City of Vaughan

Municipal Servicing Master Plan Class Environmental Assessment Study

Steeles Corridor: Jane to Keele Official Plan Amendment (OPA 620), City of Vaughan

2820529 [09321]

June 2014

Executive summary

The Steeles Corridor Secondary Plan Official Plan Amendment (OPA) 620 was adopted by City of Vaughan Council on June 26, 2006. The area encompassing OPA 620 is bounded by Steeles Avenue to the south, the CN Rail York Subdivision to the north, Jane Street to the west and Keele Street to the east **(Figure 1).** The OPA 620 corridor is envisioned to house approximately 10,000 - 11,000 people and provide jobs for approximately 4,000 – 5,000 employees.

Ready and accessible municipal infrastructure is essential to the existing and future community. Infrastructure planning, land use planning and infrastructure investment require thoughtful integration to ensure adequate, efficient, safe and economically achievable solutions to providing the water and wastewater infrastructure to support the envisioned development of the OPA 620 corridor.

This Municipal Servicing Master Plan was prepared with the objective to undertake a comprehensive review and analysis for water, wastewater and stormwater servicing requirements.

A Public Consultation Plan was developed which included a total of three (3) Public Information Centres, in accordance with Phases 1 and 2 of the Municipal Class EA process.

Water Distribution System

The City of Vaughan is serviced via a lake based water distribution system, supplied by the Region of York. The Region of York is responsible for the production, treatment, storage and transmission of water to the area municipalities. The City of Vaughan is responsible for the distribution of water within OPA 620.

The OPA 620 lands are presently well serviced by external watermains. There is a 900mm diameter main on Keele Street, a 400mm diameter watermain along Steeles Avenue, and a 300mm diameter watermain running from Steeles Avenue northerly where it follows Jane Street about 200m north of Keele Street.

The preferred water servicing alternative includes the construction of a new 400mm trunk watermain along a portion of a future east/west road along the north limit of OPA 620 from Keele Street to the east limit of the United Parcel Services (UPS) property with smaller 300mm distribution watermains on future internal streets. This alternative provides for the full redevelopment of the OPA 620 lands east of the UPS property. The remaining portion of the 400mm trunk watermain is to be constructed when the UPS lands develop.

Wastewater Collection System

The study area is located within the City's Steeles Avenue Collector drainage area which drains to the York Region's Black Creek Sewage Pumping Station, which in turn pumps sewage to the York-Durham sewage system where the effluent is treated at the Duffins Creek Water Pollution Control Plant in the City of Pickering.

The preferred wastewater collection system alternative includes the construction of a new sanitary trunk along a future east-west road. The trunk sewer would follow Street 'C' to

Steeles Avenue and then westerly along Steeles Avenue to Jane Street and northerly on Jane Street to the Black Creek Pumping Station. The existing Steeles Avenue sewer would be extended from it easterly limit to pick up all lands to Keele Street. This alternative provides the greatest flexibility for the development of OPA 620, does not require crossing of the UPS site with the trunk sewer, and provides a new trunk sewer along the section of Steeles Avenue and Jane Street where the present sewer would have capacity issues with the new densities.

Stormwater collection system

The majority of the OPA 620 drainage area is captured by a trunk storm sewer that runs within an easement on the north side of Steeles Avenue.

The preferred stormwater servicing alternative incorporates three (3) stormwater management ponds; a new quality and quantity control facility on the Milestones property, a retrofit quality and quantity control facility within the City/Region lands (expanded footprint from the existing City Pond) and a new quantity control facility (dry pond) within the Black Creek Pioneer Village lands. This alternative is preferred because it provides maximum flexibility in developing the OPA 620 lands by making use of existing infrastructure and provides for future upgrades in stages.

For all of the proposed servicing strategies, because the specific development details are unknown at this time, including size, location and servicing demands, the specific servicing requirements will need to be determined at the development application stage.

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CD

CD	Visual OTTHYMO Modelling	Rear Pocket

Appendices

Appendix 1 Background Studies and Reports

- 1A Preliminary Master Stormwater Management Strategy Report (Sernas 2009)
- 1B Assessment of Potential Natural Impacts from the Construction of One New SWM Facility and the Removal of an existing SWM Facility – Savanta Inc.

