1 TRANSPORTATION MASTER PLAN

2 WATER & WASTEWATER MASTER PLANS

3 SUMMARY AND NEXT STEPS

INFRASTRUCTURE MASTER PLANS

UPDATE TO CITY BUILDING COMMITTEE

City Building Committee

March 5, 2019

Tom Reeve

Barrie

Infrastructure Master Plans

- Studies started in 2017
- Based on long term population and employment projections for the City
- Studies follow the municipal class environmental assessment process for master plans

Barrie

Infrastructure Master Plans

Where are they used?

OFFICIAL PLAN UPDATE

The Master Plans are key input to the Official Plan Update as they outline the infrastructure required to provide key municipal services into the future.

TOOL FOR FUTURE STUDY

The tools created and updated in the Master Plans provide tools the City can use to advance understanding and study of infrastructure.

DC BACKGROUND STUDY

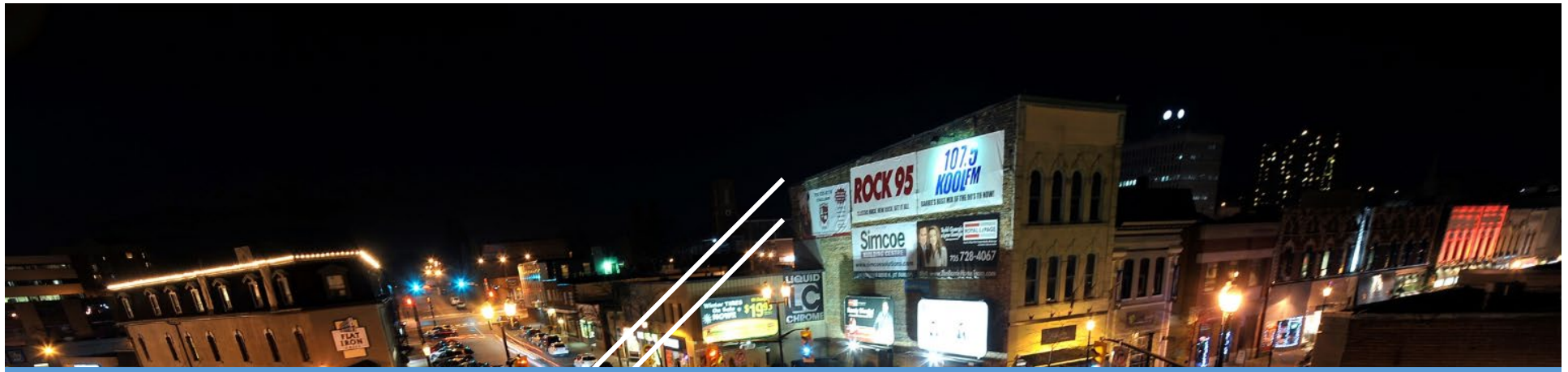
As the Master Plans use growth predictions as key input they are important to the development charges background study.

FINANCIAL AND ASSET MANAGEMENT PLANNING

The information from the Master Plans will be considered when developing the long range financial plan and asset management strategies.

CAPITAL PLANNING

Annually as the City prepares their capital budget, the Master Plans provide direction to the projects required.



TRANSPORTATION MASTER PLAN

City Building Committee

March 5, 2019

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Barrie

GROWTH PROJECTIONS

Provincial Growth Plan

In 2017 the province released an update to their growth plan. Includes targets for population and employment for Barrie.

