

The Regional Municipality of York

Committee of the Whole
Environmental Services
November 11, 2021

Report of the Commissioner of Environmental Services

Water and Wastewater Master Plan Update Draft Infrastructure Plan

1. Recommendations

The Regional Clerk circulate this report to the Clerks of the local municipalities, conservation authorities (Toronto and Region and Lake Simcoe Region Conservation Authorities) and the Director of the Central Region Office, Ministry of the Environment, Conservation and Parks.

2. Summary

This report provides the draft infrastructure plan for the Water and Wastewater Master Plan that supports growth to 2051 including consultation and engagement activities.

Key Points:

- The Water and Wastewater Master Plan is a long-term servicing plan that identifies infrastructure and programs required to support projected growth to 2051 as envisioned in the Regional Official Plan
- The Master Plan Update is expected to be completed in early 2022
- Work is being coordinated with the Municipal Comprehensive Review (MCR), Transportation Master Plan and Development Charges Bylaw Update
- Infrastructure projects identified in the 2016 Master Plan have been recalibrated to reflect updated costs and timing. \$4.3 billion in new and expanded water and wastewater infrastructure and supporting programs is required to service growth to 2051
- The 2016 Plan continues to be valid to meet the needs of York Region's growing communities and to support greater resilience in the overall water and wastewater systems by using One Water principles that integrate needs, infirstretch to maximize capacity and apply an innovation lens to guide decision-making
- Extensive consultation and engagement with a variety of participants continue to inform the Master Plan Update

3. Background

This Water and Wastewater Master Plan Update identifies Region wide critical infrastructure to support growth to 2051

York Region has completed regular updates to the Water and Wastewater Master Plan for over two decades to ensure that long-term strategies reflect evolving needs that cross municipal boundaries. The last update was completed and endorsed by Regional Council in 2016.

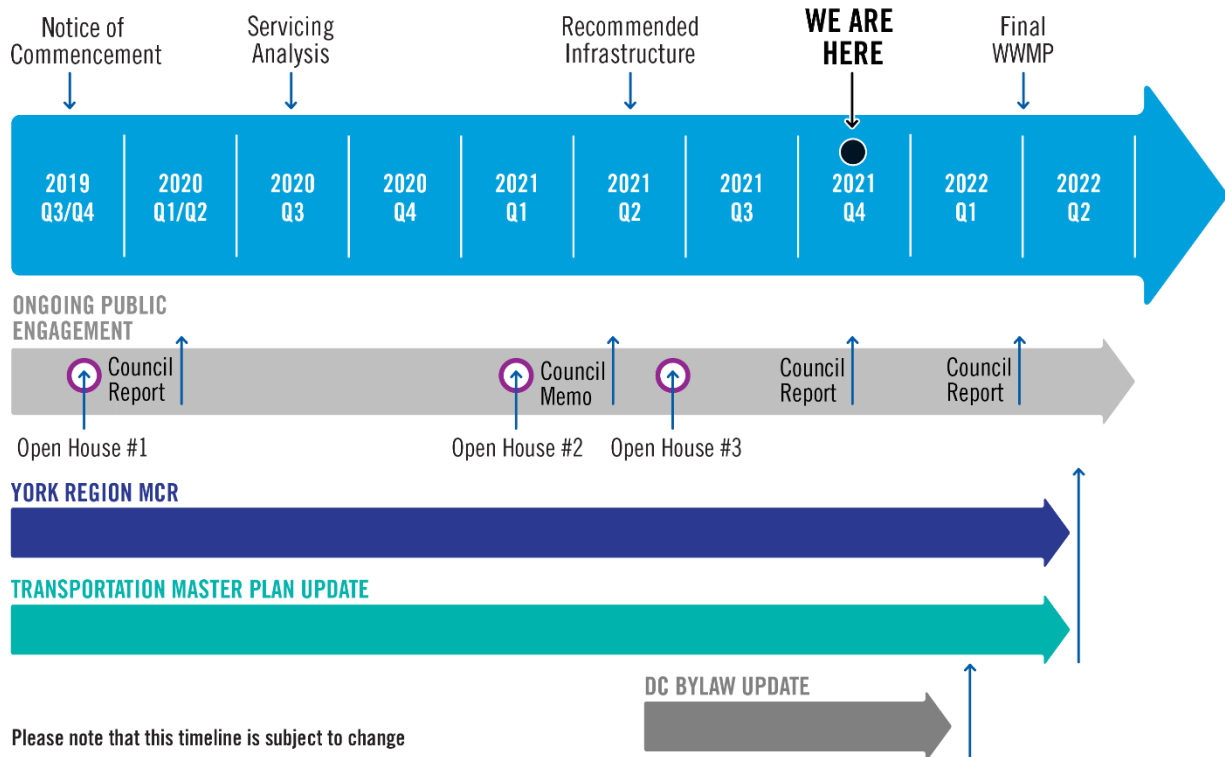
The 2021 Master Plan Update was introduced in the [March 2020](#) report to Regional Council and an update on engagement activities was provided in [June 2021](#). This report provides a progress update on the Master Plan Update including draft water and wastewater infrastructure and associated costs required to support growth to 2051 as part of the Municipal Comprehensive Review. As outlined in the Growth Plan, York Region is projected to grow to 2.02 million residents and employment is projected to grow to 990,000 jobs.

