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2011 WATER AND WASTEWATER SUPPLY AND DEMAND MONITORING REPORT

The Planning and Economic Development Committee recommends the adoption of the recommendation contained in the following report dated August 26, 2011 from the Acting Commissioner of Planning and Development Services.

1. RECOMMENDATION

It is recommended that:

1. The Regional Clerk forward a copy of this report and the 2011 Water and Wastewater Supply and Demand Monitoring Report (*Council Attachment 2*) to the Clerks of the local municipalities in York Region.

2. PURPOSE

This report informs Council about the 2011 Water and Wastewater Supply and Demand Monitoring Report. The Monitoring Report tracks the current water and wastewater system demands versus the available servicing capacity on a community/service area basis in York Region in 2011 and highlights areas of potential constraints in the systems for further evaluation. There are other reports to Council that address the related issues of population forecasts, servicing allocation and the delivery of water and wastewater infrastructure.

3. BACKGROUND

The Supply and Demand Monitoring Report compares the current water and wastewater system demands with the available servicing capacity for each community/service area

The first York Region Water and Wastewater Supply and Demand Monitoring Report was published in 2005, the second was published in 2007 and the third was published in 2010. The 2011 Supply and Demand Monitoring Report has the same objectives as the previous reports which is to compare the current water and wastewater system demands with the available servicing capacity for each community/service area in York Region. Similar to the 2010 report, the 2011 version includes information on metered water and wastewater demands and takes a comprehensive look at the progress of capital plan projects in meeting servicing demands.

The Supply and Demand Monitoring Report works together with other related Regional reports

The Supply and Demand Monitoring Report works together with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008, February 2010, and April 2010.

The above mentioned reports are coordinated as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that is recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to balance development with servicing capacity. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

4. ANALYSIS AND OPTIONS

Monitoring was done by comparing measured population with population forecasts and planned infrastructure

Water and wastewater capacity and infrastructure must be built ahead of development demand. This monitoring report is part of an overall process to ensure that demand does not exceed available capacity. To accomplish the goal of monitoring water and wastewater supply and demand, a comparison is made between the latest available demand data, (i.e. measured 2010 water and wastewater demands through population numbers) and the projected 2011 demands. Since the Water and Wastewater Master Plan used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured and projected demands are noted and evaluated in this report. Also, any infrastructure projects that are not being built according to the timeframe in the Water and Wastewater Master Plan are documented and evaluated to identify potential effects on servicing capacity. Additionally, measured flow data, where available, is compared to water supply and wastewater treatment capacities.

SUMMARY OF FINDINGS: WATER

Generally, no water supply constraints on the York Water System (YWS) in 2010, although in some areas infrastructure implementation will need to be monitored and evaluated

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, was approximately 959,000 by end of year 2010. This serviced population is consistent with the forecast used to prepare the Water & Wastewater Master Plan. No future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 (see *Council Attachment 1*) should be done to determine whether the planned infrastructure needs to be advanced. Measured 2010 maximum day demands from the Toronto and Peel water supply systems were within the agreement limits. The progress of implementation of the Region's capital plan generally matches the system demands on the YWS up to 2011.

Available capacity in the stand-alone water systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone water systems (including Keswick and Sutton) is approximately 58,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 maximum day demands in the stand-alone water supply systems were within the permitted capacities, although in some cases the maximum day demands exceeded the available firm capacities (firm capacity is the capacity of the system with the largest well out of service). Infrastructure upgrades in these communities will be completed within the next 2 years to service the build-out of approved community plans and provide additional capacity.

The Water and Wastewater Master Plan has examined the mid and longer term demand and made appropriate recommendations regarding water infrastructure requirements and timing for both the YWS and stand-alone systems.

SUMMARY OF FINDINGS: WASTEWATER

Available capacity in the York-Durham Sewage System (YDSS) can accommodate 2010 demands, although some areas require further evaluation

The Region committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure was based on the pre-expansion capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows

from York Region and the allowable flows to Peel Region. At end of year 2010, the residential population on the YDSS, including Peel diversion has reached approximately 948,000 persons. This figure is within the 2011 projections utilized by the Water and Wastewater Master Plan.

Measured 2010 average day sanitary flow from the YDSS to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2010 average day sanitary flow from York Region to Peel Region is within the agreement limits.

Generally, no sanitary capacity issues are anticipated although the populations in a few service areas are building out faster than forecasted. Evaluation of the Thornhill service area by Regional staff in consultation with local municipal staff will be reported on when completed. The progress of implementation of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011.

Available capacity in the stand-alone wastewater systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone wastewater systems (including Keswick and Sutton) is approximately 49,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The progress of implementation of the Region's capital plan generally matches the system demands up to 2011.

The Water and Wastewater Master Plan has examined the longer term demand situation and made appropriate recommendations regarding wastewater infrastructure requirements and timing for both the YDSS and stand-alone systems.

5. FINANCIAL IMPLICATIONS

The monitoring study was conducted using internal staff resources within the approved 2011 operating budget. The results of the report will assist in the capital planning process in prioritizing projects to meet growth demands and thereby assist in managing and avoiding unanticipated financial implications.

6. LOCAL MUNICIPAL IMPACT

The Supply and Demand Monitoring Report provides detailed information on the capacity of and demand on the Regional water and wastewater systems. The local municipalities benefit from this report by having additional information on system performance and the impact on growth in their respective municipalities.

7. CONCLUSION

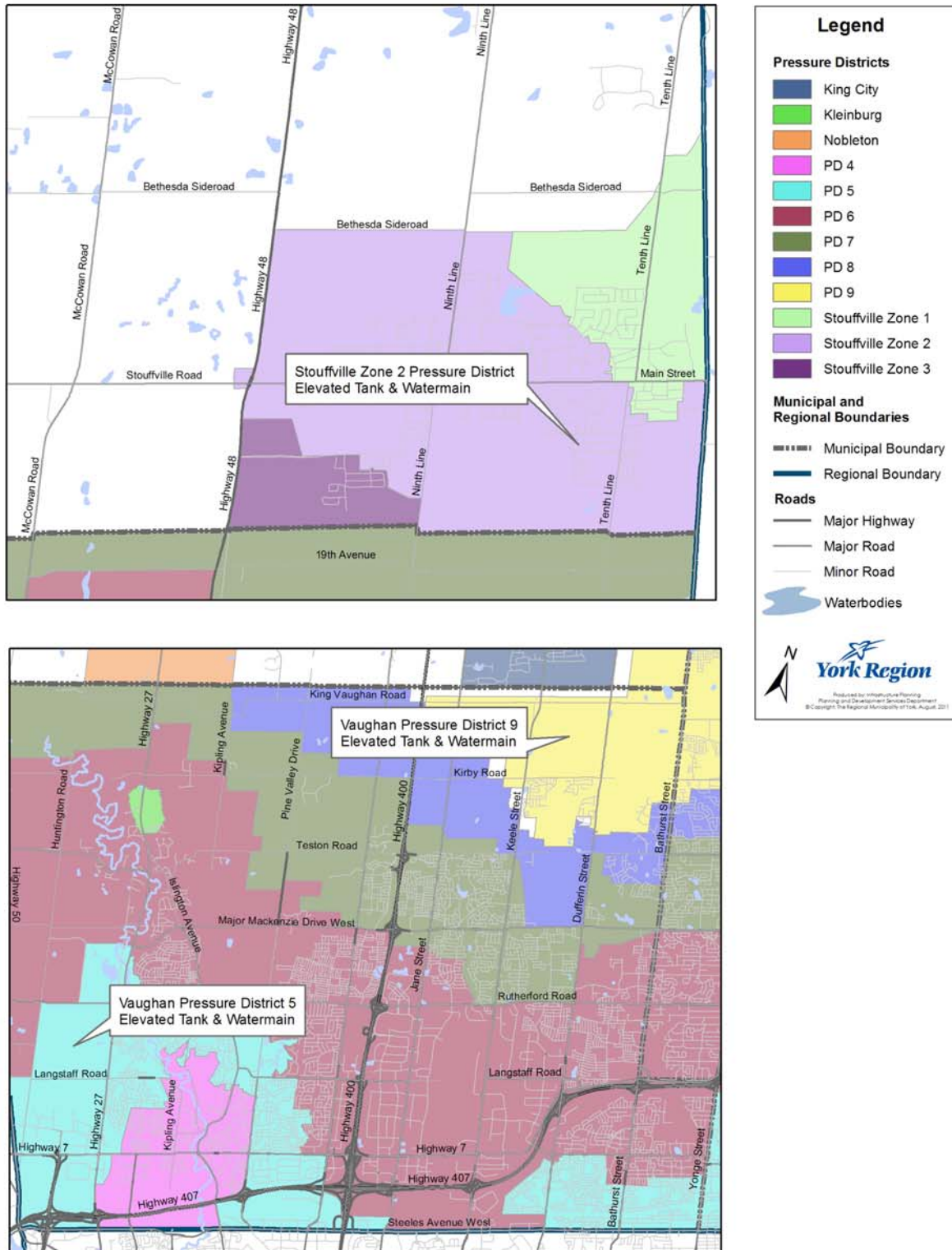
The Supply and Demand Monitoring Report has revealed that the 2010 year end residential populations relying on the York Water System (YWS), York-Durham Sewage System (YDSS) and the stand-alone water and wastewater systems (including Keswick and Sutton) are within the corresponding 2011 planning forecasts used by the Water and Wastewater Master Plan. However, residential populations in a few water pressure districts and sanitary service areas are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 should be done to determine whether the planned infrastructure needs to be advanced. The information contained in this report will assist the Environmental Services Department in the timing of their projects. The progress of implementation of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2010 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

For more information on this report, please contact Jonathan P'ng, Manager, Water and Wastewater Planning, at 905-830-4444, ext. 1573 or Loy Cheah, Director, Infrastructure Planning at ext. 5024.

The Senior Management Group has reviewed this report.

(The two attachments referred to in this clause are attached to this report.)

Service Areas Requiring Additional Monitoring





2011 Water and Wastewater Supply and Demand Monitoring Report



September 2011

DISCLAIMER

The information contained in this report has been provided as a public service. Although efforts have been made to ensure its accuracy, The Regional Municipality of York makes no guarantee, warranty or any representation of any kind whatsoever, whether express or implied, concerning the accuracy, reliability, usefulness or completeness of the information or various sources of information contained in this report. Any use that any third party makes of this report or the information contained in this report is the responsibility of the third party.

Water and Wastewater Supply and Demand Monitoring Report

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Executive Summary

Water and wastewater capacity and infrastructure must be built ahead of development demand. This monitoring report is part of an overall process to ensure that demand does not exceed available capacity. To accomplish the goal of monitoring water and wastewater supply and demand, a comparison is made between the latest available demand data, (i.e. measured 2010 water and wastewater demands through population numbers) and the projected 2011 demands. Since the Water and Wastewater Master Plan used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured and projected demands are noted and evaluated in this report. Also, any infrastructure projects that are not being built according to the timeframe in the Water and Wastewater Master Plan are documented and evaluated to identify potential effects on servicing capacity. Additionally, measured flow data, where available, is compared to water supply and wastewater treatment capacities.

