
APPENDIX B

WASTEWATER SYSTEM



EXCELLENCE IN
ENVIRONMENTAL
CONSULTING
SERVICES

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March 28, 2008

**YORK WATER AND WASTEWATER MASTER PLAN
ALTERNATIVE WASTEWATER SERVICING SOLUTIONS**

Prepared for:

YORK REGION
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

Attention: Hamid Hatami, P.Eng.

Prepared by:

XCG CONSULTANTS LTD.
2620 Bristol Circle
Suite 300
Oakville, Ontario
L6H 6Z7

XCG Consultants Ltd.
2620 Bristol Circle
Suite 300
Oakville, ON
L6H 6Z7
Tel: (905) 829-8880
Fax: (905) 829-8890
toronto@xcg.com

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1. INTRODUCTION

1.1 Report Purpose and Organization

The purpose of this Technical Memorandum is to present a summary of planned and required capital projects needed to provide wastewater servicing to future populations based on the 30%, 40%, 50% and no growth scenarios as defined by the Region of York, Long Range Planning.

The Technical Memorandum is organized into the following sections:

- Section 1: Introduction – provides an overview of the assumptions made regarding the development of flow projections for each scenario as well as the summary of capital costs.
- Section 2: Satellite Communities – provides an overview of the status of existing facilities within the Region’s satellite communities, as well as the planned and required projects for each service area.
- Section 3: YDSS – provides an overview of the status of existing and planned infrastructure required within the YDSS service area, including the Duffin Creek WPCP.
- Section 4: Summary of Infrastructure Requirements – provides a summary of the planned and required projects, including capital cost estimates, for each growth scenario considered.

1.2 Assumptions

Planning projections were provided by the Region of York, Long Range Planning, on January 16, 2008 (30% and 50%), January 23, 2008 no growth and February 7, 2008 (40%). Flow projections were developed for 30%, 40%, 50% and no growth scenarios based on these planning projections and unit wastewater generation rates, as per the Unit Rates Report, 3rd Draft (February 15, 2008).

It should be noted that for each of the pumping stations, the 2006 peak flow was generated using the calibrated InfoWorks model with a 25 year design storm as input. For the purposes of evaluation, two different rainfall distributions were used to generate peak flows including a 1 hour AES design storm and a 12 hour AES design storm. Following review of model results, the highest peak flow generated by the model was selected to represent the existing conditions 25 year peak flow.

Where available, cost projections for planned and required projects were obtained from the Region’s 2007 cost estimates. In some cases, cost estimates were obtained from the most recent Class Environmental Assessment documents. These costs are assumed to be high level conceptual level costs and are considered accurate to within a range of -25% to +40%.

Where cost projections were not available in Class EA documents or provided by the Region, the estimated capital costs from the York Region Business Plan & Budget – Capital (Approved), June 2007, were used.

The estimated capital costs for each project have been adjusted to 2008 dollars (ENR Construction Cost Index = 8090, January 2008) and rounded to the nearest \$1,000.

2. SATELLITE FACILITIES

2.1 Schomberg

The Schomberg WPCP was originally constructed in 1991 and has a rated capacity of 683 m³/d. The wastewater treatment process consists of three (3) facultative, earthen-lined lagoons followed by three (3) intermittent sand filters.

The Schomberg WPCP was originally designed to service a population of 1,500 persons. The Schomberg Community Plan (1998) anticipates the need for servicing a population of approximately 3,100 together with employment lands at build out.

The service area for the Schomberg WPCP is presented in Figure 2.1.

Status of Facilities

A Class Environmental Assessment (Class EA) was completed for the expansion of the Schomberg WPCP to identify the preferred approach to provide wastewater servicing capacity for the community to the build out of the Community Plan to the year 2011.

The Environmental Study Report (ESR) was completed in December 2004 and identified the preferred design concept for the expansion of the Schomberg WPCP to 2,055 m³/d. Final technology selection and site layout of the new processes will be determined during detailed design of the expanded plant.

The increased design capacity of 2,055 m³/d was developed to service a future residential population of 3,076 persons along with additional commercial lands of 8.3 ha and additional industrial lands of 24.9 ha. Based on a maximum total phosphorus loading of 75 kg/yr and an effluent phosphorus concentration of 0.1 mg/L, the maximum average day flow that can be treated at the expanded Schomberg WPCP is 2,055 m³/d. Additional treatment capacity may be possible with advanced treatment for phosphorus removal.

Flow Projections

Flow projections for the Schomberg WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.2.

Figure 2.1 Schomberg WPCP Service Area

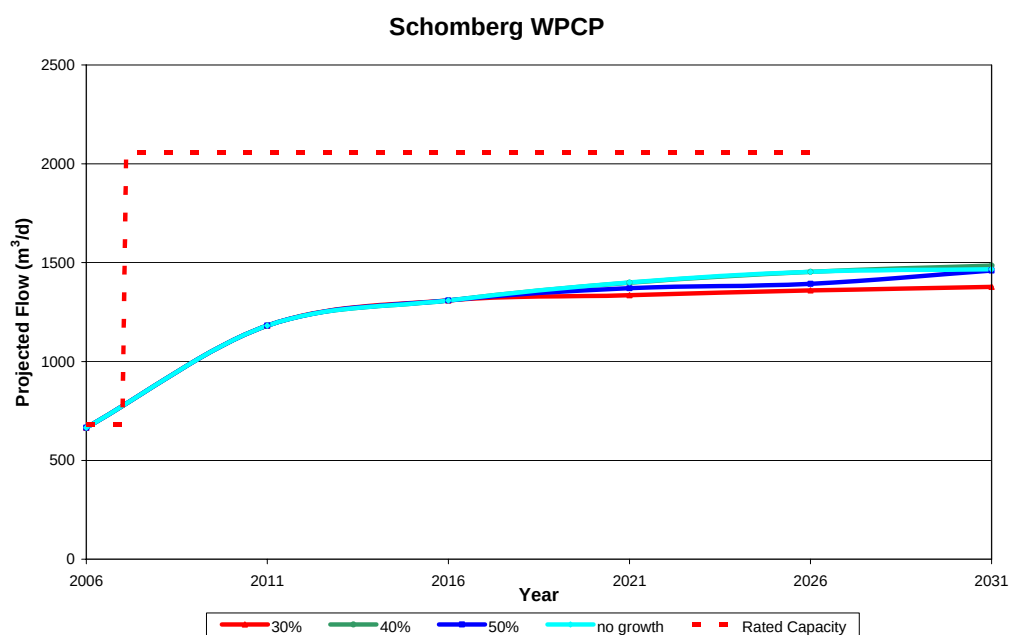


FIGURE 2.2 SCHOMBERG WPCP FLOW PROJECTION CURVE

Infrastructure Requirements

Planned Projects

The expansion of the Schomberg WPCP is currently underway. Table 2.1 presents the estimated costs for the current Schomberg WPCP expansion in 2008 dollars.