Growth Consultant

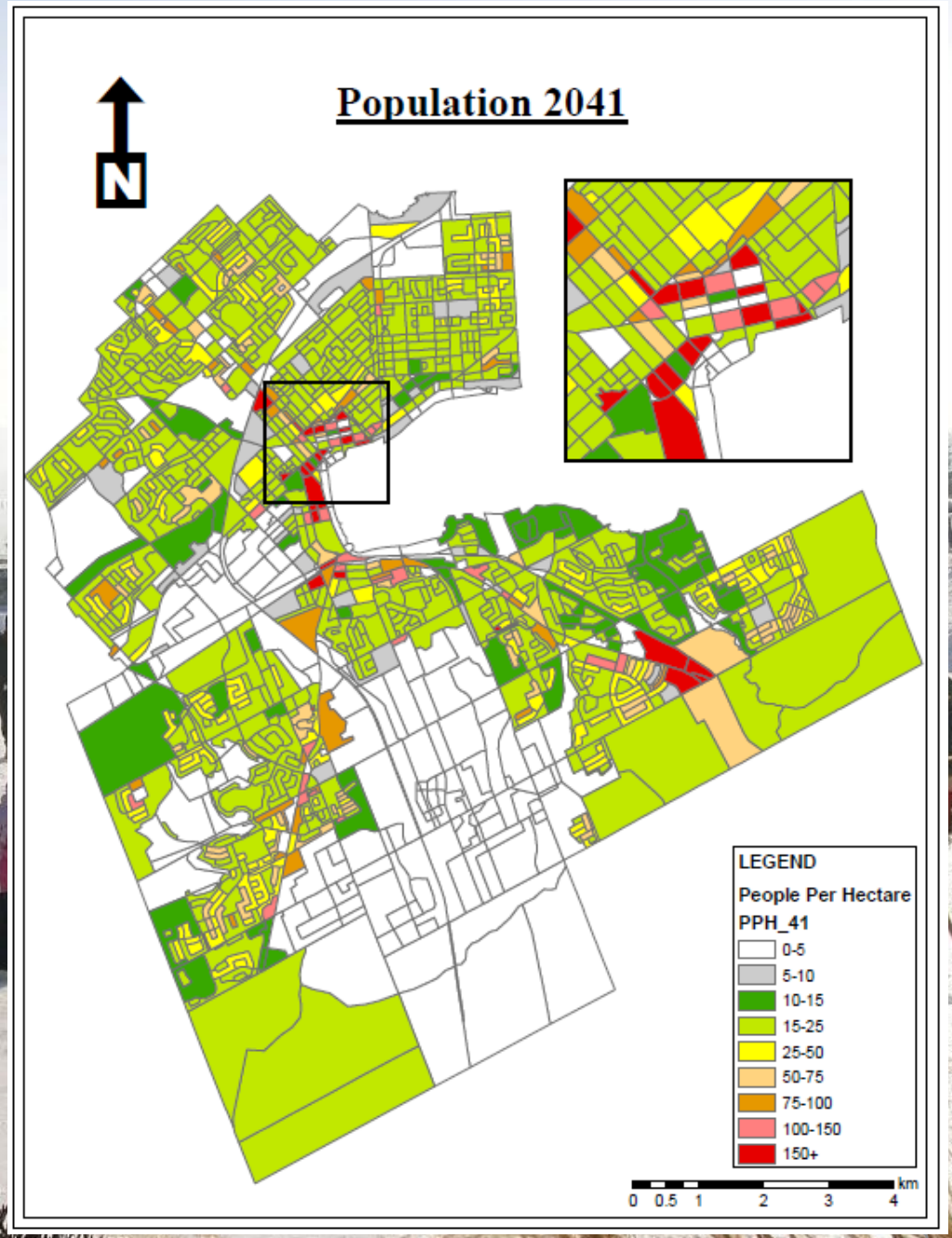
The City hired Watson and Associated to update the City's population and employment projections on a geographic basis.

Population Projections

Barrie's growth projections to take the City to 253,000 by 2041. About 50,000 of that population in the secondary plan areas.