1C Phase I Environmental Site Assessment, 7100 Keele Street – Pinchin Environmental Ltd.
1D Phase I Environmental Site Assessment, Part of lot 1, Concession 4
- Pinchin Environmental Ltd.
1E Phase II Environmental Site Assessment, Part of lot 1, Concession 4
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1F Environmental Risk Database Search – ERIS
1G Cost Estimates – Water Projects
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Appendix 2 Public Consultation
2A Notice of Study Commencement
2B Black Creek Pioneer Village Stakeholder Workshop
2C PIC #1 (June 17 2010)
2D PIC #2 (August 17 2010)
2E PIC #3 (May 17 2011)

Appendix 3 Public and Agency Stakeholder List

Appendix 4 Correspondence, Comments and Responses

Appendix 5 Black Creek Pioneer Village North, Master Plan, Updated June 2013

1. Introduction and Background

The Steeles Corridor Secondary Plan Official Plan Amendment (OPA) 620 was adopted by City of Vaughan Council on June 26 2006. The area encompassing OPA 620 is bounded by Steeles Avenue to the south, the CN Rail York Subdivision to the north, Jane Street to the west and Keele Street to the east **(Figure 1).** The OPA 620 corridor is envisioned to house approximately 11,000 people and provide jobs for approximately 4,000 employees.

Ready and accessible municipal infrastructure is essential to the existing and future community. Infrastructure planning, land use planning and infrastructure investment require thoughtful integration to ensure adequate, efficient, safe and economically achievable solutions to providing the water and wastewater infrastructure to support the envisioned development of the OPA 620 corridor.

The City of Vaughan Vision 2020/Strategic Plan developed specific priorities to blend planning and managing the economic vitality of the City together with environmentally sustainable initiatives. This strategic plan initiative, coordinated by the City, is a blueprint for building a sustainable community and develop solutions that support high capacity transit planned for the OPA 620 area.

The Municipal Servicing Master Plan utilizes the planned population of 11,000 people and employment estimates of 4,000 jobs from Official Plan Amendment 620 (OPA 620, 2006) for the purpose of the study.

1.1 Master Plan Goals and Objectives

The Master Plan objectives and work plan were defined as follows:

- Review all planning data and inputs to the servicing analysis based on estimates provided in OPA 620
- Undertake a comprehensive review and analysis for water, wastewater and stormwater servicing requirements
- Provide capital cost estimates

Generally, the overall goals for the water, wastewater and stormwater servicing strategies are to:

- Provide high level of service to existing users and approved growth
- Provide security of supply of water, wastewater and stormwater services
- Mitigate impacts to natural, social and economic environments
- Best meet provincial and local policy, policy statements, regulations and guidelines
- Ensure servicing meets existing technical criteria
- Optimize existing infrastructure
- Provide cost effective strategies

1.2 Master Plan Study Components

Relevant (Historical) Reports

1.2.1 York Region Transit Improvements EA (2005)

The York Region Transit Improvements EA recommends a preliminary preferred design consisting of a new east/west road from Jane Street approximately one-third of the distance to Keele Street. The timing and implementation of the east/west road will be dependent on the timing of the Steeles West Subway Station and OPA 620 lands.

1.2.2 2007 Master Stormwater Management Strategy Report – 2009 Update

The 2007 Master Stormwater Management Strategy Report provided a technical analysis of possible stormwater management options for the OPA 620 lands.

The SWM Strategy Report, updated in 2009 to provide additional SWM phasing analysis, related specifically to the Steeles West Station, identified the location, capacity, timing and required capital for the infrastructure.

1.2.3 2009 York Region Water and Wastewater Master Plan Update

The 2009 Water and Wastewater Master Plan review was approved in November 2009. The Master Plan review established preferred water and wastewater servicing strategies for the existing and growth areas up to 2031 in the Town of Georgina, East Gwillimbury, Whitchurch-Stouffville, Richmond Hill and Markham, the Township of King and City of Vaughan.

