major system needs. Today, stormwater renewal and upgrades are funded entirely through taxation and available grants, additional growth funding of approximately $50 million over 20 years as noted in the table below would lead to some increased service levels.

Stormwater		Current Program to 2040		Increase Funding		Accelerated	
Category		Funding	Service Level	Funding Increase	Service Level	Funding Increase	Service Level
2040 Infrastructure Plan	Major Systems	O	↔	Moderate	↑	High	↑
	Flood Mitigation	O	↓	Any	↑	High	↑
Growth Cost		$0 million		$50 million		$50 Million	

Next Steps

Using the utility service levels provided through Council's direction, the next step will be to provide a more detailed cost analysis and initiation plan for each infrastructure component required for the 2040 OCP and 20 Year Servicing Plan. Estimates will also be provided for growth ultimately for determination of Development Cost Charges (DCC's) to be applied in the future. These costs will be further summarized in the financial impact analysis to be completed in the fall of 2020 as part of the 20 Year Servicing Planning process.

Internal Circulation:

Divisional Director, Corporate Strategic Services
Divisional Director, Financial Services
Utilities Services Manager

Wastewater Operations Manager
Water Operations Manager
Communications.
Community Planning Division;

Financial/Budgetary Considerations:
Coordination with other plans: This report is part of a series of upcoming coordinated reports for the 2040 OCP and 20-year Servicing Plan. Building off the 20-year Servicing Plan Update provided to Council on March 16, 2020, this report provides the deeper level of analysis of utility requirements for the 20-year Servicing Plan. Similar reports for transportation and parks have been submitted, culminating with a comprehensive report for the 20-year Servicing Plan that will look at balancing the service levels and costs for the three major cost centres to establish the total financial cost to service the 2040 OCP.

Considerations applicable to this report:
Financial/Budgetary Considerations: 20-Year Servicing and Financial Plan

Considerations not applicable to this report:
Existing Policy:
Personnel Implications:
External Agency/Public Comments:
Communications Comments:
Alternate Recommendation:

Submitted by: Rod MacLean, Utilities Planning Manager

Approved for inclusion:  A. Newcombe, Divisional Director, Infrastructure

Attachment 1 – 20 Year Servicing Plan Update – Water, Wastewater, Stormwater presentation

cc: Divisional Director, Infrastructure
Deputy City Manager
Divisional Director, Corporate Strategic Services
Divisional Director, Financial Services
Utilities Services Manager
Wastewater Operations Manager
Water Operations Manager