Table 2.1 Capital Cost Estimate for Schomberg WPCP Expansion

Total Projected Capital Costs	Upgrade/Expansion Costs
ESR Capital Cost Estimate (December 2004)	\$8,400,000
January 2008 Dollars	\$9,291,000

Required Projects

No further projects are required to provide wastewater servicing for growth in the Schomberg WWTP Service Area to the year 2031.

2.2 Keswick

The Keswick WPCP has a rated capacity of 12,070 m³/d and a peak flow capacity of 32,580 m³/d. The treatment process consists of aerated grit tanks, mechanical screening, extended aeration, secondary clarification, filtration, disinfection and sludge management. Final effluent is discharged into Cooks Bay, Lake Simcoe.

Currently, a portion of the available capacity of the Keswick WPCP has been committed to service new development in Keswick and the Willow Beach and other Lake Simcoe lakeshore communities within the Town of Georgina. A new communal sewage collection system is currently being installed to service the Willow Beach area and other lakeshore communities.

The current and future service areas for the Keswick WPCP are shown in Figure 2.3.

Status of Facilities

In order to meet anticipated growth, it is proposed that the Keswick WPCP be upgraded in two phases. The first phase will increase the capacity of the treatment plant by approximately 50 percent up to an average day flow of 18,000 m³/d. A second phase of the expansion is planned for 2021 and will result in a rated capacity of 24,000 m³/d.

Flow Projections

Flow projections for the Schomberg WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.4.

Infrastructure Requirements

Planned Projects

Table 2.2 presents a preliminary process design summary of the preferred servicing extended aeration process alternative.

Table 2.2 Capital Cost Estimates for Keswick WPCP Upgrade/Expansion

Total Projected Capital Costs	Phase I Upgrade Cost	Phase II Upgrade Cost
January 2008 Dollars	\$32,400,000	\$32,400,000

Required Projects

No additional projects beyond the planned two phase expansion of Keswick WPCP are required to provide wastewater servicing for planned growth in Keswick up to 2031.

Figure 2.3 Keswick WPCP Service Area

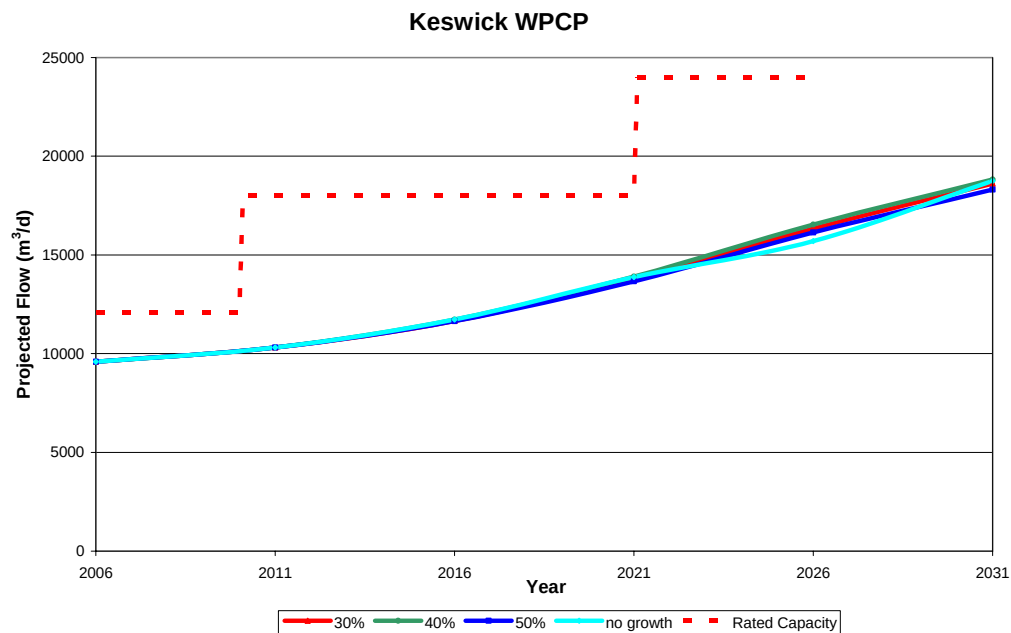


Figure 2.4 Keswick WPCP Flow Projection Curve

2.3 Sutton

The current Sutton WPCP (Phase 1) has a rated capacity of 3,142 m³/d. The final effluent is discharged to a tributary of the Black River, which then flows into Lake Simcoe. Thickened sludge is transported to the Duffin Creek WPCP for disposal.

The service area of the Sutton WPCP is shown in Figure 2.5.

Status of Facilities

The 1991 Environmental Study Report identified that expansion beyond a rated capacity of 3,868 m³/d would require the construction of a new outfall to Lake Simcoe. An EA to expand to a rated capacity of 7,510 m³/d is currently underway.

Flow Projections

Flow projections for the Sutton WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.6.