As reported in the [2021 Servicing Capacity Assignment Status Update](#) there is sufficient capacity assigned within the York Durham Sewage System to support growth for 178,132 persons, about six years of capacity based on annual market growth trends.

The Master Plan Update is being completed in coordination with the Municipal Comprehensive Review and Transportation Master Plan using the Council-endorsed principle to align growth with infrastructure, and is based on the March 2021 MCR [Proposed 2051 Forecast and Land Needs Assessment report](#). Infrastructure costs and timing inform the Development Charges Bylaw update which will be brought to Council in 2022.

Figure 1 highlights key activities that have occurred since 2019 as part of this Master Plan Update as well as activities required to finalize this Master Plan in early 2022.

Figure 1
Integrated Growth Planning Timeline



The 1997 York Durham Sewage System (YDSS) Master Plan first identified the need for a wastewater project to service growth in Aurora, East Gwillimbury and Newmarket

In 2004, less than 10 years after downloading the York Durham Sewage System to York and Durham Regions, the Province of Ontario issued an unprecedented letter to York Region mandating that specific infrastructure expansion projects were required to undergo Individual Environmental Assessments. Upper York Sewage Solutions was one of those mandated projects forcing the Region into this unprecedented level of assessment for an infrastructure project required to support already approved growth. In 2009, the Individual Environmental Assessment was publicly launched and in 2010, the Province of Ontario directed York Region to consider innovative wastewater treatment technologies located within York Region as a possible servicing solution. After more than five years of extensive scientific study and consultation with Indigenous communities, government agencies and the public, York Region submitted the project’s Environmental Assessment report to the Province for approval in July 2014.

Now, after more than seven years since submission of the Upper York Sewage Solutions Individual Environmental Assessment, the Province enacted the [York Region Wastewater Act, 2021](#). This legislation puts an indefinite hold on any decision by the Minister of the Environment, Conservation and Parks on the Upper York Sewage Solutions Environmental Assessment, prevents any further action being taken by York Region to advance this project

and seeks to limit the Province's liability for taking these steps. The Province has also announced creation of an expert advisory panel to provide advice on options to address wastewater servicing capacity needs in York Region and future growth in both York Region and Durham Region. York Region is extremely disappointed with the measures taken by the Ontario government and has maintained its position that the Province needs to make a decision on the Upper York Sewage Solutions Environmental Assessment.

The 2021 Master Plan continues to consider the Upper York Sewage Solutions Water Reclamation Centre as a key component of long-term servicing. This commitment to the Lake Simcoe solution was affirmed by Regional Council at their [January 2021](#) meeting. Consideration of alternative servicing options for the Upper York service area are outside the scope of this Master Plan update. Should the Province issue further direction, additional assessment will be undertaken beyond the timelines of the current growth management work plan.

Master Plan details comprehensive, cost-efficient, and resilient infrastructure plan for water and wastewater services

In alignment with the 2019-2023 Strategic Plan and 2021 Fiscal Strategy, the goal of the Water and Wastewater Master Plan is to develop a long-term servicing strategy that is environmentally sustainable and provides cost-effective and reliable service. To achieve this goal, two key objectives were identified through the Master Plan Update process:

- Develop a cost-effective, resilient water and wastewater infrastructure plan to service future growth to 2051 and beyond, and
- Develop an integrated, long-term approach to provide sustainable water and wastewater services