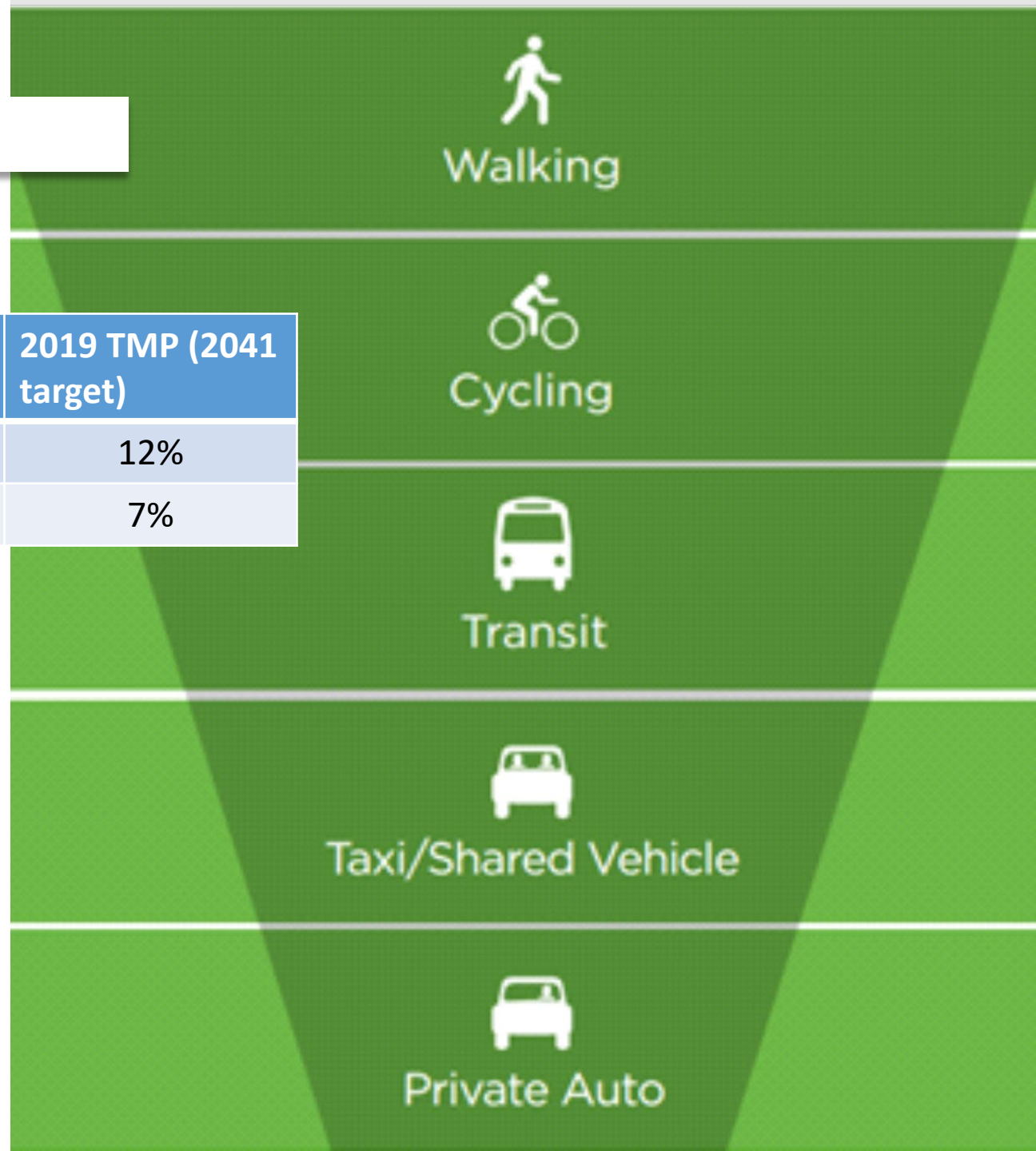
Employment Projections

To accompany the population growth, the City is expected to grow from 74,000 jobs to 129,000 jobs.



MODAL SPLIT

	Current	2014 MMATMP (2031 target)	2019 TMP (2041 target)
Active Transportation	<6%	12%	12%
Transit	<2.6%	7%	7%



TARGETS

The City's modal splits have not changed much since the last study recommended the 'medium' approach to modal targets.

LONGER IMPLEMENTATION TIME

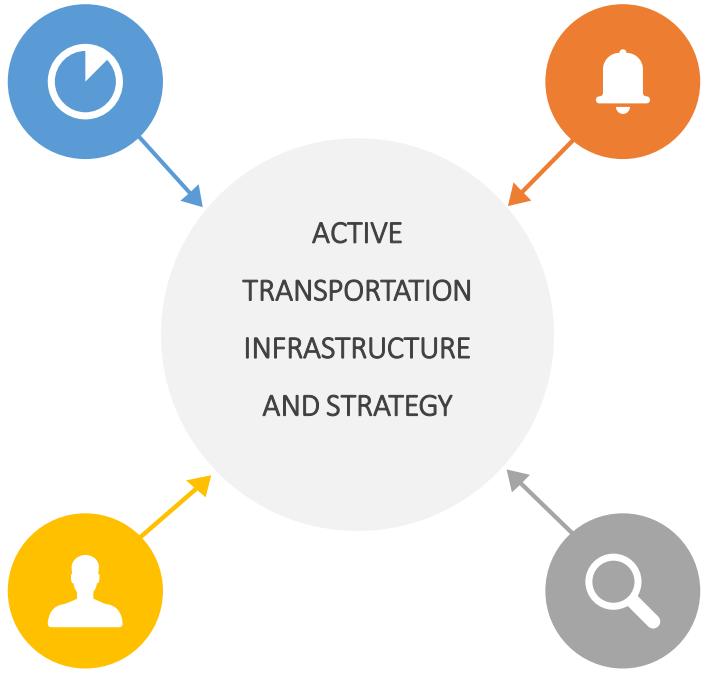
Using the same targets but changing the target year from 2031 to 2041 gives the City more time to reach the goals but still keep the targets in-line with the council priority for improving options to get around Barrie.

ACTIVE TRANSPORTATION

Pedestrian System + Multi-Use System + Cycling System – Barrie's Active Transportation Network

REVIEW OF BEST PRACTICES

Consultant applies their experience from the province and across North America to keep the plan up to date with the most proven methods to improve active transportation.



DESIGN GUIDELINES FOR ACTIVE TRANSPORTATION

MTO guidelines guide the selection of the type of active transportation infrastructure considering traffic volume, neighbourhood setting, connectivity and speeds.

CONSIDERTION FOR GROWTH

Plan is developed considering the expected growth in population and employment. Intensification areas expected to be areas with high modal split.

CULTURE CHANGES

Infrastructure requirements are accompanied by some recommendations on improving the modal split by working to change the culture.

ACTIVE TRANSPORTATION HIGHLIGHTS

HIGHLIGHTS

The 2014 Multi-Modal Active Transportation Master Plan was Barrie's first plan that comprehensively considered Active Transportation. The 2019 TMP update builds on that plan and updates it to reflect current and future trends. A few highlights of the updated plan includes:

The plan considered recreational and commuter users and enhances opportunities for users of all ages and abilities.

The trend across the province is to place more emphasis on separated bicycle facilities.

This Transportation Master Plan is the first master plan to include a trails master plan component.

Integration of Active Transportation and Transit are a critical component to changing commuting options for City residents.

Off-Road Trails

- multi-use (Type 1-3)
- primarily pedestrian only(Type 4-5)

In-Boulevard Pathways

Cycle Tracks

Buffered Bike Lanes

Bike Lanes

Paved Shoulders

Signed Routes
Includes signed bike routes and urban shoulders (edge line markings)

Sidewalks

TRANSIT

GO TRAIN SERVICE

Barrie's two GO Train stations form a key part of transit for Barrie. Service to Barrie using the GO Train is planned to be upgraded to a two-way, all-day rail service during peak and non-peak hours on a 30 minute frequency.

TRANSIT SERVICE PRINCIPLES

To increase transit usage, the consultant recommended the City put an emphasis on major corridors based on the principles of: Core Frequency (10 minute service), Supporting Network (20 minute service) and minimum transfers.

ADDITIONAL MEASURES

Study recommends the City investigate opportunities to take advantage of transportation demand management measures to improve transit usage.

ROADS

Secondary Plan Growth

The TMP has confirmed the lane requirement for future roads in the Salem and Hewitt's Secondary Plan Areas.