Figure 2.5 Sutton WPCP Service Area

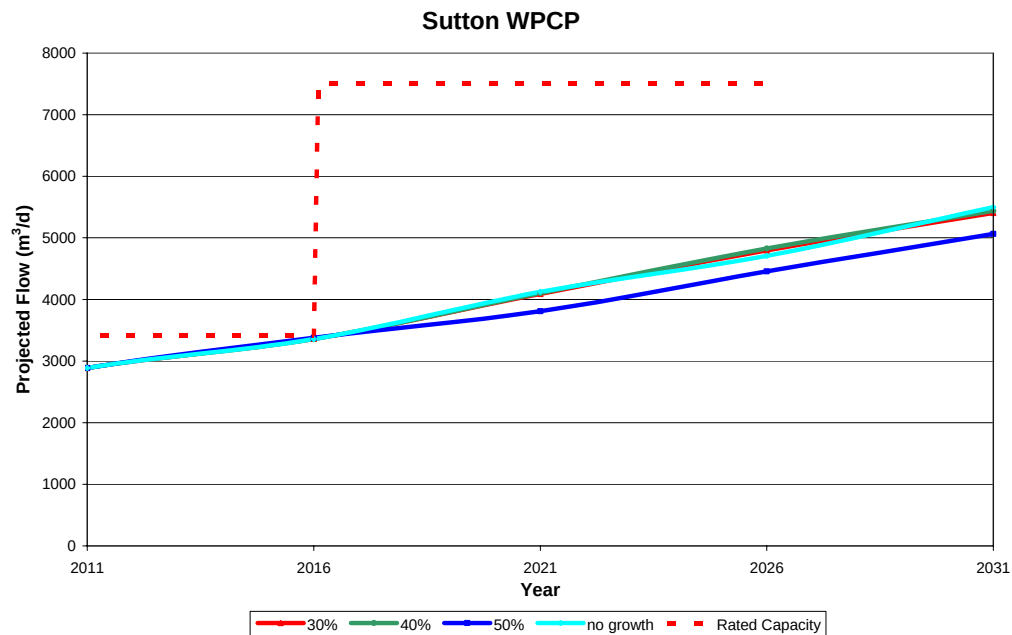


Figure 2.6 Sutton WPCP Flow Projection Curve

Infrastructure Requirements

Planned Projects

Table 2.3 presents the preliminary cost estimates for the expansion of the Sutton WPCP to a rated capacity of 7,510 m³/d.

Table 2.3 Sutton WPCP Upgrade Project Costs

Total Projected Capital Costs	Upgrade/Expansion Costs
January 2008 Dollars	\$29,500,000

Required Projects

No additional projects beyond the planned expansion of Sutton WPCP are required to provide wastewater servicing for planned growth in the future Sutton WPCP service area to the year 2031.

2.4 Mount Albert

The Mount Albert WPCP has a rated capacity of 2,043 m³/d and was commissioned in May 2005. The plant includes extended aeration followed by tertiary filtration and UV disinfection, with discharge of the final effluent to Mount Albert Creek and Vivian Creek.

Figure 2.7 present the existing and future service area of the Mount Albert WPCP.

Status of Facilities

The Mount Albert WPCP was designed to service the Mount Albert Community Plan population. At present, no additional wastewater infrastructure is required for wastewater servicing in Mount Albert.

Flow Projections

Flow projections for the Mount Albert WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.8.

Infrastructure Requirements**Planned Projects**

There are no planned wastewater projects in the Mount Albert WPCP service area.

Required Projects

No additional projects are required to provide wastewater servicing for planned growth in the future Mount Albert WPCP Service Area up to 2031.

Figure 2.7 Mount Albert WPCP Service Area

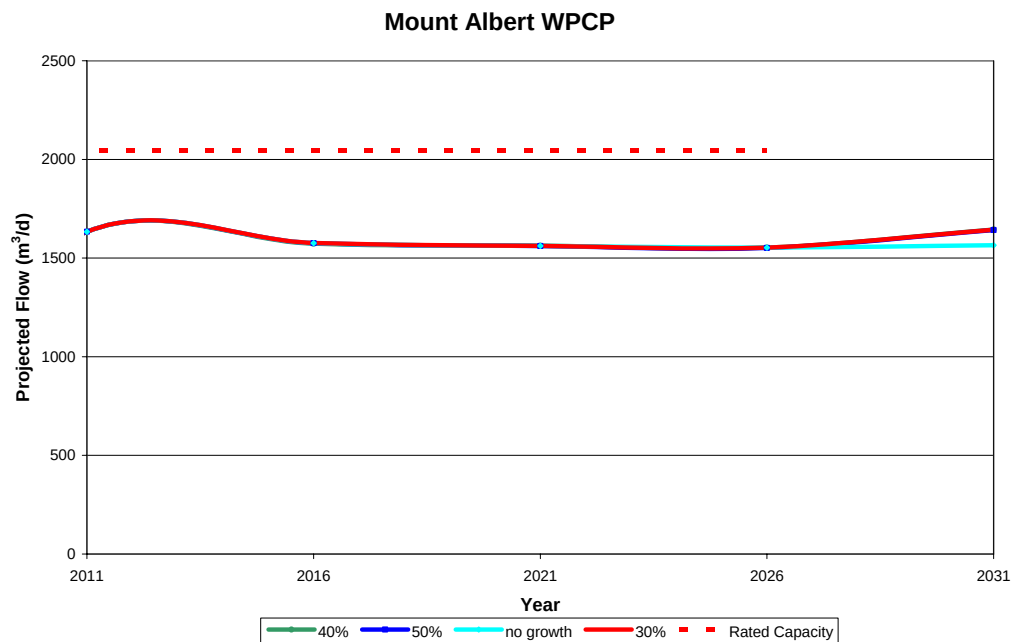


Figure 2.8 Mount Albert WPCP Flow Projection Curve

2.5 Nobleton

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. Approval of the secondary plan by the Regional Municipality of York is contingent on the availability of adequate sanitary sewage servicing.

Figure 2.9 presents the planned service area for the Nobleton WPCP.

Status of Facilities

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. Construction of these facilities is planned to begin in 2009.

Figure 2.9 Nobleton WPCP Service Area

Flow Projections

Flow projections for the Nobleton WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.10.

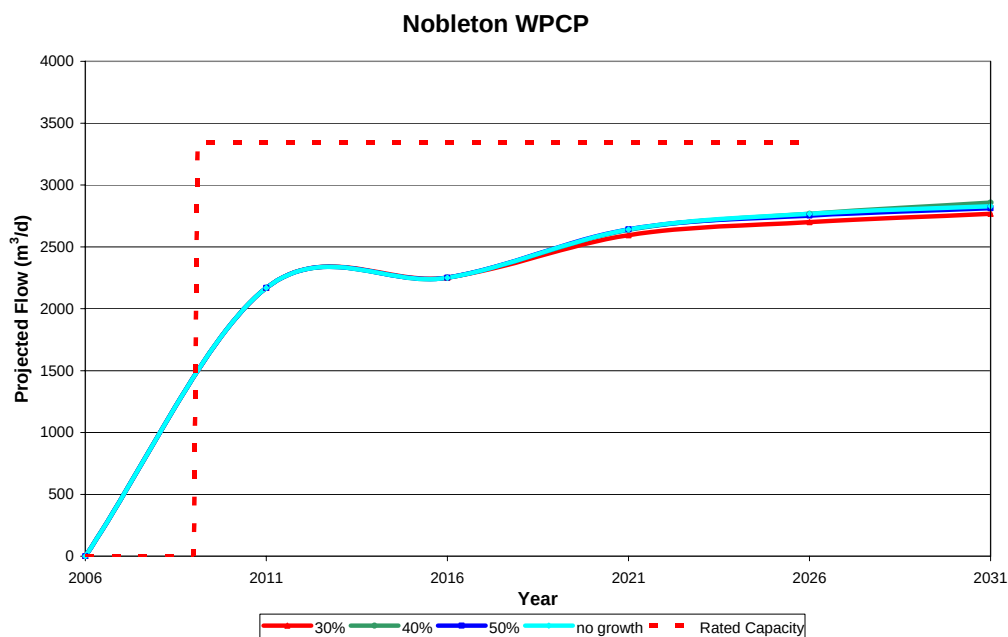


Figure 2.10 Nobleton WPCP Flow Projection Curve

Infrastructure Requirements

Planned Projects

Table 2.4 presents the current cost estimates for the construction of the Nobleton WPCP.