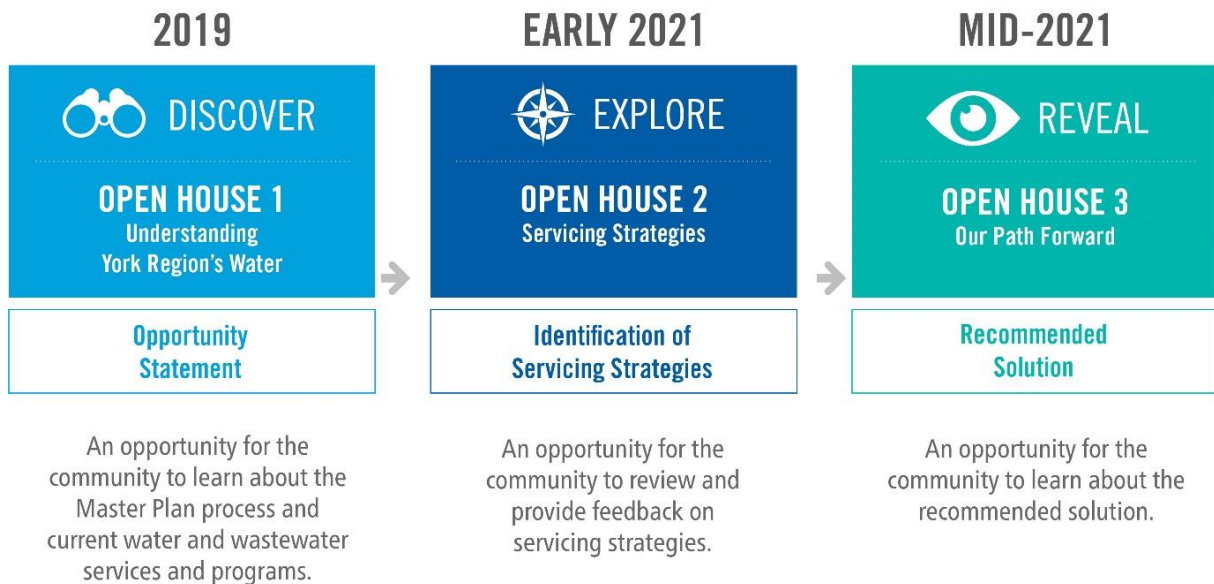
Three guiding principles have been adopted to guide the decision-making process of the Master Plan and the development of strategies to achieve the above objectives:

- Integration - Integrate Master Plan with demand management and asset management initiatives to create synergy and increase efficiency
- Innovation - Practice and explore innovative new concepts and ideas through the development of the Master Plan and continue the same throughout capital planning and delivery processes to promote cost-efficiency and environmental sustainability
- Infrastretching - Maximize useful capacity and useful life of built infrastructure with the benefit of minimizing and/or deferring capital investment

Comprehensive consultation and engagement extended to wide range of participants; final round of engagement focused on draft infrastructure plan

Engagement is an integral component in developing the future infrastructure needs to support growth to 2051. Over the course of the Master Plan Update, three rounds of project engagement occurred to share information and provide opportunities for feedback. The general consultation and engagement approach for the Master Plan Update was presented to Council in [June 2021](#). Engagement milestones are illustrated in Figure 2.

Figure 2
Engagement Milestones for Master Plan Update



Engagement activities on the draft infrastructure plan have been carried out with a variety of stakeholders, partners and Indigenous communities. In keeping with requirements of the Municipal Class Environmental Assessment Process, project information was shared with interested stakeholders and partners. York Region remains committed to effective engagement and consultation, providing opportunities to those expressing interest to meet and discuss as needed. Feedback received from all participants has been addressed and has informed the Water and Wastewater Master Plan Update.

Engagement throughout the project has occurred using a variety of tactics:

- One on one meetings with the local municipalities and regional servicing partners (Region of Durham, Peel Region, and the City of Toronto)
- Meetings with Indigenous communities and the Building Industry and Land Development Association coordinated with the Municipal Comprehensive Review and Transportation Master Plan
- Meetings and correspondence with Ministry of Environment, Conservation and Parks and Toronto and Region Conservation Authority and Lake Simcoe Region Conservation Authority Engagement
- Three public open houses

Public Open Houses held throughout the project offer opportunity for feedback on the draft Plan

Feedback received informs the Master Plan Update and is shared with other water and wastewater business areas. Details of Open Houses 1 and 2 were reported to Council in

[March 2020](#) and [June 2021](#). The third Open House, hosted virtually from June 24 to July 8, 2021, highlighted the draft recommended water and wastewater infrastructure plans (Attachments 1 and 2). It also provided participants an opportunity to learn more about current water and wastewater services and programs and provide feedback.

