



Water and Wastewater Supply and Demand Monitoring Report



September 2007

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Executive Summary

The Water and Wastewater Supply and Demand Monitoring Report provides an up-to-date description of the current and short-term (up to 2011) water and wastewater servicing supply and demand status for the nine area municipalities. Specifically, the purpose of this report is to document, as far as possible, the supply capacity of water and wastewater infrastructure and respective demands by distinct service areas. It will also provide a basis for water and wastewater planning staff to 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 the local municipalities.

It is not the intention of this Report to recommend or establish the release of additional capacity, adjust population forecasts or identify allocation priorities. Also, it does not identify the infrastructure required to service the predicted growth; the water and wastewater master plans to be updated from time to time will recommend the required infrastructure and phasing. Decisions on the timing and release of additional capacity will be made through the involvement of both the Planning and Transportation and Works Departments through the Capacity Allocation Protocol which has been developed in consultation with the area municipalities.

Summary of Supply and Demand Monitoring: Estimation of Serviced Population

1. The estimates of the serviced population within the water and wastewater service areas are based on the unit type, number and persons per unit (PPU) on serviced parcels as of June 2006. The PPU's utilized in this analysis are based on Statistics Canada's Census 2001 estimates. It is noted that there is a trend of decrease in the PPU's over the years in the Region and elsewhere in Canada.
2. The servicing boundaries were updated in September 2006 by the Region's staff in collaboration with the local areas municipalities. It must be noted that the

accuracy of the serviced population largely depends on the accuracy of the servicing boundaries.

3. The distribution of unit types within servicing boundaries and number of units on a serviced parcel are derived from the information available in the Municipal Property Assessment Corporation (MPAC) data (CD OASYS, updated September 2006). This update approximately corresponds to the Region's 2006 mid-year estimates of the total population in the York Region.

Summary of Supply and Demand Monitoring: Water

1. The serviced population on the York Water System, including the Yonge Street Aquifer System is approximately 815,000 by mid-year 2006. This figure is well within the projections utilized by the 2004 Long-Term Water Master Plan. The current progress of Region's capital plan and allocation is generally in sync with the system demands in the short term. The ongoing Water Master Plan Update will confirm the longer term demand situation and make appropriate recommendations regarding the infrastructure requirement and timing.
2. The water consumption rates used in the analysis are based on the 2006 actual metered average flows combined with the peaking factors utilized in the 2004 Master Plan. The consumption rates are being updated as part of the ongoing water and wastewater master planning exercise to be completed in 2008. Once updated, these rates will allow an opportunity to monitor the effectiveness of various water efficiency programs through the Region's Water for Tomorrow Program.
3. The actual serviced population reached by the year 2006 in the communities with stand-alone water systems is approximately 64,000 and is within the corresponding planning forecasts used by the 2004 Master Plan Update. The 2006 theoretical maximum day water demand in these water systems is generally within the supply capacity of the existing wells. The actual maximum day metered consumptions for these communities were not available at the time of preparation

of this Report. The ongoing Water and Wastewater Master Plan Update to be completed in 2008 will further confirm the capacity status for these systems.

4. The total maximum day demand for the York Water System for 2006 is based on a band of peaking factors between 1.6 and 1.8. Although the flows based on the design peaking factor of 1.8 appear to be slightly higher than the corresponding flow schedules from Toronto and Peel, the average flows based on cumulated 2006 metered flows are within the currently agreed flow schedules. Records of maximum day flows to the York Water System were not available at the time of the preparation of this Report. Also, for monitoring purposes, there is a need to update the peaking factor for the York Water System.

Summary of Supply and Demand Monitoring- Wastewater

1. Current Regional commitments for wastewater serviceable population on YDSS are 970,000 based on June 23, 2005 Council approved capacity. This figure is based on the capacity available at Duffin Creek WPCP for flows from the York Region. At mid-year 2006, the population on YDSS, including Peel diversion has reached approximately 816,000. Based on the updated forecasts, the 2011 projected population on the YDSS is also within the current Regional commitments. Therefore, the current progress of Region's capital plan and allocation is in sync with the wastewater demands on the YDSS in the short term. The ongoing Wastewater Master Plan Update will confirm the longer term demand situation and make appropriate recommendations regarding the infrastructure requirement and timing.
2. There are two major components in the YDSS which determine its servicing supply capacity – the conveyance system, which is the system of pipes and pumps that carry wastewater flow to the plant, and the treatment works, the Duffin Creek Water Pollution Control Plant (WPCP). Both components are considered when determining the population that can be serviced.

3. Regionally, the currently approved YDSS conveyance capacity at the boundaries (including the Peel diversion and the existing South East Collector) is 972,000 persons prior to twinning the South East Collector. However, the results of the re-evaluation of the existing South East Collector Sewer Capacity (Earth Tech, May 2007) concluded that peak flows experienced during intense or extended rainfall events could cause surcharge or backup of wastewater flows. Therefore, an alternate servicing solution consisting of flow control systems in the YDSS has been recommended to mitigate risks of system surcharging as a result of construction delays anticipated in the South East Collector. The flow control structures will also provide long-term flow management capabilities through flexibility in operation and maintenance activities.
4. Growth in all the stand-alone wastewater serviced communities in the Region may near the capacity of the currently existing wastewater treatment systems by the year 2011. The ongoing construction projects or Class Environmental Assessments for the expansion/upgrade of the existing wastewater treatment facilities will address these issues. The Water and Wastewater Master Plan Update to be completed in 2008 will confirm the capacity status of these systems.

Water and Wastewater Supply and Demand Monitoring Report

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Chapter 1

Background

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:

- Provide a technical reference for maintaining and applying the Region's water and wastewater modeling tools to increase the Region's ability to understand, manage, predict, and report on water and wastewater servicing supply and demand requirements of the municipalities,
- Document and report on water and wastewater supply and demand by distinct service areas for all municipalities,
- Provide a basis for water and wastewater staff to 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.

In this release, it is also intended to monitor the growth (current versus projected) in the service areas relative to the ultimate servicing capacity of the existing infrastructure wherever possible. Such monitoring would provide guidance in development review process with respect to the capacity issues in case of any significant deviations in terms of the population density, or with regards to the timing of the proposed growth related infrastructure upgrades. This release of the Supply and Demand Monitoring Report will cover the water and wastewater supply and demand in York Region to the year 2011 for each of the nine municipalities.

The Supply and Demand Monitoring Report does not recommend or establish the release of additional capacity, adjust population forecasts, or identify allocation priorities. This

document reports on the physical supply available to each municipality with regards to the water and wastewater systems. Decisions on the timing and release of additional capacity will be made through the involvement of both the Planning and Transportation and Works Departments through the Capacity Allocation Protocol which has been developed in consultation with the area municipalities. The Capacity Allocation Protocol includes a list of infrastructure triggers required for release of capacity to new development. An up-to-date table of these triggers is included in Appendix 1.

Chapter 2

Methodology

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. For the current update (2006), 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. The service areas were then converted into GIS layers by the Region's Transportation and Works staff. These GIS layers formed the basis to extract the serviced population within water and wastewater servicing boundaries using GIS tools. In order to establish the most accurate estimate of the 2006 serviced population within these service areas, various alternative methods were evaluated. They are discussed below.

2.1 Estimation of the 2006 Serviced Population

Approach 1: Traffic Zone Estimates Based Approach

The Long-Range Planning Branch of Planning and Development Services regularly update the York Region's population based on a grid that divides the Region into 352 traffic zones. The population of each zone is determined based on the occupied households from the most recent census data that is regularly updated based on Canada Mortgage and Housing Corporation (CMHC) housing completion data. The numbers are further adjusted to account for the census undercount and institutional population to establish the existing residential and employment population within the zone. Also, future projections are made based on various growth and intensification scenarios.

This approach as it applies to estimation of water and wastewater serviced population involves three steps:

1. Overlay the traffic zone grid on the water and wastewater service area map.
2. Using a spreadsheet, identify the traffic zones and corresponding percentage area of the traffic zones enclosed within each water or wastewater service areas. When a traffic zone is partially contained in a service area (see Figure 2-1), the population is calculated proportionate to the percent area of the traffic zone enclosed within the servicing boundary. The assumption, of course is that the population within a traffic zone is uniformly distributed over the zone, which is seldom the case. Where the population distribution within a traffic zone can be visually verified with the aid of aerial photography and proposed and/or approved subdivisions, the error can be reduced by adjusting the percent area of the traffic zones enclosed within a service area. However, this approach is not error free as the traffic zones are often intersected by water or wastewater service areas.
3. Calculate the total population within the service areas by summing up the population within all the traffic zones enclosed within each service area.

The above procedure could be automated using the Region's GIS application. However, there would be no opportunity for manual adjustment to account for the error involved in Step 2 above.

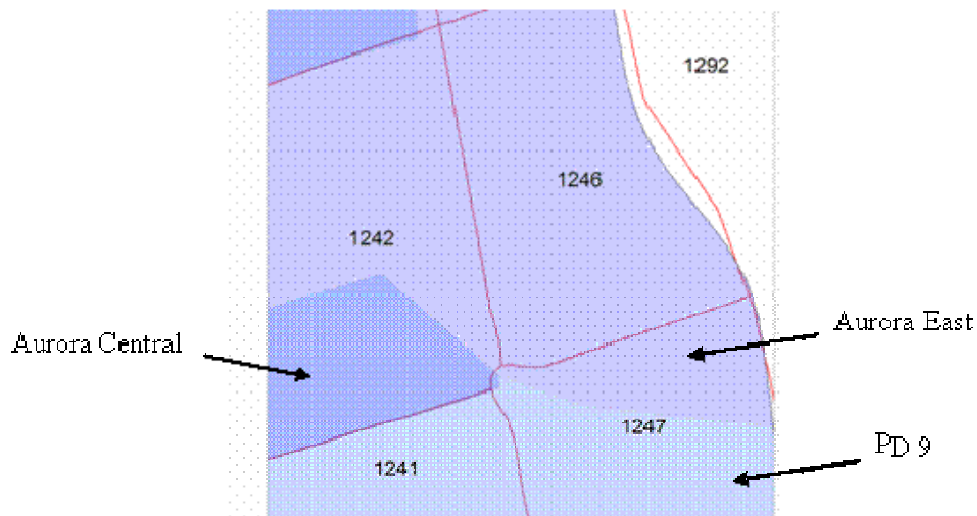


Figure 2-1 Traffic Zones Containing Multiple Service Areas

Because of the limitations of the traffic zones based procedure, a more realistic alternative approach based on dwelling units on serviced parcels was utilized for residential population as described below. However, for employment population, traffic zones based approach was maintained.

Approach 2: Serviced Parcels Based Approach

The Geomatics Branch of Planning and Development Services Department maintains a geo database that contains the parcel fabric information including the roll numbers and municipal address points. Water and Wastewater service area layer files are updated by the Water and Wastewater Branch of Transportation and Works Department in consultation with the area municipalities. Typically, the process to estimate the serviced population based on the serviced parcels approach, involves the following steps:

1. Overlay the parcel fabric on the service area map.
2. Capture all the parcels within each service area and record the dwelling unit type and the number of units on each parcel. York Region uses four dwelling unit types, namely single, semi-detached, row and apartment for population estimation.
3. Calculate the total population within each service area boundary based on the persons per unit (PPUs) applicable to the municipality and the type of dwelling. The PPU's used in this analysis are based on 2001 Census of Statistics Canada.

This approach, while being the ideal and technically feasible using GIS tools, could not be directly utilized due to the following limitations, particularly in completing the Step 2 above:

- The information on 'unit type' or the 'number of units' on the serviced parcels was not available in the Region's spatial data warehouse (SDW). However it is noted that the allocation tracking tables do have this information for post 2004 developments when the allocation tracking process started.

- The roll numbers and address information of the serviced parcels was only partially available at the time of this analysis

In order to complement the existing GIS database, a manually intensive approach was used in estimating the 2006 serviced population. The analysis was based on the property information from CD-OASYS (updated September 2006), a Municipal Property Assessment Corporation (MPAC) database. Further discussion along with the steps involved in this procedure is provided in Appendix 2.

2.2 Estimation of the 2011 Serviced Population

The 2011 projected population used in this analysis is based on the 40% intensification scenario. This means that 40% of the new growth is required to be accommodated within the currently existing built urban boundaries. As the traffic zones are the lowest geographical units these projections are available for, this analysis is also based on the traffic zone approach as described in Section 2.1.

2.3 Estimation of Demands and Infrastructure Capacity

Water demands generated by the 2006 serviced and future projected population for the York Water System (defined in Section 3.1) are estimated based on the water consumption rates and peaking factors used by the 2004 Master Plan for the years 2006 and 2011. However, for the stand-alone systems, the rates are based on the information utilized in the recently completed or ongoing respective Environmental Assessment (EA) studies. Similarly, the equivalent population for key wastewater infrastructure capacity, where applicable is derived from the information utilized in the most recent Water and Wastewater Infrastructure Status Report available at the time of preparation of this Report.

Chapter 3

Supply And Demand Monitoring- Water

Water is provided to residents, businesses and institutions in York Region through a variety of systems and facilities. In 2006, York delivered approximately 117,000 ML of potable water across the Region with approximately 80% coming from Lake Ontario for the southern urban area. Water service areas in the Region are described generally as the York Water System, 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 November 2002, lake-based surface water from York Water System was introduced to Aurora from pressure district 9, to supplement the groundwater supply. The lake-based supply to these service areas will further increase once the Aurora/Newmarket Feedermain is completed.

Two water filtration plants in Georgina and eight groundwater-based systems in Vaughan (Kleinburg), King, East Gwillimbury and Whitchurch-Stouffville service the stand-alone systems.

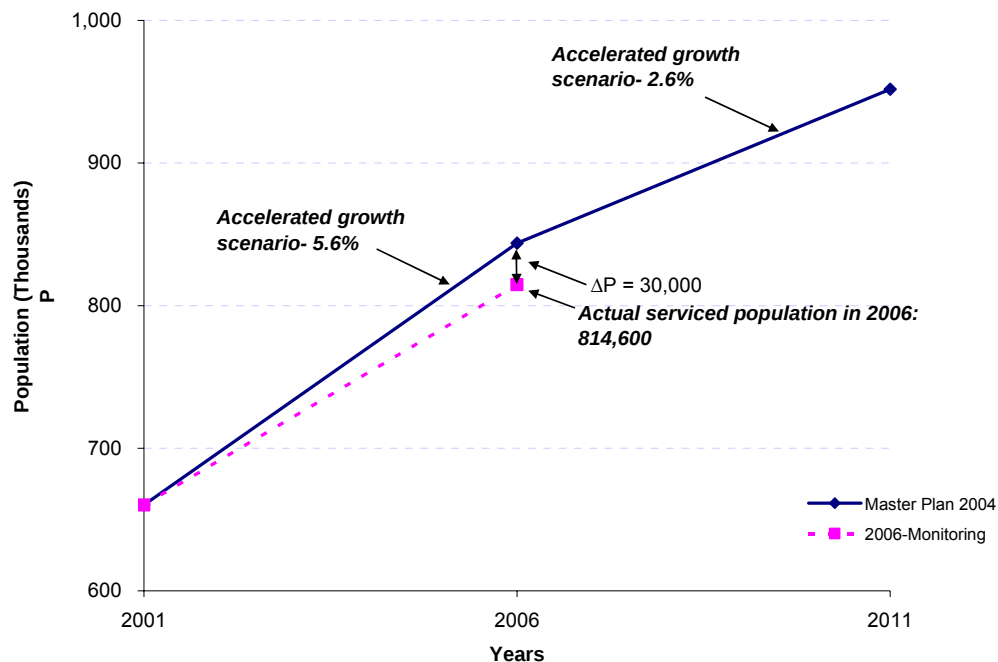
3.1 York Water System

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 12 service areas within the 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 additional

8 pressure districts from Aurora and Newmarket. Further detail on the supply capacity and service areas of the Yonge Street Aquifer is provided in Section 4.8.

The Master Plan Update of 2004 recommended infrastructure improvement projects to address the growth in the Region based on an accelerated growth scenario in the municipalities serviced by the York Water System. The accelerated growth scenario represents about 68,000 persons greater than identified in the Regional Official Plan projection by 2011 for the York Water System (LTWP Master Plan, 2004). A summary of the original projections and actual 2006 serviced population on York Water System by Municipality estimated as of mid-year 2006 is provided in Figure 3-1 and Table 3-1. Also shown in the Table are the Long-Range Planning forecasts within the water service areas for the year 2011.

Figure 3-1 Population Growth on York Water System



Based on the serviced population count as of mid 2006, it appears that the system wide population on the YWS is approximately 30,000 lower than the 2004 Master Plan

projections for 2006. If the original target based on the accelerated growth rate was to be met, it would appear that a growth rate of 3.9% could be accommodated to 2011 within the provisions of the 2004 Master Plan.

Table 3-1 Population Growth on York Water System by Municipalities

Municipality	2006 Served Population ¹	2004 LTWP Master Plan (April, 2004) Forecasts		Updated Long- Range Planning Forecasts (40% Intensification) ²
		2006	2011	2011
Aurora	47,800	49,000	56,100	55,500
East Gwillimbury (Holland Landing, Sharon, Queensville)	11,600	13,000	21,500	12,100
Markham	267,800	269,400	296,100	306,800
Newmarket	78,200	79,000	87,000	85,300
Richmond Hill	172,100	171,600	195,000	196,500
Vaughan	237,100	261,800	296,100	284,500
Total YWS Served	814,600	843,800	951,800	939,700

¹ Estimates based on the 2006 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 40% intensification traffic zone forecast population from within the servicing boundaries

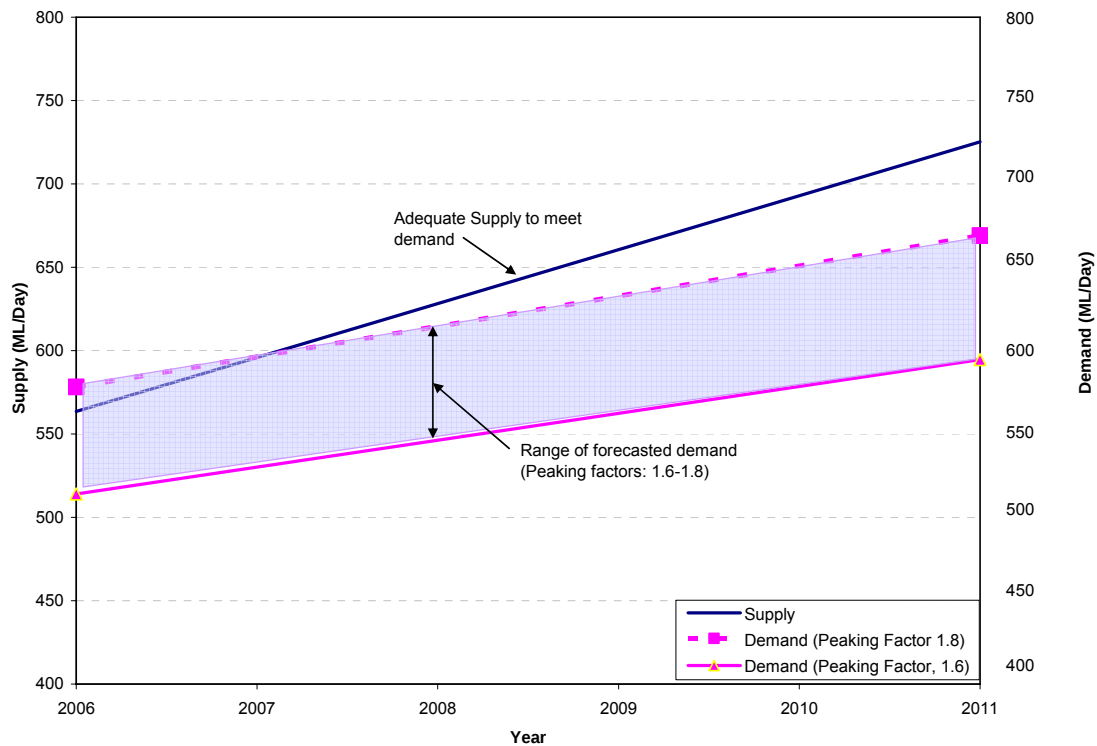
The calculated expected demand from the combined York Water System and Yonge Street Aquifer service areas is based on a band of peaking factors ranging from 1.6 to 1.8 times average day flows. The observed mean peaking factor for the southern municipalities is 1.6, based on six years of historical data while the Region's design peaking factor for York Water System continues to be 1.8 (LTWP Master Plan Update, 2004). Table 3-2 shows the water consumption rates for residential and employment population as used by the 2004 Master Plan. Overall supply versus demand for the York Water System and Yonge Street Aquifer service areas based on these rates is shown in Figure 3-2.

Table 3-2 Water Consumption Rates and Maximum Day Factors¹

Municipality	Residential Consumption Rate (l/ca/day)		Employment Consumption Rate (l/cap/day)		Design Peaking Factors
	2006	2011	2006	2011	
Aurora	260	258	218	214	1.8
East Gwillimbury	195	192	190	186	2.16
Markham	285	282	173	170	1.8
Newmarket	212	208	173	170	1.8
Richmond Hill	300	295	232	228	1.8
Vaughan	307	298	269	267	1.8

¹ Source: Long-Term Water Project, Master Plan Update, 2004

Figure 3-2 Overall Supply and Demand for the YWS and Yonge Street Aquifer



Water supply from the City of Toronto is governed by the 2005 Water Supply Agreement between the City and the Region. This agreement includes projected flow rates at each of the fifteen interconnection points required to service York Region. The agreement provides for annual increases in maximum day flow limits starting with 460 ML/day in 2004 to 501 ML/day in 2011 to a maximum of 530 ML/day in 2031.

Starting in November of 2005, the Region has been obtaining water supply from the Region of Peel. The York-Peel Water Supply Agreement includes a schedule of flows required by York. The agreement provides for annual incremental increases in maximum day flow limits starting with 19.4 ML/day in 2005 to 133.9 ML/day in 2011 to a maximum of 388.3 ML/day in 2031. Table 3-3 provides a summary of the schedule of flows as per City of Toronto and York-Peel water supply agreement.

Table 3-3 York Water System Supply Sources
(Maximum Day Supply)¹

Supply Source	2006 ML/d	2007 ML/d	2008 ML/d	2009 ML/d	2010 ML/d	2011 ML/d	2012 ML/d	2013 ML/d
City of Toronto	460	465	470	482	494	501	501	501
Peel Region	33.6	50.93	69.32	89.7	111.12	133.9	149.2	164.5
Total	493.6	515.93	539.32	571.7	605.12	634.9	650.2	665.5

¹ Source: Toronto-York Water Supply Agreement (2004) and York-Peel Water Supply Agreement (2002)

Table 3-4 presents the names of YWS pressure districts and supply sources including the associated infrastructure.

There are 12 interconnected service areas within six pressure zones (PD4 to PD9) that are serviced by a series of watermain, pumping stations, reservoirs and tanks. System details, including the existing serviced areas and existing and future infrastructure in the York Water System are provided in Figure 3-3.