Table 2.4 Nobleton WPCP Construction Project Costs

Total Projected Capital Costs	Construction Costs
Estimated Capital Costs ¹ (April 2007)	\$28,200,000
January 2008 Dollars	\$29,000,000
Notes:	
1. Includes construction of Nobleton WPCP, PS, Forcemain and Trunk Sewer.	

Required Projects

No additional projects are required to provide wastewater servicing for planned growth in the future Nobleton WPCP Service Area to the year 2031.

2.6 Kleinburg

The Kleinburg WPCP provides wastewater servicing to the community of Kleinburg-Nashville. The Kleinburg WPCP is a circular extended aeration plant with chemical phosphorus removal. The plant has a rated capacity of 1,205 m³/d.

Figure 2.11 presents the service area for the Kleinburg WPCP.

Status of Facilities

An expansion of the Kleinburg WPCP was proposed as part of a recently completed Class EA to increase the rated capacity of the facility to 2,874 m³/d.

Flow Projections

Flow projections for the Kleinburg WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 2.12.

Infrastructure Requirements

Planned Projects

Capital costs for the Kleinburg WPCP expansion based on new and expanded processes are presented in Table 2.5.

Table 2.5 Capital Cost Estimates for Kleinburg WPCP Upgrade/Expansion

Total Projected Capital Costs	Upgrade/Expansion Costs
ESR Capital Cost Estimate (May 2007)	\$10,920,000
January 2008 Dollars	\$11,232,000

Required Projects

A small amount of additional capacity will be required to convey and treat wastewater from future growth areas in Kleinburg by the year 2014 for all growth scenarios considered. In this case rather than consider structural alternatives to provide capacity, an intensified program of water efficiency should be employed to reduce demand.

Figure 2.11 Kleinburg WPCP Service Area

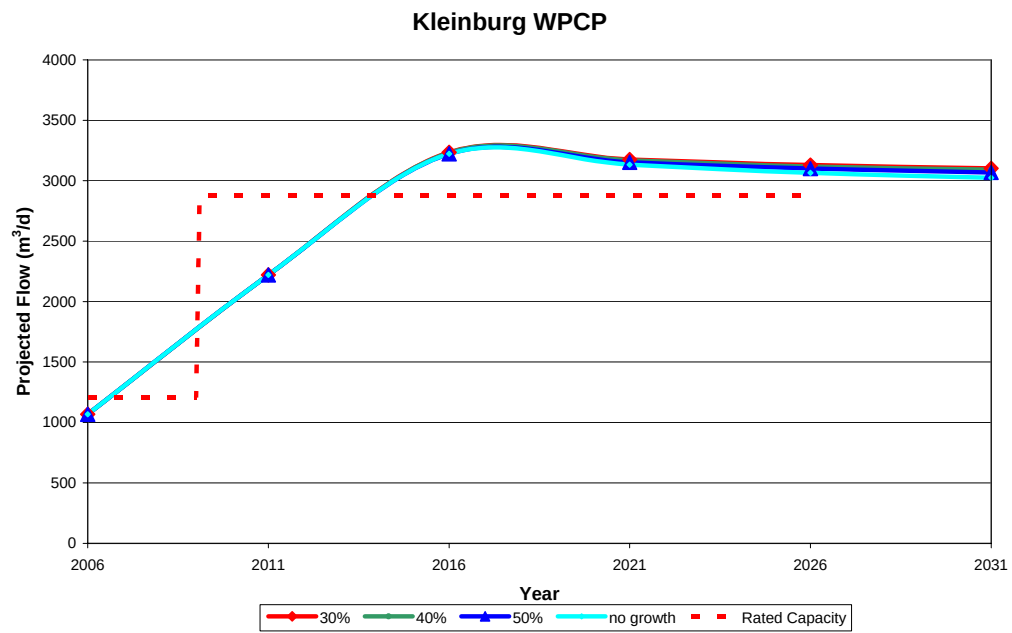


Figure 2.12 Kleinburg WPCP Flow Projection Curve

3. YDSS

The following sections provide information on required infrastructure improvements for the YDSS service area. Figure 3.1 presents the YDSS service area. A separate section has been included for East Gwillimbury which is not currently part of the YDSS Service Area.

3.1 East Gwillimbury

The community of East Gwillimbury is currently serviced by a combination of private sewage systems and the Holland Landing Lagoons.

The existing works at the Holland Landing Lagoons consist of one sewage pumping station discharging to a four cell, 36 acre, seasonal retention waste stabilization pond. The sewage undergoes phosphorus reduction before being discharged twice per year into the East Branch of the Holland River. The lagoon approved treatment capacity is 1,360 m³/d with a total storage capacity of 248,000 m³ at an operating depth of 1.5 metres.

Status of Facilities

York Region recently completed a draft Class Environmental Assessment for servicing of the Holland Landing/ Queensville/ Sharon Service Areas. The draft Class EA recommended an interim solution involving construction of a new pumping station at 2nd Concession to convey flows from the service area to the YDSS. In the long term, the Upper York Sewerage System (UYSS) is intended to provide servicing for the Holland Landing/ Queensville/ Sharon Service Area.

Figure 3.1 **YDSS Service Area**

Flow Projections

Figure 3.2 shows the projected total flows from the Holland Landing/ Queensville and Sharon service area.