Feedback collected through this most recent public open house indicates:

- Participants appreciate the opportunity to learn about Regional water and wastewater services and the proactive planning that occurs to enable and sustain future growth
- Responsible resource management for future generations is a priority and participants recommended further enhancing demand management initiatives with innovative water uses such as rainwater harvesting and piped water reuse
- There is strong support for timely delivery of water and wastewater services

4. Analysis

Master Plan Update confirms 2016 servicing strategies continue to be valid

Detailed analysis found that the high-level servicing strategies from the 2016 Master Plan continue to be valid to meet the needs of York Region's growing communities:

- 2010 Intra-basin Transfer approval provides sufficient access to Lake Ontario sourced water to support 2051 planning horizon
- Water supply needs can be met through existing sources and the water supply agreements in place with Toronto and Peel
- Although additional wastewater capacity is needed, wastewater treatment will continue to be provided through agreements with Peel and Durham, the Water Reclamation Centre (WRC) proposed by the Upper York Sewage Solutions Individual Environmental Assessment, as well as through stand-alone treatment facilities

Using the Municipal Class Environmental Assessment framework, the evaluation of servicing strategy alternatives confirmed that the strategy set out in the 2016 Master Plan continues to be recommended today. This recommended strategy will not only service planned growth but will also benefit system resiliency, reduce water age, lower energy consumption, and improve water balance.

Long-term servicing will continue to leverage the existing water and wastewater system and established servicing agreements

The Master Plan Update emphasizes the principle of infrastretching by making best use of the existing system and established long-term servicing agreements. The Master Plan builds upon the 2016 servicing strategy and focuses on recalibrating infrastructure components to accommodate the updated growth forecast.

The 2021 Master Plan Update has identified a long-term strategy to service growth in York Region communities as follows:

- Continued supply of drinking water to the Cities of Markham, Richmond Hill and Vaughan and part of the Township of King with Lake Ontario water and return of the wastewater flows generated in these communities via the York Durham Sewage System and Peel Diversion
- Continued supply to the Towns of Aurora, Newmarket and the community of Stouffville using groundwater and Lake Ontario water, with return of wastewater flows via the York Durham Sewage System. A portion of wastewater flows from Newmarket will be treated at the proposed Upper York Water Reclamation Centre
- Continued water supply to East Gwillimbury using groundwater and Lake Ontario water will also include a future connection from the Lake Simcoe system to supplement water supply to the York Water System. While not yet approved, the Upper York Sewage Solutions project continues to be considered the preferred wastewater servicing solution for growth in the northern communities of East Gwillimbury and a portion of flows from Newmarket
- Continued supply to the Town of Georgina using Lake Simcoe water with wastewater flows returned via the Keswick and Sutton water resource recovery facilities
- Continued water supply to stand-alone communities using groundwater with return of wastewater flows to individual water resource recovery facilities in those communities. Continued implementation of demand management programs like water conservation and inflow and infiltration reduction influence the available capacity by stretching the infrastructure and extending the time for when new infrastructure is needed

Approximately 80% of the water and wastewater \$4.3 billion infrastructure plan to 2051 is not contingent of the provincial approval of the Upper York Servicing Solutions project and can proceed through implementation in the capital plan.

2021 updated infrastructure program is a recalibration of previous Master Plans

This servicing strategy provides the high-level direction for how servicing is planned to be delivered; implementation of the strategy is undertaken through infrastructure projects and supporting programs.

Infrastructure projects identified in the 2016 Master Plan are recalibrated in this update to consider the 2051 planning horizon and to provide greater system resilience. Most growth infrastructure projects identified in previous plans continue to be needed to support growth in York Region communities. Adjustments have been made to sizing, timing and estimated costs in the updated plan. The plan also details additional infrastructure needed to accommodate the growth anticipated by 2051.

Infrastructure identified in the Master Plan Update includes:

- 19 new water facilities, 6 water facility expansions, and approximately 75 kilometers of watermain
- 3 new wastewater facilities, 17 facility expansions, and approximately 65 kilometers of sewer

Attachment 1 and Attachment 2 highlight the full suite of updated and new projects identified. Table 1 summarizes some of the key growth-related water and wastewater infrastructure that have been updated from the 2016 Master Plan.