Table 3-5 provides 2006 serviced and 2011 projected population by Pressure Districts. The 2011 population is based on the assumption that the growth will take place within the currently serviced areas.

Figure 3-4 provides an example schematic of the York Water System flow for 2006 maximum day scenario for a general understanding of the overall water system. This flow chart shows the current demands resulting from the existing serviced population within the serviced portion of the pressure districts. However, it is noted that the system flows shown on the chart are based on the original modeling of 2006 scenario completed as part of the 2004 Master Plan exercise and therefore may not be accurate. The ongoing Master Plan Update exercise is expected to update the system flows, including the supply feeds based on the most up-to-date demands and Regional water infrastructure network.

System specific infrastructure supply and demand analysis is provided under the description for each pressure district in Chapter 4.

Table 3-4 YWS Pressure Districts, Supply Sources and Associated Infrastructure

Pressure District (PD) Name	Water Supply Source	Associated Supply Infrastructure
PD4 West (Woodbridge)	Toronto PD 4 York PD 5	600mm PD4 Watermain York PD5 PRVs
PD5	Toronto PD 5	PD5 Toronto connections Kennedy PD5 Pumping Station (PS) Milliken PD 5 PS
PD 5 West	Toronto PD 4 York PD 6	Keele PD5 PS York PD 6
PD 5 Milliken	Toronto PD4	Milliken PD 5M PS
PD 6	Peel Supply Toronto PD 4 York PD 5	Airport Road PD 6 PS in Peel Keel PD 6 PS Bayview PD 6 PS Markham PD 6 PS
PD 6S	York PD 6	PD 6 Pressure Reducing Valves (PRVs)
PD 6M	York PD 6	PD 6 PRVs
PD 7	York PD 6	Richmond Hill PD 7 PS South Maple PD 7 PS
PD 8	York PD 7	North Richmond Hill PD 8 PS
PD 9	York PD 8	Jefferson PD 8 PS
PD Aurora Central (AC)	York PD 9 Local Wells	Oak Ridges PD 9 PRV Aurora Wells- 1, 2, 3, 4, 5 and 6
PD Aurora South (AS)	York PD AC	Ridge Road PD AS PS
PD Aurora East (AE)	York PD AC	Aurora East PD AE PS
PD Aurora West (AW)	York PD AC York PD AS	Orchard Heights PD AW PS Allanvale PD AS Valves
PD Newmarket East (NE)	Local Wells York PD Queensville (QE)	Newmarket Well No. 14 Queensville Wells 1-4
PD Newmarket Central (NC)	Local Wells York PD NE York PD AC	Newmarket Wells 1, 2, 13, 15 and 16 Davis Drive PD NE PRV York PD AC PRV
PD Newmarket West (NW)	York PD NC	Kirby PD NC PS
PD Sharon (SA)	York PD QE	PD QE PRVs
PD Queensville (QE)	Local Wells	Queensville Wells 1-4
PD Holland Landing (HL)	Local Wells York PD QE	Holland Landing Wells 1 and 2 PD QE PRV

Figure 3-3 York water System

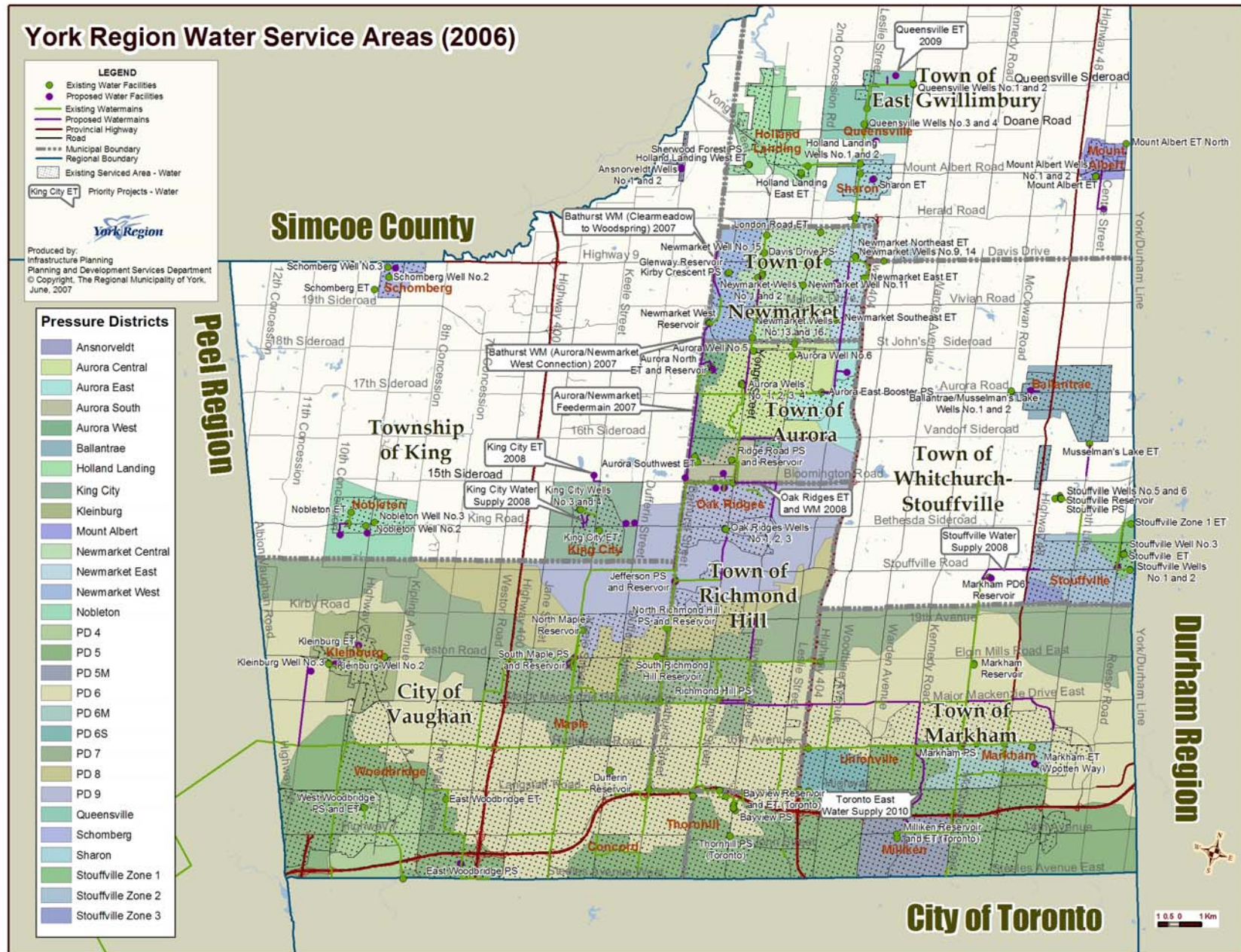


Table 3-5 YWS 2006 Serviced and Future Projected Population by Pressure Districts

Pressure District (PD)/Service Area Name	Mid-2006 Serviced Population ¹		Future Projected Population (2011) ²	
	Residential ¹	Employment ²	Residential ²	Employment ²
PD4 West (Woodbridge)	17,500	9,200	19,900	10,700
Vaughan PD 5	44,400	6,500	42,600	6,700
Markham PD 5	113,500	77,100	125,100	89,900
PD 5 Woodbridge	27,800	26,500	30,600	37,500
PD 5 Milliken	34,400	19,000	35,800	19,400
Vaughan PD 6	102,300	102,700	121,700	115,600
Richmond Hill PD6	79,600	25,000	85,000	27,000
Buttonville PD 6S	11,400	17,900	11,300	19,400
Markham PD 6	76,400	19,700	99,300	32,900
Markham PD6M	32,100	9,500	32,600	9,500
Maple PD 7	40,800	7,700	62,000	12,700
Richmond Hill PD 7	46,400	30,800	49,900	39,700
Markham PD 7	100	600	2,700	2,600
Richmond Hill PD 8	15,600	1,800	17,700	2,200
Vaughan PD 8	800	1,200	2,700	1,400
Richmond Hill PD 9	30,500	2,800	43,900	4,700
Vaughan PD 9	3,400	400	5,000	700
PD Aurora Central (AC)	34,400	16,100	41,400	16,600
PD Aurora South (AS)	1,800	900	4,000	1,000
PD Aurora East (AE)	100	900	700	4,200
PD Aurora West (AW)	11,400	1,500	9,400	1,400
PD Newmarket East (NE)	9,900	14,300	9,000	15,500
PD Newmarket Central (NC)	51,300	22,700	57,400	23,200
PD Newmarket West (NW)	17,100	4,700	18,600	5,900
PD Sharon (SA)	2,900	500	2,300	500
PD Queensville (QE)	800	300	1,100	300
PD Holland Landing (HL)	7,900	2,100	8,700	2,300
Total YWS	814,600	422,400	940,400	503,500

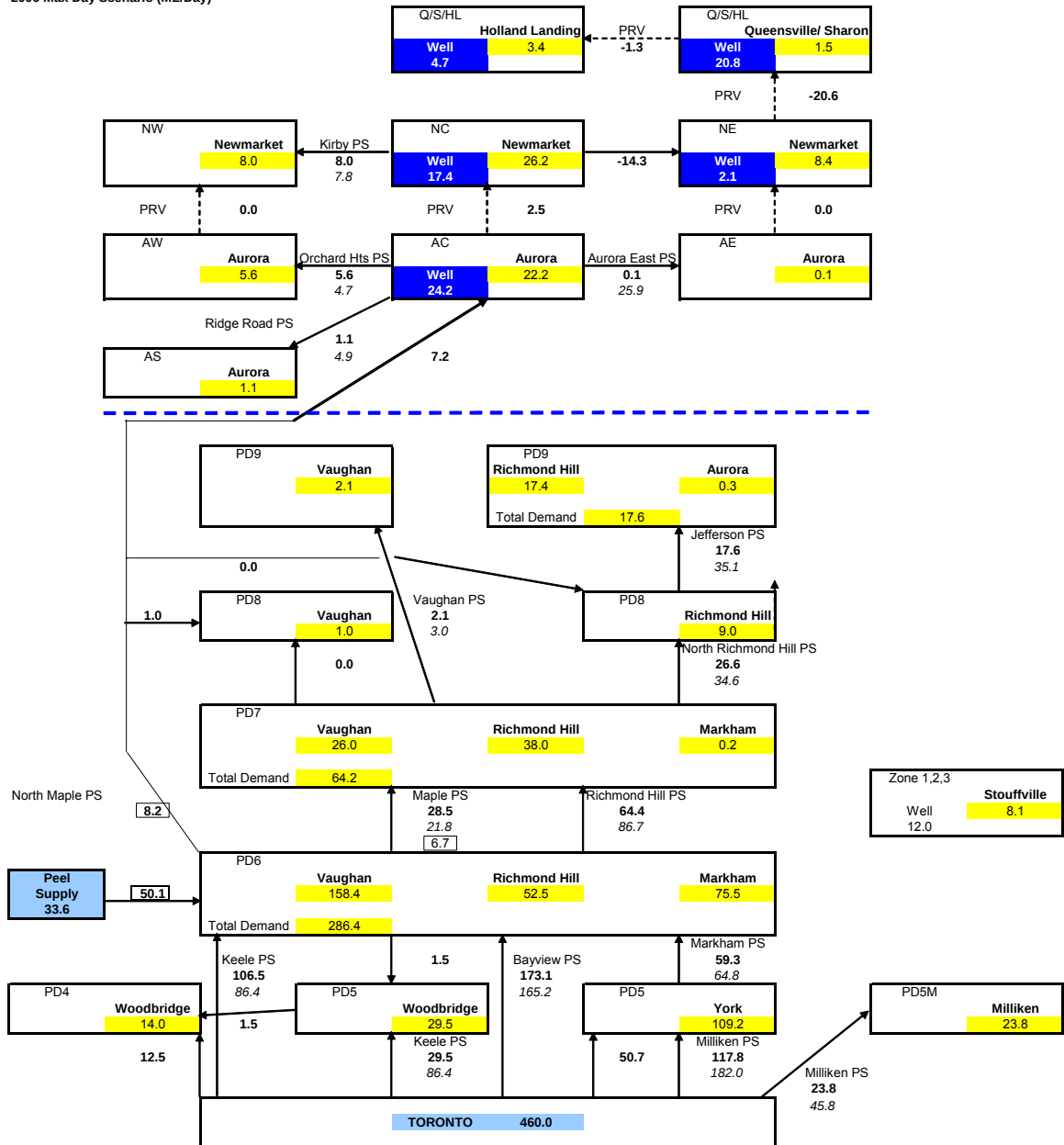
¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 40% intensification traffic zone forecast population from within the servicing boundaries

Figure 3-4 Example Schematic of York Water System Supply, Demands and Flows (2006)

(Based on Peaking Factor 1.8)

York Water System Flows
2006 Max Day Scenario (ML/Day)



3.2 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.

The Long-Term Water Project Master Plan Update of 2004 recommended infrastructure improvement projects to address the growth in Georgina Water System (GWS). A summary of the original projections and actual 2006 serviced population by service area within GWS estimated as of mid year 2006 is provided in Table 3-6 and Figure 3-5.

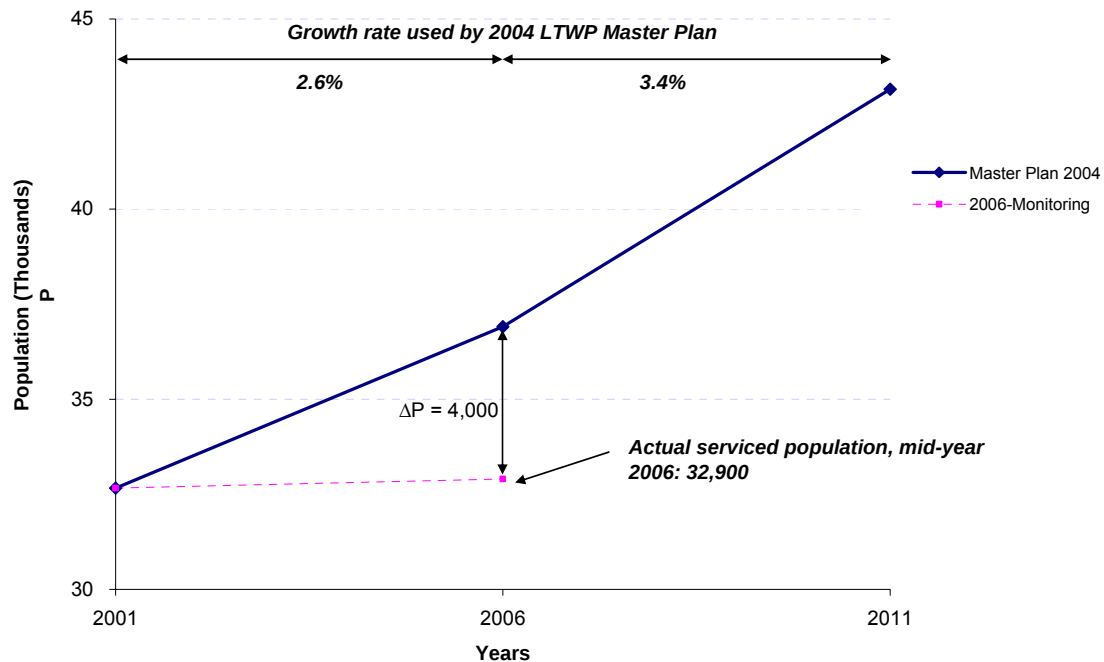
Table 3-6 Georgina Water System 2006 Serviced and Future Projected Population

Pressure District (PD)/Service Area Name	Mid-2006 Serviced Population¹		Forecasts Used by 2004 LTWP Master Plan (April, 2004)			
	Res.	Emp.	Res. (2006)	Emp. (2006)	Res. (2011)	Emp. (2011)
Keswick	25,600	4,000	29,100	6,100	32,800	8,100
Sutton	5,800	1,700	7,800	2,500	10,400	3,000
Total	31,400	5,700	36,900	8,600	43,200	11,100

¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

It is observed that the residential population projections used by the 2004 Long-Term Water Master Plan were approximately 4,000 more compared to the actual serviced in 2006 suggesting that the projections were generally ambitious.

Figure 3-5 Population Growth on Georgina Water System



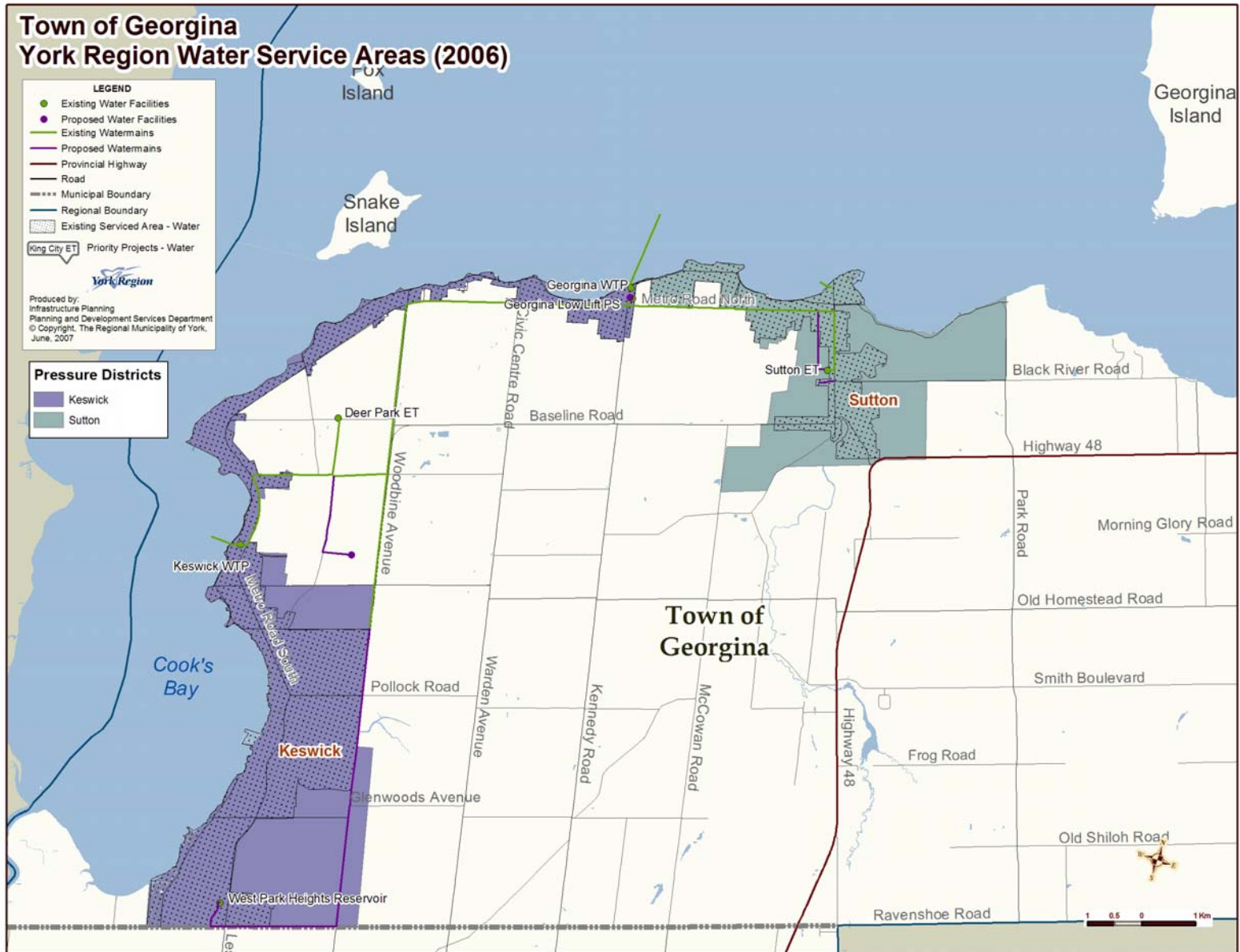
The communities of Keswick and Sutton in the Town of Georgina were originally serviced by two separate municipal water supply systems. In 2005 the two systems were connected and operate together to service both communities. The Willow Beach (Lakeshore) community was included in 2006/2007. Construction of services in the Willow Beach area is currently underway and is expected to be in service by 2007. The combined treatment capacity of the two existing plants is 35.6 ML/day of which Georgina plant is 20 ML/day and Keswick is 15.6 ML/day.

The Keswick WTP was constructed in 1983 and is a conventional treatment facility located in the community of Keswick. The Georgina WTP was completed in 2004 and is located on the south shore of Lake Simcoe in the Willow Beach area between the communities of Keswick and Sutton. The ultimate design capacity of the facility is 50 ML/d. Water supply for the community of Sutton is provided solely from the Georgina

WTP whereas Keswick and the Willow Beach area (lakeshore communities) are to be supplied from both the Keswick and Georgina treatment plants.

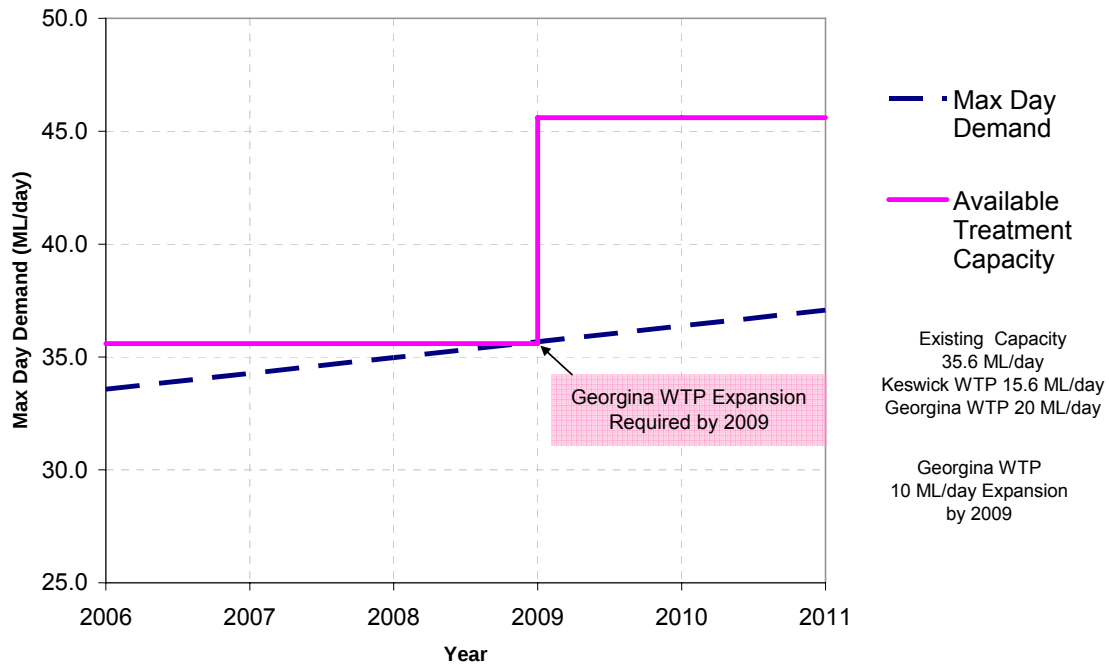
Figure 3-6 shows the Georgina Water Supply Systems including the existing serviced areas and existing and future infrastructure.