ROW Protection

The TMP determined the minimum Right-Of-Way widths for protection during development and re-development.

Road Diets

In a few locations, there is excess lane capacity. These area can be explored as potential road diets.

HOV Lanes

High Occupancy Vehicle Lanes are recommended for long-term consideration on major corridors.

HIGHWAY 400

Crossings and Interchanges

ACCESS TO HIGHWAY 400

Improvements to the number of lanes to access Highway 400 are being made at Dunlop Street, Essa Road, Mapleview Drive, and McKay Road.

ACCESS ACROSS HIGHWAY 400

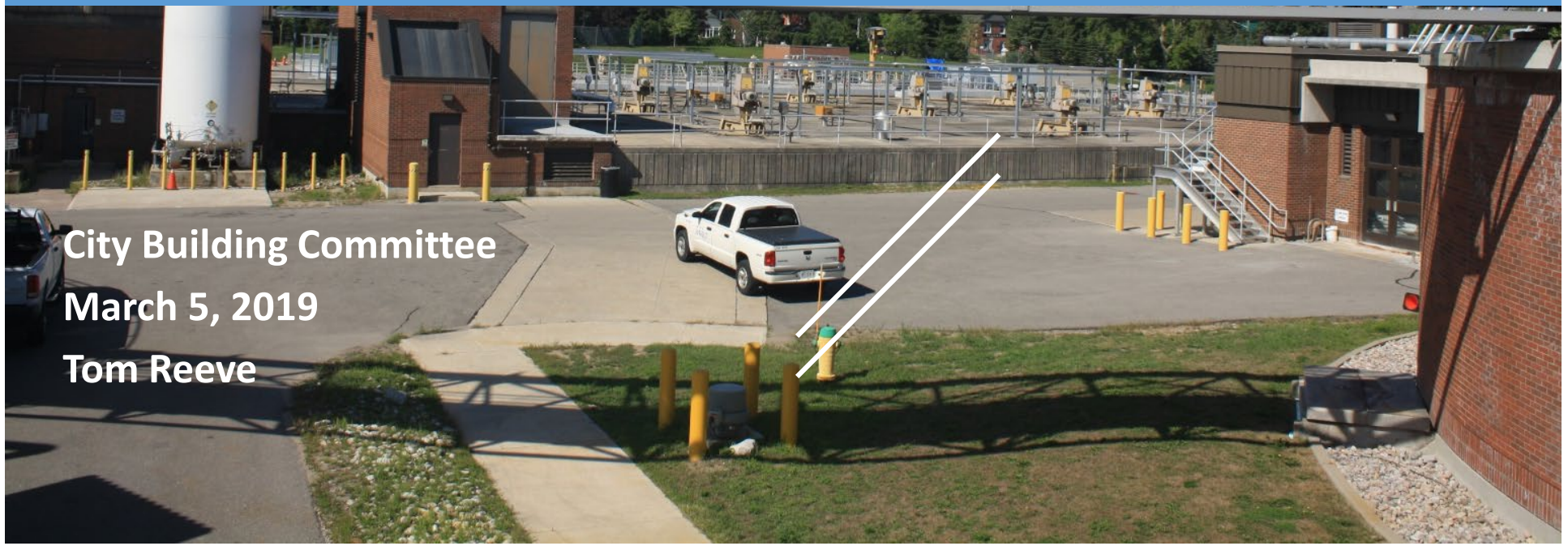
Additional capacity being added to cross Highway 400 at Dunlop Street, Essa Road, Harvie/Big Bay Point Road, Mapleview Drive, Lockhart/Salem Road, and McKay Road.

HARVIE-BIG BAY Interchange Not Required

Because of the improvements in access to and across the highway, the partial interchange previous contemplated is no longer recommended. As well, getting a interchange in at this location would be challenging because of the proximity to existing interchanges and the ONroute access.

QUESTIONS

WATER & WASTEWATER MASTER PLANS



City Building Committee

March 5, 2019

Tom Reeve

Water & Wastewater Master Plans

Water Supply

The Water Supply Master Plan looks at the City's sources and treatment of drinking water and recommends what is needed to allow the City to grow.

Water Distribution

The Water Storage and Distribution Master Plan looks at the pipes, reservoirs and pump stations required to provide water for consumers and to fight fires.

Wastewater Collection

The Wastewater Collection Master Plan analyses the sewers and pumping stations required to bring wastewater to the plant as the City grows.