Table 1
Growth-related infrastructure projects updated from 2016 Master Plan

Infrastructure Projects	Planned Timing	Cost Estimates
<p>Northeast and West Vaughan Servicing Projects</p> <p>Water and wastewater projects will connect urban expansion lands in Northeast Vaughan and West Vaughan to the existing Regional systems</p>	2021-2030	\$682 million
<p>North Markham Servicing Projects</p> <p>New infrastructure will connect key development areas in North Markham to the existing Regional systems</p>	2031-2040	\$156 million
<p>Primary Trunk Sewer Twinning and Upgrades at Duffin Creek Plant</p> <p>Various projects to improve and expand capacity of the Duffin Creek Plant and York Durham Sewage System in Durham</p>	2021-2030	\$243 million
<p>Upper York Sewage Solutions Water Reclamation Centre and Expansion</p> <p>The Water Reclamation Centre remains a key component of the servicing strategy and in the long-term, will require a future expansion of the facility (subject to future studies and approvals)</p>	<p>WRC construction 2028*</p> <p>Expected future expansion 2041*</p>	\$765 million
<p>Introduction of Lake Simcoe Water Supply to York Water System</p> <p>Infrastructure to connect Lake Simcoe-based water supply to north end of the York Water System to supplement existing water sources is needed to service planned growth and maintain water balance between the Lake Ontario and Lake Simcoe watersheds. This project also supports improved system resiliency</p>	2031-2040	\$50 million

Infrastructure Projects	Planned Timing	Cost Estimates
<p>Other Water Servicing</p> <p>Projects supporting additional water supply including cost-shared water supply agreements with Toronto and Peel Region, as well as Nobleton and Georgina system upgrades. Improvements and expansion of water storage facilities, pipe network and pumping stations in various locations</p>	Various	\$479 million
<p>Other Wastewater Servicing</p> <p>Increased wastewater treatment capacity including expansion of Keswick and Sutton Water Resource Recovery Facilities and Nobleton Wastewater Servicing. Upgrades to the trunk sewer pipe network and pumping stations in various locations</p>	Various	\$590 million

*Construction timing of the initial phase of the Water Reclamation Centre is based on receiving Provincial approval in 2021

Table 2 summarizes the additional growth-related infrastructure projects identified in the current Master Plan update that are needed to support the updated growth forecast.

Table 2
Additional growth-related infrastructure to support updated growth forecast

Infrastructure Projects	Planned Timing	Cost Estimate
<p>Expansion of Duffin Creek Plant</p> <p>To receive higher flows to 2051, the Duffin Creek Plant will require additional upgrades which are expected to be phased and will be further defined through future planning studies coordinated with Durham Region</p>	Various between 2031-2051	\$757 million
<p>Expansion of YDSS Conveyance System</p> <p>Trunk sewer upgrades to increase the capacity of the YDSS sewer network</p>	Various	\$325 million
<p>York East Water System Expansion</p> <p>New infrastructure to bring additional Lake Ontario water supply into York Region's northern communities on the east side of the York Water System. This project will accommodate growth in Aurora, Newmarket and</p>	2031-2040	\$148 million

Infrastructure Projects	Planned Timing	Cost Estimate
East Gwillimbury and support a more robust system to service these communities		
King City Wastewater System Upgrades	Initial Phase 2021-2030	\$48 million
Phased upgrades to increase the capacity of the King City Wastewater System in line with planned growth	Second Phase 2041-2051	
Other Water Servicing	Various	\$24 million
Various upgrades and expansion of water system network		
Other Wastewater Servicing	Various	\$7 million
Various upgrades and expansion of wastewater system network		

Draft infrastructure plan supports revised phased 50-55% intensification scenario recommended by Municipal Comprehensive Review

Council has recently approved the staff recommended phased 50-55% intensification scenario, which can be accommodated without major shifts in infrastructure planning and timing.

Also, at its October 21, 2021 Special Council meeting, Council approved four motions that have implications for planning and servicing growth to 2051. Staff will be considering potential impacts arising from these motions on timing and servicing details for King Township, Whitchurch-Stouffville, East Gwillimbury and Markham as we work to finalize the Master Plan.

In the next 30 years, there will be numerous opportunities to recalibrate the long-term water and wastewater servicing plan given that several Municipal Comprehensive Reviews, Master Plan updates and Development Charge Bylaw updates are anticipated between now and 2051. As growth projections are realized, infrastructure timing can be adjusted within the fiscal framework during the 30 year planning horizon. Identifying the remaining Whitebelt lands as “Future Urban” beyond 2051 acknowledges the reality of future long-term function of these lands and allows long-term planning for infrastructure in advance of subsequent municipal comprehensive reviews.