Figure 3-6 Georgina Water Supply System



Overall water treatment capacity versus system demand is shown in Figure 3-7.

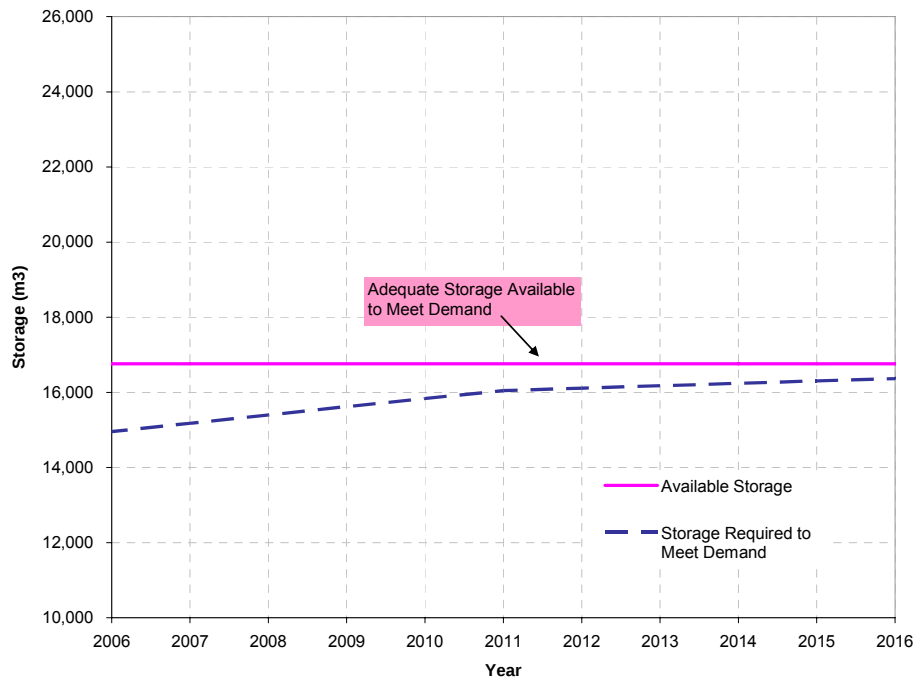
Figure 3-7 Georgina Water Treatment Supply vs. Demand



Storage for the community of Keswick is provided by the 8.5 ML Keswick Tank and the 1.83 ML Deer Park Elevated Tank. Storage in Sutton is provided by the Sutton Elevated Tank which has a capacity of 2.73 ML. There is also a clear well storage of 3.8 ML at the Georgina Water Treatment Plant. Therefore, the total storage available for the Town of Georgina is approximately 16.86 ML.

A class EA for Keswick North Elevated Tank (ET) has been recently completed. This ET was originally recommended by the 2004 Master Plan for completion by 2011. The recommendation was based on the projected growth of the Georgina Community. However, based on the 2006 updated population forecasts and the original consumption rates provided in the 2004 Master Plan, there seems to be adequate storage available to meet the MOE recommended storage demands until 2016 (Figure 3-8).

Figure 3-8 Georgina Water Storage



3.3 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.

Table 3-7 below summarizes the capacities as per the current MOE's Permit to Take Water (PTTW) and 2006 demands of these wells. It is noted that the average day demands are within the PTTW of respective systems. However, the 2006 theoretical peak demands indicate that the firm capacity of the systems may have been exceeded. The actual 2006 maximum day flows were not available at the time of preparation of this report.

Table 3-7 Stand-alone Systems Well Supply Capacities and Demands
(Maximum day)

Area Municipality	Service Area	Supply Capacity based on PTTW (ML/d)	2006 Average Day Demands (ML/d) ¹	2006 Maximum Day Demands (ML/d) ²
East Gwillimbury	Mount Albert	4.35	0.94	2.56
	King City	4.58	1.53	3.70
King	Nobleton	3.93	1.05	2.65
	Schomberg	3.93	0.67	1.7
Vaughan	Kleinburg	3.27	1.59	3.85
Whitchurch-	Ballantrae	4.58	1.07	3.51
Stouffville	Stouffville	11.98	4.93	8.28

¹ Source: York Region Water Billing Data (2006)

² Based on Observed Mean Peak Factors (L.TWP, Master Plan, 2004).

Similarly, Table 3-8 summarizes the 2006 serviced and future projected population for each service area.

Table 3-8 Stand-alone Water Systems, 2006 Serviced and Future Serviceable Population

Pressure District (PD)/Service Area Name	Mid-2006 Serviced Population¹		Projected Population (2011)²	
	Residential	Employment	Residential	Employment
Kleinberg	3,600	1,300	5,200	1,600
Nobleton	3,300	800	4,600	1,200
King City	4,200	1,600	6,200	2,300
Schomberg	1,900	1,900	2,800	1,800
Stouffville	12,300	5,600	24,000	9,800
Ballantrae	4,100	600	7,200	1,000
Mount Albert	3,600	700	5,600	1,100
Total Stand-alone	33,000	12,500	55,600	18,800

¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 40% intensification traffic zone forecast population from within the servicing boundaries

3.3.1 Kleinburg

Water supply for the community of Kleinburg in the City of Vaughan consists of two well house pumping stations and a 1.82 ML elevated tank. Existing Well No. 2 is proposed to be decommissioned, while Well No. 3 alone is capable of supplying a maximum flow rate of 3.27 ML/d. Problems with plugged screens were encountered with Well No. 3 in 2006. In the event of a problem with Well No.3, Well No.2 cannot provide adequate contingency.

A Class EA to address the need for additional water supply to support growth in the Community of Kleinburg to 2021 has been recently completed (June 2007). A connection to lake-based water system (YWS) for 2.81 ML/d water supply has been recommended with the following infrastructure to be completed and commissioned in 2010.

- 2.81 ML/day additional water supply
- 1.9 ML Elevated Tank

- 400 mm watermain along Huntington Road from York Peel Feedermain to an existing watermain on Nashville Road
- 400 mm watermain along Islington Avenue from an existing watermain at Bindertwine Boulevard in the community of Kleinberg to an existing watermain in the Woodbridge Expansion Area at Sunset Ridge Drive for added system reliability
- Construction of Well No.4 adjacent the existing Well No. 3 to allow for water supply in the interim period until construction of the lake-based supply system is complete, followed by decommissioning of the existing Kleinberg groundwater wells

Details of the Kleinburg Water system are shown on Figure 4-1 City of Vaughan and Kleinberg Water Systems.

3.3.2 King Township

The Township of King includes three communities serviced with municipal well water: Nobleton, King City and Schomberg.

Nobleton: The Nobleton Supply System consists of two well house pumping stations and a 2.0 ML elevated tank. This system is permitted and equipped to produce a maximum flow rate of 3.93 ML/d. The firm capacity of the system with one well out of service is 1.964 ML/d which is insufficient for current needs. Growth projections to 2016 indicate a need to service a population of 6,500 with a 4.46 ML/d water supply and 2.9 ML of storage. A Class EA is underway to address the need for additional water supply to support this growth. The EA is expected to be completed in July 2007. The recommended solution for additional water supply is to develop an additional well with a supply capacity of 1.9 ML/d, an 1.0 ML elevated tank and a watermain connecting to the existing supply. New water supply infrastructure required for development in Nobleton includes:

- 1.9 ML/day additional well water supply
- 1.0 ML Elevated Tank
- New watermain connecting to the existing supply

Details of the Nobleton water system are shown on Figure 3-9 King Township Water supply systems.

King City: The King City Water Supply System serves the community of King City by means of two well house pumping stations and a 2.74 ML elevated tank. The King City well system is permitted to produce a maximum flow rate of 4.58 ML/d.

Currently, there is insufficient water supply in the event one of the wells has to be taken out of service for maintenance. By 2021, the King City Community Plan has approved a population growth to 12,000 plus employment population of 4,400. Based on the projected growth in the community, additional water supply is needed by as early as 2007.

A Class EA has been completed recently. The EA addresses the need for additional water supply to support growth in the Community of King City. A lake-based water supply has been recommended. The construction is expected to be completed in the spring of 2010. New water supply infrastructure required for development in King City includes:

- 8.5 ML/day additional water supply (which includes provision for servicing Seneca College and Country Day School)
- 2.74 ML Elevated Tank

Details of the King City water system are shown on Figure 3-9 King Township Water supply systems.

Schomberg: The Schomberg Water Supply System is comprised of two well house pumping stations and a 1.5 ML elevated tank. The Schomberg system can produce a maximum flow rate of 3.93 ML/d.

The population of Schomberg is expected to increase to an ultimate build out population of 3,100. Also a total of 24.9 ha of industrial and 8.3 ha of commercial land will be developed. This planned growth is expected to increase water demand to 5.4 ML/d which is above the existing well capacity of 3.9 ML/d. Similarly, the water storage required at the build out will be 3.2 ML, which is greater than the existing 1.5 ML.

A Class EA has been completed which addresses the need for additional water supply to support growth in the Community of Schomberg. The EA recommendations are to construct the following:

- 1.508 ML/day additional well (Well No. 4) water supply
- A treatment facility designed to treat the capacity of all three municipal wells and rated for 5.435 ML/d
- A 1.7 ML in-ground water storage reservoir under the planned new treatment plant
- New watermain from the treatment facility to the existing distribution system

The construction is to be completed by the end of 2008. Details of the Schomberg water system are shown on Figure 3-9 King Township Water supply systems.

3.3.3 Whitchurch-Stouffville

The Town of Whitchurch-Stouffville includes two communities serviced with municipal well water- Stouffville and Ballantrae/Musselman's Lake. Details on the Stouffville and Ballantrae community water supply are shown on Figure 3-10 Whitchurch-Stouffville Water Supply Systems. Further detail is provided below.

Stouffville: York Region operates five municipal wells to service the community of Stouffville that can supply a maximum flow rate up to 11.98 ML/day. There is one 3.4 5.09 ML reservoir servicing the community of Stouffville. The Region operates a booster pumping station adjacent to the reservoir which supplies water to commercial and residential users in the Highway 48 / Bloomington area. There are also two elevated tanks, one 3.4 ML and one 5.9 ML Stouffville Zone 1 Elevated Tank that was added in 2006. The combined system can service a total population of up to 21,000.

A Class EA was completed in 2006 which addresses the need for additional water to support growth beyond 21,000 in the Community of Stouffville. A connection to the York Water System by a pumping station at the PD6 North Markham Reservoir has been recommended. The construction of the pumping station and the watermain to connect the existing system is planned to be completed by September 2009.

Ballantrae: The communities of Ballantrae/Musselman's Lake are serviced by two groundwater production wells and one treatment facility. An elevated tank with 2.76 ML total capacity is located on the 9th Line, south-east of Musselman's Lake. This system can produce a maximum flow rate of 2.62 ML/d.

To support the continued growth of the community of Ballantrae, additional water supply capacity will be required. A Class EA study and water resource exploration program is currently underway to provide additional water supply capacity for approved future growth in the communities of Ballantrae-Musselman Lake and Bloomington. The study will also review the need for additional water supply in the event that one of the existing two community wells was not operational.

3.3.4 Mount Albert

Water supply for the community of Mount Albert in the Town of East Gwillimbury is from two municipal wells and two elevated tanks, one 0.91 ML tank and a 3.0 ML tank. The Mount Albert well system can produce a maximum flow rate of 6.52 ML/d; however, the PTTW allows a maximum withdrawal of 4.35 ML/d. The existing well

system was designed to service a population of 5,300 persons which represents the approved population as described in the Mount Albert Community Plan.

The firm capacity of the Mount Albert well systems, with the highest producing well off-line is 1.7 ML/d. The average maximum day demand for Mount Albert for the last four years was approximately 2.449 ML/d. A Class EA has been recently completed to address the need for additional water to provide firm capacity for supply. The recommendations include an additional well with a maximum flow rate of 3.2 ML/d, a pumping station and a new watermain to be completed by June 2008.

Details on the Mount Albert community water supply are shown on Figure 3-11 Town of East Gwillimbury water supply systems.

Figure 3-9 King Township Water Supply Systems

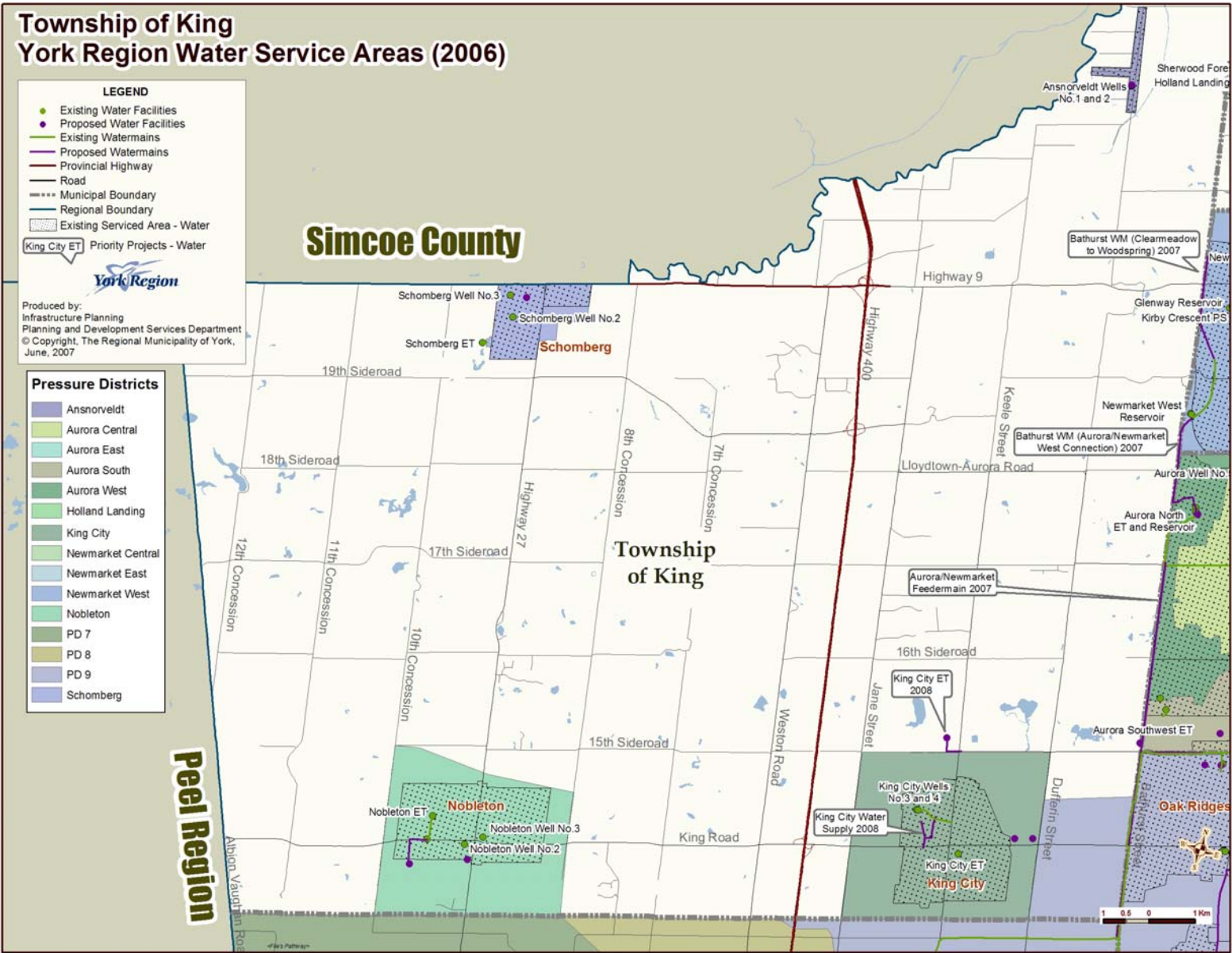


Figure 3-10 Whitchurch-Stouffville Water Service Areas

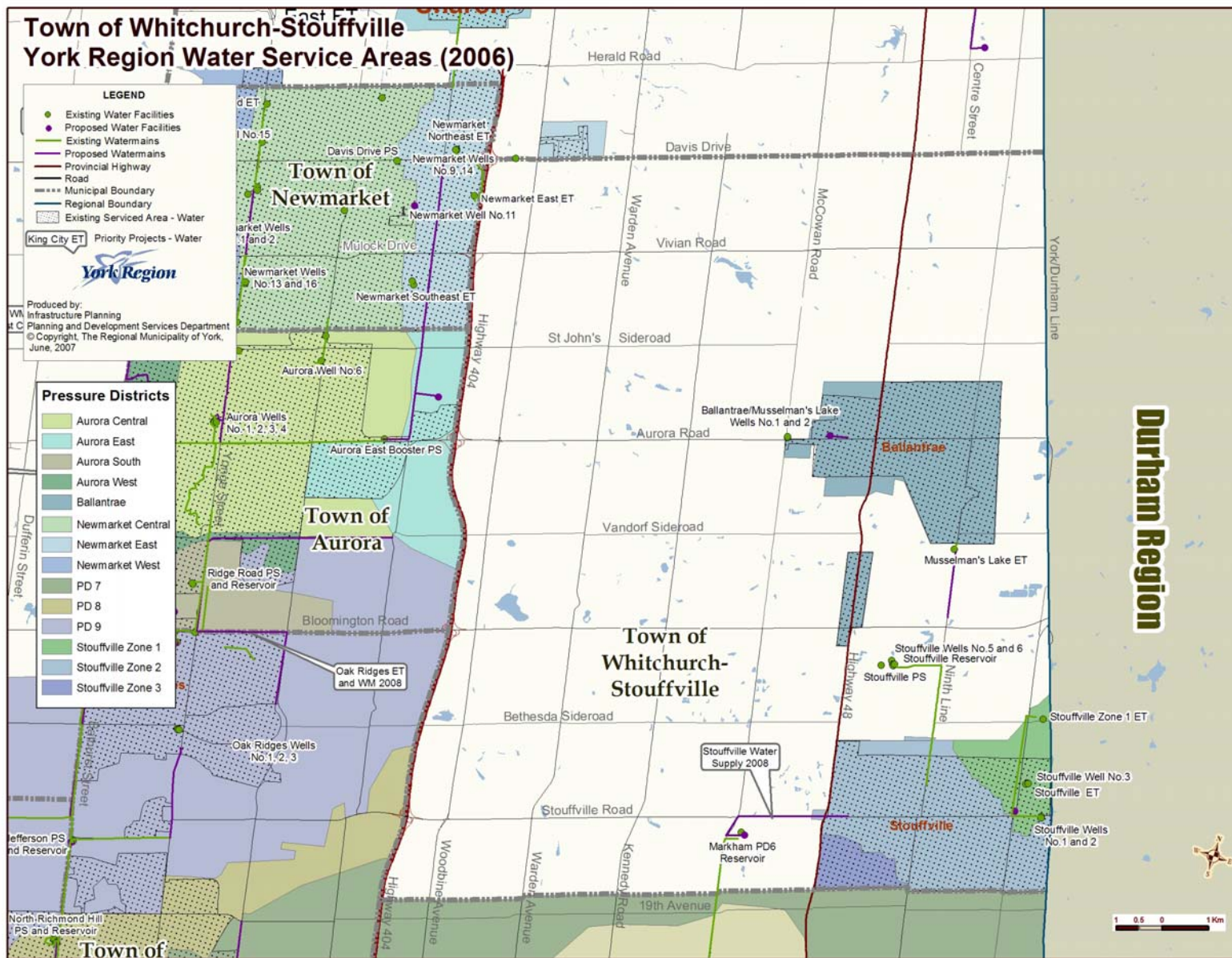
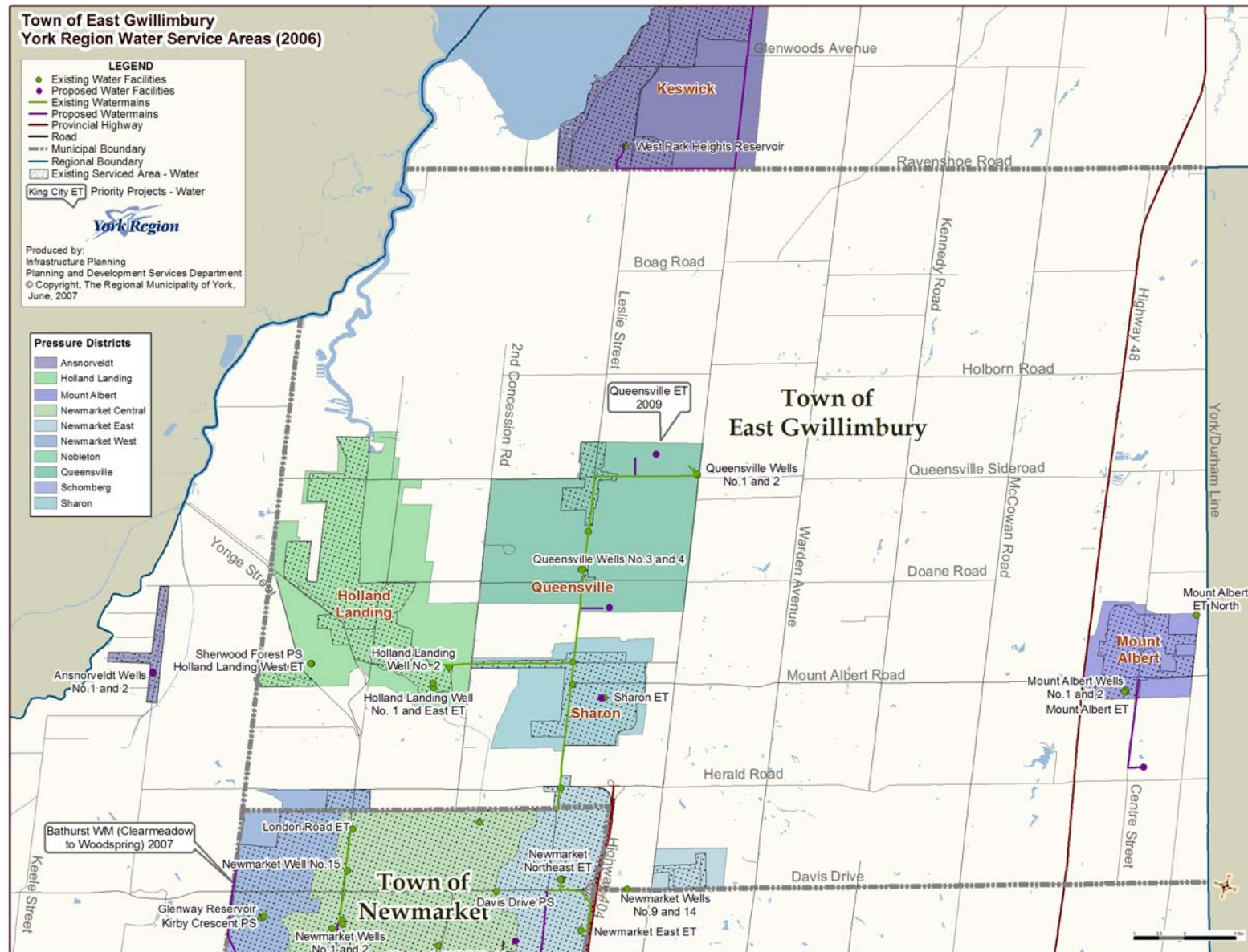


Figure 3-11 Town of East Gwillimbury Water Service Areas



Chapter 4

York Water System Description

4.1 Woodbridge Pressure District 4 (PD4)

Woodbridge PD4 is integrated with the Toronto PD4W system to the south and supplied directly by Toronto through a single watermain on Islington Avenue. Storage is provided by the 3.4 ML West Woodbridge Elevated Tank. Additional water is supplied to Woodbridge PD4 for security through a pressure reducing valve from Woodbridge PD5 on Highway 7 east of Highway 27. The supply capacity to Woodbridge PD4 is 13.2 ML/d.