Wastewater Treatment

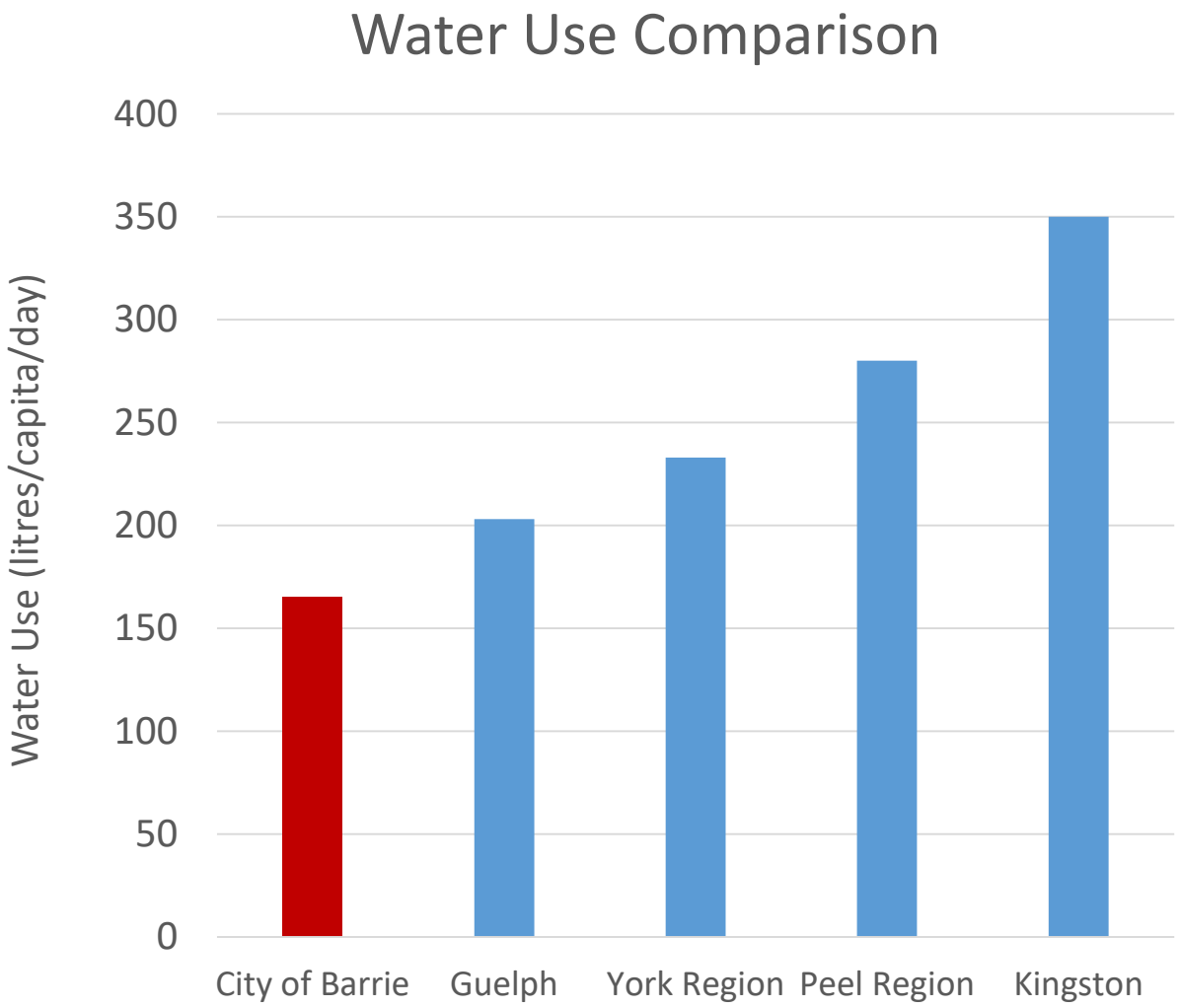
The Wastewater Treatment Master Plan outlines the changes required to the Wastewater Treatment Facility in order to treat the increased flows from growth and meet current legislation.