The Supply and Demand Monitoring Report compares the current water and wastewater system demands with the available servicing capacity for each community/service area

The first York Region Water and Wastewater Supply and Demand Monitoring Report was published in 2005, the second was published in 2007 and the third was published in 2010. The 2011 Supply and Demand Monitoring Report has the same objectives as the previous reports which is to compare the current water and wastewater system demands with the available servicing capacity for each community/service area in York Region. Similar to the 2010 report, the 2011 version includes information on metered water and wastewater demands and takes a comprehensive look at the progress of capital plan projects in meeting servicing demands.

The Supply and Demand Monitoring Report works together with other related Regional reports

The Supply and Demand Monitoring Report works together with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008, February 2010, and April 2010.

The above mentioned reports are coordinated as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that is recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to balance development with servicing capacity. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

Summary of Supply and Demand Monitoring: Water

Generally, no water supply constraints on the York Water System (YWS) in 2010, although in some areas infrastructure implementation will need to be monitored and evaluated

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, was approximately 959,000 by end of year 2010. This serviced population is consistent with the forecast used to prepare the Water & Wastewater Master Plan. No future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 should be done to determine whether the planned infrastructure needs to be advanced. Measured 2010 maximum day demands from the Toronto and Peel water supply systems were within the agreement limits. The progress of implementation of the Region's capital plan generally matches the system demands on the YWS up to 2011.

Available capacity in the stand-alone water systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone water systems (including Keswick and Sutton) is approximately 58,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 maximum day demands in the stand-alone water supply systems were within the permitted capacities, although in some cases the maximum day demands exceeded the available firm capacities (firm capacity is the capacity of the system with the largest well out of service). Infrastructure upgrades in these communities will be completed within the next 2 years to service the build-out of approved community plans and provide additional capacity.

The Water and Wastewater Master Plan has examined the mid and longer term demand and made appropriate recommendations regarding water infrastructure requirements and timing for both the YWS and stand-alone systems.

Summary of Supply and Demand Monitoring: Wastewater

Available capacity in the York-Durham Sewage System (YDSS) can accommodate 2010 demands, although some areas require further evaluation

The Region committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure was based on the pre-expansion capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows from York Region and the allowable flows to Peel Region. At end of year 2010, the residential population on the YDSS, including Peel diversion has reached approximately 948,000 persons. This figure is within the 2011 projections utilized by the Water and Wastewater Master Plan.

Measured 2010 average day sanitary flow from the YDSS to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2010 average day sanitary flow from York Region to Peel Region is within the agreement limits.

Generally, no sanitary capacity issues are anticipated although the populations in a few service areas are building out faster than forecasted. Evaluation of the Thornhill service area by Regional staff in consultation with local municipal staff will be reported on when completed. The progress of implementation of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011.

Available capacity in the stand-alone wastewater systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone wastewater systems (including Keswick and Sutton) is approximately 49,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The progress of implementation of the Region's capital plan generally matches the system demands up to 2011.

The Water and Wastewater Master Plan has examined the longer term demand situation and made appropriate recommendations regarding wastewater infrastructure requirements and timing for both the YDSS and stand-alone systems.

Conclusion

The Supply and Demand Monitoring Report has revealed that the 2010 year end residential populations relying on the York Water System (YWS), York-Durham Sewage System (YDSS) and the stand-alone water and wastewater systems (including Keswick and Sutton) are within the corresponding 2011 planning forecasts used by the Water and Wastewater Master Plan. However, residential populations in a few water pressure districts and sanitary service areas are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 should be done to determine whether the planned infrastructure needs to be advanced. The information contained in this report will assist the Environmental Services Department in the timing of their projects. The progress of implementation of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2010 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

Chapter 1

Background

The 2011 Supply and Demand Monitoring Report has the same objectives as the previous three Supply and Demand Monitoring Reports

In September 2005, the Region prepared the first Water and Wastewater Supply and Demand Monitoring Report as part of the Water and Wastewater Supply and Demand Monitoring Program. The Report, which was prepared through consultation and discussion with staff from the nine area municipalities, had the following objectives:

- Increase the Region's ability to manage the water and wastewater servicing supply and demand requirements of the municipalities;
- Provide a technical reference for maintaining and applying the Region's water and wastewater modelling tools;
- Provide a basis for water and wastewater planning staff to review and provide comments on the water and wastewater aspects of development applications; and
- Become a reference document for Regional and Municipal technical staff, the development industry and regulatory agencies.

The subsequent 2007 Water and Wastewater Supply and Demand Monitoring Report had similar objectives.

The 2010 Supply and Demand Monitoring Report also had the same goals as the 2005 and 2007 reports and it utilized a similar monitoring approach. It provided an up-to-date description of the current water and wastewater demands in the nine area municipalities and compared them to the 2011 demand projections that were assumed in the 2009 Water and Wastewater Master Plan Update. Since Regional infrastructure has been sized to accommodate the 2011 demands and beyond, any observed deviations from the 2011 demands were noted in the report. However the 2010 Supply and Demand Monitoring Report included additional forms of monitoring, not found in the previous two Supply and Demand Monitoring Reports. For example, measured flow data, where available, was compared to water supply and wastewater treatment capacities. Also, any infrastructure projects that were not being built according to the timeframe in the 2009 Water and Wastewater Master Plan Update were documented and evaluated to identify potential effects on servicing capacity. Additionally, information on servicing allocation and growth projections by municipality was presented.

The 2011 Supply and Demand Monitoring Report has the same objectives as the previous three reports and it follows the format of the 2010 Report.

The 2011 Supply and Demand Monitoring Report works together with other related Regional reports

The 2011 Water and Wastewater Supply and Demand Monitoring Report works together with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008, February 2010 and April 2010.

The above mentioned reports work together as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that was recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to ensure that development occurs where servicing capacity will exist. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

Chapter 2

2.1 Growth Areas

As depicted in Figure 2-3, there are three distinct areas in the Region that can accommodate growth to the year 2031:

Built-up Area

The Built-up Area was “built-up” as of June 2006 and is defined by the provincially delineated built boundary. The Province has directed that by 2015, 40% of all new growth in York Region shall occur within the Built-up Area and that this growth shall be classified as intensification.

Regional Centres in Markham, Newmarket, Richmond Hill and Vaughan (depicted as black circles in Figures 2-1 and 2-2) will accommodate the most significant proportion of intensification in the Region. Regional Corridors on Yonge Street, Highway 7, Green Lane and Davis Drive will also accommodate a significant amount of intensification.

Designated Greenfield Area

The Designated Greenfield Area is designated “Urban Area” or “Towns and Villages” in the Regional Official Plan and is outside of the Built-up Area. These areas will accommodate a large share of the Region’s greenfield development to 2031.

Whitebelt Area

The Whitebelt Area is not currently designated “Urban Area” or “Towns and Villages” and is outside of the Greenbelt and the Oak Ridges Moraine. Lands within the Whitebelt Area are found in northern Markham, northern Vaughan and in East Gwillimbury between the designated communities of Holland Landing, Queensville and Sharon. The Whitebelt Area represents the remaining lands with development opportunities within the Region and is where urban boundary expansions can occur.

ROPA Areas are located within the Whitebelt and require a Regional Official Plan Amendment for an urban boundary expansion to redesignate the lands to allow for urban development to the year 2031.

2.2 Servicing Allocation and Forecast Growth

Figure 2-4 presents information on building permits, future servicing allocation and growth projections for municipalities on the YDSS. So far servicing allocation has been

given out to the year 2013. From the graph it can be seen that building permits slowed down significantly in 2008, 2009 and 2010 and were generally lower than the forecasted growth for those years. However, on a Region-wide basis, the allocation given to the local municipalities on the YDSS has been consistently higher than the forecast growth since 2005. Thus allocation has not been fully utilized since 2005. Extra allocation has been given to the local municipalities beyond the planning forecasts to allow flexibility in the planning approval process.