The service area is the old Woodbridge community and is generally mature. No additional infrastructure is planned to service PD4. Minor population increases in Woodbridge PD4 (i.e. infill developments) could be accommodated by the existing water system. Any large scale intensification would require further analysis.

System details are shown in Figure 4-1 City of Vaughan and Kleinberg Water Supply Systems.

4.2 Woodbridge Pressure District 5 (PD5)

Woodbridge PD5 is supplied directly from Toronto from the Keele PD5 Pumping Station. The service area surrounds Woodbridge PD4 and extends generally between Huntington Road and Weston Road from Steeles Avenue to Rutherford Road and is isolated from York PD5 to the east. Storage is provided at the 3.4 ML East Woodbridge Elevated Tank.

Supply to the west side of this pressure district (Highway 27 corridor) will be available through a future connection to the Peel Feedermain via a PRV at Highway 27. The Peel

Feedermain was completed in 2006. No additional infrastructure is planned to service Woodbridge PD5.

The residential component of this service area is the old Woodbridge community and is generally mature. Most of the growth in this area is expected to occur in the employment lands west of Highway 27. Minor population increases in Woodbridge PD5 (i.e. Infill developments) could be accommodated by the existing water system. Any large scale intensification would require further analysis.

System details are shown in Figure 4-1 City of Vaughan and Kleinberg Water Supply Systems.

4.3 York PD5

York PD5 is integrated with the Toronto system south of Steeles Avenue and is supplied directly by Toronto-owned pumping stations in York and by eight supply points generally located along Steeles Avenue. Thornhill and Milliken Pumping Stations are located in York but are owned and operated by Toronto. York PD5 serves southern Vaughan and Markham generally along Steeles Avenue from Dufferin Street to Ninth Line. The supply capacity to York PD5 from Toronto is approximately 214 ML/d. York PD5 also provides water to PD6 through a series of pumping stations.

Storage for York PD5 is provided by the Markham Reservoir and by the Toronto owned Dufferin Reservoir. System details are shown in Figure 3-3 York Water System.

4.3.1 Vaughan PD5

The Vaughan PD5 service area is a small area of Thornhill just north of Steeles Avenue, Yonge Street to the east, and just west of Dufferin Street to the west. Supply to Vaughan PD5 is provided directly from the City of Toronto. Storage is provided to this service area by the Toronto owned Dufferin Reservoir.

This area is generally mature with little or no growth projected to 2011. Minor population increases in Vaughan PD5 (ie. Infill developments) could be accommodated by the existing water system. Any large scale intensification would require further analysis.

System details are shown in Figure 4-1 City of Vaughan and Kleinberg Water Supply Systems.

4.3.2 Markham PD5

The Markham PD5 service area extends from Yonge Street in the west to Ninth Line in the east, Steeles Avenue in the south to generally Sixteenth Avenue in the north. Supply to Markham PD5 is provided directly from the City of Toronto. Storage is provided by the 45.5 ML Markham Reservoir. A large amount of growth expected in this service area will occur in the development areas of Box Grove and Markham Centre.

System details are shown in Figure 4-2 Town of Markham York Water System.

4.3.3 Milliken PD5M

Milliken PD5M is supplied by the Milliken PS which is owned and operated by Toronto. Storage to this small district is provided by the 3.4 ML Milliken Elevated Tank. The system services an isolated mature area in Markham south of 14th Avenue from Warden Avenue to McCowan Road north of Steeles Avenue.

Small population increases in Milliken PD5M can be accommodated by the existing water system. Any large scale intensification would require further analysis.

System details are shown in Figure 4-2 Town of Markham York Water System.

4.4 York Pressure District 6 (PD6)

York PD 6 acts as the supply backbone to the rest of the York Water System. PD6 is an integrated district that services areas in Vaughan, Richmond Hill and Markham and provides water to pressure districts 7-9.

Supply to PD6 is provided from the Toronto owned and operated Keele PD6 pumping station and the Region's Bayview pumping station and Markham pumping station. Since November, 2005 additional water supply has been made available from the Peel Feedermain. Storage for PD6 is presently provided by the 45.4 ML Maple Reservoir, owned and operated by the City of Toronto, and the 61 ML South Richmond Hill Reservoir. Since 2006 the Markham Reservoir has been in service adding an additional 60 ML of storage to the PD6 system. System details are shown in Figure 3-3 York Water System.

New water supply infrastructure in Pressure District 6 includes:

- Toronto East Water Supply: Kennedy Road Watermain and Milliken Reservoir Expansion to be completed by December 2010
- Major Mackenzie Watermain to be completed by 2007

4.4.1 Vaughan PD6

Vaughan PD6 is supplied from Toronto Keele PD6 PS and is interconnected with Richmond Hill PD6 and Markham PD6. The service area lies generally between Weston Road and Bathurst Street from Steeles Avenue to Rutherford Road. Vaughan PD6 supplies water to Vaughan PD7.

Water supply from Peel has directly connected to Vaughan PD6 at the Maple Reservoir and at connections to the Feedermain at Weston Road and Teston Road. The McNaughton Road/Major Mackenzie Drive watermain are in service conveying water from the Maple Reservoir to supplement the supply of water to rest of PD6 in Richmond

Hill and Markham. Storage for Vaughan PD6 is supplied from the Toronto owned Maple Reservoir.

4.4.2 Richmond Hill PD6

Richmond Hill PD6 is supplied from Toronto PD4 through Bayview PS and is interconnected with both Vaughan PD6 and Markham PD6. The service area is generally bounded by Highway 7, Major Mackenzie Drive, Bathurst Street and Highway 404. This service area supplies Buttonville PD6S through a PRV near Highways 7 and 404. Storage for Richmond Hill PD6 is provided by the 61.2 ML Richmond Hill Reservoir.

4.4.3 Buttonville PD6S

Buttonville PD6S is a reduced pressure zone between PD5 and PD6 in Markham and is supplied from Bayview PS through the Richmond Hill PD6 system. The service area is generally bounded by Highway 7, 16th Avenue, Highway 404 and Warden Avenue and includes a large commercial/office component. System details are shown in Figure 4-2 Town of Markham York Water System.

4.4.4 Markham PD6

Markham PD6 is supplied from the York PD5 through the Markham PS. It services most of the area north of 16th Avenue and is interconnected with Richmond Hill PD6 and Vaughan PD6. The firm capacity of the Markham PS is 64.1 ML/d.

Additional water supply to PD6 will be made available from Toronto through Kennedy Road Watermain and Milliken Reservoir Expansion.

Markham PD6M is an intermediate zone where the top water level of the district is about 20m less than Markham PD6. It is serviced via pressure reducing valves from Markham PD6. McCowan Avenue, 16th Avenue, 9th Line, Highway 7 and Church Street generally bound the service area. Minimal storage for Markham PD6M is provided by the 61.2 ML

South Richmond Hill Reservoir. Since 2006 the 60 ML North Markham Reservoir is in service providing additional storage to the Markham PD6 area.

System details are shown in Figure 4-2 Town of Markham York Water System.

4.5 Pressure District 7 (PD7)

4.5.1 Maple PD7

Maple PD7 is supplied from Vaughan PD6 through the Maple PS to supply the local community of Maple. The service area is from Weston Road to east of Keele Street generally north of Rutherford Road. The City of Vaughan operates a local booster PS (PD8) to supply the industrial development in the northern area of Maple. Storage for Maple PD7 is from the 11.4 ML North Maple Reservoir.

4.5.2 Richmond Hill PD7

Richmond Hill PD7 is supplied from Richmond Hill PD6 through the Richmond Hill PS. This system supplies the area of Richmond Hill north of Major Mackenzie Drive from Bathurst Street to east of Bayview Avenue. Richmond Hill PD7 also provides water to Richmond Hill PD8. Richmond Hill PD7 is interconnected to Vaughan PD7 and the future Markham PD7. Storage to Richmond Hill PD7 is provided by the 22.7 ML North Richmond Hill Reservoir.

New water supply infrastructure in Richmond Hill Pressure District 7 includes:

- Bathurst Street / Elgin Mills watermain from the North Richmond Hill Reservoir to Bayview Avenue to be completed by 2011
- Pugsley / Enford Watermain from the Richmond Hill PS to Elgin Mills Rd to be completed by 2011

4.5.3 Markham PD7

Markham PD7 is a new development area in Markham that will be serviced by the Elgin Mills watermain connected to PD7 in Richmond Hill. The area is bounded generally by Elgin Mills Road to approximately 19th Avenue on the east and west sides of Woodbine Avenue.

System details are shown in Figure 4-2 Town of Markham York Water System.

4.6 Pressure District 8 (PD8)

4.6.1 Richmond Hill PD 8

Richmond Hill PD8 is supplied from Richmond Hill PD7 through the North Richmond Hill PS. The system supplies a local area from Bathurst Street to Bayview Avenue, south of Gamble Road in north Richmond Hill and an isolated residential area in Vaughan west of Bathurst Street and north of Elgin Mills Road. Richmond Hill PD8 also provides water to Richmond Hill PD9. Storage for Richmond Hill PD8 is provided by the 10.5 ML Jefferson Reservoir.

4.6.2 Vaughan PD8

Vaughan PD8 (Woodland Acres subdivision) is supplied directly from Richmond Hill PD8 on Bathurst Street. This area is located north of Teston Road on the west side of Bathurst Street. Further development in PD8 is planned on the south side of Teston Road west of Bathurst Street.

4.7 Pressure District 9 (PD9)

4.7.1 Richmond Hill PD9

Richmond Hill PD9 is supplied from Richmond Hill PD8 through the Jefferson PS to service the community of Oak Ridges. The firm capacity of the Jefferson PS is 35.3 ML/d. Storage to PD9 is supplied from the 3.63 ML Oak Ridges Standpipe. Additional storage is required to ensure continued emergency and maximum day supply in PD9. New water infrastructure required in Richmond Hill PD9 includes:

- A new 7.6 ML elevated tank south of Bond Lake with a connecting watermain to Yonge Street to be completed by June 2008
- Construction of a watermain on Yonge St. from Jefferson Sideroad to Old Colony Road to be completed by June 2008

System details are shown in Figure 4-3 Town of Richmond Hill York Water System.

4.7.2 Vaughan PD9

Vaughan PD9 is serviced by a City of Vaughan pumping station which is supplied from the PD7 North Maple Reservoir.

Minor population increases in Vaughan PD9 can be accommodated by the Regional supply system. Any larger intensification would require further analysis.

System details are shown in Figure 4-1 City of Vaughan and Kleinberg Water Supply Systems.

Figure 4-1 City of Vaughan and Kleinburg Water Supply Systems

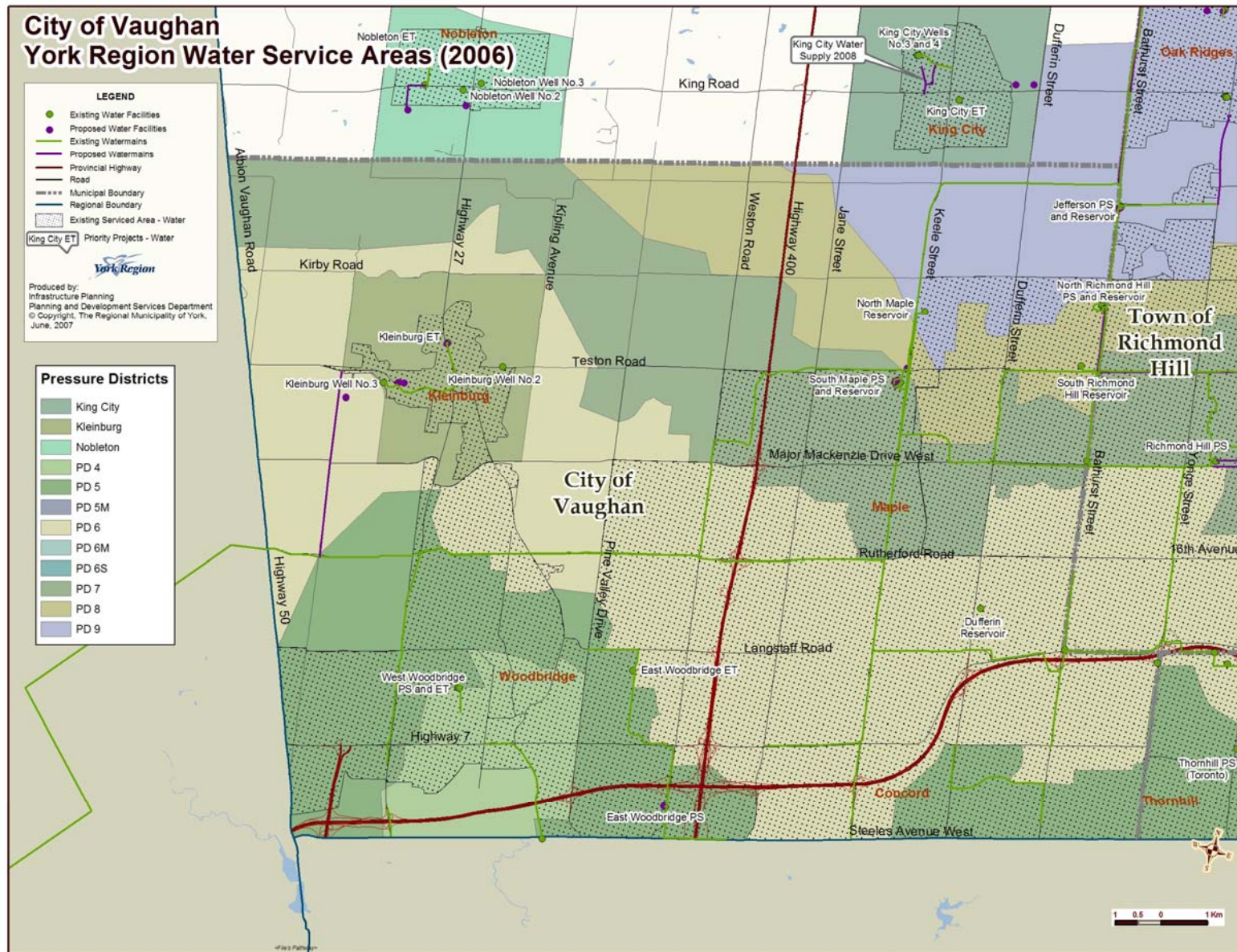


Figure 4-2 Town of Markham York Water System

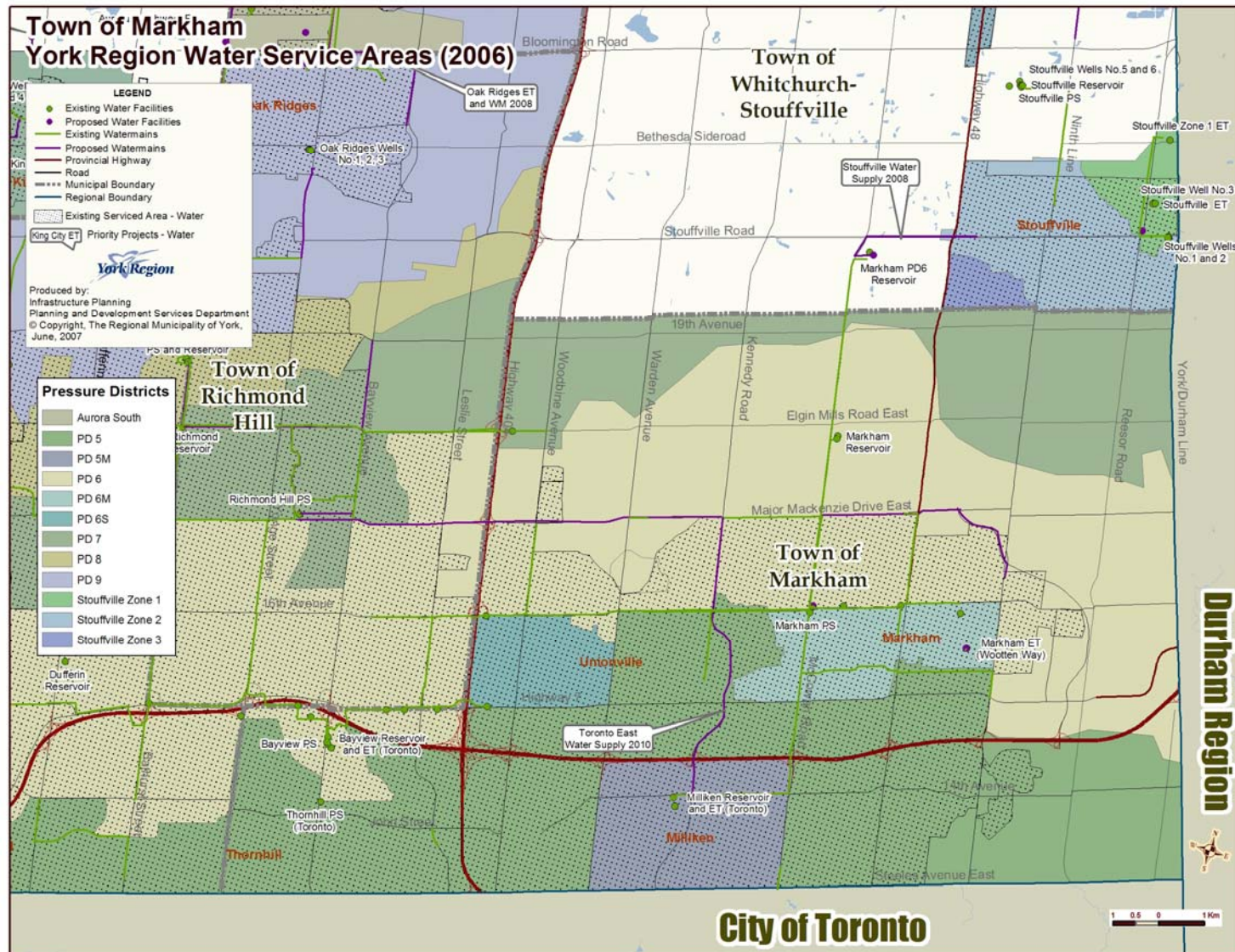
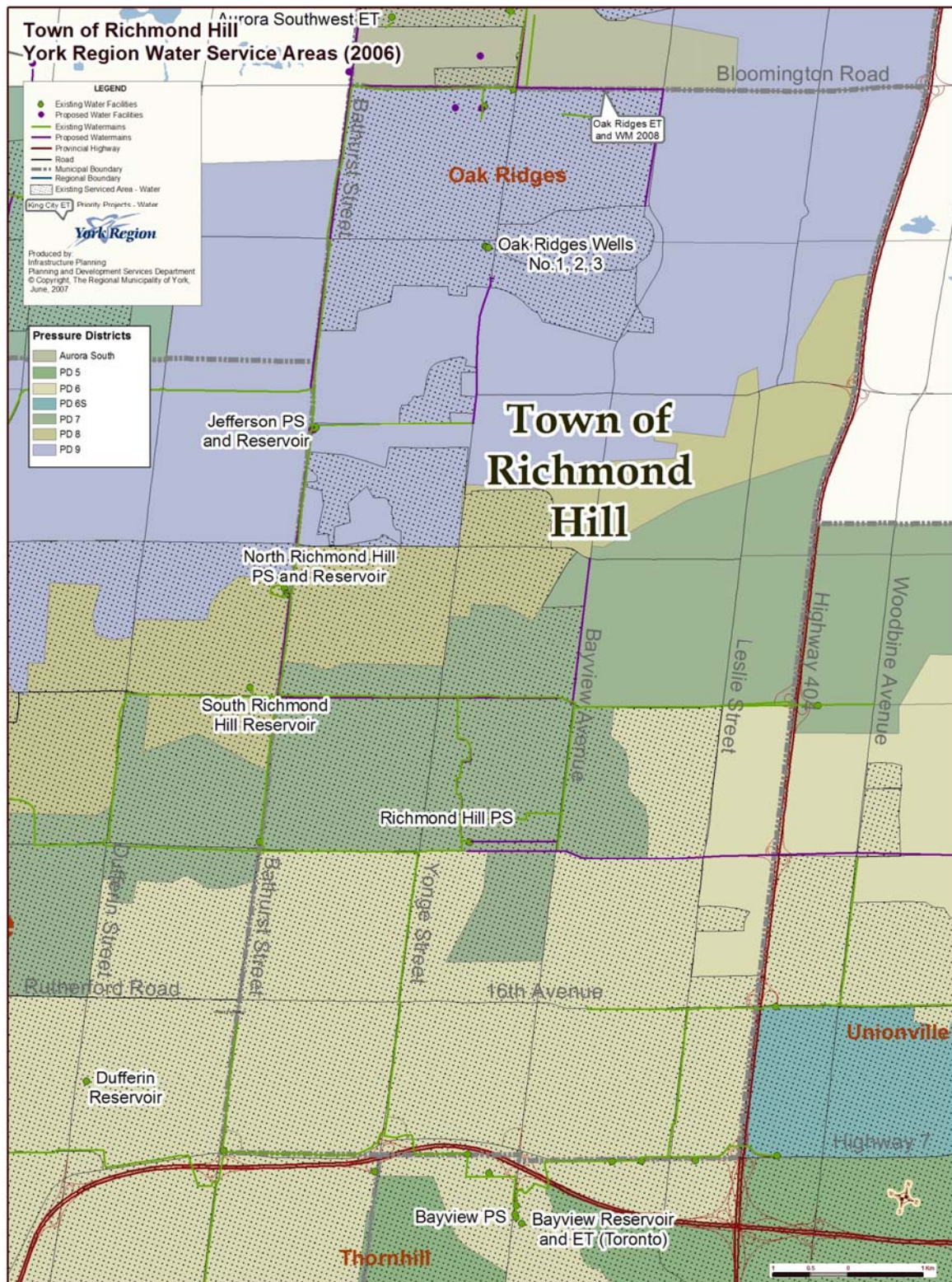


Figure 4-3 Town of Richmond Hill York Water System



4.8 Yonge Street Aquifer

The Yonge Street Aquifer System is an integrated groundwater based system that serves the Towns of Aurora and Newmarket, as well as the communities of Queensville, Sharon, Holland Landing and Green Lane West in the Town of East Gwillimbury. The Yonge Street Aquifer System is connected to the YWS by a watermain connecting the Aurora and Richmond Hill PD9 system. Approximately 10% of Aurora's water supply has been provided from the York Water System.