DESIGN CRITERIA

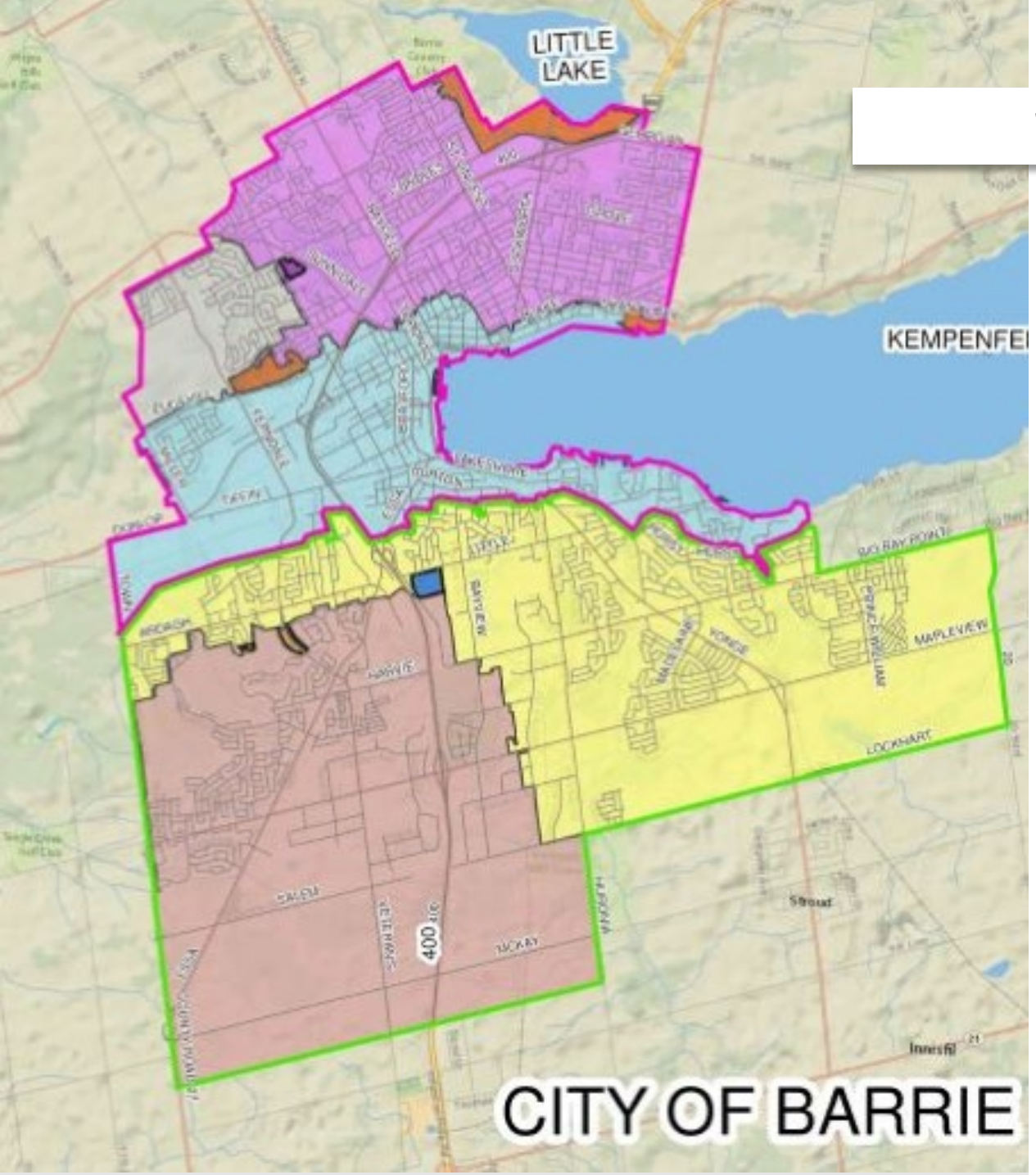
LEVEL OF SERVICE

The Water and Wastewater Master Plans are driven by legislation and standards that govern:

- Drinking Water Standards: the Ministry of Environment, Conservation and Parks (MECP) outlines the requirements to provide municipal drinking water.
- Having abundant supply of water and suitable pressure is a key component of fire protection in the City of Barrie.
- In addition to the normal requirements of the Ministry of Environment, Conservation and Parks (MECP) for wastewater discharge, the City of Barrie must also meet the water quality standards for the Lake Simcoe Protection Plan.
- The City of Barrie's standards have been developed to ensure that the City has a robust and secure water and wastewater system.



Water Supply Master Plan



GROUNDWATER SUPPLY

The north and central part of the City are supplied by groundwater wells. There are 12 wells currently providing water to the northern and central pressure zones.

SURFACE WATER SUPPLY

The Surface Water Treatment Plant (SWTP) began supplying water to Barrie in 2011. Surface water is drawn from Lake Simcoe (Kempenfelt Bay) through a pipe nearly 1 km from shore and 26 m deep and supplies the southern portion of the City.