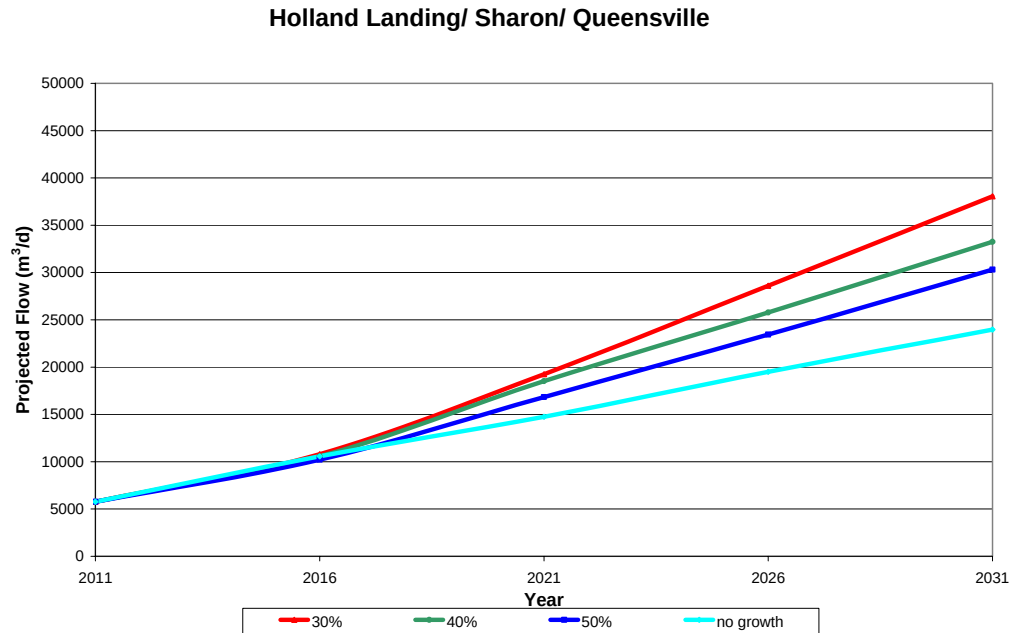


Figure 3.2 Holland Landing/ Queensville/ Sharon Service Area Flow Projection Curve

Infrastructure Requirements

Planned Projects

The 2003 Wastewater Master Plan recommended the construction of the Upper York Sewerage System (UYSS) to convey flows from East Gwillimbury to the YDSS. Table 3.1 presents a description of the required UYSS infrastructure and conceptual level cost estimates. These are high level conceptual level costs and should be considered accurate to within +/- 50%.

Table 3.1 UYSS System Description and Capital Cost Estimate

Required Infrastructure	Sizing Requirements
QHLS forcemain on Davis Drive from Newmarket PS to Leslie Street	750mm -4,000m in length
North Newmarket Trunk Sewer on Leslie Street from Davis Drive to Mulock PS	Diameters range from 1,050 mm to 1,350mm - 2000m in length
Mulock PS	Station capacity of 2,500 L/s
Mulock PS Forcemain –on Leslie Street from Mulock PS to Wellington PS	750mm diameter – 4,200m in length
Wellington PS	Station capacity of 2,500 L/s
Wellington PS Forcemain -on Leslie Street from Wellington PS to Bloomington Road	750mm diameter – 4,200m in length
Upper Leslie Trunk Sewer – on Leslie Street from Bloomington Road to 19 th Avenue	1350mm diameter – 6,200m in length
Estimated Capital Cost (January 2008 Dollars)	\$338,682,000

For all growth scenarios, the pumping stations, forcemains and gravity sewers described in Table 3.1 will be required. It is anticipated that there would be a cost reduction for the no growth scenario as pumping station capacity requirements will be marginally lower.

Required Projects

No additional projects beyond the planned UYSS project are required to provide wastewater servicing for planned growth in Holland Landing/ Queensville/ Sharon Service Area to the year 2031.

3.2 Newmarket PS

The Newmarket PS has a current peak flow capacity of 1,390 L/s. The facility pumps flows from the northern part of Newmarket and will also pump flows from Holland Landing, Queensville and Sharon until the UYSS is place.

Flow Projections

Peak flow projections for the Newmarket PS were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning. Figure 3.3 presents the future projected flows for the Newmarket PS assuming that the Holland Landing/ Queensville/ Sharon areas will be serviced by the UYSS beyond 2016.

Infrastructure Requirements

Planned Projects

There are no planned projects within the Newmarket PS service area.

Required Projects

No additional projects are required to provide wastewater servicing for planned growth in the Newmarket PS Service Area to 2031.

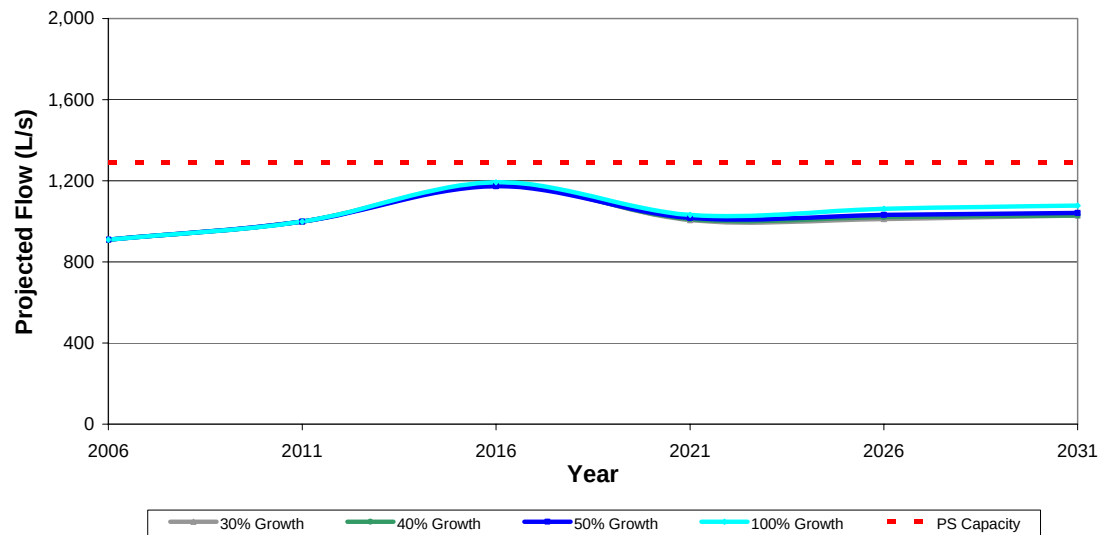
Newmarket PS Flow Projection (2006 - 2031)

Figure 3.3 Newmarket PS Flow Projection Curve

3.3 Aurora PS

The Aurora PS has a current peak flow capacity of 2,000 L/s. The facility pumps flows from Newmarket, Aurora and from Holland Landing/ Queensville/ and Sharon until the UYSS is place.

Flow Projections

Peak flow projections for the Aurora PS were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 3.4.