Water supply from the Yonge Street Aquifer is governed by the Permit to Take Water (PTTW). Table 4-1 provides the 2006 estimated range of total maximum day demands and available groundwater supply by pressure districts based on a band of theoretical peaking factors between 1.6 and 1.8. The demands are generated by the 2006 mid-year estimates of actual serviced population.

Table 4-1 2006 Water Demands and Existing Ground Water Supply Capacity by Yonge Street Aquifer Service Areas

Pressure District (PD)/Service Area Name	Range of 2006 Maximum Day Demands (ML/Day)	Existing Groundwater Operational Supply Capacity (ML/Day)
Aurora Central	19.7 - 22.2	24.2
Aurora West	4.9 - 5.6	-
Aurora South	1 - 1.1	-
Aurora East	0.09 - 0.1	-
Newmarket Central	23.3 - 26.2	17.4
Newmarket East	7.4 - 8.4	2.1
Newmarket West	7.1 - 8.0	-
Sharon/Queensville	1.3 - 1.5	20.8
Holland Landing	3 - 3.4	4.7
Total	67.8 - 76.5	69.2

From Table 4-1, it is observed that the current operating capacity of Yonge Street Aquifer wells is likely exceeded on a maximum day for 2006. This observation is consistent with the Region's current practice of supplying additional water from Pressure District 9 of the York Water System.

Table 4-2 provides further detail on the maximum withdrawal based on MOE Permit to Take Water (PTTW) and the actual operational capacity of each well in the Yonge Street Aquifer system.

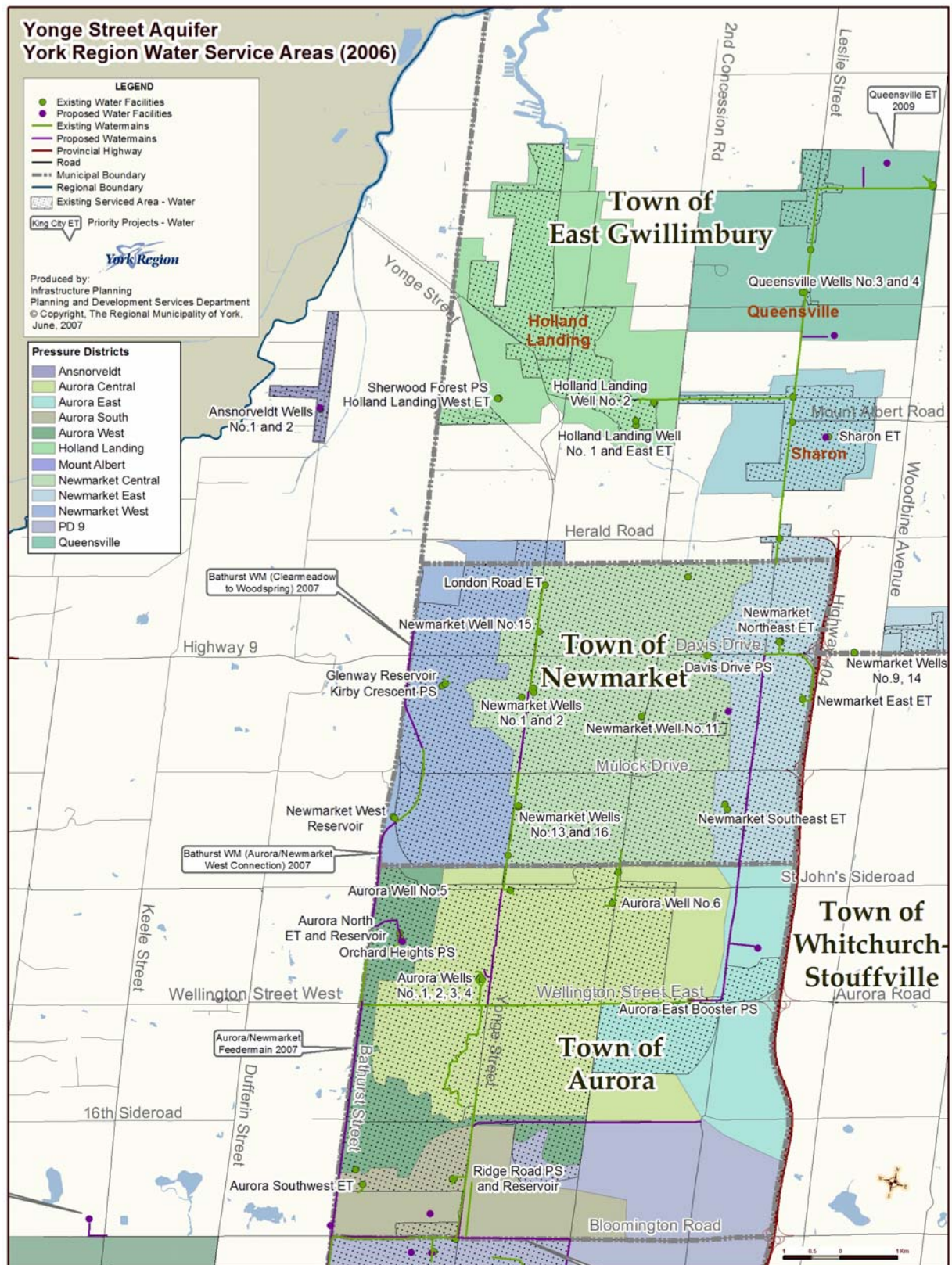
Table 4-2 Yonge Street Aquifer Well Capacities

Municipality	Well	Pressure Zone	PTTW ML/D	Operational Capacity ML/D
Aurora	1	AC	3.27	2.6
	2	AC	5.89	4.7
	3	AC	5.24	4.2
	4	AC	7.85	6.3
	5	AC	5.89	4.7
	6	AC	3.46	2.8
Newmarket	1	NC	2.29	1.8
	2	NC	4.58	3.7
	9	<i>Not used</i>	<i>0.79</i>	
	11	<i>Not used</i>	<i>2.29</i>	
	13	NC	5.89	4.7
	14	NC	2.29	1.8
Sharon/Queensville	15	NC	3.27	2.6
	16	NC	5.63	4.5
	1	SQ/NE	6.54	5.2
	2	SQ/NE	6.54	5.2
Holland Landing	3	SQ/NE	6.54	5.2
	4	SQ/NE	6.54	5.2
	1	HL	2.29	1.8
	2	HL	3.60	2.9
TOTAL				69.9

The permit also includes special conditions related not only to individual maximum pumping rates, but also yearly average pumping rates, peak daily pumping rates and simultaneous pumping rates. Although the permitted capacity of the Yonge Street Aquifer well system is 90 ML/day, operational and hydro-geological constraints limit maximum day groundwater taking to about 69 ML/day.

Figure 4-4 shows the existing Yonge Street Aquifer system including all pressure districts, the 2006 serviced areas, and existing and future infrastructure.

Figure 4-4 Yonge Street Aquifer System



Currently the Yonge Street Aquifer system is integrated with the York Water System through a connection between Richmond Hill PD9 and the Aurora Central Zone. The existing connection to PD9 has limited supply capabilities due to the limitations in PD9. Additional water supply for the Yonge Street Aquifer system will be made available into the Aurora Central Zone via the Aurora Newmarket Feedermain.

Additional trunk watermain and upgrades or additions to existing booster pumping stations are required to transmit the additional York Water Supply from the Aurora Central District into other areas of the Yonge Street Aquifer system. The available or required infrastructure is described below in the analysis of each Zone.

There are 11 service areas within the Yonge Street Aquifer.

Construction of additional infrastructure to increase water supply to Aurora and Newmarket from the YWS is currently underway. The Aurora Newmarket Feedermain project originates from a new pumping station located on the site of the PD 6 South Maple Reservoir in the City of Vaughan. A watermain connects the pumping station to a new ground level storage facility near Bloomington Road and Bathurst Street. The watermain further extends to Wellington Street in Aurora to connect to the existing water system.

4.8.1 Aurora Central Zone

Aurora Central Zone is supplied by six municipal wells, five along Yonge Street and one at Bayview Avenue and St. John's Sideroad (see Table 4-2 for details of the Yonge Street Aquifer Well Capacities). Storage is provided from the 7.0 ML Ridge Road Reservoir and the 6.82 ML Orchard Heights Reservoir.

The Aurora Central Zone supplies water to the other zones within the Town of Aurora via booster pumping stations. Completion of the Aurora Newmarket Feedermain will provide additional water supply into the Aurora Central Zone.

New water supply infrastructure required for development in Aurora Central Zone includes:

- Wellington Street watermain
- Yonge Street watermain from north of Wellington Street to south of St. John's Sideroad
- Yonge / Vandorf / Bloomington Watermain

The timing and sizing of the Yonge / Vandorf / Bloomington watermain will be re-assessed in the 2007 Master Plan Update.

4.8.2 Aurora West Zone

Aurora West Zone is supplied from the Aurora Central Zone from the Orchard Heights Pumping Station. Firm capacity of the Orchard Heights PS is 4.7 ML/day. The zone is located east of Bathurst Street. Storage is provided by the 3.64 ML Northwest Elevated Tank.

The Aurora West Zone will be interconnected with the Newmarket West Zone through a PRV upon completion of the Bathurst Watermain from Orchard Heights PS to the Newmarket West Reservoir. Additional water supply to this combined West Zone will be provided by expansions/upgrades to the Orchard Heights PS.

The Aurora West Zone service area is generally mature. The current and planned serviced population of Aurora West Zone is approximately 9,900 people. Minor population increases (ie. infill developments) could be accommodated by the existing water system. Any large scale intensification would require further analysis.

4.8.3 Aurora South Zone

Aurora South Zone is supplied from the Aurora Central Zone through the Ridge Road Pumping Station which has a firm capacity of 4.9 ML/day. This small zone is located in the south west portion of Aurora north of Bloomington Road, east and west of Yonge Street. Storage is provided from the 3.0 ML Southwest Elevated Tank.

Minor population increases can be accommodated with the existing water supply system. Any large scale intensification would require further analysis.

4.8.4 Aurora East Zone

Aurora East Zone is a new zone that supplies the area east of Leslie Street from the Aurora East Pumping Station. There is no storage for the East Zone at this time. Full supply (including emergency needs such as firefighting) is available from the Aurora East PS.

The completion timing of the Aurora East elevated tank and Leslie Street watermain will be monitored as development in the East Zone progresses.

Water demand in this area has increased with the completion of the State Farm commercial/industrial development area. At this time it is expected that most of the demand in the Aurora East Zone will be from commercial/industrial developments. Presently plans for the build out of the residential component occur post 2011.

4.8.5 Newmarket Central Zone

Newmarket Central Zone is supplied by five municipal wells (see Table 4-2 for details of the Yonge Street Aquifer well capacities) located generally along Yonge Street and from the Queensville Wells through the Newmarket East Zone PRV on Davis Drive. PRV connections between Aurora Central and Newmarket Central Zones exist at Yonge Street

and Bayview Avenue. The Central zone extends from Yonge Street to west of Leslie Street. Storage is provided from the 4.6 ML Glenway Reservoir, 3.4 ML London Road Elevated Tank and 4.0 ML Magna Elevated Tank.

New water supply infrastructure in Newmarket Central Zone includes:

- Yonge Street watermain to be completed by April 2008

This watermain is required to increase the supply capabilities from the Newmarket Wells and Aurora Central into Newmarket Central storage at Glenway Reservoir.

4.8.6 Newmarket East Zone

Newmarket East Zone is supplied by the Queensville wells (see Table 4-2). This zone extends from Highway 404 to just west of Leslie Street. Storage to the Newmarket East Zone is provided from the 2.3 ML Northeast Elevated Tank and the 4.0 ML East Elevated Tank.

The Newmarket East Zone will be interconnected with the Aurora East Zone through a PRV connection on Leslie Street. The timing of this connection will be monitored over time as demands in both Newmarket and Aurora East zones increase.

4.8.7 Newmarket West Zone

Newmarket West Zone is supplied from the Newmarket Central Zone through the Kirby Pumping Station. Firm capacity of Kirby PS is 5.2 ML/day. The zone generally extends from Bathurst Street to Yonge Street. Storage is provided from the 5.0 ML Newmarket West Reservoir. New water supply infrastructure required for development in Newmarket West Zone includes:

- Bathurst Street watermain from Orchard Heights Pumping Station in Aurora to the Newmarket West Reservoir to be completed by November 2007
- Bathurst Street watermain from Clearmeadow Boulevard to Woodspring Avenue to be completed by November 2007

These watermains are required to increase the supply capabilities from the Aurora West Zone into the Newmarket West Zone. The Newmarket West Zone will be connected through a PRV to the Aurora West Zone upon completion of the Aurora/Newmarket West Connection watermain on Bathurst Street.

4.8.8 Town of East Gwillimbury

Regional Council at its June 23, 2005 meeting provided water and wastewater servicing capacity to all municipalities currently serviced or to be serviced by the YDSS. The East Gwillimbury communities of Holland Landing, Sharon, Queensville and Green Lane West are included in this capacity assignment. East Gwillimbury received a water and wastewater servicing capacity assignment of 1,100 units for new development. The allocation has been aligned with the wastewater allocation. The Town has allocated 635 units for Green Lane West on a phased basis between now and 2010.

The Region will work closely with the Town of East Gwillimbury to monitor and report on growth in these areas as allocated by the Town.

4.8.8.1 Green Lane West

Green Lane West is an extension of the Newmarket West Zone and is located south of Green Lane between Bathurst and Yonge Street in East Gwillimbury. Servicing to this area will be from connections to Town of Newmarket watermains. New water supply infrastructure that will facilitate development in Green Lane West includes:

- Bathurst Street watermain from Orchard Heights PS in Aurora to the Newmarket West Reservoir to be completed by November 2007
- Bathurst Street watermain from Clearmeadow Boulevard to Woodspring Avenue to be completed by November 2007

4.8.8.2 Holland Landing

Holland Landing is supplied by Holland Landing Wells 1 and 2. Additional water is supplied from the Queensville wells through a PRV connection on the Mount Albert Road watermain. Storage is provided from the 3.0 ML Holland Landing West and 1.136 ML Holland Landing East Elevated Tanks. No additional water infrastructure is required to service the Holland Landing area.

4.8.8.3 Queensville

Queensville is supplied by the four wells located in Queensville. There is no storage in Queensville at this time. Development in Queensville will require completion of 6.6 ML Queensville Elevated Tank to be completed in 2009.

4.8.8.4 Sharon

Sharon is supplied by the Queensville Wells through a connection from the Leslie Street watermain. Storage is provided by the 0.945 ML Sharon Elevated Tank. No additional water infrastructure is required to service Sharon. The proposed Queensville Elevated Tank will provide storage to the community of Sharon. The Sharon Elevated Tank will be decommissioned after completion of the Queensville Elevated Tank in 2009.

Chapter 5

Supply and Demand Monitoring- Wastewater

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 Towns of Newmarket, Aurora, Richmond Hill and Markham and the City of Vaughan.

The Region operates stand-alone water pollution control plants in the communities of Sutton, Keswick, Mount Albert, Stouffville and Kleinburg. Lagoon treatment facilities are operated in Holland Landing and Schomberg.

5.1 York Durham Sewage System

The YDSS consists of a series of gravity sewers, pumping stations, forcemains and the Duffin Creek Water Pollution Control Plant located in Durham Region. Figure 5-1 provides the details for the York Durham Sewage System with existing and future serviceable areas.

Approximately 95% of York Region sewage is collected through the York-Durham Sewer System (YDSS) in Newmarket, Aurora, Richmond Hill, Vaughan, Markham, King and Stouffville and treated at the Duffin Creek Water Pollution Control Plant (WPCP) on the shores of Lake Ontario in Pickering, Ontario. The sewage is conveyed to the Plant via the South East Collector sewer, which is a trunk sewer passing through parts of Markham, Scarborough and Pickering. The South East Collector is required to provide additional capacity to accommodate growth in the YDSS serviced areas.

There are two major components in the YDSS which determine its servicing supply and demand – the conveyance system, which is the system of pipes and pumps that carry wastewater flow to the plant, and the treatment works, the Duffin Creek Water Pollution

Control Plant. Both components must be considered when determining the population that can be serviced.

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. The annual incremental increases in flow are presented in Table 5-1.

Table 5-1 Peel Wastewater Schedule of Flows (Average Day)

Year	2006	2007	2008	2009	2010	2011	2016	2021	2026	2031
ML/day	22.29	25.85	29.41	32.97	36.53	40.09	41.99	43.89	48.56	53.22

The June 23, 2005 Council approved overall YDSS capacity is 970,000 persons based on the existing treatment capacity of Duffin Creek Pollution Control Plant. This figure also corresponds to the conveyance capacity of South East Collector. The overall conveyance capacity of YDSS is tied to the completion of 16th Avenue Sewer Phase 2 (completion September 2007) and Lower Leslie trunk and YDSS Interceptor (completion January 2008).

As of June 2006, the YDSS serviced population has reached approximately 816,000 (Table 5-2). The updated forecast population in the YDSS serviced communities for the year 2011 is within the currently approved population. However, the results of the re-evaluation of the existing South East Collector Sewer Capacity (Earth Tech, May 2007) concluded that peak flows experienced during intense or extended rainfall events could cause surcharge or backup of wastewater flows. Therefore, an alternate servicing solution consisting of flow control systems in the YDSS has been recommended to mitigate risks

of system surcharging as a result of construction delays anticipated in the South East Collector. The flow control structures will also provide long-term flow management capabilities through flexibility in operation and maintenance activities. A Report to Council to this effect is planned for June, 2007. Individual Environmental Assessment (IEA) for this project was initiated in 2005. The Terms of Reference were approved by the MOE in 2006. The construction is expected to be completed by 2012.

Estimates of 2006 serviced and projected 2011 serviced population by municipality and service area are provided in Table 5-2.

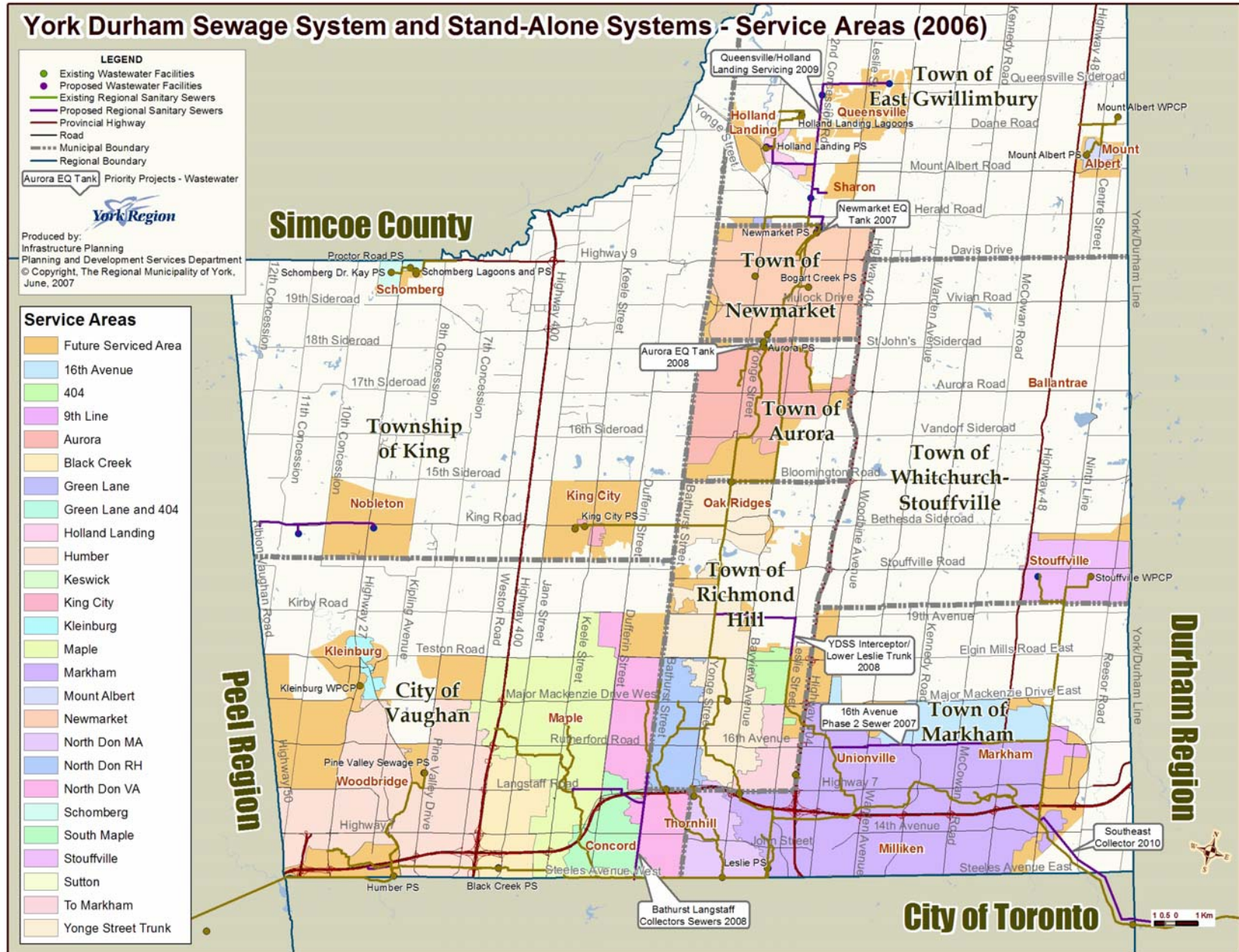
Table 5-2 YDSS Service Areas, 2006 Serviced and Projected 2011 Serviced Population

Service Area Name	Mid-2006 Serviced Population¹	Future Projected Serviced Population (2011)²
Newmarket	78,200	84,900
Aurora	47,800	56,100
Richmond Hill	172,000	193,400
Yonge Street Trunk	113,000	127,400
North Don RH	36,000	41,000
Highway 404	12,100	13,600
East Beaver Creek	10,900	11,400
Markham	267,800	306,900
Markham	186,500	213,100
16 th Avenue	41,300	45,700
Ninth Line	8,100	16,200
North Don Markham	31,900	31,900
Vaughan	236,400	280,500
Humber	89,800	97,200
Black Creek (Jane St.)	100	1,200
Maple	71,100	87,500
South Maple	37,000	38,000
North Don Vaughan	38,400	56,600
Whitchurch- Stouffville	13,500	24,800
King City	-	6,200
East Gwillimbury	-	16,700
Holland Landing	-	10,000
Queensville	-	900
Sharon	-	3,600
Green Lane West	-	2,200
Total YDSS Serviced	815,700	969,500

¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 40% intensification traffic zone forecast population from within the servicing boundaries

Figure 5-1 York Durham Sewage System



5.2 Duffin Creek Water Pollution Control Plant

The Duffin Creek Water Pollution Control Plant (WPCP) is located in Durham Region in Pickering, Ontario. The plant is jointly owned and operated by York and Durham Regions. A Class Environmental Assessment to expand the treatment capacity to 630 ML/day has recently been completed. The construction is to be completed by December 2010.