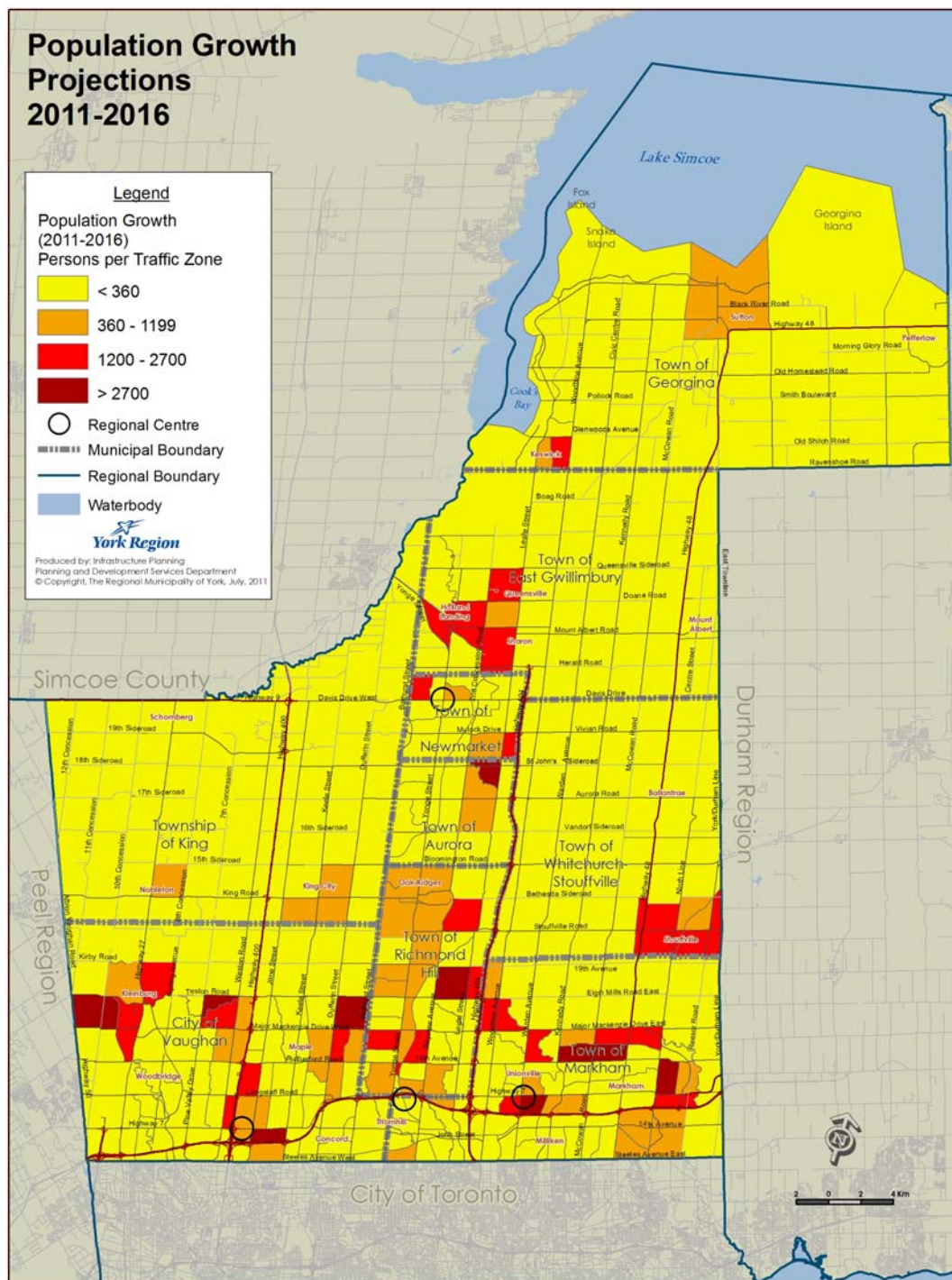


Figure 2-1 York Region Population Growth Forecasts by Traffic Zones 2011-2016

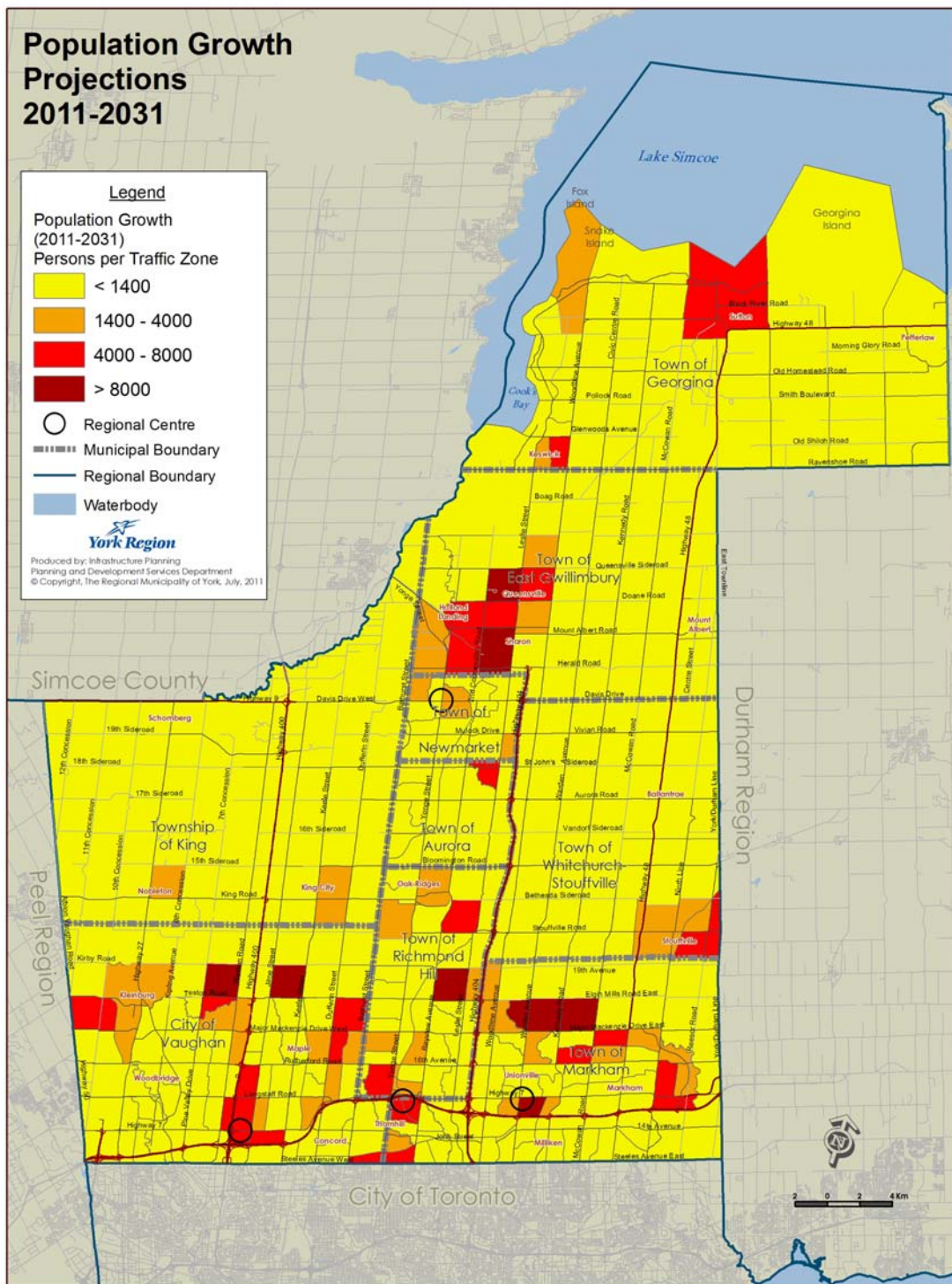


Figure 2-2 York Region Population Growth Forecasts by Traffic Zones 2011-2031

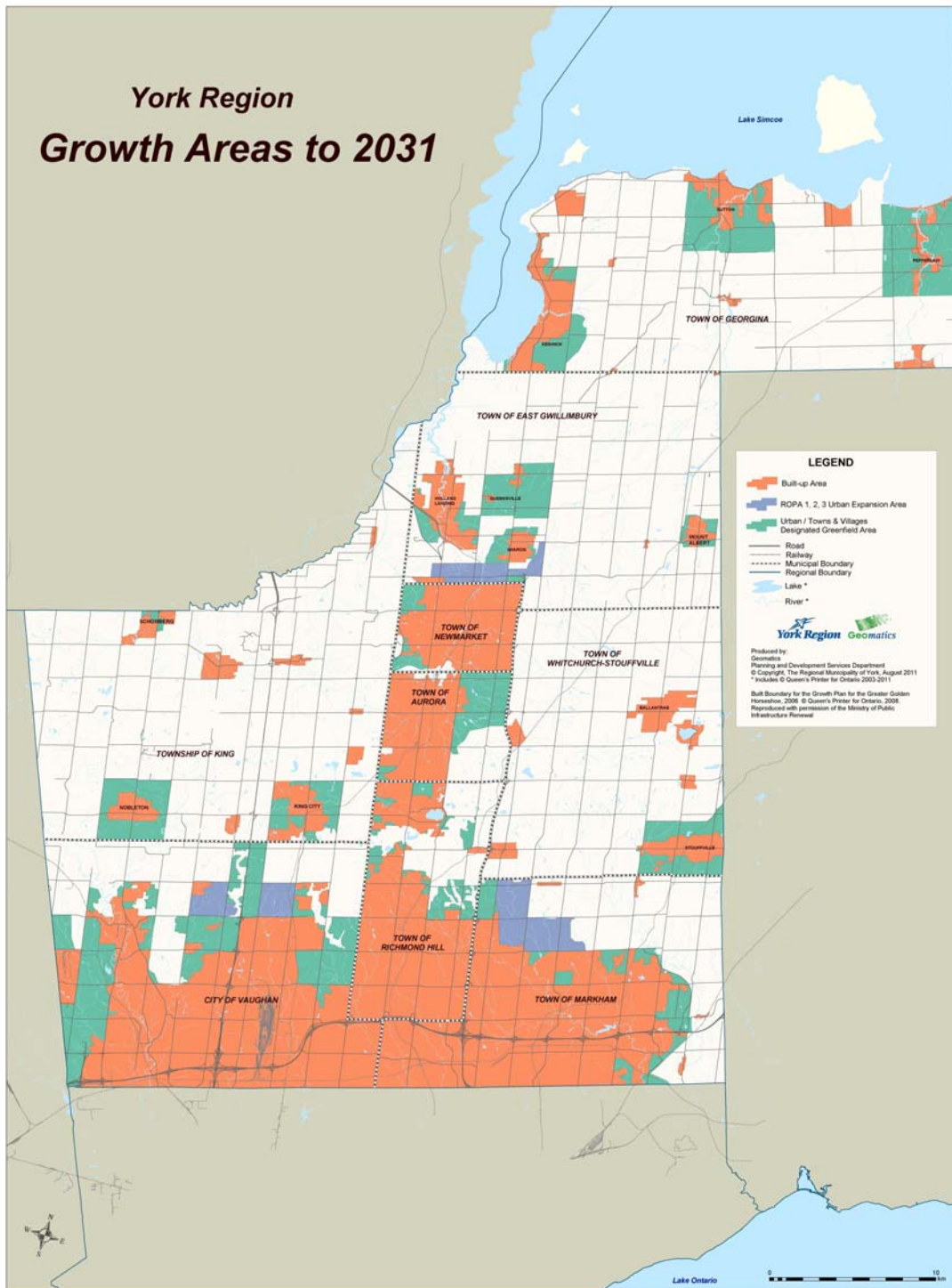


Figure 2-3 Growth Areas to 2031 in York Region

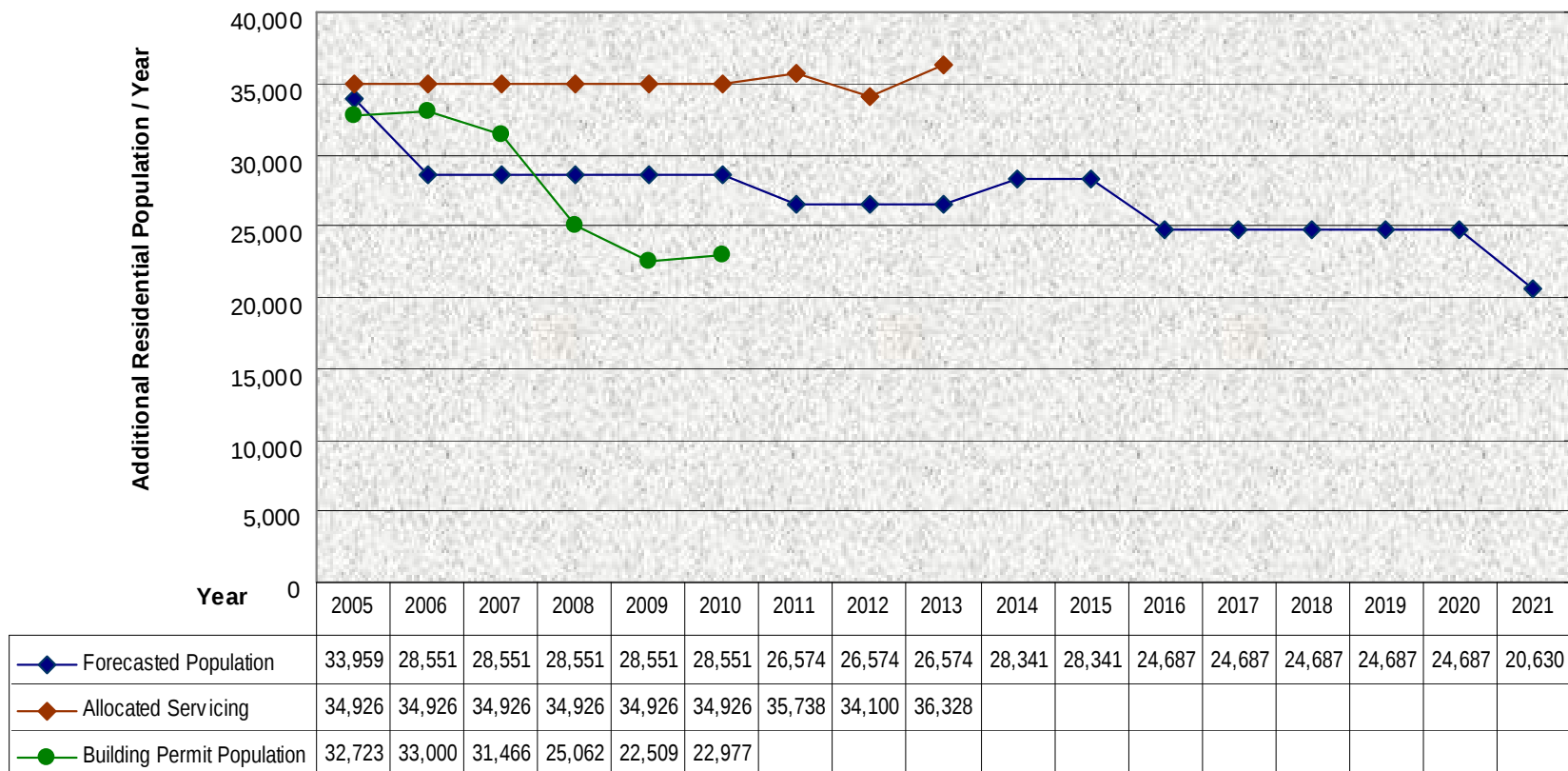


Figure 2-4 Population Growth Forecasts, Building Permits and Servicing Allocation for All Municipalities Serviced by the YDSS

Chapter 3

3.1 Serviced Population Estimation Methodology

Service areas were delineated with collaboration from local municipalities

During the preparation of the 2005 Report, extensive consultation was done by Regional staff with the local municipalities to determine the boundaries that would most suit the needs of monitoring supply and demand in each municipality. In the subsequent update (2007), Regional staff, in cooperation with the local municipalities, spent considerable time determining the limits of currently serviced water and wastewater service boundaries within the Region. While most service boundaries have not changed since the last update, there have been some changes. Examples include the recent addition of the Bathurst Langstaff Trunk sewer drainage area and the Nobleton sanitary drainage area. Also some new sanitary service areas will shortly become active, such as the 19th Avenue sanitary service area. This report incorporates these changes where possible.