Aurora PS Flow Projection (2006 - 2031)

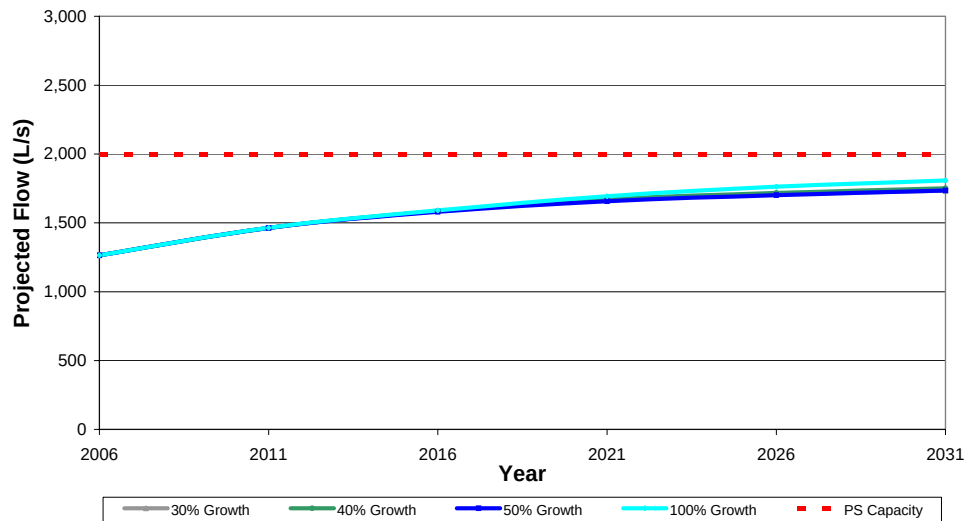


Figure 3.4 Aurora PS Flow Projection Curve

Infrastructure Requirements

There are no planned projects within the Aurora PS service area.

Required Projects

No additional projects are required to provide wastewater servicing for planned growth in the Aurora PS Service Area to the year 2031.

3.4 Humber PS

The Humber PS has a current peak flow capacity of 1,700 L/s. The facility pumps flows from Vaughan and can pump to the Peel collection system or into the YDSS. Average flows and peak flow rates that can be pumped to Peel have been negotiated with Peel Region. Currently, the Region pumps all flow to Peel, up to the daily maximum flow, and then pumps to the YDSS.

Flow Projections

Peak flow projections for the Humber PS were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 3.5.

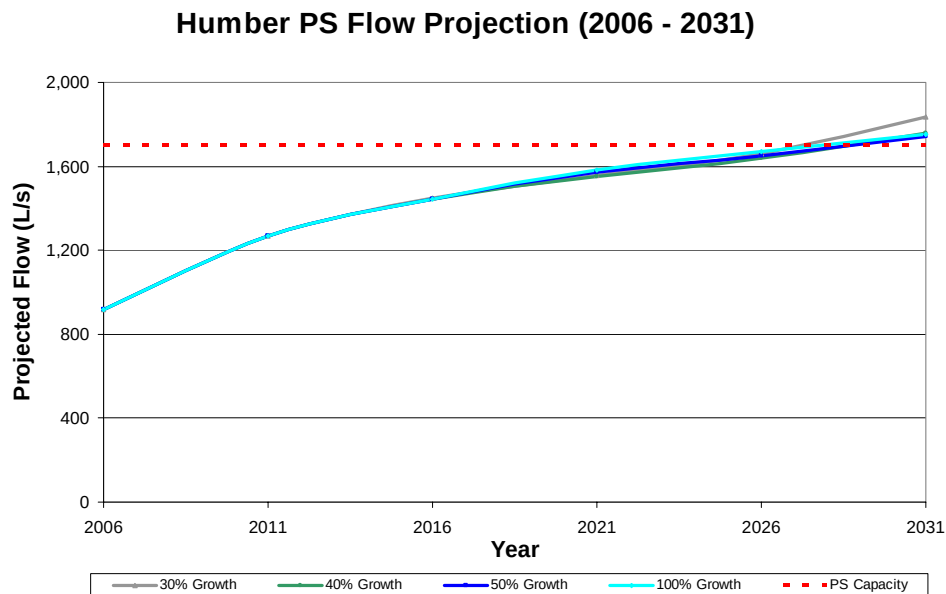


Figure 3.5 Humber PS Flow Projection Curve

Infrastructure Requirements

Planned Projects

There are no planned projects within the Humber PS service area.

Required Projects

An expansion to the Humber PS to increase the firm capacity of the station to 1,835 L/s will be required in 2026 to service future growth. In addition to the pumping station capacity increase, improvements to the operational strategy at the Humber PS are needed to allow the Region flexibility to pump only a portion of the peak flow to the YDSS during a wet weather event. To allow for this flexibility, a second Humber PS could be constructed to pump only wet weather peak flow to the YDSS.

Table 3.2 presents the estimated costs for the pumping station expansion and new wet weather pumping station.

Table 3.2 Humber PS Costs	
Total Projected Capital Costs	Upgrade/Expansion Costs
Humber PS Upgrade (30% scenario)	\$2,224,000
Humber PS Upgrade (40% Scenario)	\$1,200,000
Humber PS Upgrade (50% Scenario)	\$950,000
Humber PS Upgrade (No Growth Scenario)	\$1,140,000
Humber WWPS (all scenarios)	\$4,200,000

3.5 **Black Creek PS**

The Black Creek PS has a current peak flow capacity of 1,390 L/s. The facility pumps flows from Vaughan.

Flow Projections

Peak flow projections for the Black Creek PS were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 3.6. These projections take into account the required project of a new Humber wet weather pumping station.

Infrastructure Requirements

Planned Projects

There are no planned projects within the Black Creek PS service area.

Required Projects

There are no required projects within the Black Creek PS service area.