Analysis of flow records indicates that there has been a reduction over time in the average daily per capita sewage flow to the plant. This is due primarily to successful water use efficiency programs in both York and Durham, and also because new development throughout Ontario is required under the plumbing code to be equipped with water efficient fixtures and low volume flush toilets.

Based on an average per capita sewage flow rate of 386 Lpcd, there is enough capacity at the Duffin Creek WPCP to accommodate projected population in both York and Durham Regions to approximately 2010. For York Region, the service capacity available is in the order of 970,000 (Report of Transportation and Works Committee, September 2006). The Council approved current capacity for allocation of 970,000 includes discharge to Duffin Creek and Peel. The 2011 mid-year projected population on the YDSS including the Peel diversion is approximately 969,500. The Duffin Creek WPCP is planned to be expanded by the end of 2010.

5.3 Georgina Wastewater System

The Georgina Wastewater system is comprised of two separately functioning treatment plants, one in Keswick and the other in Sutton.

Table 5-3 provides the 2006 serviced and future serviceable population for Keswick and Sutton service areas.

Table 5-3 Georgina Wastewater Service Areas, 2006 Serviced and Future Projected Population

Service Area	Existing Treatment Capacity (Population)	Mid-2006 Serviced Population¹	Future Projected Population (2011)²
Keswick/Willowbeach	33,000	29,500	31,100
Sutton/Willowbeach	7,500	4,300	8,500
Total Georgina	40,500	33,800	39,600

¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 40% intensification traffic zone forecast population from within the servicing boundaries

5.3.1 Keswick

The Keswick wastewater system is comprised of the Keswick Sewage Pumping Station and the Keswick Water Pollution Control Plant (WPCP). The Keswick WPCP was constructed in 1984 and provides sanitary sewage treatment for the community of Keswick and part of Willow Beach Community. The Keswick WPCP is an extended aeration facility and has a Certificate of Approval rated average day flow of 12.070 ML/D. The serviceable population of the existing facility is 33,000 people. The Class EA for the expansion of the Keswick WPCP was completed in 2006. Design and construction of the plant will start in 2007 with operation of the new plant expected in 2010. The new plant will have a capacity of 18 ML/d, which is equivalent to a serviced population of approximately 49,300.

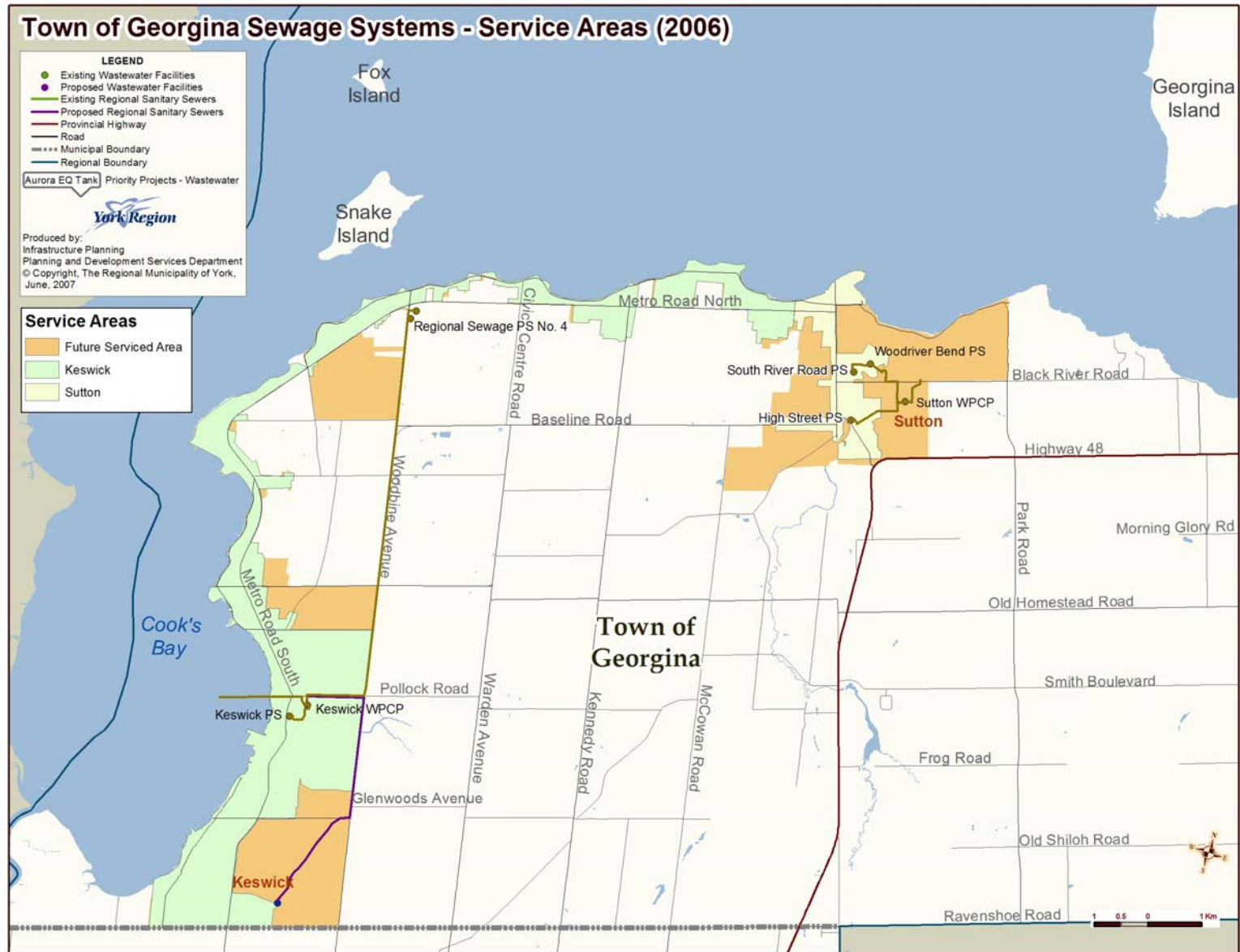
5.3.2 Sutton

The Sutton Water Pollution Control Plant (WPCP) is located on Black River Road in the community of Sutton in the Town of Georgina. The WPCP services both the Sutton and Jackson Point areas. The existing WPCP is based on Sequencing Batch Reactor process and was built in 2003 to service population of 7500. Current population projections for Sutton indicate that the serviced population of the community may exceed the WPCP capacity in 2011.

The Region is initiating a Class EA process (Project Initiation scheduled for July, 2007) to increase the wastewater servicing of the WPCP to accommodate a build-out population of about 16,500. As part of the Environmental Assessment the existing overflow lagoon will also be decommissioned. The EA is to be completed by 2008. The construction of the new plant will be completed in 2010.

Figure 5-2 provides the details of the Georgina Wastewater System for both the existing and future conditions.

Figure 5-2 Georgina Wastewater System



5.4 Stand-alone Wastewater Systems

The Region operates and maintains local separate wastewater systems in East Gwillimbury, King and Vaughan. Figures 5-3, 5-4 and 6-4 provide the map of the serviced areas in East Gwillimbury, King and Vaughan respectively. Brief system description is provided in the following Sections. Table 5-4 provides the information on the existing and future estimated population in each service area.

Table 5-4 Stand-alone Service Areas, 2006 Serviced and Future Projected Population

Service Areas	Existing Treatment Capacity (Population)	Mid-2006 Serviced Population ¹	Future Projected Population (2011) ²
Holland Landing	4,100	4,100	10,000
Mount Albert	5,300	3,300	5,600
Schomberg	2,277	2,100	2,800
Kleinberg	3,048	2,700	5,200
Total Stand-alone	14,725	12,200	23,600

¹ Estimates based on the 2001 estimates of the person per units (PPU) on serviced parcels

² Estimates based on 2006 updated traffic zone forecast population from within the servicing boundaries

5.4.1 Holland Landing

The Holland Landing wastewater system is comprised of the Holland Landing Lagoons and the Bradford Street Pumping Station. The capacity of the lagoon treatment system is approximately 4,100 and is currently operating at capacity.

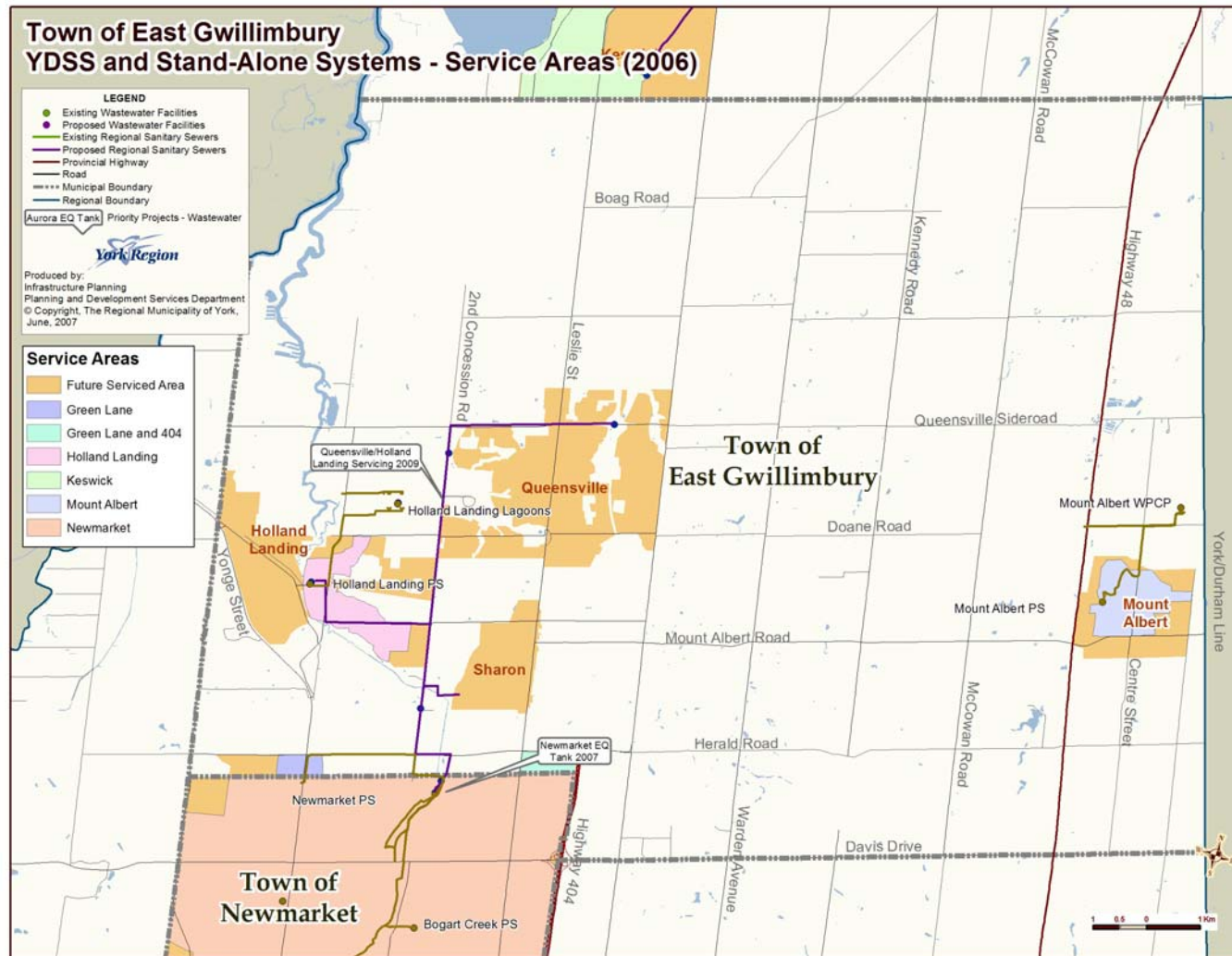
Figure 5-3 shows the 2006 serviced areas in Holland Landing in the Town of East Gwillimbury.

5.4.2 Mount Albert

The Mount Albert wastewater system is comprised of the Mount Albert WPCP, a sewage pumping station, forcemain and an outfall to the Mount Albert Creek. The wastewater is pumped approximately 2 km from the pumping station on King Street to the WPCP on Doane Road.

In May 2005 upgrades to the Mount Albert WPCP were put into operation. The rated capacity of the plant is 2.040 ML/day and is intended to service a population of 6,000 people. Figure 5-3 shows the currently serviced areas in Mount Albert in the Town of East Gwillimbury.

Figure 5-3 Town of East Gwillimbury Wastewater Service Areas



5.4.3 Schomberg

The Schomberg wastewater system is comprised of the Schomberg WPCP and two pumping stations. The community's wastewater is conveyed by way of gravity to the Dr. Kay Pumping Station. Wastewater from the industrial section of Schomberg is conveyed by gravity to the Proctor Pumping Station. From these two stations, wastewater is pumped to the Schomberg WPCP which has an existing capacity of 0.683ML/day. Based on 300 l/cap/day, the capacity of the existing plan is approximately 2,277 people.

The Schomberg Community Plan anticipates the need for servicing a build out population of approximately 3,311 additional people combined with employment population. Schomberg WPCP expansion to 2.055 ML/day is under construction (2008 completion) with a total design population of 5,588. The capacity required for future population is based on a flow rate of 365 l/cap/day.

Figure 5-4 shows the Wastewater service areas in Schomberg in the Township of King.

5.4.4 Nobleton

The Community of Nobleton, located in the Township of King at Highway 27 and King Sideroad, has a population of approximately 3,200. Sewage servicing in the community is currently provided by private on-site sewage systems, generally septic tanks and tile fields. Problems have been identified with the operation of these systems that have resulted in groundwater and surface water quality impacts and environmental concerns.

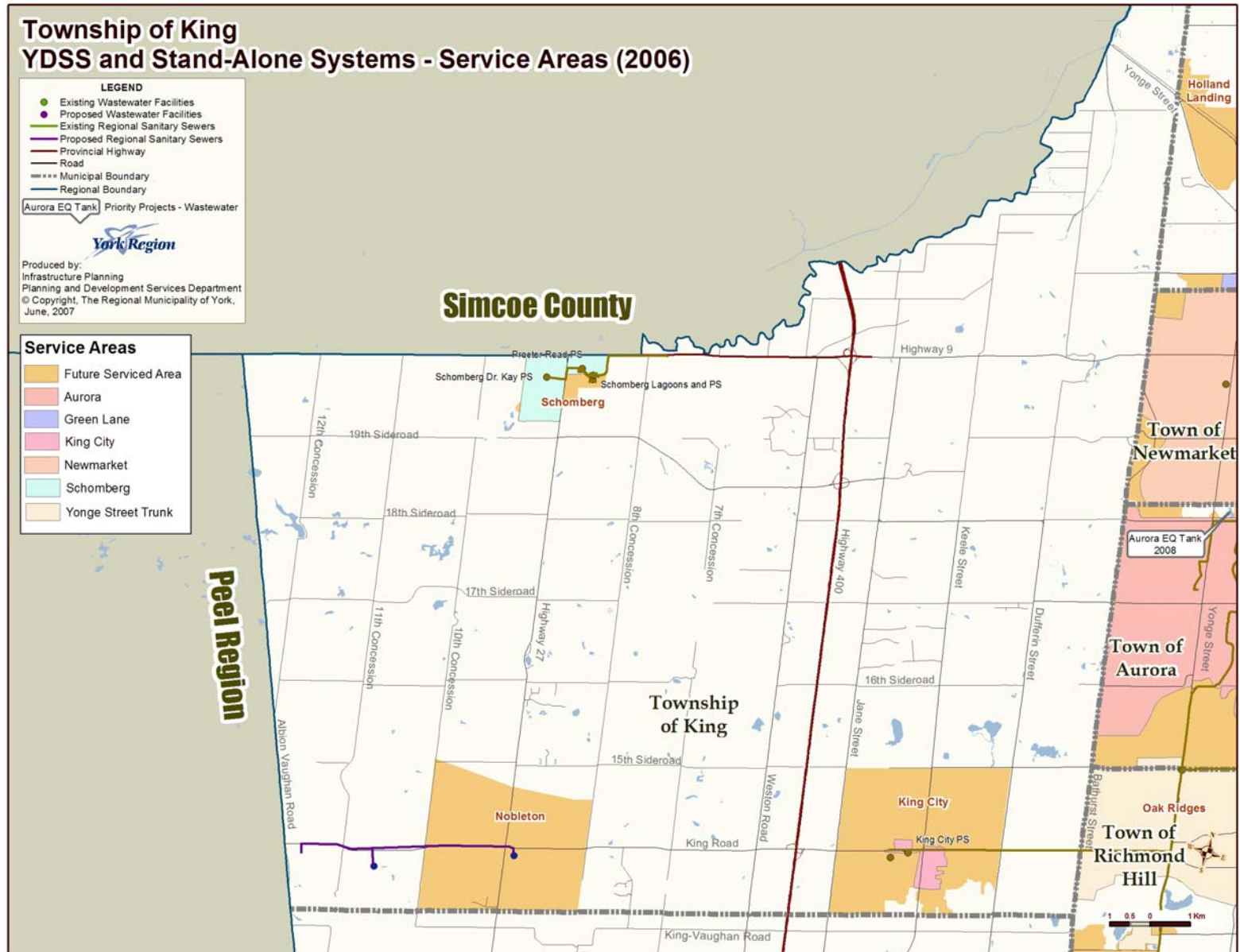
A secondary plan has been prepared for the community of Nobleton and adopted by the Township of King that would provide for a population of up to 6,500 people on full municipal services to the year 2016. The Region has approved the Plan. The Nobleton Sewage Servicing Environmental Study Report has been completed and a sanitary sewage servicing system has been selected as the preferred alternative. The selected system includes a gravity sewer collection system, a raw sewage pumping station and

forcemain, a wastewater treatment plant and a treated effluent outlet pipe discharging into the Humber River.

A Pre-paid Development Charge Agreement has been finalized and the Developer Group Funding is in process.

Figure 5-4 shows the Wastewater service areas in Nobleton in the Township of King.

Figure 5-4 Township of King Wastewater Service Areas



5.4.4 Kleinburg

The Kleinburg-Nashville wastewater system is comprised of a WPCP and four municipal pumping stations. The WPCP has a rated capacity of 1.205 ML/day and can service a population of 2,932 persons.

For the 2021 planning period, a total capacity of 2.874 ML/day is required to service a projected population of 7,505 persons. A Class EA was completed in May 2007 to address the need for additional wastewater treatment to support growth in the Community of Kleinburg to the year 2021. An expansion of the existing Kleinberg WPCP has been recommended as described below:

- Construction of new secondary treatment facilities including extended aeration tanks (approximate total volume of 1.6 ML), secondary clarifiers and aeration blower gallery housing new blowers for aeration tanks
- Installation of additional tertiary filtration capacity approximately double that already in place
- Additional UV disinfection capacity
- New aerobic digesters

The construction is scheduled to be completed in the fall of 2009.

Currently serviced areas in Kleinberg are shown in Figure 6-4.

Chapter 6

Description of YDSS Service Areas

6.1 Newmarket

Approximately 65% of the Town of Newmarket is tributary to the Newmarket Pumping Station. Flows from the pumping station are conveyed south via forcemain and gravity sewer. The Newmarket PS firm capacity is 98 ML/day. Under modelled peak flow conditions the pumping station is currently operating at capacity.

The completion of the Newmarket and Aurora Equalization Tanks will allow the detention of wet weather flows allowing the pumping station to operate at reduced or average pumping rates. The use of the equalization tanks will immediately reduce the risk of system surcharge in critical areas downstream in the YDSS by reducing the volume of wastewater pumped during wet weather events. The Newmarket equalization tank will also allow continued growth to occur in areas tributary to the Newmarket Pumping Station. In addition, pumping capacity at the Newmarket Pumping Station will be increased marginally to 107 ML/day by the installation of new impellers. The project is to be completed in 2008. Connections to the gravity sewer make up the remaining 35% of the Town's serviced area.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Newmarket and Aurora equalization tanks to be completed by October 2007
- YDSS Interceptor Sewer/Lower Leslie Street Trunk to be completed by January 2008
- 16th Avenue Sewer to be completed by September 2007

Details of the existing and future YDSS in Newmarket are shown on Figure 6-1.

6.2 Aurora

All wastewater flows from the Town of Aurora are conveyed to the YDSS through the Aurora Pumping Station. The Aurora PS also pumps all flows from the Town of Newmarket.

The completion of the Aurora Equalization Tank in 2008 will allow the detention of wet weather flows allowing the pumping station to operate at reduced or average pumping rates.

The use of the Aurora equalization in combination with the Newmarket equalization tank will reduce the risk of system surcharge in critical areas downstream in the YDSS by reducing the volume of wastewater pumped during wet weather events.

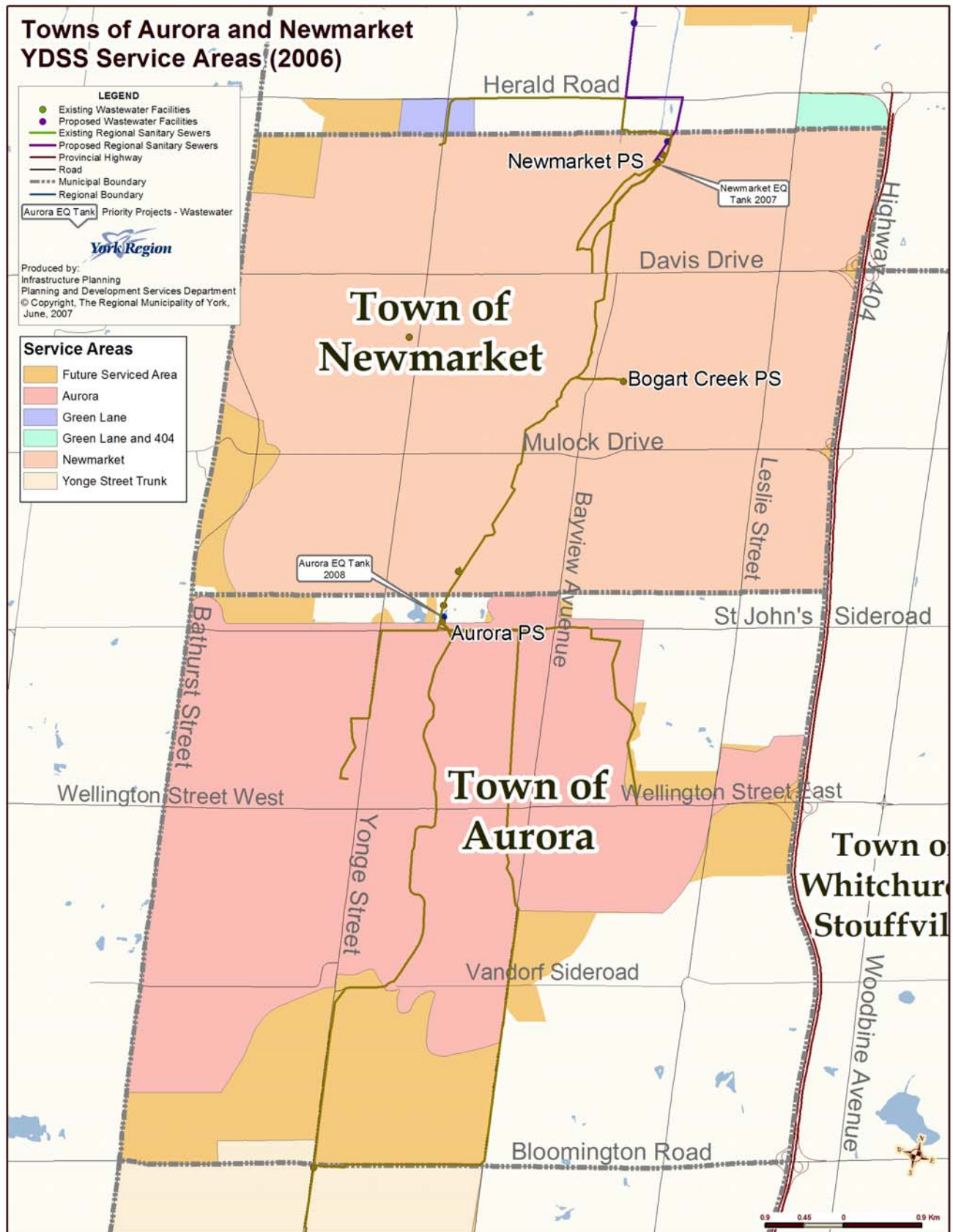
The equalization tank will also allow continued growth to occur in areas tributary to the Aurora Pumping Station.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Newmarket and Aurora equalization tanks to be completed by October 2007
- YDSS Interceptor Sewer/Lower Leslie Street Trunk to be completed by January 2008
- 16th Avenue Sewer to be completed by September 2007

Details of the existing and future YDSS in Aurora are shown on Figure 6-1.