Mid-year 2006 serviced population was used as the baseline population

The Planning Department has established the estimated mid-year 2006 baseline water and wastewater serviced population by service areas. Improvements in the parcel fabric information in the Region's Geographic Information System (GIS) has allowed this baseline population update to occur. With correct parcel fabric information in GIS layers and the service areas also in GIS layers, an automated approach to determining the number of parcels in each service area was made possible. Previous versions of the Water and Wastewater Supply and Demand Monitoring Report had to rely upon a similar semi-automated process that involved a significant amount of manual checking.

Building permit data was used to derive the end of year 2010 serviced population

The Planning Department maintains an up-to-date database of the residential building permits issued by the local municipalities. The building permit data obtained from the municipalities includes unit types and addresses. The building permits issued in the year 2006, 2007, 2008, 2009 and 2010 were geo-coded to associate the new units to respective traffic zones and water and wastewater service areas. These units were converted into serviced population using the 2006 census based persons per unit (PPUs). Finally, this newly serviced population was added to the 2006 serviced base population to derive the year-end 2010 population.

Mid-year 2011 serviced population was estimated using the traffic zone population forecast data

The 2011 estimated serviced populations used in this analysis are identical to those used in the 2009 Water and Wastewater Master Plan Update and are based on forecasts generated by the Region's Planning Department. As the traffic zones are the lowest geographical units these projections are available for, this analysis is also based on the traffic zone approach. The 2011 wastewater service area populations shown in this report are the sum of the mid-year 2006 populations and the serviced growth between 2006 and 2011 as estimated by the Region's Planning Department.

3.2 Flow Data Collection Methodology

Measured water and wastewater flow data in the Regional systems for 2010 was received from the Environmental Services Department. This data was collected using a variety of metering technologies including magentic, doppler, ultrasonic, venturi, turbine, radar, insertion, thermal mass and coriolis.

Chapter 4

Supply and Demand Monitoring - Water

Water service areas in York Region are described generally as the York Water System (YWS), the Yonge Street Aquifer System, the Georgina Water System and the independent stand-alone systems

Water is provided to residents, businesses and institutions in York Region through a variety of systems and facilities. Water service areas in the Region are described generally as the York Water System (YWS), the Yonge Street Aquifer System, the Georgina Water System and the independent stand-alone systems. The southern municipalities of Markham, Vaughan, and Richmond Hill receive their water supply from the York Water System – an extension of the Lake Ontario-based system from the City of Toronto and the Region of Peel.

Aurora, Newmarket and the communities of Holland Landing, Sharon and Queensville in East Gwillimbury are serviced by groundwater from the Yonge Street Aquifer system. Since January 2002, lake-based surface water from the York Water System has been introduced to Aurora from pressure district 9, to supplement the groundwater supply. The lake-based supply to these service areas has further increased after the completion of the Aurora/Newmarket Feedermain. Since January 2002, lake-based surface water from the York Water System has also been introduced to Newmarket from Aurora. In September 2009 and July 2011, lake-based water supply was introduced to Stouffville and to King City respectively to supplement the groundwater supply. Connection of Kleinburg to the YWS is expected to occur in 2012.

Currently, two water treatment plants in Georgina and groundwater-based systems in Vaughan (Kleinburg), King (Schomberg, Nobleton, Ansnorveldt), East Gwillimbury (Mount Albert) and Whitchurch-Stouffville (Ballantrae) service the stand-alone systems.

4.1 York Water System

The York Water System (YWS) receives water from the City of Toronto and Region of Peel to serve Markham, Richmond Hill and Vaughan. There are six pressure districts (PD4 to PD9) with local intermediate zones within these systems. The inclusion of the Yonge Street Aquifer System to the YWS adds an additional 7 pressure districts from Aurora and Newmarket. The inclusion of the Stouffville area to the YWS adds an additional 3 pressure districts. Further detail on the supply capacity and service areas of the Yonge Street Aquifer, Stouffville and the York Water System is provided in the 2009 Water and Wastewater Master Plan Update. A map showing the existing York Water System (YWS) infrastructure and its pressure districts is presented in Figure 4-1.

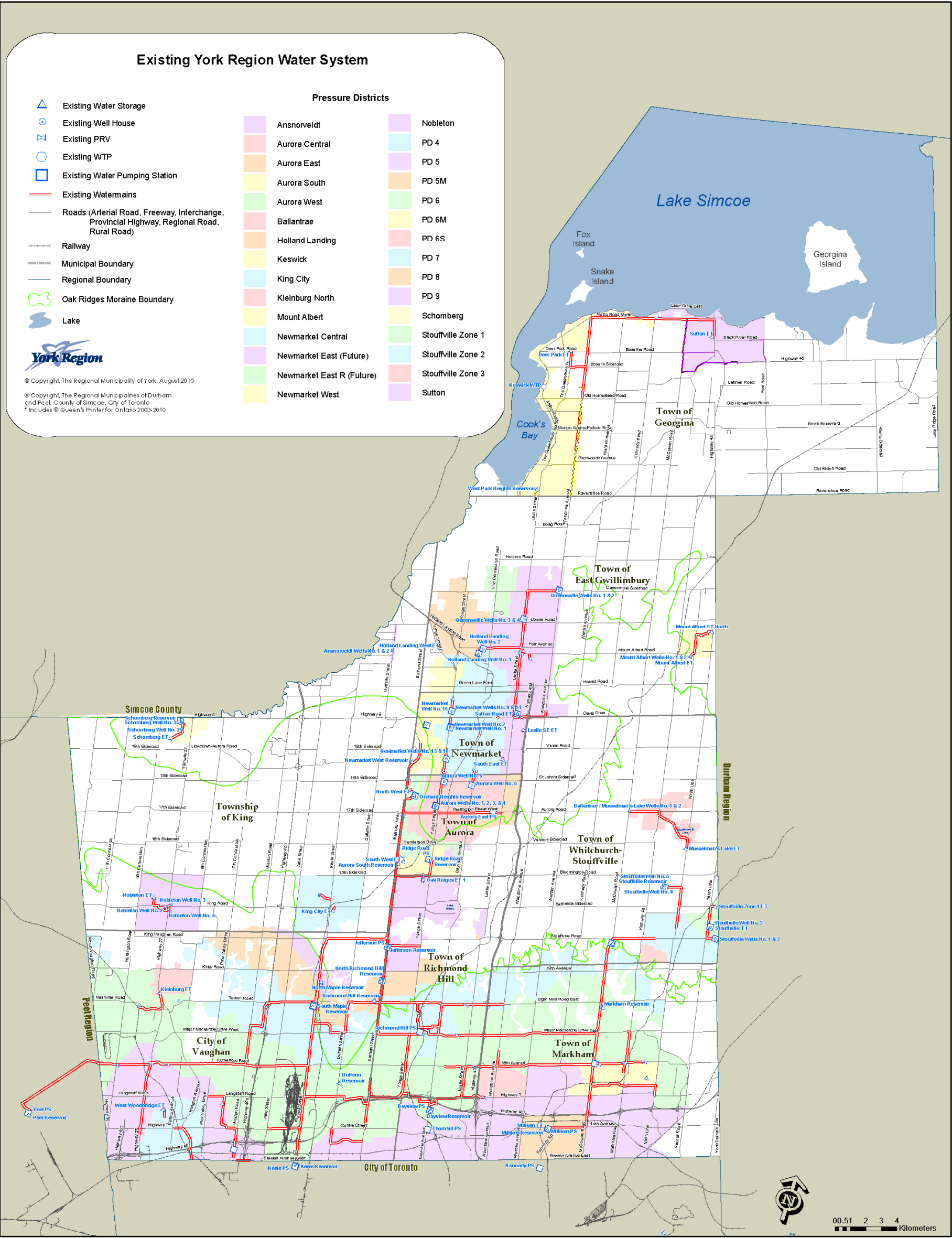


Figure 4-1 York Region Water System

Maximum day water demand from Toronto and Peel is within the supply capacities outlined in the agreements.

As seen below in Table 4-1, the measured 2010 maximum day water demand from Toronto is within the supply capacity outlined in their agreement with York Region. The measured 2010 maximum day water demand from Peel Region was 108 megalitres per day (MLD), which is also within the supply capacity outlined in their agreement with York Region.

Table 4-1 Toronto and Peel Region Water Supply, 2010 Maximum Day Water Demand vs. Maximum Day Capacity

Water Supply Provider	2010 Maximum Day Demand	2010 Maximum Day Supply as per Agreement	Demand vs. Agreement Capacity
	MLD	MLD	%
Toronto	430	494	87%
Peel Region	108	111	97%

Although there are agreements in place with the City of Toronto and Peel Region to ensure sufficient water supply to the YWS to accommodate the Region's population planning projections, future growth in certain areas of the YWS is dependent upon the completion of localized Regional water infrastructure. For example, growth in the Aurora East Pressure District requires completion of the Leslie/Wellington Street watermain, which is scheduled to be completed in late September 2011. The water and wastewater infrastructure status report submitted to Council quarterly provides status and expected completion dates of key infrastructure projects..

As shown in Tables 4-2 and 4-3 the serviced population at the end of 2010 on the YWS is approximately 959,000 people.