Implementing the Master Plan Update will involve annual monitoring and recalibration of the capital plan as needed

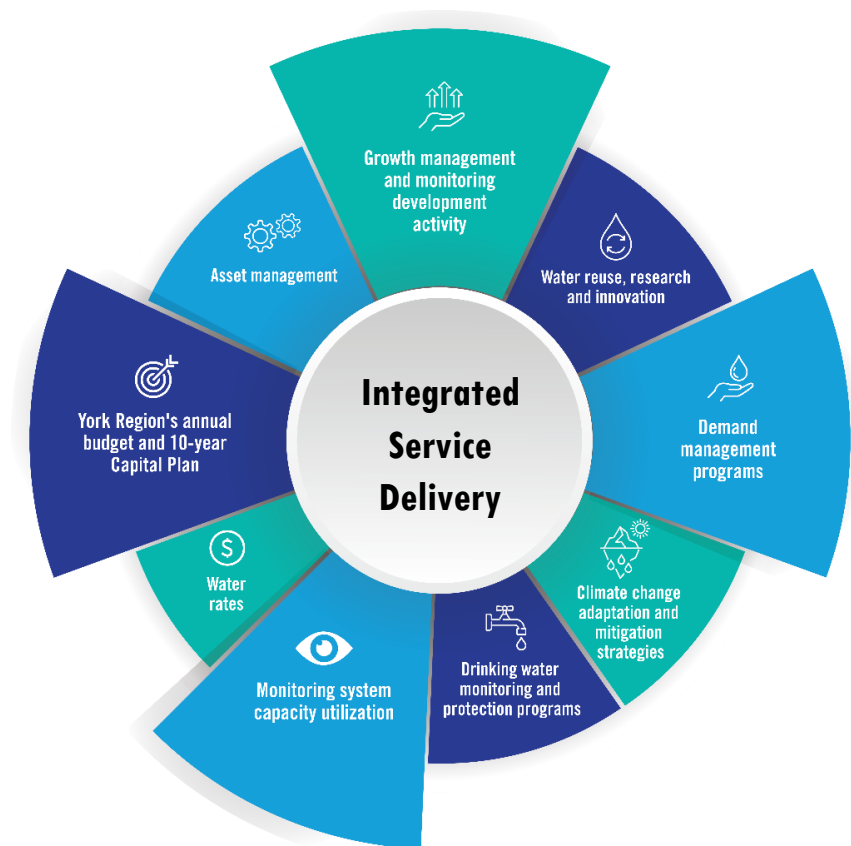
This Master Plan provides a high-level roadmap for delivering servicing over the long term by establishing future infrastructure project needs. The Master Plan Update has been created with the best available information and understanding. Over time assumptions need to be

monitored. Updates and course corrections will happen as things change, or better information becomes available. A more agile approach to managing growth that phases new infrastructure in line with actual growth and development charge collections will make it easier for the Region to maintain financial sustainability.

The Master Plan identifies projects that will be implemented through the 10-year Capital Plan and sets out sequencing of projects/programs to meet growth and asset management needs. The Capital Plan is reviewed annually in conjunction with the annual budget; this process provides an opportunity each year to recalibrate near-term plans to reflect changing circumstances. Shifting circumstances considered in Capital Plan updates include financial constraints, changes to timing or costs of projects in implementation, shifting asset management needs informed by ongoing condition assessments and coordination with other projects.

Close monitoring of capacity utilization in the infrastructure system and development activity enables the Region to coordinate servicing capacity with growth/development. Demand management programs, which target water conservation and reduction of inflow and infiltration, monitor system flows on an ongoing basis and contribute to capacity available in the Regional system. A variety of ongoing programs, plans, analysis, and activities support this, illustrated in Figure 3.

Figure 3
Integrated Approach to Water and Wastewater Service Delivery



Regional Council looking to the Province for opportunities to provide servicing to support local municipal requests

Requests for regional servicing solutions have been received for areas that are restricted by Provincial policies as shown in Table 3.

Table 3
Areas affected by Provincial policy restrictions

Provincial policy	Affected area
Growth Plan Greenbelt Plan	Nobleton
Growth Plan Greenbelt Plan Oak Ridges Moraine Conservation Plan	Ballantrae Gormley Vandorf
Greenbelt Plan Oak Ridges Moraine Conservation Plan	Hwy 404 Employment Lands

Long-term options are necessary as communities continue to grow and expand into areas that make Great Lake based services a viable and sustainable option for these isolated and strategic communities. Based on recent Council decisions, staff will work to document servicing implications and costs for these affected areas and include that information in an appendix to the Master Plan.