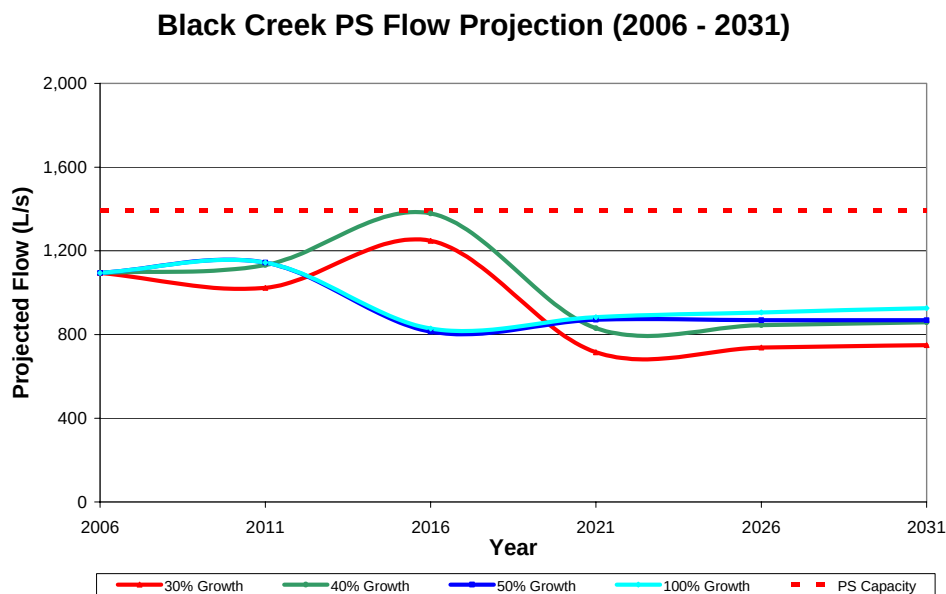


Figure 3.6 Black Creek PS Flow Projection Curve

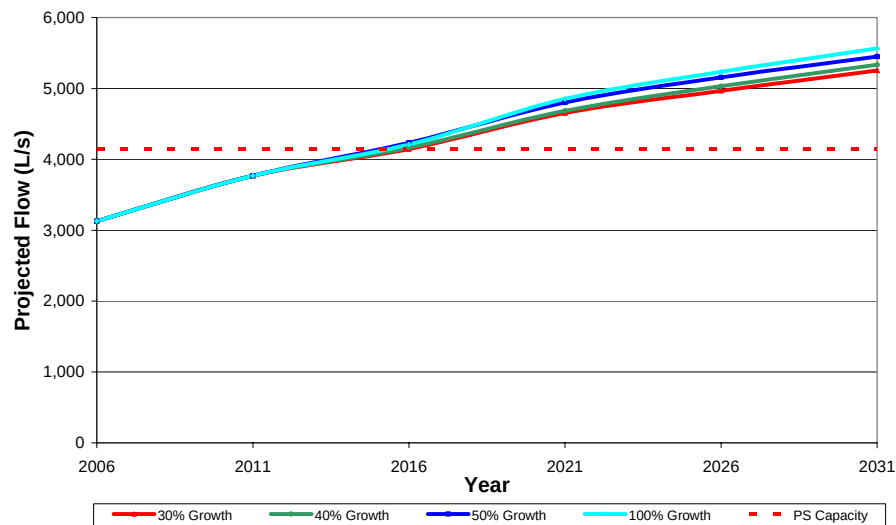
3.6 Leslie PS

The Leslie PS has a current peak flow capacity of 4,150 L/s. The facility pumps flows from Vaughan and part of Richmond Hill.

Flow Projections

Peak flow projections for the Leslie PS were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning and are presented in Figure 3.7.

Leslie PS Flow Projection (2006 - 2031)

**Figure 3.7 Leslie PS Flow Projection Curve****Infrastructure Requirements****Planned Projects**

There is a planned project to modify the Leslie Street PS to achieve a firm capacity of 7,560 L/s. Table 3.3 presents the estimated costs for this project.

Table 3.3 Leslie PS Costs

Total Projected Capital Costs	Upgrade/Expansion Costs
Estimated Capital Costs (April 2007)	\$3,905,000
January 2008 Dollars	\$4,017,000

Required Projects

No additional projects are required to provide wastewater servicing for planned growth in the Leslie PS Service Area up to 2031.

3.7 Collector Sewers

Collector sewer requirements were estimated for the Southeast Collector and for new Regional collector sewers that are to service future growth areas in North Markham, Northeast Vaughan and Northwest Vaughan.

3.7.1 Planned Projects

3.7.1.1 Southeast Collector

The Region has an ongoing Individual Environmental Assessment Study (IEA) for the Southeast Collector. Table 3.4 presents the current cost estimates for the construction of the Southeast Collector.

Table 3.4 Southeast Collector Estimated Cost

Facility	Estimated Capital Cost
Southeast Collector (January 2008 Dollars)	\$513,832,000 ¹
Notes:	
1. 2008 York Region Capital Budget	

3.7.2 Required Projects

New collector sewers are required to service new growth areas in North Markham, Northeast Vaughan, and Northwest Vaughan. The following projects have been included to service these growth areas.

3.7.2.1 North Markham Collector

The Regional portion of the North Markham Collector was assumed to extend from Major MacKenzie Drive to the 16th Avenue Collector. This collector would be constructed using an earth pressure balance tunnel boring machine. Table 3.5 presents conceptual level estimated costs for Regional portion of the North Markham Collector. These costs were generated based on the total project costs for the recently completed Bathurst Langstaff tunnel. The North Markham Collector is required by 2021 to service growth in the North Markham area for the 30%, 40% and 50% growth scenarios. The North Markham Collector would not be required for the no growth scenario.

Table 3.5 North Markham Collector (Regional Sewer)

Facility	Estimated Capital Cost
North Markham Collector (Regional Sewer)	\$19,560,000

3.7.2.2 Northeast Vaughan Collector

The Regional portion of the Northeast Vaughan Collector was assumed to extend from Teston Road to North of Major Mackenzie Drive along Weston Road. This collector would be constructed using an earth pressure balance tunnel boring machine. Table 3.6 presents conceptual level estimated costs for the Regional portion of the Northeast Vaughan Collector. These costs were generated based

on the total project costs for the recently completed Bathurst Langstaff tunnel. The Northeast Vaughan Collector is required by 2026 for the 30%, 40% and 50% growth scenarios. The Northeast Vaughan Collector is not required for the 100% growth scenario.

Table 3.6 Northeast Vaughan Collector (Regional Sewer)

Facility	Estimated Capital Cost
Northeast Vaughan Collector (Regional Sewer)	\$40,650,000

3.7.2.3 Northwest Vaughan Collector

The Regional portion of the Northwest Vaughan Collector was assumed to extend from Rutherford Road to the Rainbow Creek Trunk Sewer along Highway 27. This collector would be constructed using an earth pressure balance tunnel boring machine. Table 3.7 presents conceptual level estimated costs for the Regional portion of the Northwest Vaughan Collector. These costs were generated based on the total project costs for the recently completed Bathurst Langstaff tunnel. The Northwest Vaughan Collector is required by 2021 for all growth scenarios considered.