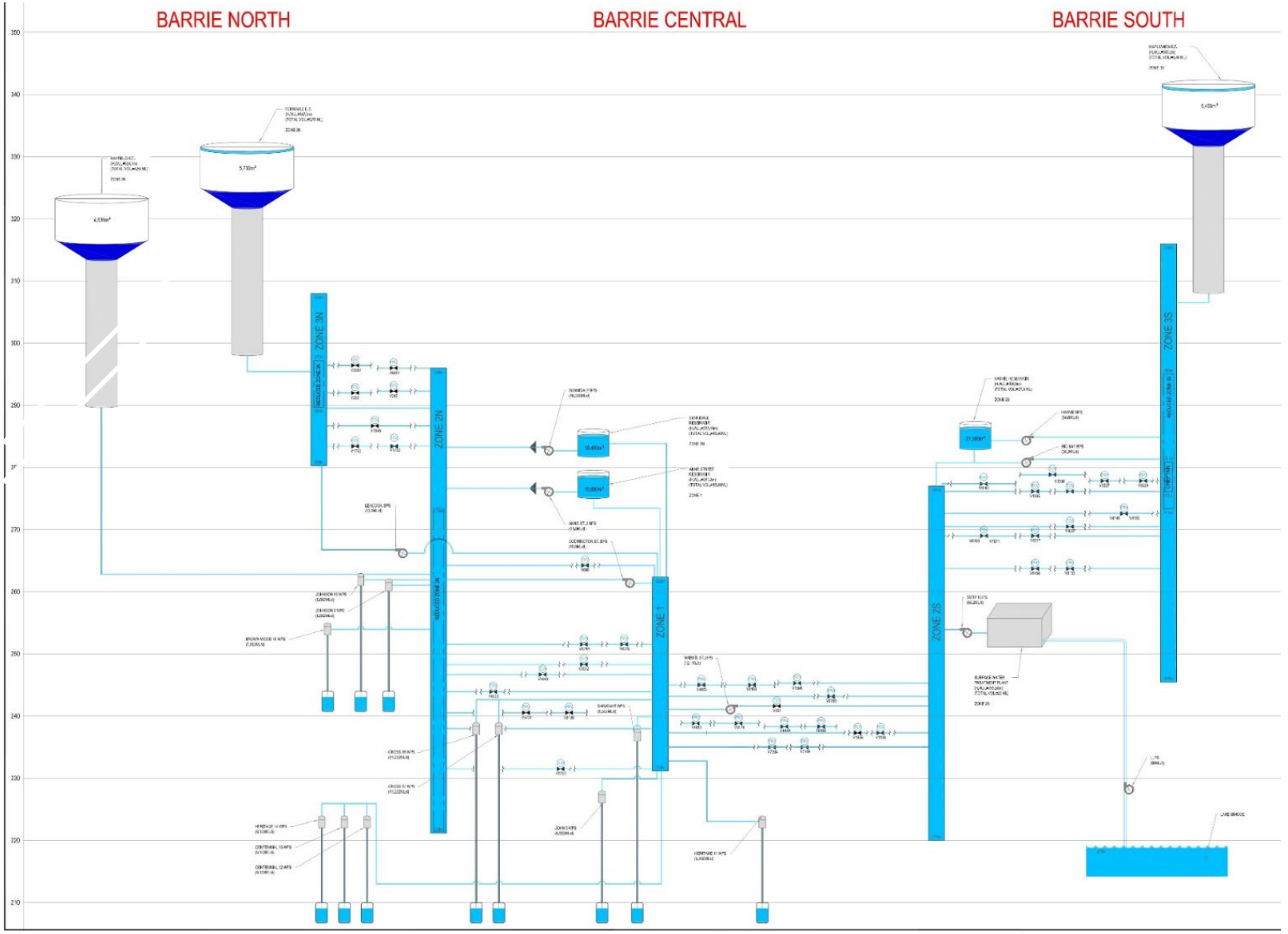
ACCOMMODATIONS FOR GROWTH

The City must have adequate water supply in place prior to water users coming online as part of intensification and green field growth. Because of the low per-capita water use and the recently constructed Surface Water Treatment Plant, the City has sufficient water to grow with only a few minor improvements to the system. This is achieved through mixing of surface and groundwater pressure zones.

Water Storage and Distribution Master Plan

The City of Barrie has five main pressure zones that supply water to the City. The Water Storage and Distribution Master Plan outline the recommendations for new projects to allow the City to grow. These projects include:

- 67 km of new water mains.
- A new pump station with 20 ML/ day capacity.
- A new Salem water reservoir with 20 ML of storage.



NEW INFRASTRUCTURE

11 km of new trunk sewers are proposed and an additional 2 pump stations. Mostly these are new sewers to service the Secondary Plan areas but there are also some existing pipes that will need to be upsized to accommodate intensification.

INFLOW AND INFILTRATION

Inflow and infiltration is water that enters the sewer system from sources other then wastewater. It includes water from leaky pipes, sump pumps connected to sanitary and cross connections.

WASTEWATER TREATMENT MASTER PLAN

ADVANCED NUTRIENT REMOVAL

The Wastewater Treatment Master Plan updates and confirms the need to install a Membrane Bioreactor (MBR) to grow and meet the new requirements outlined by the Lake Simcoe Protection Plan.

SOLIDS TREATMENT

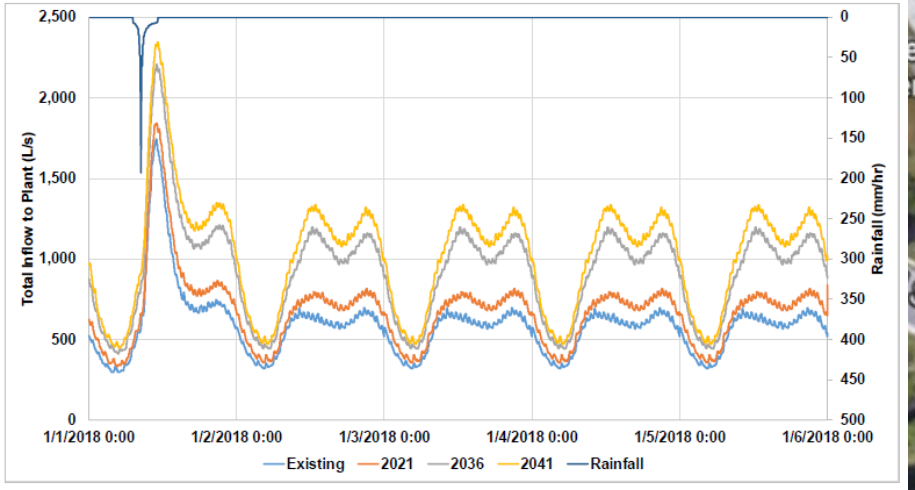
Since the Wastewater Treatment Facility was upgraded, the solids loading to the plant has been increasing and will continue to do so as the City grows. The Master Plan has recommended additional digester capacity be installed.