Master Plan Report will be brought to Council for endorsement in 2022

This Master Plan Update is scheduled for completion in Q1/Q2 2022. Key activities in the next few months include:

- Review public input and finalize master plan report
- Complete presentations to Local Municipal Councils on findings of the Master Plan Update
- Report to Council in Q1/Q2 2022 for endorsement of the Master Plan Update
- Submit Master Plan Update Report to Ministry of Environment, Conservation and Parks
- Support activities leading to the Regional Official Plan update
- Support activities leading to the Development Charge Bylaw Update including the preparation of the Development Charge Background Study

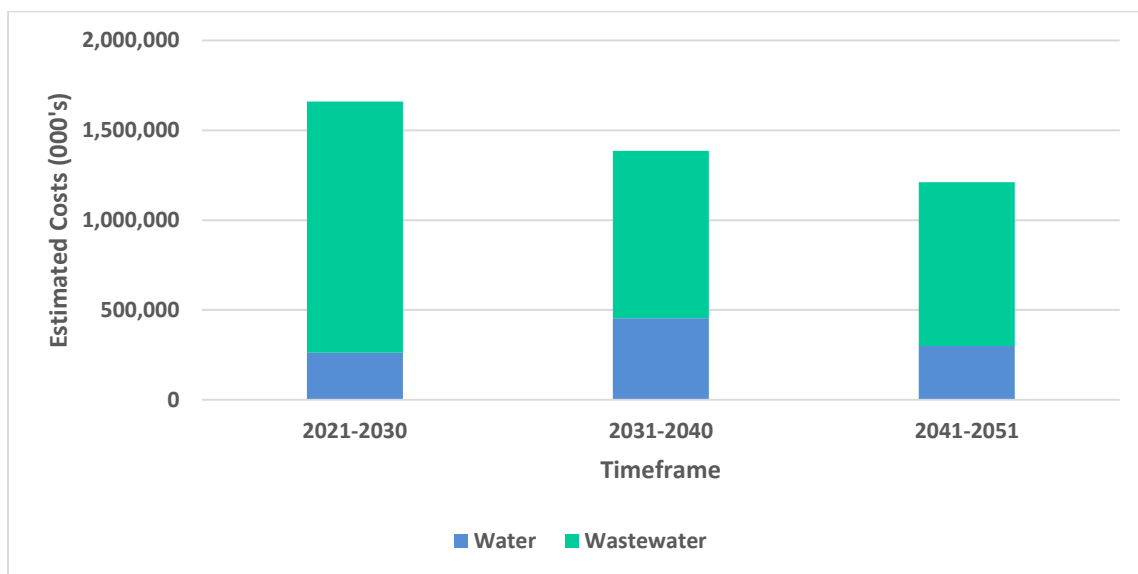
5. Financial

Estimated cost of water and wastewater infrastructure to support growth to 2051 is \$4.3 billion

Subject to final adjustments based on engineering analysis to be completed over the next few months, the total cost of projects and supporting programs required to support growth to 2051 identified under this Master Plan is \$4.3 billion, which includes an additional \$1.4 billion in new water and wastewater infrastructure compared to the 2016 Master Plan. The capital cost of the first 10 years of the draft infrastructure is in alignment with the 2021 10-year capital plan. The annual budget process provides an opportunity to recalibrate capital costs as required.

A breakdown of the estimated capital costs to implement the water and wastewater projects identified in the Master Plan is provided in Figure 4.

Figure 4
Growth Related Capital Infrastructure Costs for water and wastewater



The majority of the \$4.3 billion in growth-related capital costs is eligible for Development Charges funding. Staff are currently updating the Region's Development Charge Bylaw, which is expected to be tabled in Q1 2022.

Maintaining financial sustainability requires careful alignment of growth planning and infrastructure