Figure 6-1 Towns of Aurora and Newmarket YDSS



6.3 Richmond Hill

The Town of Richmond Hill contributes to the YDSS through four distinct service areas: Yonge Street, North Don Richmond Hill, Highway 404 and East Beaver Creek service areas.

Figure 6-2 shows the YDSS service areas in Richmond Hill.

6.3.1 Yonge Street Service Area

The Yonge Street service area is the largest of Richmond Hill's wastewater service areas. The area extends from Bloomington Avenue in the north to Highway 7 in the south, both east and west of Yonge Street and includes both the newest and oldest areas of Richmond Hill. The Yonge Street Trunk sewer also conveys flows from Newmarket and Aurora.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Newmarket and Aurora equalization tanks to be completed by October 2007
- YDSS Interceptor Sewer/Lower Leslie Street Trunk to be completed by January 2008
- 16th Avenue Sewer to be completed by September 2007

The YDSS Interceptor Sewer/Lower Leslie Trunk will divert flows from the Yonge Street Trunk sewer to the 16th Avenue Sewer. This diversion will create unused capacity in the Yonge Street Trunk south of 19th Avenue in Richmond Hill.

6.3.2 North Don Richmond Hill Service Area

The North Don service area provides wastewater service to the three municipalities of Vaughan, Richmond Hill and Markham. In Richmond Hill the service area extends from Bathurst Street east to Yonge Street and from Elgin Mills Road south to Highway 7. This is a generally mature area. The North Don sewer is being utilized on an interim basis by developments in Vaughan which will ultimately be serviced by the Bathurst Langstaff sewer.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Bathurst/Langstaff Trunk Sewer to be completed by October 2008

6.3.3 Highway 404 Service Area

The Highway 404 service area is tributary to the Lower Leslie and Highway 404 sewers. The Highway 404 sewer south of 16th Avenue to the YDSS was designed and built as an interim sewer with lower capacity than the Lower Leslie sewer. Flows from the Lower Leslie sewer will be diverted to the 16th Avenue sewer upon its completion.

New wastewater infrastructure that will facilitate the future development in this service area includes:

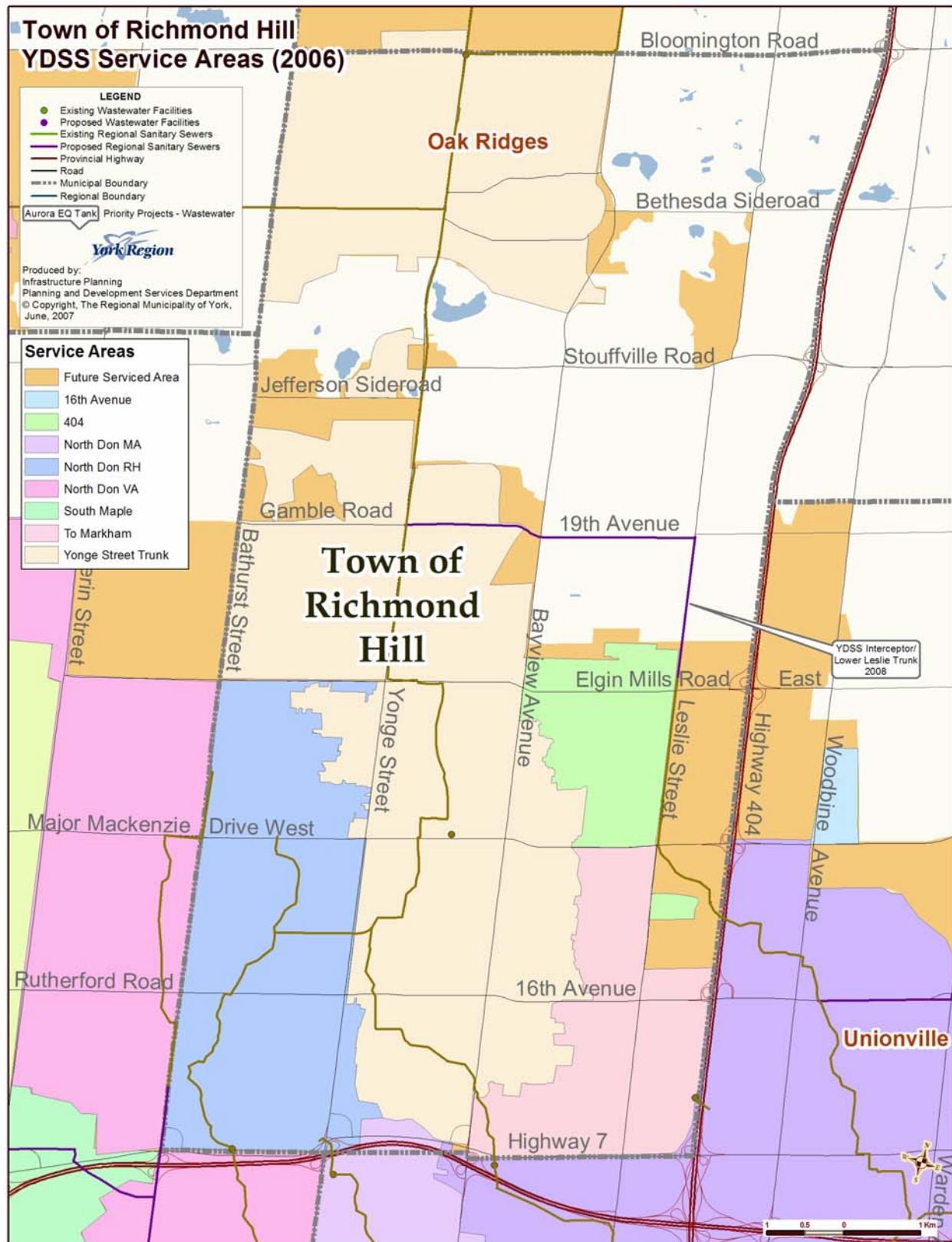
- 16th Avenue Sewer to be completed by September 2007

6.3.4 East Beaver Creek Service Area

The East Beaver Creek service area of Richmond Hill is connected to the YDSS through a connection to local Markham sewers. This mainly industrial/commercial service area extends from west of Leslie Street to Highway 404 and from Major Mackenzie Drive to Highway 7.

No additional wastewater infrastructure is required for servicing in the East Beaver Creek Service area.

Figure 6-2 Town of Richmond Hill YDSS



6.4 Markham

The Town of Markham contributes to the YDSS through five distinct service areas: Markham, 16th Avenue, 9th Line, Box Grove and North Don Markham service areas.

Figure 6-3 shows the YDSS service areas in the Town of Markham.

6.4.1 Markham Service Area

The Markham service is bounded generally by Highway 404 to Ninth Line and from Steeles Avenue to 16th Avenue. This area includes the Markham Centre development area. Wastewater servicing to the Markham service area is through a number of local Markham sewers connected by gravity to the YDSS.

6.4.2 16th Avenue Service Area

This new service area is expanding as completion of the 16th Avenue Sewer progresses. Currently the area west of 9th Line to Highway 48 is being serviced by the 16th Avenue Sewer. The area west of Highway 48 to Warden Avenue is being serviced by the Kennedy Road Pumping Station which is connected to the YDSS at Kennedy Road and near 14th Avenue. Flows from this pumping station will be intercepted by the 16th Avenue sewer upon its completion.

The 16th Avenue sewer will also convey flows from East Gwillimbury, Newmarket, Aurora and north Richmond Hill.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- 16th Avenue Sewer to be completed by September 2007

6.4.3 Ninth Line Service Area

The Ninth Line service area extends from just north of 16th Avenue to Steeles Avenue, east of Ninth Line to approximately 10th Line.

No additional wastewater infrastructure is required for servicing in the Ninth Line service area.

6.4.4 Box Grove Service Area

This site is bounded by Highway No. 407 to the north, the CPR Line and 10th Line to the east, the CNR Line to the south and 9th Line and Rouge River to the west.

No additional wastewater infrastructure is required for servicing in this service area.

6.4.5 North Don Markham Service Area

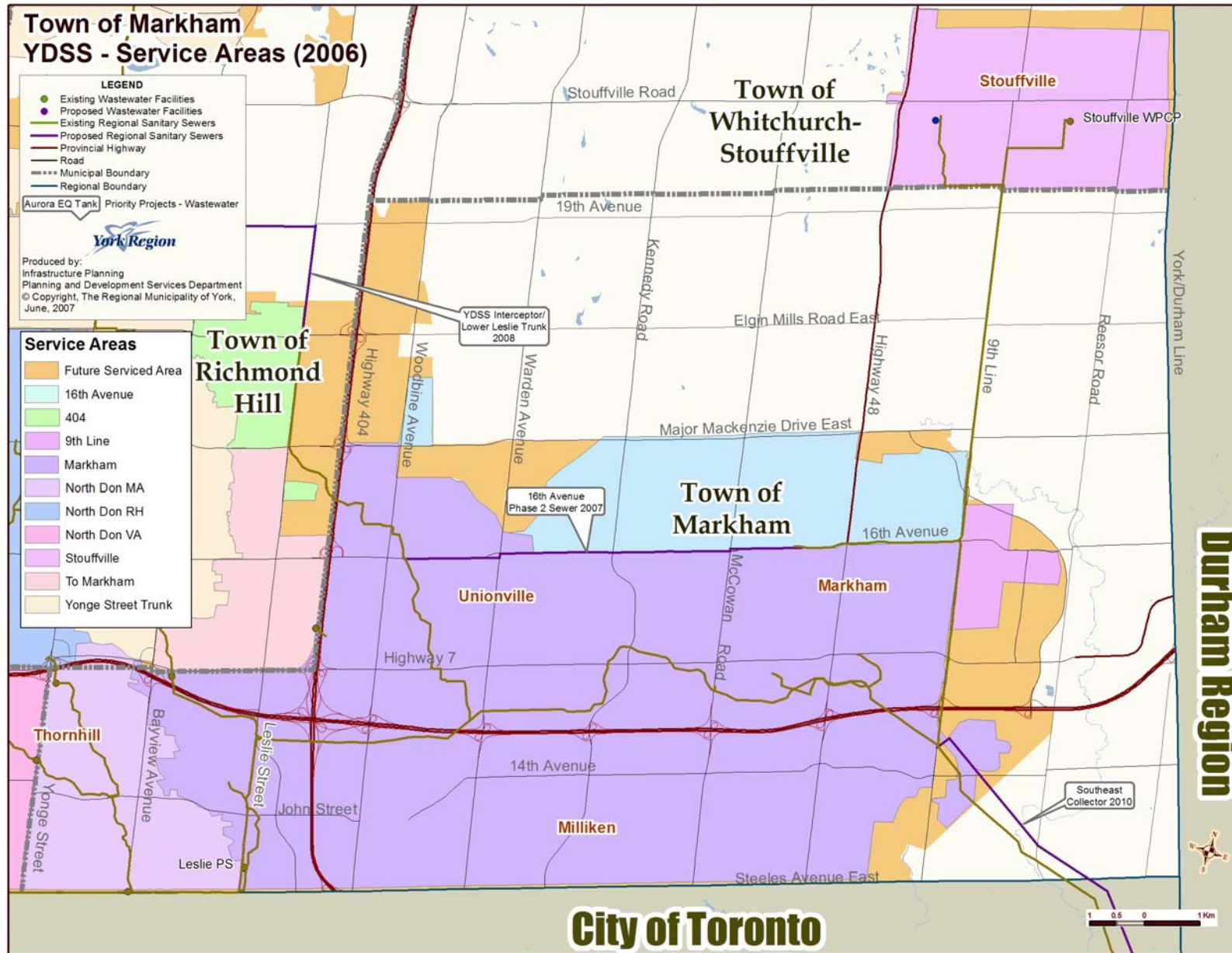
The North Don service area provides wastewater service to the three municipalities of Vaughan, Richmond Hill and Markham. In Markham the service area extends from Steeles Avenue to Hwy 407 and east of Yonge Street. This is a generally mature area.

The North Don sewer is being utilized on an interim basis by developments in Vaughan which will ultimately be serviced by the Bathurst Langstaff sewer.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Bathurst/Langstaff Trunk Sewer to be completed by October 2008

Figure 6-3 Town of Markham YDSS



6.5 Vaughan

The City of Vaughan sewage system tributary is currently comprised of four discrete service areas: Woodbridge, Black Creek (Jane Street), Maple, Thornhill. A fifth service area, Bathurst, will be added upon completion of the Bathurst Langstaff Trunk Sewer.

Details of the existing and future service areas in Vaughan are shown on Figure 6-4.

6.5.1 Woodbridge Service Area

The Woodbridge area is serviced by the West Rainbow and Islington Collectors which are tributary to the Humber PS. The West Rainbow Collector services the area west of Kipling Avenue, north and south of Highway 7. The area west of Kipling to Highway 27 is mainly residential, while the area west of Highway 27 is mainly industrial.

The Islington Trunk services the remainder of the Woodbridge area east to Highway 400. The Pine Valley PS was completed in 2006. This pumping station directs flows to the Islington Trunk from the area north of Langstaff Road, east of Pine Valley Drive.

Humber PS has been constructed to pump flows from Woodbridge to either Peel or to the YDSS along Steeles Avenue. The Pumping Station has a firm capacity of 147 ML/day. Since 2006 the Peel forcemain has been in service. The flows will be split between the Peel system and the YDSS as per the Peel Wastewater Agreement (Table 5-1).

6.5.2 Black Creek (Jane St.) Service Area

The Black Creek (Jane St.) Service Area extends from Steeles Avenue to the south, to Rutherford Road in the north and from Highway 400 easterly to the CN Yard and is predominantly industrial with approximate area of 660 ha. City of Vaughan owned subtrunk systems on either side of Jane Street collect wastewater into a single City of Vaughan owned trunk sewer along Jane Street to the Region's Black Creek Pumping Station.

The Black Creek PS pumps sewage flows east on Steeles Avenue from the Humber PS as well as flows from the Jane Street drainage area.

No additional wastewater infrastructure is required for servicing in the Jane Street service area.

6.5.3 Maple Service Area

The Maple Service Area is located from approximately Bathurst Street to approximately Weston Road and from Teston Road to Steeles Avenue. The area South East of Highway 7, also known as South Maple, is part of this service area. The capacity of the Maple Collector is fully utilized or committed to the existing residents and the first phases of development in Vaughan Blocks 18 and 33 West.

Some of the flow in the Maple Collector north of Langstaff Road will be diverted east in the Langstaff Trunk upon completion of the Bathurst/Langstaff Trunk Sewers. New wastewater infrastructure that will facilitate the future development in this service area includes:

- Bathurst/Langstaff Trunk Sewer to be completed by October 2008

6.5.4 Bathurst Service Area

The Bathurst service area will be created upon completion of the Bathurst/Langstaff Trunk Sewers. The completion of these sewers is expected in 2008. This area is being serviced on an interim basis through the North Don Collector and is therefore currently a part of the North Don Vaughan Service Area. New wastewater infrastructure that will facilitate the future development in this service area includes:

- Bathurst/Langstaff Trunk Sewer to be completed by October 2008

6.5.5 North Don Vaughan (Thornhill) Service Area

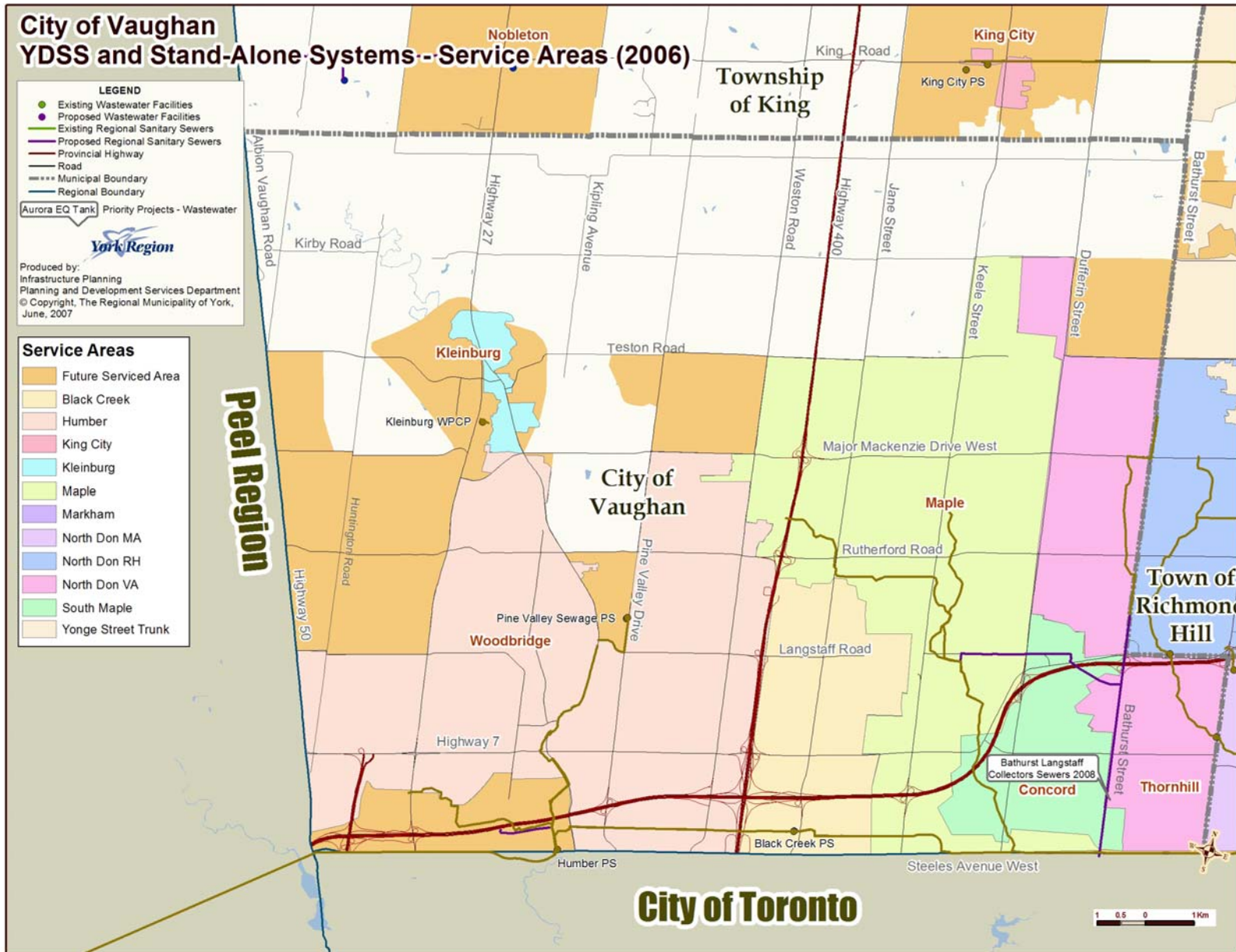
The Thornhill service area in Vaughan has two trunk systems that convey flows to the YDSS. Approximately half of the Thornhill community is serviced via the North Don Collector. Areas north of Langstaff Road and west of Bathurst Street are also being serviced on an interim basis through the North Don Collector. Future servicing of these lands will be via the Bathurst Trunk Sewer.

This service area also includes some smaller areas that are directly connected to the Southwest Collector sewer on Steeles Avenue. For ease in reporting and monitoring these areas have been included in the North Don service area.

New wastewater infrastructure that will facilitate the future development in this service area includes:

- Bathurst/Langstaff Trunk Sewer to be completed by October 2008

Figure 6-4 City of Vaughan Wastewater Service Areas



6.6 East Gwillimbury

Two commercial/industrial areas within the Town of East Gwillimbury are currently serviced by the YDSS. Both are on the south side of Green Lane, one at Yonge Street and the other at Leslie Street.