Table 4-2 2010 and Projected 2011 Serviced Population on York Water System by Municipalities

Municipality	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Aurora	53,879	57,384	94%
East Gwillimbury (Holland Landing, Sharon, Queensville)	11,195	17,015	66%
Markham	303,906	304,897	100%
Newmarket ¹	84,725	84,017	101%
Richmond Hill	185,689	196,165	95%
Vaughan	296,185	290,595	102%
Whitchurch-Stouffville	23,537	24,766	95%
Total Serviced on YWS	959,116	974,839	98%

¹ Includes East Gwillimbury's Green Lane West development

Table 4-3 YWS 2010 and Projected 2011 Serviced Population by Pressure Districts

Pressure District (PD)/Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
PD4 West (Woodbridge)	21,326	19,186	111%
Vaughan PD 5	77,926	71,171	109%
Markham PD 5	128,557	124,129	104%
PD 5 Milliken	33,865	35,421	96%
Vaughan PD 6	124,516	129,366	96%
Richmond Hill PD6	83,163	85,149	98%
Buttonville PD 6S	12,732	10,054	127%
Markham PD 6	94,679	101,944	93%
Markham PD6M	32,014	30,874	104%
Maple PD 7	63,143	62,506	101%
Richmond Hill PD 7	46,536	47,331	98%
Markham PD 7	2,059	2,476	83%
Richmond Hill PD 8	17,591	19,949	88%
Vaughan PD 8	4,477	4,578	98%
Richmond Hill PD 9	38,399	43,736	88%
Vaughan PD 9	4,797	3,786	127%
PD Aurora Central (AC)	40,917	40,830	100%
PD Aurora South (AS)	2,029	5,025	40%
PD Aurora East (AE)	44	1,013	4%
PD Aurora West (AW)	10,889	10,516	104%
PD Newmarket East (NE)	11,388	9,802	116%
PD Newmarket Central (NC)	52,038	54,055	96%
PD Newmarket West (NW) ¹	21,299	20,160	106%
PD Sharon/Queensville/Holland Landing	11,195	17,015	66%
PD Stouffville Zone 1	2,689	5,442	49%
PD Stouffville Zone 2	19,963	17,637	113%
PD Stouffville Zone 3	885	1,687	52%
Total YWS	959,116	974,839	98%

¹ Includes East Gwillimbury's Green Lane West development

Serviced populations within certain pressure districts exceed the 2011 forecast populations

The actual serviced population on the overall York Water System by year end 2010 is within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update. However, the serviced population within certain pressure districts exceeds the 2011 forecast populations. There are a number of reasons why this may have occurred. The simplest reason is that development in a given area may have occurred faster than anticipated by the projections from the Region. It should be kept in mind that the 2011 planning projections are forecasts only and require recalibration on a regular basis. The results of this water and wastewater monitoring report will assist in the recalibration process. It is also noted that the end of year 2010 population estimates were developed in accordance with the methods described in Chapter 3 and there were many assumptions involved, such as the populations per unit, number of units per parcel, unit types and number of parcels etc. Therefore even though some of the service area population estimates for 2010 appear to be beyond their projected mid-year 2011 populations already, this does not necessarily mean they are.

In addition there is inherent uncertainty in the results of the water and wastewater computer models. Even though there are some sources of uncertainty as described above, all of the service areas that showed a 2010 population estimate above their 2011 planning forecast were evaluated for potential servicing capacity problems.

Service Area Capacity Assessment

The **PD4 West (Woodbridge)** service area has a 2010 residential population that is 111% of the 2011 population. It is a mature community and is supplied directly from Toronto to the south. This area was projected to have little to no growth over the next 40 years and accordingly no infrastructure has been planned in the 2009 Water and Wastewater Master Plan Update to increase water supply to this area. However, the residential population grew by 5% last year alone, therefore the planning projections and required water infrastructure needs to be re-examined and closely monitored.

Vaughan PD5 is showing a 2010 residential population that is 109% of the 2011 forecast population. The population in Vaughan PD5 was 74,639 in 2006 and 77,926 in 2010. This pressure district is supplied directly from the City of Toronto. According to the Regional planning projections Vaughan PD5 is only expected to experience approximately 5% additional growth by 2026. However, there was growth of approximately 1% (900 residential persons) in 2010 in this pressure district. The only improvements planned for PD5 in the 2009 Water and Wastewater Master Plan Update are a new reservoir and connecting watermain with a 2011-2016 completion. York Region staff are not aware of any operational or supply issues in Vaughan PD5. Additional monitoring and evaluation is needed to determine whether the infrastructure recommended in the 2009 Master Plan for this pressure district needs to be advanced.

Markham PD5 has a 2010 population that is 104% of the 2011 forecast population. The 2006 and 2010 populations in Markham PD5 were approximately 113,579 and 128,557 respectively. This PD has been experiencing significant population growth and is expected to have substantial population growth into the future. This PD is fed directly from the City of Toronto. However, the 2009 Water and Wastewater Master Plan Update has not recommended any new infrastructure for this PD within the next 41 years. According to the Master Plan this PD can accommodate up to 175,000 people with no infrastructure improvements. Therefore, the fact that this PD is building out faster than anticipated is not expected to be a concern from a York Region infrastructure perspective. Upgrades to City of Toronto infrastructure requirements to meet the demands in Markham PD5 will be identified in the Toronto/York Joint Optimization Study which is expected to be completed in late 2011.

The 2010 residential population in **Buttonville PD6S** is 127% of the 2011 forecast population. This PD is supplied with water through the much larger Richmond Hill PD6 system. The current Regional long range planning forecasts predict no growth until at least 2016 in this area and only 20% additional growth by 2031. This forecast could change however if a proposed OPA gets approved to redevelop the Buttonville Airport. The building permits only show growth of 20 persons in this pressure district in 2010. Since this PD is supplied through the much larger PD6 system and all improvements to the PD6 system that are needed for the next 41 years will be completed by 2011, no action is needed to improve the Buttonville PD6S system. York Region staff are not aware of any operational or supply issues in Buttonville PD6S and therefore no further investigation is required for this service area.

The **Markham PD6M** pressure district is showing a 2010 residential population that is 104% of the 2011 population. This pressure district is supplied through York PD5 and through pressure reducing valves from Markham PD6. According to the Long Range Planning forecasts Markham PD6M is not expected to experience any new growth until at least 2041. The building permits only show growth of 18 persons in this pressure district in 2010. Since this PD is supplied through the much larger PD5 and PD6 systems and all improvements to the PD5 and PD6 system that are needed for the next 41 years will be completed by 2011, no action is needed to improve the Markham PD6M system. York Region staff are not aware of any operational or supply issues in Markham PD6M and therefore it is suggested that no further investigation be undertaken for this service area.

The **Maple PD 7** pressure district is showing a 2010 residential population that is 101% of the 2011 forecast population. The 2009 Master Plan anticipated approximately 3% growth per year in this pressure district over the next five years. Upgrades planned for this pressure district in the next ten years include a new watermain and storage tank that is scheduled for a 2014 start and an upgrade to the South Maple PD7 pumping station that is currently under construction. Since the end of year 2010 population is only 1% higher than the mid-year 2011 forecast population this pressure district is probably not an area of concern. However, it will continue to be closely monitored in future Supply and Demand Monitoring Reports.

The 2010 residential population in **Vaughan PD9** is 127% of the 2011 forecast population. However, there was no growth in this service area in 2010. This is a very small pressure district that is supplied by a City of Vaughan pumping station which is connected to York Region's PD7 North Maple Reservoir. Improvements to the Vaughan PD9 system are not suggested until 2017-2021 in the 2009 Master Plan, when the residential population is expected to be between 4,300 people and 7,500 people. However, according to Table 4-3 the population is already at approximately 4,800 in this PD. No infrastructure is currently planned for Vaughan PD9 in the Region's 10-year Capital Plan, since York Region staff are still consulting with City of Vaughan staff to determine who should own future infrastructure in PD9. Additional monitoring and evaluation is needed to determine whether the infrastructure recommended in the 2009 Master Plan for this pressure district needs to be advanced.

The **Aurora Central** pressure district has a 2010 residential population that is 100% of the 2011 forecast population. This pressure district experienced a 1% growth rate in 2010. The 2009 Master Plan anticipated a 2% per year growth rate for this pressure district over the next five years. Since the end of year 2010 population is essentially the same as the mid-year 2011 forecast population this pressure district is probably not an area of concern. However, it will continue to be closely observed in future Supply and Demand Monitoring Reports.

The **Aurora West** pressure district has a 2010 residential population that is 104% of the 2011 forecast population. This is a mature service area that only experienced growth of 30 additional housing units between 2006 and 2010. Residential population is only expected to grow by an additional 2% by 2031. The Aurora West zone is supplied from the Aurora Central zone from the Orchard Heights Pumping Station. Upgrades to this facility are currently underway to meet growth needs in Aurora West and Newmarket West pressure districts. The project is expected to be completed by 2012.

The 2010 residential population in the **Newmarket East** pressure district is 116% of the 2011 forecast population. The Newmarket East zone is currently supplied by the Queensville wells. The 2009 Water and Wastewater Master Plan Update assumed the population in Newmarket East would be 11,376 people in 2016 and 13,019 people in 2021. The 2009 Water and Wastewater Master Plan Update recommended two improvements over the next 41 years for the Newmarket East zone: (1) a new watermain along Leslie Street connecting to the Aurora East zone (2012 expected completion); and (2) a new pumping station on Davis Drive to pump water from Newmarket Central to the Newmarket East zone (2027-2031 expected completion). It is anticipated that the new watermain along Leslie Street will provide water capacity to service Newmarket East pressure district until at least 2027 when the new pumping station may be required.

The **Newmarket West** Pressure District has a 2010 residential population that is 106% of the projected 2011 population. This pressure district is supplied from the Newmarket Central zone (Kirby Pumping Station) and from the Aurora West zone (Orchard Heights Pumping Station). Newmarket West has grown by approximately 4,000 people between

2005 and 2009 and is expected to grow to 22,602 in 2016 and 24,253 people in 2021. To accommodate this growth in the short term an upgrade to the Orchard Heights PS is scheduled, with an expected completion of 2012. With these upgrades in place there are not anticipated to be any constraints to the servicing capacity in Newmarket West.

The 2010 residential population of the **Stouffville Zone 2** pressure district is 113% of the 2011 forecast population. The 2009 Water and Wastewater Master Plan Update anticipates significant growth in the Stouffville Zone 2 pressure district, with the residential population going to 24,567 people in 2016 and 29,126 people in 2021, compared to the 2010 population of 19,963. Upgrades in the near future for the Stouffville Zone 2 pressure district include a new elevated tank and connecting watermain on 10th Line. The planned completion date of this infrastructure is 2016 in the Region's 10-year Capital Plan. It is suggested that the watermain and storage tank on 10th Line be advanced as early as possible in the Region's 10-year Capital Plan. Population growth in Stouffville Zone 2 pressure district will continue to be monitored to ensure that adequate system capacity is in place to service the demands.

4.2 Georgina Water System

Water supply for the Town of Georgina is provided from two Lake Simcoe water treatment plants: the Keswick Water Treatment Plant (WTP) and the Georgina Water Treatment Plant. For a further description of the Regional Georgina Water System (GWS), please see the 2009 Water and Wastewater Master Plan Update.

The 2009 Water and Wastewater Master Plan Update recommended infrastructure improvement projects to address the growth in GWS. A summary of the estimated 2010 serviced population by service area within GWS is provided in Table 4-4.

Table 4-4 Georgina Water System, 2010 and Projected 2011 Serviced Population

Pressure District (PD)/Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Keswick/Willowbeach	29,266	29,036	101%
Sutton	5,356	8,266	65%
Total	34,622	37,302	93%

The estimated water serviced population in the Keswick/Willowbeach pressure district by year end 2010 is 1% higher than the 2011 planning forecast utilized by the 2009 Water and Wastewater Master Plan Update. However, as seen below in Table 4-5, the measured 2010 maximum day water demand in the Georgina water service area is well within the supply capacities of the Keswick and Georgina water treatment plants. Also, all of the

water infrastructure planned to service Keswick for the next 40 years is expected to be built by early 2012. Therefore, the fact that the Keswick/Willowbeach area has built out slightly faster than forecasted should not be a concern.