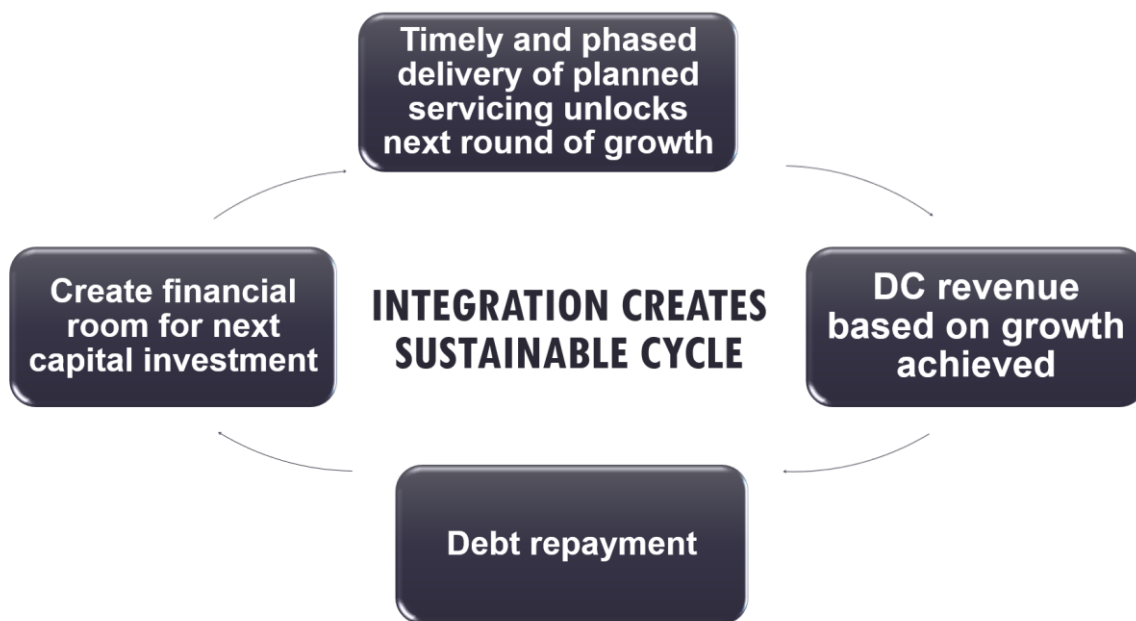
To support growth to 2051, an integrated approach to land use planning will continue to be required to manage the capital plan in line with objectives of the Council approved Fiscal Strategy. As [reported to Council](#) throughout the Municipal Comprehensive Review process, aligning planning for growth with infrastructure and financial planning is of paramount importance to ensure the Region delivers complete communities supported by Regional

infrastructure delivered and operated in a financially sustainable way. A more agile approach to managing growth that phases new infrastructure in line with actual growth and development charge collections will make it easier for the Region to maintain financial sustainability.

Capital investments will need to be closely aligned with timing and location of actual growth as well as with collection of development charges revenues to provide sufficient debt capacity to finance those infrastructure investments. Prioritization and staging of capital investments will be required to align with actual population growth achieved rather than by set timelines based on the Region's growth forecasts. This financially sustainable approach is based on the actual timing and location of future development in the Region.

A number of factors can disrupt the financial sustainability cycle as shown in Figure 5, including infrastructure delays, taking on too much debt at once, slower than anticipated growth, or actual growth misaligned with forecasted growth and planned infrastructure. Aligning the growth and infrastructure timing can help mitigate financial risks associated with planning for growth and help manage and reduce the Region's debt ensuring growth can be accommodated in a financially sustainable way.

Figure 5
The Financial Sustainability Cycle



6. Local Impact

Local municipal engagement continues throughout the project

The Master Plan is being completed in consultation with local municipal staff and Councils. Regional infrastructure projects identified through the Master Plan Update will provide input to local municipal master planning and servicing studies. Throughout the past summer months, Regional staff met with staff from each local municipality to review and discuss the draft infrastructure program. Local municipal staff reinforced the need for timely, well-paced and coordinated infrastructure delivery of resilient and robust services.

Active participation of local municipalities in the ongoing long-term water conservation and infiltration and inflow reduction initiatives continues to be essential to ensure the provision of reliable, sustainable, and cost-effective water and wastewater services over the long-term.

Presentations to Local Municipal Councils are currently underway and should be completed by the end of November 2021. Feedback received from this final step of engagement and direction resulting from the October 21, 2021 Special Council meeting will inform the final Water and Wastewater Master Plan Update report in 2022.

7. Conclusion

The Master Plan Update supports the Region's Municipal Comprehensive Review process to update the Region's Official Plan in alignment with the provincial growth target for York Region, and provides input to the 2022 Development Charges Bylaw.

The draft infrastructure plan outlines \$4.3 billion dollars for water and wastewater projects to enable growth to 2051. Since June 2021, this draft plan has been under review with extensive consultation, including public stakeholders, Indigenous communities, Municipal councils and staff. Feedback received from all participants has been considered and will inform the final Water and Wastewater Master Plan Update. The final draft is anticipated for Council endorsement in Q1/Q2 2022.

For more information on this report, please contact Wendy Kemp, Acting Director, Infrastructure Asset Management at 1-877-464-9675 ext.75141. Accessible formats or communication supports are available upon request.



Recommended by:

Erin Mahoney, M. Eng.
Commissioner of Environmental Services



Approved for Submission:

Bruce Macgregor
Chief Administrative Officer

October 22, 2021
Attachments (2)
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