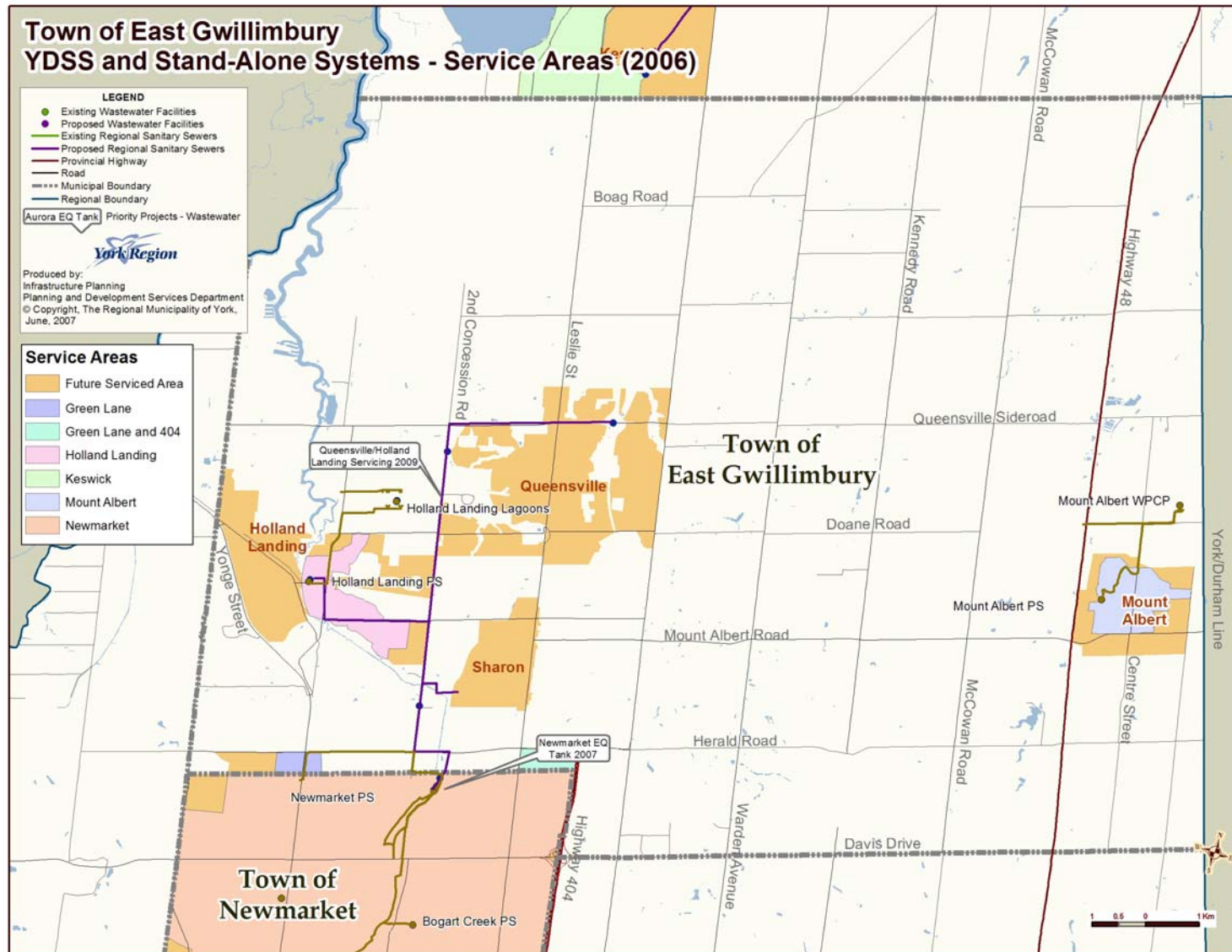
Regional Council at its June 23, 2005 meeting provided water and wastewater servicing capacity to all municipalities currently serviced or to be serviced by the YDSS. The East Gwillimbury communities of Holland Landing, Sharon, Queensville and Green Lane West are included in this capacity assignment.

East Gwillimbury received a water and wastewater servicing capacity assignment of 1,100 units for new development and an additional 4,148 people held in reserve for the existing residents of Holland Landing currently serviced by the Holland Landing Lagoons. The Town has allocated 635 units for Green Lane West on a phased basis between now and 2010. Green Lane West will be serviced through the existing sewer on Green Lane that discharges to Newmarket Pumping Station.

The Region will work closely with the Town of East Gwillimbury to monitor and report on growth in these areas as allocated by the Town.

Details of the existing and future wastewater systems in East Gwillimbury are shown on Figure 6-5.

Figure 6-5 East Gwillimbury Wastewater Service Areas



6.6.1 Holland Landing, Queensville and Sharon

The Holland Landing Lagoons provide sanitary sewage treatment for the community of Holland Landing and is presently servicing at capacity. The current residents in the community of Queensville and Sharon are serviced by individual privately owned septic systems.

The Region is currently undertaking a Class Environmental Assessment Review and Addendum for Holland Landing, Queensville and Sharon Wastewater Infrastructure servicing. A Project File Report (PFR) has been submitted to the Ministry of the Environment for approval. The recommendations of the EA Review are to connect these communities to the YDSS to allow for the growth up to 2015 and to proceed with the individual EA for upper YDSS to determine a long-term solution to wastewater servicing so that community growth can continue beyond 2015.

Upon completion of the YDSS connection to Holland Landing, the lagoons will be decommissioned. Therefore, new wastewater infrastructure that may facilitate the future development in this service area includes:

- Connection to YDSS expected for completion in October 2009
- Newmarket and Aurora equalization tanks to be completed by spring of 2008
- YDSS Interceptor Sewer/Lower Leslie Street Trunk to be completed by January 2008
- 16th Avenue Sewer to be commissioned in September 2007

6.6.2 Green Lane West

Green Lane West is an extension of the Newmarket system and is located south of Green Lane between Bathurst and Yonge Street in East Gwillimbury. Servicing to this area will be from the Green Lane Sewer which is connected to the Newmarket pumping station. Because this area is directly serviced from the Newmarket system, new wastewater infrastructure that will facilitate the future development in this service area includes:

- Newmarket and Aurora equalization tanks to be completed by spring of 2008
- YDSS Interceptor Sewer/Lower Leslie Street Trunk to be completed by January 2008
- 16th Avenue Sewer to be commissioned in September 2007
- Green Lane Pumping Station Upgrade to be completed by 2008

6.7 King City

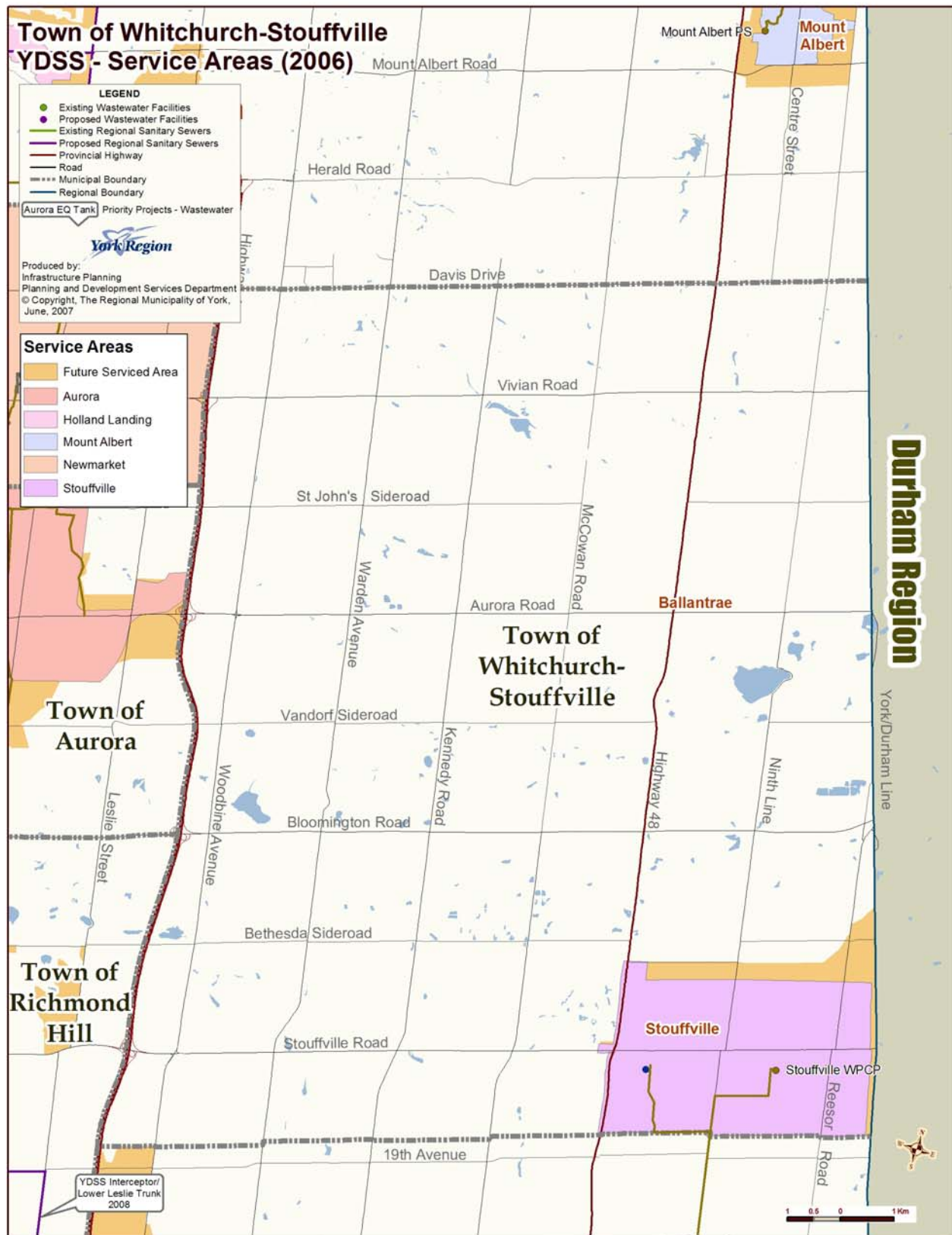
Wastewater servicing to the community of King City has been available through the YDSS. Servicing of the existing residents will proceed in phases as new local municipal sewers are constructed.

Details of the existing and future wastewater systems in King are shown on Figure 5-4 Township of King Service Areas.

6.8 Stouffville

Wastewater servicing to the residents of the community of Stouffville is provided by the YDSS via the Ninth Line sewer. Details of the existing and future wastewater systems in Whitchurch Stouffville are shown in Figure 6-6.

Figure 6-6 Whitchurch-Stouffville Wastewater Service Areas



REFERENCES

- CD-OASYS (2006D), a Municipal Property Assessment Corporation (MPAC) database, September 2006
- Class Environmental Assessment Wastewater Servicing Capacity for Kleinberg-Nashville (KMK Consultants), May 2007
- Class Environmental Assessment and Water Resources Exploration for Water Supply in the Community of Mount Albert (Marshal Macklin Monaghan), December 2006
- Class Environmental Assessment for Water Supply in the Community of Schomberg Environmental Screening Report (Mac Viro/Genivar), March 2007
- Flow Control on the York Durham Sewage System- Report of Transportation and Works Committee, June 13, 2007
- Keswick North Elevated Tank and Connecting Watermain Class Environmental Assessment Study (Gartner Lee), June 2007
- Schomberg Water Pollution Control Plant Class Environmental Assessment Environmental Study Report (KMK Consultants), December 2004
- Stouffville Water Supply Schedule B Class EA Report (Mac Viro), March 2006
- Water and Wastewater Capacity and Servicing Assignment Protocol- Report No. 1 of the Joint Transportation and Works Committee and the Planning and Economic Development Committee, June 23, 2005
- Water and Wastewater Infrastructure Status Report: Report No. 4 of the Transportation and Works Committee Regional Council Meeting of April 19, 2007
- Water Resource Exploration and Class Environmental Assessment for Water Supply and Storage for the Community of King City (Jagger Hims Limited): Presentation to PCC # 3, May 29, 2007
- York Durham Sewage System Master Plan Update Class Environmental Assessment (Mac Viro and Earth Tech), 2002
- York Region Long Term Water Project Master Plan Update (United Utilities Canada Limited), April 2004
- York Region Water and Wastewater Supply and Demand Monitoring Report, November 2005

APPENDIX 1

Short Term Servicing Requirements by Municipality as of February 2007

Municipality	Infrastructure Required	Targeted Timing for Completion (Year & Quarter)	Proposed Earliest Triggers for Draft Plan Approvals or Presales	Earliest Trigger Timing
Aurora	• Aurora/Newmarket Feedermain (PS, WM and Reservoir) • Bathurst WM (Aurora/Newmarket West connection) • Newmarket EQ Tank • Aurora EQ Tank • 16thAvenue Phase 2 Sewer • YDSS Interceptor/ Lower Leslie Street Trunk	Q4 - 2007 Q4 - 2007 Q4 - 2007 Q2 - 2008 Q2 - 2007 Q1 - 2008	One year prior to in service date (Q4/06) Not Critical- continue monitoring Tender award (Q4/05) Tender award (Q4/06) One year prior to in service date (Q2/06) Tender award (Q3/06)	Permission presales granted in Nov 2006
East Gwillimbu	• Aurora/Newmarket Feedermain (PS, WM and Reservoir) • Queensville ET • Bathurst WM (Aurora/Newmarket West connection) (Green Lane West only) • Bathurst WM (Clearmeadow to Woodspring) (Green Lane West only) • Newmarket EQ Tank • Aurora EQ Tank • 16thAvenue Phase 2 Sewer • YDSS Interceptor/ Lower Leslie Street Trunk • Queensville/Holland Landing Servicing	Q4 - 2007 Q2 - 2009 Q4 - 2007 Q4 - 2007 Q4 - 2007 Q2 - 2008 Q2 - 2007 Q1 - 2008 Q3 - 2009	One year prior to in service date (Q4/06) One year prior to in service date (Q2/08) Not Critical- continue monitoring Not Critical- continue monitoring Tender award (Q4/05) Tender award (Q4/06) One year prior to in service date (Q2/06) Tender award (Q3/06) To be determined	Permission presales granted in Nov 2006
King	• King City Elevated Tank • King City Water Supply • 16thAvenue Phase 2 Sewer • YDSS Interceptor/ Lower Leslie Street Trunk	Q4 - 2008 Q4 - 2008 Q2 - 2007 Q1 - 2008	Tender award (Q4/07) Tender award (Q4/07) One year prior to in service date (Q2/06) Tender award (Q3/06)	Q4 - 2007
Markham		• None		2005

Municipality	Infrastructure Required	Targeted Timing for Completion (Year & Quarter)	Proposed Earliest Triggers	Earliest Capacity Allocation Timing
Newmarket	• Aurora/Newmarket Feedermain (PS, WM and Reservoir) • Bathurst WM (Aurora/Newmarket West connection) • Bathurst WM (Clearmeadow to Woodspring) • Newmarket EQ Tank • Aurora EQ Tank • 16th Avenue Phase 2 Sewer • YDSS Interceptor/ Lower Leslie Street Trunk	Q4 – 2007 Q4 - 2007 Q4 - 2007 Q4 - 2007 Q2 - 2008 Q2 - 2007 Q1- 2008	One year prior to in service date (Q4/06) Not Critical- continue monitoring Not Critical- continue monitoring Tender award (Q4/05) Tender award (Q4/06) One year prior to in service date (Q2/06) Tender award (Q3/06)	Permission for presales granted in Nov 2006
Richmond Hill (Yonge Street Corridor PD 8 and 9)	• Aurora Newmarket Feedermain connection to PD8 • Oak Ridges ET & WM • 16th Avenue Phase 2 Sewer • YDSS Interceptor/ Lower Leslie Street Trunk	Q4 - 2007 Q2 - 2008 Q2 - 2007 Q1 - 2008	One year prior to in service (Q4/06) Tender award (Q1/07) One year prior to in service (Q2/06) Tender award (Q3/06)	Q1 – 2007
Richmond Hill (remainder)	• None			2005
Vaughan	• Bathurst Langstaff Trunk • Pine Valley Pumping Station	Q4 - 2008 Q4 - 2006	One year prior to in service (Q4/07) Tender award (Q3/05)	<u>Woodbridge service area</u> Permission for presales granted in Aug 2006 <u>For other areas</u> Q4 – 2007
Whitchurch-Stouffville (Stouffville)	Additional Water Supply (wells connection to YWS)	Q3 - 2008	One year prior to in service (Q3/07)	Q3 - 2007
This data will be updated quarterly and submitted to Committee and Council *Bolded dates indicate revisions since last report of January, 2007				

APPENDIX 2

Procedure Utilized to Estimate the 2006 Serviced Population

To complement the existing GIS database, property information from CD-OASYS (2006D), a Municipal Property Assessment Corporation (MPAC) database, was utilized. MPAC updates the CD-OASYS database on a quarterly basis. The database contains exportable fields such as property codes and unit classification, e.g. RU for residential units, etc, for structure(s) on each property within the Region. The MPAC property code definitions correlate directly with the Region's classification of the dwelling 'unit types' thereby providing an opportunity to relationally 'join' the two databases based on a common field, such as parcel roll number. This would allow the parcels in Region's GIS database with unique roll numbers to be associated with an MPAC property code and the respective dwelling type based on the property code definitions. However, associating each property with the number of units was not straight forward because the MPAC database does not have an exportable field for 'number of units' on a property. Moreover, the parcels in the Region's database with missing roll numbers could not be joined with the MPAC database as there was no alternate 'unique' field common to both databases. For these reasons, it was not possible to fully automate the process of estimating the serviced population based on this approach. The following describes the procedure used to complete the process:

1. Perform a 'spatial join' between MPAC data fields and GIS data based on parcel roll numbers. This would allow each of the parcels in GIS with a unique roll number to be associated with an MPAC property code.
2. Perform a query in the GIS and export all the parcels within the water and wastewater serviced areas into an Excel spreadsheet by municipality. This export should include the following fields: roll number, MPAC property code, municipal address, service area name and municipality.

3. Perform spreadsheet analyses to group the parcel roll numbers by water and wastewater serviced areas separately for each municipality.
4. From the CD OASYS, export all the parcels with residential units (unit class: RU) to a comma separated variable (CSV) file by municipality. Include the following fields in the export: roll numbers, property code and street address. If exporting to Excel, the export may need to be broken down by property codes, or any other field, to limit the size of the export file, particularly for larger municipalities.
5. Create a summary table (e.g. a pivot table) in Excel to summarize total unit counts for each parcel by municipality. This table contains roll numbers and associated units on each parcel.
6. Compare the parcel roll numbers from CD OASYS (summary table of Step 5) with the parcels from GIS (table from Step 3) for each municipality. Prepare a table of the parcels that exist in the CD OASYS but are missing from the Region's GIS for each municipality. The table should include parcel roll numbers, street address and MPAC property codes.
7. Associate each parcel in the Table from Step 6 to a water and/or wastewater service area based on the street address and service area maps. This is the most time consuming process and involves visually locating the address on the service area map. If the parcel is outside of the service area, it is commented accordingly. The end result of this step is a spreadsheet containing a list of parcels within the servicing boundaries with the following fields: parcel roll number, street address, MPAC property code and name of water/wastewater service area.
8. Append the table from Step 7 to the table from Step 3 to capture all the parcels within the service areas.
9. Assign each parcel with a unit type based on MPAC property code definition and the Region's four dwelling categories, namely Singles, Semis, Rows and Apartments (Table A1).
10. Look up the number of units associated with each parcel from the CD OASYS database (summary table from Step 5).

11. For each parcel, look up the persons per unit (PPU) applicable to the unit type specific to the municipality (Table A2)
12. Calculate the estimated number of persons on each parcel and obtain the total estimated population by summing up the respective cells in the column for each service area.

Repeat steps 3-12 for each municipality.

Table A1 MPAC Codes and Regional Dwelling Categories

Code	Category	Description
333	Apartments	Residential property with three self-contained units
334	Apartments	Residential property with four self-contained units
335	Apartments	Residential property with five self-contained units
336	Apartments	Residential property with six self-contained units
340	Apartments	Multi-residential, with 7 or more self-contained units (excludes row-housing)
341	Apartments	Multi-residential, with 7 or more self-contained residential units, with small commercial unit(s)
360	Apartments	Rooming or boarding house – rental by room/bedroom , tenant(s) share a kitchen, bathroom and living quarters.
361	Apartments	Bachelorette, typically a converted house with 7 or more self-contained units
365	Apartments	Group Home as defined in Claus 240(1) of the <i>Municipal Act, 2001</i> – a residence licensed or funded under a federal or provincial statute for the accommodation of three to ten persons, exclusive of staff, living under supervision in a single housekeeping
366	Apartments	Student housing (off campus) – residential property licensed for rental by students.
370.353	Apartments	Residential Condominium Unit-Med/High Rise
370.355	Row	Residential Condominium Unit- Stacked Townhouse
370.354	Row	Residential Condominium Unit-Rows/THs
370.351	Semi-Detached	Residential Condominium Single family Semi-detached
370.352	Apartments	Condominium Apartment in a Walkup
370.350	Single	Condominium Single Family Detached
370	Apartments	Residential Condominium Unit-other structures
371	Apartments	Life Lease - No Redemption. Property where occupants have either no or limited redemption amounts. Typically Zero Balance or Declining Balance Life Lease Types.
372	Apartments	Life Lease - Return on Invest. Property where occupants can receive either a guaranteed return or a market value based return on the investment. Typically, represented by Fixed Value, Indexed-Based, or Market Value Life Lease Types.
373	Apartments	Cooperative housing – equity – Equity Co-op corporations are owned by shareholders. The owners of shares do not receive title to a unit in the building, but acquire the exclusive use of a unit and are able to participate in the building’s management.
374	Row	Cooperative housing - non-equity
375	Apartments	Co-ownership – percentage interest/share in the co-operative housing.
378	Apartments	Residential Leasehold Condominium Corporation – single ownership of the development where the units are leased.
379	Apartments	Residential phased condominium corporation – condominium project is registered in phases.
380	Apartments	Residential commom elements condominium unit
471	Apartments	Retail or Office with residential units above or behind- with 6 or less apartments, older downtown core
472	Apartments	Retail or Office with residential units above or behind- with 7 or more apartments, older downtown core

Table A1 Contd..

Code	Category	Description
602	Apartments	Multiple occupancy educational institutional residence located on or off campus
309	Row	Freehold Townhouse/Row house – more than two units in a row with separate ownership
350	Row	Row housing, with three to six units under single ownership
352	Row	Row housing, with seven or more units under single ownership
311	Semi-Detached	Semi-detached residential – two residential homes sharing a common center wall with separate ownership.
322	Semi-Detached	Semi-detached residence with both units under one ownership – two residential homes sharing a common center wall.
332	Semi-Detached	Typically a Duplex – residential structure with two self-contained units.
201	Single	Farm with residence- with or without structures; no farm outbuildings
211	Single	Farm with residence- with or without structures; with farm outbuildings
221	Single	Farm with residence- with commercial/industrial operation
261	Single	Non-farm residence owned by a non-farmer with a portion being farmed
262	Single	Non-farm residence owned by a farmer with a portion being farmed
301	Single	Single family detached (not on water)
302	Single	More than one structure used for residential purposes with at least one of the structures occupied permanently
303	Single	Residence with a commercial unit
304	Single	Residence with a commercial/ industrial use building
305	Single	Link home – are homes linked together at the footing or foundation by a wall above or below grade.
306	Single	Boathouse with residence above
307	Single	Community lifestyle (not a mobile home park) – Typically, a gated community. The site is typically under single ownership. Typically, people own the structure.
313	Single	Single family detached on water – year round residence
314	Single	Clergy Residence
381	Single	Mobile home – one or more mobile home on a parcel of land, which is <u>not</u> a mobile home park operation.
382	Single	Mobile home park – more than one mobile home on a parcel of land, which is a mobile park operation.
383	Single	Bed and breakfast establishment
700	Single	Place of worship with a clergy residence
245	Single	Managed forest property residence on water
244	Single	Managed forest property residence not on water
231	Single	Intensive farm operation with residence

Table A2 LRSP's Persons Per Unit (PPU) Estimates for 2006

Year	Category	Aurora	East Gwillimbury	Georgina	King	Markham	Newmarket	Richmond Hill	Vaughan	WS
2006	Single	3.25	3.12	2.86	3.05	3.65	3.33	3.50	3.59	3.07
	Semi-Detached	3.00	3.40	2.86	2.46	2.97	2.99	3.02	3.19	2.58
	Row	2.62	2.04	2.77	1.39	2.77	2.84	2.91	3.01	1.97
	Apartments	1.77	1.91	1.93	1.45	2.24	1.92	1.90	1.91	1.82
	Total	3.00	3.02	2.78	2.98	3.35	3.01	3.13	3.35	2.89