Table 4-5 Georgina Water Servicing, 2010 Maximum Day Water Demand vs. Treatment Plant Maximum Day Capacity

Service Area Name	2010 Maximum Day Demand	2010 Treatment Plant Maximum Day Firm Capacity	Demand vs. Firm Capacity
	MLD	MLD	%
Keswick/Willowbeach/Sutton	16.5	35.6	46%

4.3 Stand-alone Water Systems

The Region owns and operates a number of independent stand-alone water systems to service communities around the Region. Water supply for the stand-alone systems is obtained from a system of groundwater wells. For a further description of the Regional stand-alone water systems, please refer to the 2009 Water and Wastewater Master Plan Update.

Table 4-6 summarizes the 2010 serviced and future projected population for each service area.

Table 4-6 Stand-alone Water Systems, 2010 and Projected 2011 Serviced Population

Pressure District (PD)/Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Kleinberg ¹	3,871	5,269	73%
Nobleton ²	3,465	4,746	73%
King City ³	4,148	6,398	65%
Schomberg	2,436	2,661	92%
Ansnorveldt	231	240	96%
Ballantrae ²	4,681	4,622	101%
Mount Albert	4,471	5,743	78%
Total Stand-alone	23,303	29,679	79%

¹ This community will be connected to the YWS in 2012

² The water supply firm capacity in these communities will be upgraded in 2012

³ This community was connected to the YWS in July 2011

The estimated serviced population in the stand-alone systems by year end 2010 are generally within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update. The one exception is Ballantrae, however, based on the data in Table 4-7 and the fact that the firm capacity is being upgraded in 2012 to 4.58 MLD, the excess population is not a concern.

Also as seen below in Table 4-7, while the firm capacity of some of the stand-alone systems are being exceeded, the measured 2010 maximum day demands are within the permitted system capacities for all stand-alone communities. Steps have been, or are being taken to address these conditions. King City has been recently connected to the York Water System, and the Kleinburg connection is projected to occur in 2012. As a result, firm capacities for these communities are no longer a concern. The Nobleton and Ballantrae water supply systems are being upgraded in 2012 to a firm maximum day capacity of 4.46 MLD and 4.58 MLD respectively. A project to upgrade the water supply system in Ansnorveldt is under review by the Region's infrastructure management group.

Table 4-7 Stand-alone Water Systems, 2010 Maximum Day Water Demands vs. Maximum Day Supply Capacities

Service Area Name	2010 Maximum Day Demand	2010 Maximum Day Supply Firm Capacity	Demand vs. Firm Capacity
	MLD	MLD	%
Kleinberg ¹	4.273	3.578	119%
Nobleton ²	2.308	1.890	122%
King City ³	3.413	1.850	184%
Schomberg	1.682	3.144	53%
Ansnoerveldt	0.086	0.083	104%
Ballantrae ²	2.916	2.618	111%
Mount Albert	2.484	4.990	50%

¹ This community will be connected to the YWS in 2012

² The water supply firm capacity in these communities will be upgraded in 2012

³ This community was connected to the YWS in July 2011, therefore firm capacity is no longer an issue

4.4 Status of Water Infrastructure Projects

In order to verify that capacity remains available in each of the Regional water service areas, not only is it necessary to compare the existing populations with the forecast populations used in the York Water System computer model, it is also necessary to confirm that all of the infrastructure assumed to be in place in the computer model are progressing and will be in place as planned. The table below lists all of the water infrastructure recommended by the 2009 Water and Wastewater Master Plan Update to be in place between 2006 and 2011 and the current status of the projects. None of these projects were complete as of November 2009 when the 2009 Water and Wastewater Master Plan Update was finished.

Table 4-8 Comparison of the 2009 Water & Wastewater Master Plan Update Recommended Water Project Schedule with the Current Project Status (2006-2011)

Project Name	Master Plan Recommended Completion	Current Expected Completion
Decommission PD9 standpipe	2009	2011
Ballantrae well #3	2009	2012
Ballantrae watermain (well#3 to town)	2009	2012
Kennedy Road watermain	2009-2011	2013
Orchard Heights pumping station (PS)	2009-2011	2012
North Queensville elevated tank	2009-2011	Under review
Toronto/Peel External Projects	2009-2011	2011/ongoing
Mount Albert well and supply	2009-2011	2011
New Nobleton well	2009-2011	2012
Schomberg well and supply watermain	2009-2011	2010
South Maple pumping station (PD7) upgrade	2010	2011
Yonge Street watermain (Jefferson Sdrd to Bond Cres.) (PD9)	2010	2010
Bloomington Rd watermain (PD9) (Yonge to Bayview Ave.)	2010	2011
Bayview Ave. watermain (PD9) (North Lake Rd to Bloomington Road)	2010	2015
Oak Ridges elevated tank (ET) replacement	2010	2011
Decommission existing Kirby pumping station	2010	Project deleted
Decommission Sharon ET	2010	Under review
King Road watermain (King-Vaughan to Proposed PS/ET)	2010	2011
King Rd/Dufferin watermain (proposed PS/ET to Town)	2010	2011
King City tank 2	2010	2011
King City PS	2010	Project deleted
Decommission King City wells	2010	Project deleted
Woodbine Ave. and Ravenshoe Rd. watermains	2010	2012
Nobleton watermain (well #4 to town)	2010	2012
Bathurst St. (Shaftbury Ave. to Jefferson PS) (PD8)	2011	2011

Project Name	Master Plan Recommended Completion	Current Expected Completion
Teston Rd/Bathurst St. (West Richmond Hill PS to Shaftsbury Ave. (PD8))	2011	2011
PD9 watermain north of Kirby Road (PD9 Vaughan PS to Keele Street)	2011	To be determined
Kleinburg PS	2011	2012
Decommission Kleinburg wells	2011	Project deleted
Keswick elevated tank	2011	2012
Nobleton watermain (proposed ET to town)	2011	2012
Nobleton ET #2	2011	2011
Georgina water treatment plant expansion	2011	2011

Explanations for Schedule Differences

Analysis of the impact of the above schedule discrepancies has been performed by Infrastructure Planning staff. In most cases the current expected completion dates will not negatively affect the servicing of population growth or existing communities. As described earlier, population growth in York Region is managed through servicing allocation, which is tied to completion of infrastructure. Many of the above noted projects are “trigger projects” for allocation as described in the quarterly Water and Wastewater Infrastructure Status Report produced by the Environmental Services Department. However, the impact of the schedule changes for the following projects merits further evaluation:

The new Ballantrae well #3 and watermain is required for firm capacity. The projected three year delay will not limit population growth, but it will affect supply security.

The completion schedule for the PD9 watermain north of Kirby Road is yet to be determined. York Region staff are currently consulting with City of Vaughan staff to confirm the need for this watermain and to determine who should own future infrastructure in PD9.

Chapter 5

Supply and Demand Monitoring - Wastewater

York Region operates the YDSS and stand-alone WPCPs in smaller communities

The Region provides wastewater conveyance and treatment services to York Region residents, businesses and institutions through sewage treatment plants, major trunk sewers and pumping stations. The York Durham Sewage System (YDSS) services the communities of King City and Stouffville, the Towns of Newmarket, Aurora, Richmond Hill and Markham, and the City of Vaughan. Depending on the results of the ongoing Upper York Sewage Solutions (UYSS) Individual Environmental Assessment (IEA) the YDSS may be extended to service the communities of Holland Landing, Queensville and Sharon.

The Region operates stand-alone water pollution control plants in the communities of Sutton, Keswick, Mount Albert, Schomberg, Nobleton and Kleinburg. Lagoon treatment facilities are operated in Holland Landing. A map showing the existing York Wastewater System including the York Durham Sewage System (YDSS) infrastructure and its service areas is presented in Figure 5-1.

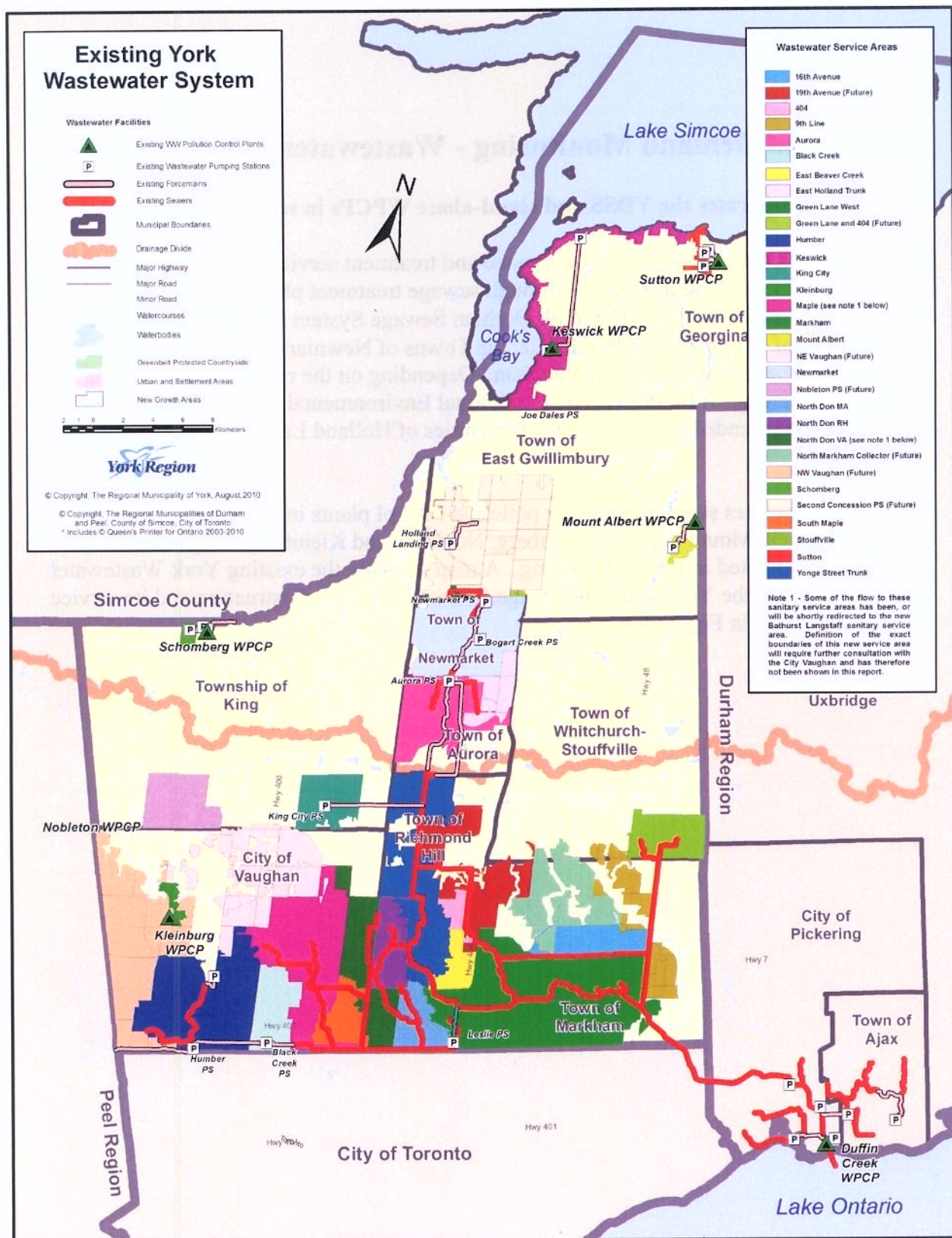


Figure 5-1 York Region Wastewater System

5.1 York Durham Sewage System

YDSS flows go to Duffin Creek WPCP and also to Peel Region

The YDSS consists of a series of gravity sewers, pumping stations, forcemains and the Duffin Creek Water Pollution Control Plant (WPCP) located in Durham Region. Approximately 85% of York Region sewage is collected through the York-Durham Sewer System (YDSS) and treated at the Duffin Creek Water Pollution Control Plant on the shores of Lake Ontario in Pickering, Ontario. Since the beginning of 2006, the Region has started pumping wastewater flows from the Humber Pumping Station to the Region of Peel. The York-Peel Wastewater Agreement includes a schedule of flows permitted by Peel. The agreement provides for a partial diversion of flows initially and full diversion of flows by 2011.