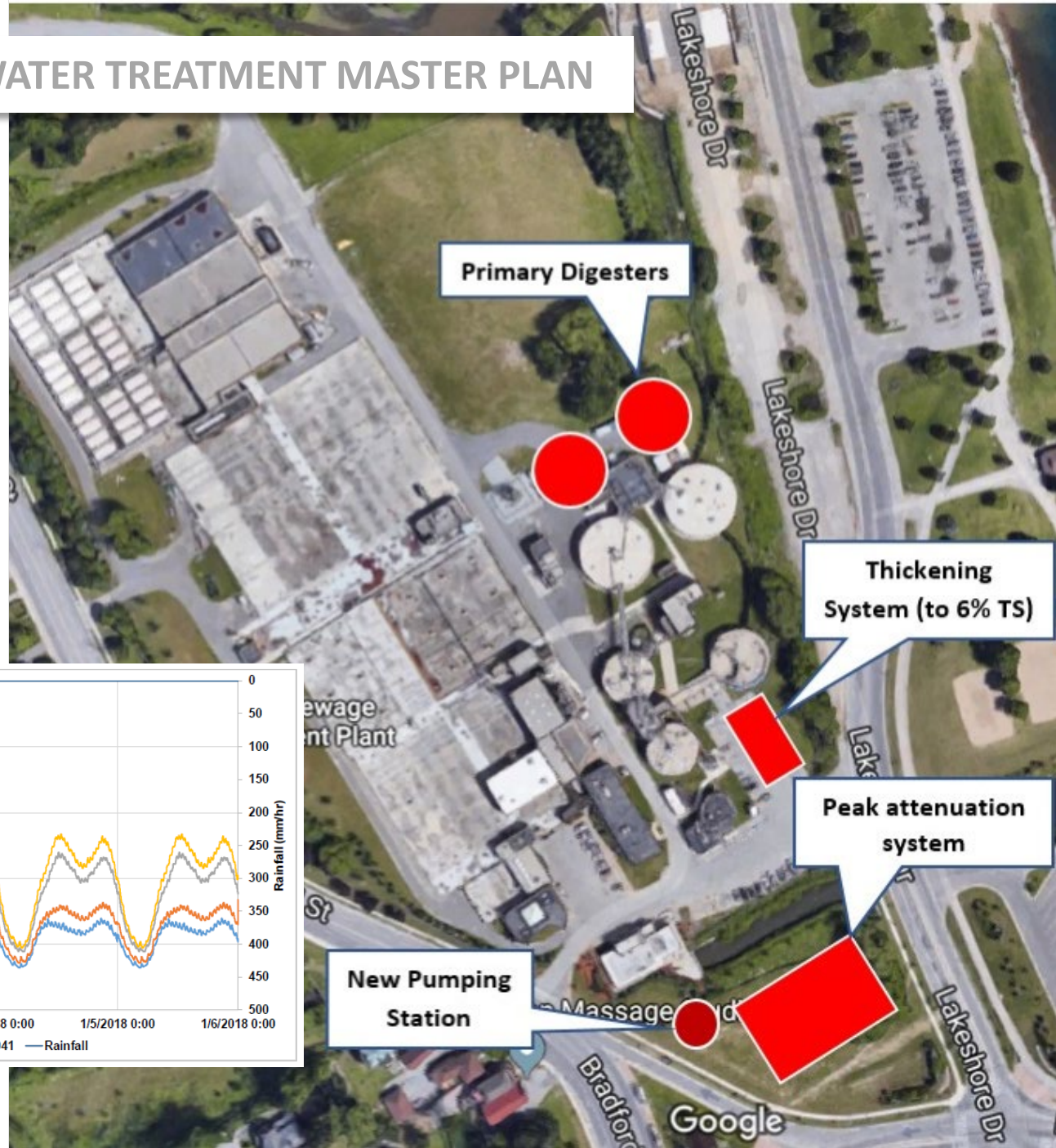
BIOSOLIDS STRATEGY

In order to extend the life of the Oro-Medonte Biosolids Facility and reduce the operating costs, the Master Plan is recommending additional dewatering of the sludge take place at the Wastewater Treatment Facility.

PEAK FLOW ATTENUATION FACILITY

Peak flows, caused principally by inflow and infiltration, can push the plant operation to the limit of its design. To reduce this risk and improve the efficiency at which the plant can operate, the Master Plan is recommending construction of a peak flow attenuation tank adjacent to the plant. The peak flow attenuation tank is also required to implement the MBR.






QUESTIONS

CAPITAL COSTS

Master Plan	Estimated Capital Cost (millions)
Drainage Master Plan	$300
Transportation Master Plan	$1750
Water Supply Master Plan	$2
Water Storage and Distribution Master Plan	$80
Wastewater Collection Master Plan	$30
Wastewater Treatment Master Plan	$175

1. Costs do not include renewal needs.
2. Life cycle costs were considered in evaluation of options but not presented here.
3. Costs are draft at time of presentation and are being refined as the Master Plans are being finalized. The City and consultants are confirming that contingency factors are appropriate to address project risks. This would potentially impact all costs above.
4. Wastewater Treatment MP costs include estimate to go to full MBR which is being assessed and would be brought to council at a later date.

Barrie

NEXT STEPS

1 COMPLETE MASTER PLANS

Over the next month, the Master Plans will be finalized and brought to General Committee and Council for acceptance. After that a Notice of Completion will be filed as part of the Environmental Assessment process.

2 INPUT TO OTHER STUDIES

The Master Plan is a key input into a few other City projects:

- Development Charges Background Report
- Official Plan Update
- Stormwater Funding Study
- Transit Asset Management Plan

3 CAPITAL PLANNING

The Master Plans present all the infrastructure recommended to 2041 to accommodate growth. However, they do not commit the City to spend money which is done on an annual basis through the budget process.

4 ASSET MANAGEMENT

The Master Plans also provide input to the City's Asset Management planning which consider levels of services, new and existing infrastructure.

5 FINANCIAL MANAGEMENT PLANNING

Overall the City needs to consider Infrastructure Master Plan recommendations in the context of all demands on the City's finances in order to be financially sustainable.

Thank you