Table 3.7 Northwest Vaughan Collector (Regional Sewer)

Facility	Estimated Capital Cost
Northwest Vaughan Collector (Regional Sewer)	\$47,000,000

3.8 Duffin Creek WPCP

The Duffin Creek WPCP is located within Durham Region and treats wastewater generated within York and within Durham. The facility has a current rated capacity of 630,000 m³/d.

Status of Facilities

The Duffin Creek WPCP is planned to be expanded to a rated capacity of 630,000 m³/d. The current rated capacity of the facility is 420,000 m³/d.

Flow Projections

Flow projections for the Duffin Creek WPCP were developed for the 30%, 40%, 50% and no growth scenarios developed by Long Range Planning. The flow projections presented in Figure 3.9 are based on the following:

- Planning projections obtained from Region on January 16, 2008 (30% and 50%, January 23, 2008 (no growth) and February 15, 2008 (40%);
- Unit wastewater generation rates as per Unit Rates Report (Third Draft – February 15, 2008);
- Planned serviced growth in East Gwillimbury;
- Peel Diversion agreement with Peel Region; and,
- Projected flow does not include any planned growth in Durham Region.

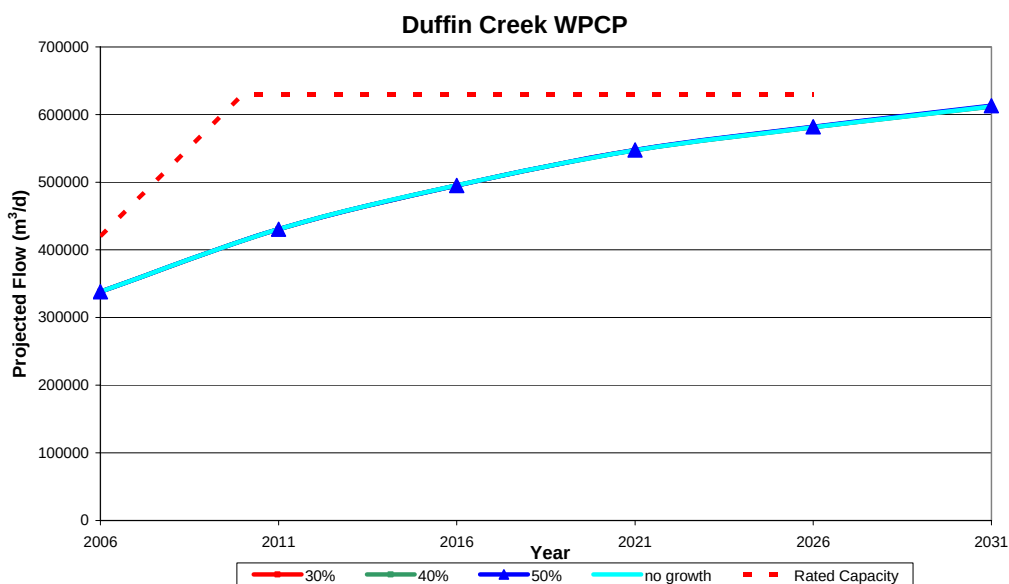


Figure 3.8 Duffin Creek WPCP Wastewater Flow Projection Curve
Infrastructure Requirements

Planned Projects

The construction of the Stage 3 Expansion of the Duffin Creek WPCP has recently been approved by the MOE.

Estimated capital costs for the expansion adjusted to 2008 dollars are presented in Table 3.6. Duffin Creek WPCP is jointly owned by the Regions of York and Durham. Table 3.6 presents the total project costs for the Duffin Creek WPCP Expansion as well as the portion of the total project costs that will be the responsibility of York Region.

Table 3.6 Capital Cost Estimate for Duffin Creek WPCP Stage 3 Expansion

Total Projected Capital Costs	Upgrade/Expansion Costs
Total Project Cost (January 2008 Dollars)	\$515,340,000
York Region Project Cost (January 2008 Dollars)	\$390,900,000

Required Projects

No additional expansion of the Duffin Creek WPCP will be required to treat flows from York Region to the year 2031 for all of the growth scenarios considered.

4. SUMMARY OF INFRASTRUCTURE REQUIREMENTS

Table 4.1 summarize the planned and required wastewater project capital cost estimates as well as presenting the timing of the required works under the 30%, 40%, 50% and no growth planning projections.

Table 4.1 Capital Cost Summary and Timing

Project Description	30%		40%		50%		No Growth	
	Project Costs	Date Required	Project Costs	Date Required	Project Costs	Date Required	Project Costs	Date Required
Schomberg WPCP Expansion	\$9,291,000	2008	\$9,291,000	2008	\$9,291,000	2008	\$9,291,000	2008
Keswick WPCP Phase I Upgrade	\$32,400,000	2011	\$32,400,000	2011	\$32,400,000	2011	\$32,400,000	2011
Keswick WPCP Phase II Upgrade	\$32,400,000	2021	\$32,400,000	2021	\$32,400,000	2021	\$32,400,000	2021
Sutton WPCP Upgrade	\$29,500,000	2016	\$29,500,000	2016	\$29,500,000	2016	\$29,500,000	2016
Nobleton WPCP	\$29,000,000	2009	\$29,000,000	2009	\$29,000,000	2009	\$29,000,000	2009
Kleinburg WPCP Expansion	\$11,232,000	2009	\$11,232,000	2009	\$11,232,000	2009	\$11,232,000	2009
UYSS	\$338,682,000	2016	\$338,682,000	2016	\$338,682,000	2016	\$338,682,000	2016
Humber PS Upgrade	\$2,224,000	2026	\$1,200,000	2026	\$950,000	2026	\$1,140,000	2026
Humber WWPS	\$4,200,000	2016	\$4,200,000	2016	\$4,200,000	2016	\$4,200,000	2016
Leslie PS Upgrade	\$4,017,000	2016	\$4,017,000	2016	\$4,017,000	2016	\$4,017,000	2016
Southeast Collector	\$513,832,000	2012	\$513,832,000	2012	\$513,832,000	2012	\$513,832,000	2012
North Markham Collector	\$19,560,000	2021	\$19,560,000	2021	\$19,560,000	2021	\$19,560,000	2021
Northeast Vaughan Collector	\$40,650,000	2026	\$40,650,000	2026	\$40,650,000	2026	0	-
Northwest Vaughan Collector	\$47,000,000	2021	\$47,000,000	2021	\$47,000,000	2021	\$47,000,000	2021
Duffin Creek Stage 3 Expansion	\$390,900,000	2011	\$390,900,000	2011	\$390,900,000	2011	\$390,900,000	2011
Total Costs	\$1,504,888,000		1,503,864,000		1,503,614,000		1,463,154,000	