Monitoring data of the actual flows at the Duffin Creek WPCP and the amount of diversion to Peel is shown in Table 5-1.

Table 5-1 Sanitary Flows at the Duffin Creek WPCP and Diversion to Peel

Year	Average Daily Flow to Duffin Creek WPCP from YDSS (MLD)		Peel Diversion Average Daily Flow (MLD)	
	Master Plan Assumption	Recorded Flow	Master Plan Assumption	Recorded Diversion
2006	338	373	0	1.4
2007	358	316	8	26.9
2008	379	354	16	29.1
2009	400	352	24	31.5
2010	420	326	32	32

Average daily wastewater flow to Duffin Creek WPCP and Peel Region is within allowable limits

The 2009 Water and Wastewater Master Plan Update assumed that the average daily wastewater flow (ADF) to the Duffin Creek WPCP would be 420 MLD for 2010. However, the measured ADF at the Duffin Creek WPCP was only 326 MLD. This discrepancy is likely attributed to reduced wastewater generation rates. The Duffin Creek WPCP Stage 3 expansion was completed by the end of 2010 and the plant capacity was increased from 420 MLD to 520 MLD. However, only 470 MLD will be available temporarily due to required upgrades to the existing plant. Thus, existing treatment capacity at the Duffin Creek Plant is adequate. Measured 2010 average day sanitary flow from York Region to Peel Region is 32 MLD. The agreement with Peel Region for diversion of York's flows does not specify a limit for 2010, only for 2006 (22 MLD) and

2011 (40 MLD). The interpolated limit for 2010 is 37 MLD and therefore the measured 2010 average day flow of 32 MLD is within the agreement limits.

Although there is sufficient treatment capacity at the Duffin Creek WPCP, future growth in certain areas of the YDSS is dependent upon the completion of localized Regional sanitary infrastructure. For example, growth in Queensville requires completion of the Queensville/Holland Landing/Sharon YDSS connection, or some alternative solution. A complete listing of all of the critical YDSS projects, their expected completion dates and the additional population growth they can accommodate can be referenced in Report No. 4 of the Environmental Services Committee Regional Council Meeting of April 21, 2011.

Estimates of 2010 year-end serviced and projected mid-year 2011 serviced population by municipality and service area are provided in Table 5-2.

Table 5-2 YDSS Service Areas, 2010 and Projected 2011 Serviced Population

Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Newmarket¹	84,708	82,830	102%
Aurora	53,599	55,723	96%
Richmond Hill			
Yonge Street Trunk	126,092	129,891	97%
North Don RH	36,355	36,627	99%
Highway 404	12,477	15,968	78%
East Beaver Creek	10,605	11,226	94%
19 th Avenue	0	939	0%
Markham			
Markham	201,030	216,842	93%
16 th Avenue	51,274	45,303	113%
Ninth Line	12,854	9,637	133%
North Don Markham	38,280	38,347	100%
Vaughan			
Humber	100,139	95,282	105%
Black Creek (Jane St.)	28	3,333	1%
Maple ²	93,978	97,069	97%
South Maple	40,464	42,388	95%
North Don Vaughan ²	60,610	56,926	106%
Whitchurch- Stouffville			
Stouffville	23,548	25,810	91%
King			
King City ³	2,263	5,500	41%
East Gwillimbury			
Holland Landing/Queensville/Sharon ⁴	0	2,940	0%
Total YDSS Serviced	948,304	972,581	98%

¹ Includes East Gwillimbury's Green Lane West development

² Some of the flow to these sanitary service areas has been, or will be shortly redirected to the new Bathurst Langstaff sanitary service area. Definition of the exact boundaries of this new service area will require further consultation with the City of Vaughan and has therefore not been shown in this report.

³ This community is in the process of connecting customers to the newly installed sanitary sewer system

⁴ The 2009 Master Plan assumed these service areas would shortly transition from stand-alone/private septic systems to the YDSS

Populations in the YDSS serviced communities are generally within the forecast 2011 populations

As of the end of 2010, the YDSS serviced population has reached approximately 948,000 (Table 5-2). The estimated populations in the YDSS serviced communities are generally within the currently forecast 2011 populations. Exceptions to this are examined below.

Service Area Capacity Assessment

The year end 2010 residential population in **Newmarket** is 102% of the 2011 planning forecast. The 2009 Water and Wastewater Master Plan Update anticipated around 10% population growth between 2011 and 2016, however it did not recommend any new infrastructure until approximately 2016 in coordination with the completion of the Upper York Sewage Solutions (UYSS) project. The recommended projects include a diversion sewer from the Northwest Newmarket Trunk sewer and new connections from the Newmarket Pumping Station and Bogart Creek Pumping Station to the future UYSS. Since the end of year 2010 population is only 2% higher than the mid-year 2011 forecast population the Newmarket sanitary service area is probably not a topic of concern. However, it will continue to be closely monitored in future Supply and Demand Monitoring Reports.

The **16th Avenue** sanitary service area has a 2010 year end residential population that is 113% of the mid-year 2011 population. This area is also expected to experience significant growth over the next five years and beyond. The 2009 Water and Wastewater Master Plan Update does not recommend any new infrastructure to service this area out to 2051, as the existing YDSS provides sufficient capacity. Therefore, even though this service area is growing faster than anticipated, this should not be a concern from a sanitary servicing perspective.

The year end 2010 residential population in the **Ninth Line** sanitary service area is 133% of the 2011 planning forecast. This area is also expected to experience significant growth over the next five years and beyond. The 2009 Water and Wastewater Master Plan Update does not recommend any new infrastructure to service this area out to 2051, as the existing YDSS provides sufficient capacity. Therefore, the fact that this service area is growing faster than anticipated should not be a concern from a sanitary servicing perspective.

The **North Don Markham** sanitary service area has a 2010 year end population that is approximately equal to the 2011 forecast population. The only upgrades recommended for this area from the 2009 Water and Wastewater Master Plan Update are an upgrade to the Leslie Street Pumping Station expected to be completed in late 2013 and a new Leslie Street PS forcemain that is needed between 2021 and 2026. However, the Master Plan did not include the updated population that is now expected to be associated with the Richmond Hill/Langstaff Urban Growth Centre (UGC). Additional sanitary system modeling has been done to include the latest growth projection for the Richmond Hill/Langstaff UGC, that may result in the need for an additional Regional sewer

connecting the Richmond Hill/Langstaff Urban Growth Centre to the existing Regional Richmond Hill Collector sewer. A map of this area and the associated trunk sewers is shown in Figure 5-2. Evaluation of the North Don Markham service area by Regional staff in consultation with local municipal staff will be reported on when completed.

The year end 2010 residential population in the **Humber** sanitary service area is 105% of the 2011 planning forecast. There is little residential growth planned over the next 40 years in the Humber service area. The majority of new growth will be industrial, commercial or institutional (ICI). However, much of the ICI development in the Humber sanitary service area is serviced by the newly constructed West Rainbow Creek Trunk sewer and according to the 2009 Water and Wastewater Master Plan, no new sanitary sewer infrastructure is planned to service the residential or ICI population in this area for the next 40 years. Therefore, it is not anticipated that there will be any sanitary servicing constraints to this area. However, Regional staff will continue to monitor closely the population buildout.

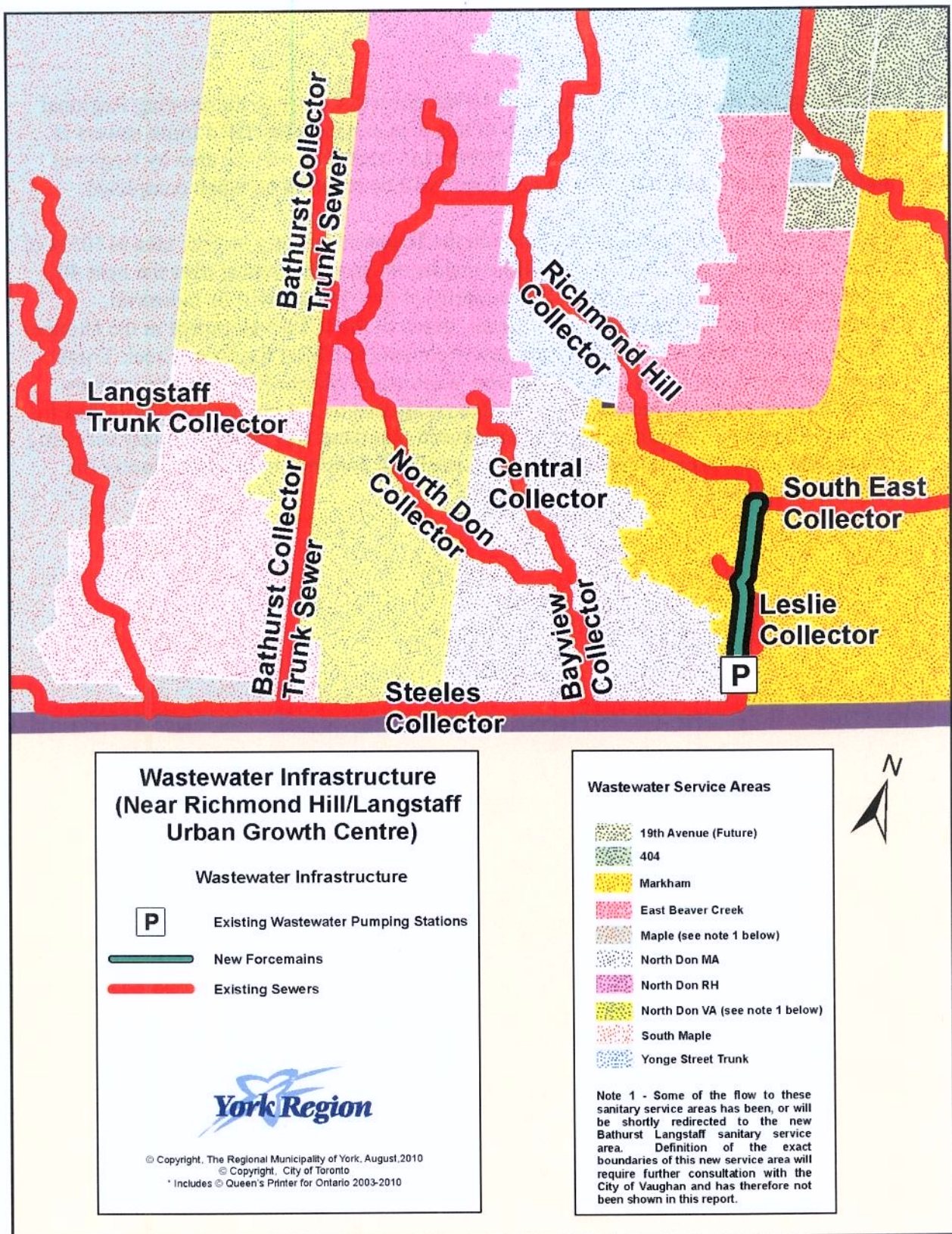


Figure 5-2 York Region Wastewater Infrastructure near the Richmond Hill/Langstaff Urban Growth Centre

The **North Don Vaughan** sanitary service area has a 2010 year end residential population that is 106% of the 2011 planning forecast population. The northern portion of this service area (West of Bathurst and North of Highway 7) has already been redirected to the Bathurst Langstaff trunk sewer which has sufficient capacity to accommodate additional growth. The southern portion of the North Don Vaughan sanitary service area (East of Bathurst and south of Highway 7) is mostly draining to the North Don Collector. Evaluation of the North Don Vaughan service area by Regional staff in consultation with local municipal staff will be reported on when completed.

5.2 Georgina Wastewater System

The Georgina Wastewater system is comprised of two separately functioning treatment plants, one in Keswick and the other in Sutton. For a further description of the Regional Georgina Wastewater Systems, please see the 2009 Water and Wastewater Master Plan Update.

Table 5-3 provides the year end 2010 serviced and mid-year 2011 future serviceable population for the Keswick and Sutton service areas.

Table 5-3 Georgina Wastewater Service Areas, 2010 and Projected 2011 Serviced Population

Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Keswick/Willowbeach	29,266	29,928	98%
Sutton	5,238	8,266	63%
Total Georgina	34,504	38,194	90%

The estimated sanitary serviced population in Keswick, Willowbeach and Sutton by year end 2010 are within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update.

Also as seen below in Table 5-4, the measured 2010 average daily wastewater flows to the Georgina wastewater treatment plants are within the capacities of the treatment plants. The Keswick wastewater treatment plant is being upgraded in 2012 to a capacity of 18 MLD.

Table 5-4 Georgina Wastewater Service Areas, 2010 Average Daily Wastewater Flows vs. Treatment Plant Capacity

Service Area Name	2010 Average Daily Flow	2010 Treatment Plant Capacity	Flow vs. Capacity
	MLD	MLD	%
Keswick/Willowbeach	9.046	12	75%
Sutton	1.726	3.41	51%

5.3 Stand-alone Wastewater Systems

The Region operates and maintains local separate wastewater systems in East Gwillimbury, King and Vaughan. For a further description of the Regional stand-alone wastewater systems, please refer to the 2009 Water and Wastewater Master Plan Update.

Table 5-5 provides the information on the existing and future estimated populations in each service area.

Table 5-5 Stand-alone Service Areas, 2010 and Projected 2011 Serviced Population

Service Area Name	2010 Serviced Population	2011 Planning Forecasts	2010 vs. 2011 Population
	Residential	Residential	%
Mount Albert	4,218	5,828	72%
Nobleton ¹	298	4,746	6%
Schomberg	2,433	2,305	106%
Kleinberg	3,047	5,433	56%
Total Stand-alone	9,996	18,312	55%

¹ This community is in the process of connecting customers to the newly installed sanitary sewer system

The estimated sanitary serviced populations in the stand-alone systems by year end 2010 are within the 2011 planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update, except for Schomberg. However, the Schomberg WPCP was recently expanded in 2010 and is expected to have capacity to service the community until

approximately 2051. Therefore, the fact that the 2010 population is slightly higher than the 2011 forecast should not be a concern.

Also as seen below in Table 5-6, the measured 2010 average daily wastewater flows to the stand-alone system treatment plants are within the capacities of the treatment plants. The Kleinburg wastewater treatment plant is being upgraded in 2011 to a capacity of 2.874 MLD.

Table 5-6 Stand-alone Service Areas, 2010 Average Daily Wastewater Flows vs. Treatment Plant Capacity

Service Area Name	2010 Average Daily Flow	2010 Treatment Plant Capacity	Flow vs. Capacity
	MLD	MLD	%
Mount Albert	0.866	2.043	42%
Nobleton ¹	n/a	2.925	n/a
Schomberg	0.716	2.055	35%
Kleinberg	1.032	1.205	86%

¹ Sanitary flows are being trucked to the Schomberg WPCP as there is insufficient flow from the connected residents to justify starting the Nobleton WPCP.

5.4 Status of Wastewater Infrastructure Projects

In order to verify that capacity remains available in each of the Regional sanitary service areas, not only is it necessary to compare the existing populations with the forecast populations used in the wastewater computer model, it is also necessary to confirm that all of the infrastructure assumed to be in place are progressing and will be in place as planned. The table below lists all of the sanitary infrastructure recommended by the 2009 Water and Wastewater Master Plan Update to be in place between 2006 and 2011 and the current status of the projects. None of these projects were complete as of November 2009 when the 2009 Water and Wastewater Master Plan Update was finished.

Table 5-7 Comparison of the 2009 Water & Wastewater Master Plan Update Recommended Wastewater Project Schedule with the Current Project Status (2006-2011)

Project Name	Master Plan Recommended Completion	Current Expected Completion
Temporary Flow Control System for YDSS	2006-2011	2010
Duffin Creek WPCP Stage 3 Expansion ¹	2006-2011	2010
King City Collection System	2006-2011	2009
West Rainbow Creek Trunk Sewer	2006-2011	2010
YDSS Overflow Security	2006-2011	2015
Leslie Street Pumping Station Upgrade	2006-2011	2013
Peel Shared Works	2006-2011	2011/ongoing
Lagoon Conversion Wetlands ²	2006-2011	2012
Joe Dales Forcemain and Pumping Station Upgrade	2006-2011	2012
Kleinburg WPCP Expansion	2006-2011	2011
Nobleton WPCP and Collection System	2006-2011	2010
Duffin Creek WPCP Stage 3 Pumping Station	2006-2011	2013
Keswick WPCP Expansion	2006-2011	2012

¹ Liquids treatment train component only

² Lagoons in Schomberg and Mt. Albert will be decommissioned by 2012, however, the decommissionings in Holland Landing and Sutton have been delayed until the IEA for the UYSS has been completed

Explanations for Schedule Differences

Analysis of the impact of the above schedule discrepancies has been performed by Infrastructure Planning staff. In most cases the current expected completion dates will not negatively affect the servicing of population growth or existing communities. As described earlier, population growth in York Region is managed through servicing allocation, which is tied to completion of infrastructure. Many of the above noted projects are “trigger projects” for allocation as described in the quarterly Water and Wastewater Infrastructure Status Report produced by the Environmental Services Department. However, the impact of the schedule changes for the following projects merits further evaluation:

The YDSS Overflow Security project is aimed at decreasing the risk of overflows at Regional pumping stations and it is now expected to be delayed by four years. This will only impact overflow security and not available capacity.

The Leslie Street Pumping Station Upgrade has been delayed two years. This will cause a minor increase in the hydraulic gradeline along the Steeles Avenue Trunk sewer. This upgrade project is being implemented as soon as possible.

Chapter 6

Summary of Servicing Demand and Capacity Assessment

Water and wastewater capacity and infrastructure must be built ahead of development demand. This monitoring report is part of an overall process to ensure that demand does not exceed available capacity. To accomplish the goal of monitoring water and wastewater supply and demand, a comparison is made between the latest available demand data, (i.e. measured 2010 water and wastewater demands through population numbers) and the projected 2011 demands. Since the Water and Wastewater Master Plan used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured and projected demands are noted and evaluated in this report. Also, any infrastructure projects that are not being built according to the timeframe in the Water and Wastewater Master Plan are documented and evaluated to identify potential effects on servicing capacity. Additionally, measured flow data, where available, is compared to water supply and wastewater treatment capacities.

Summary of Supply and Demand Monitoring: Water

Generally, no water supply constraints on the York Water System (YWS) in 2010, although in some areas infrastructure implementation will need to be monitored and evaluated

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, was approximately 959,000 by end of year 2010. This serviced population is consistent with the forecast used to prepare the Water & Wastewater Master Plan. No future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 should be done to determine whether the planned infrastructure needs to be advanced. Measured 2010 maximum day demands from the Toronto and Peel water supply systems were within the agreement limits. The progress of implementation of the Region's capital plan generally matches the system demands on the YWS up to 2011.

Available capacity in the stand-alone water systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone water systems (including Keswick and Sutton) is approximately 58,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 maximum day demands in the stand-alone water supply systems were within the permitted capacities, although in some cases the maximum day demands exceeded the available firm capacities (firm capacity is

the capacity of the system with the largest well out of service). Infrastructure upgrades in these communities will be completed within the next 2 years to service the build-out of approved community plans and provide additional capacity.

The Water and Wastewater Master Plan has examined the mid and longer term demand and made appropriate recommendations regarding water infrastructure requirements and timing for both the YWS and stand-alone systems.

Summary of Supply and Demand Monitoring: Wastewater

Available capacity in the York-Durham Sewage System (YDSS) can accommodate 2010 demands, although some areas require further evaluation

The Region committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure was based on the pre-expansion capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows from York Region and the allowable flows to Peel Region. At end of year 2010, the residential population on the YDSS, including Peel diversion has reached approximately 948,000 persons. This figure is within the 2011 projections utilized by the Water and Wastewater Master Plan.

Measured 2010 average day sanitary flow from the YDSS to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2010 average day sanitary flow from York Region to Peel Region is within the agreement limits.

Generally, no sanitary capacity issues are anticipated although the populations in a few service areas are building out faster than forecasted. Evaluation of the Thornhill service area by Regional staff in consultation with local municipal staff will be reported on when completed. The progress of implementation of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011.

Available capacity in the stand-alone wastewater systems can accommodate 2010 demands

The residential serviced population reached by the end of the year 2010 in the communities with stand-alone wastewater systems (including Keswick and Sutton) is approximately 49,000 and is within the corresponding planning forecasts used by the Water and Wastewater Master Plan. Measured 2010 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The progress of implementation of the Region's capital plan generally matches the system demands up to 2011.

The Water and Wastewater Master Plan has examined the longer term demand situation and made appropriate recommendations regarding wastewater infrastructure requirements and timing for both the YDSS and stand-alone systems.

Conclusion

The Supply and Demand Monitoring Report has revealed that the 2010 year end residential populations relying on the York Water System (YWS), York-Durham Sewage System (YDSS) and the stand-alone water and wastewater systems (including Keswick and Sutton) are within the corresponding 2011 planning forecasts used by the Water and Wastewater Master Plan. However, residential populations in a few water pressure districts and sanitary service areas are building out faster than anticipated. As a result, additional monitoring and evaluation in Vaughan Pressure Districts 5 and 9 and Stouffville Zone 2 should be done to determine whether the planned infrastructure needs to be advanced. The information contained in this report will assist the Environmental Services Department in the timing of their projects. The progress of implementation of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2010 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

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