The Master Plan followed the Class EA process for Master Plans and as such provided and approved public document which identified the location, capacity, timing and required capital for the proposed infrastructure, together with the steps required to implement the projects.

1.2.4 2010 Black Creek Pioneer Village Master Plan

Toronto & Region Conservation Authority has initiated the preparation of a Master Plan for the Black Creek Pioneer Village north property, located northwest of Steeles Avenue and Jane Street. The Master Plan is intended to determine future site use and programming for the site including cultural heritage assessment, concept development, facility and site servicing, land requirements and strategies to facilitate the future vision. The Master Plan is being developed in conjunction with the Municipal Servicing Master Plan Class EA Study.

1.2.5 OPA 620 East/West Collector Road Class Environmental Assessment

The OPA 620 east/west collector road Class Environmental Assessment recommends a preliminary preferred design consisting of a new east/west road from Keele Street approximately two-thirds of the distance to Jane Street. The new east/west road would tie into the proposed east/west collector which was approved as part of the York Region transit EA, terminating at Jane Street.

The timing and implementation of the east/west road will be dependent on the timing of development of the OPA 620 lands.

1.3 Master Plan Class EA Report Outline

This Master Plan Class EA Report documents the planning and design process followed and conclusions made for the Municipal Servicing Master Plan Class Environmental Assessment (EA) Study.

This Master Plan Class EA Report forms part of the deliverables for the project. Based on the approach followed, the documentation has been prepared as follows:

Master Plan Class EA Report

The Municipal Servicing Master Plan Class EA Study is the documentation placed on public record for the Class EA period. The Study describes the required phases of the planning process following the procedure considered essential for compliance with the Environmental Assessment Act.

The Study is organized into the following sections:

1. **Introduction and Background** – incorporates relevant information and reference to historical reports as a basis to the preparation of the Master Plan
2. **Master Planning Process** – description of the Class EA master planning process
3. **Problem/Opportunity Statement** – definition of the problem/opportunity to be addressed by this study and presentation of relevant/background information
4. **Master Plan Methodology** – description of the approach, tasks and consideration of background information relevant/considered in the preparation of the study
5. **Existing Conditions** – description of the natural, social and economic environments within the study area
6. **Water Distribution**

    6.1 **Existing Water Distribution System** – description of the existing water distribution system

    6.2 & 6.3 **Review of Water Distribution System Alternatives** – review of existing servicing strategy, update water demand projections and servicing opportunities and constraints

    6.4 **Recommended Water Servicing Strategy** – description of the rationale for the servicing strategy and confirmation of the key infrastructure components

7. **Wastewater Collection**

    7.1 **Existing Wastewater Collection System** – description of the drainage areas and wastewater pumping station

    7.2 **Review of Wastewater Distribution System Alternatives** – review of existing servicing strategy, update sewage demand projections and servicing opportunities and constraints

    7.3 **Recommended Wastewater Servicing Strategy** – description of the rationale for the servicing strategy and confirmation of key infrastructure components

8. **Stormwater Collection and Management**

   8.1 **Existing Stormwater Collection System** – description of the drainage areas and stormwater management facilities

   8.2 **Stormwater Management and Collection Alternatives** – review of existing servicing strategy, update stormwater demand projections and servicing opportunities and constraints

   8.3 **Recommended Stormwater Management Strategy** – description of the rationale for the servicing strategy and confirmation of key infrastructure components

9. **Implementation** – description of overall implementation considerations

10. **Public and Review Agency Consultation**

Appendix 1 – Background Studies and Reports

Appendix 1 contains relevant project implementation and technical evaluation and analysis, including:

- Planning information
- Water and wastewater system data
- Water demand and supply capacity calculations
- Wastewater flows and system capacity calculations
- Unit costs
- Stormwater system data
- Sub-consultant reports

Appendix 2 – Public Consultation

Appendix 2 contains relevant documentation of the public consultation process including notices, comments and responses, presentation material from the public information centres (3) and workshop held at Black Creek Pioneer Village.

Appendix 3 – Public and Agency Stakeholder List

Appendix 4 – Correspondence, Comments and Responses

Appendix 4 contains relevant documentation of correspondence, comments and responses and includes meeting minutes.

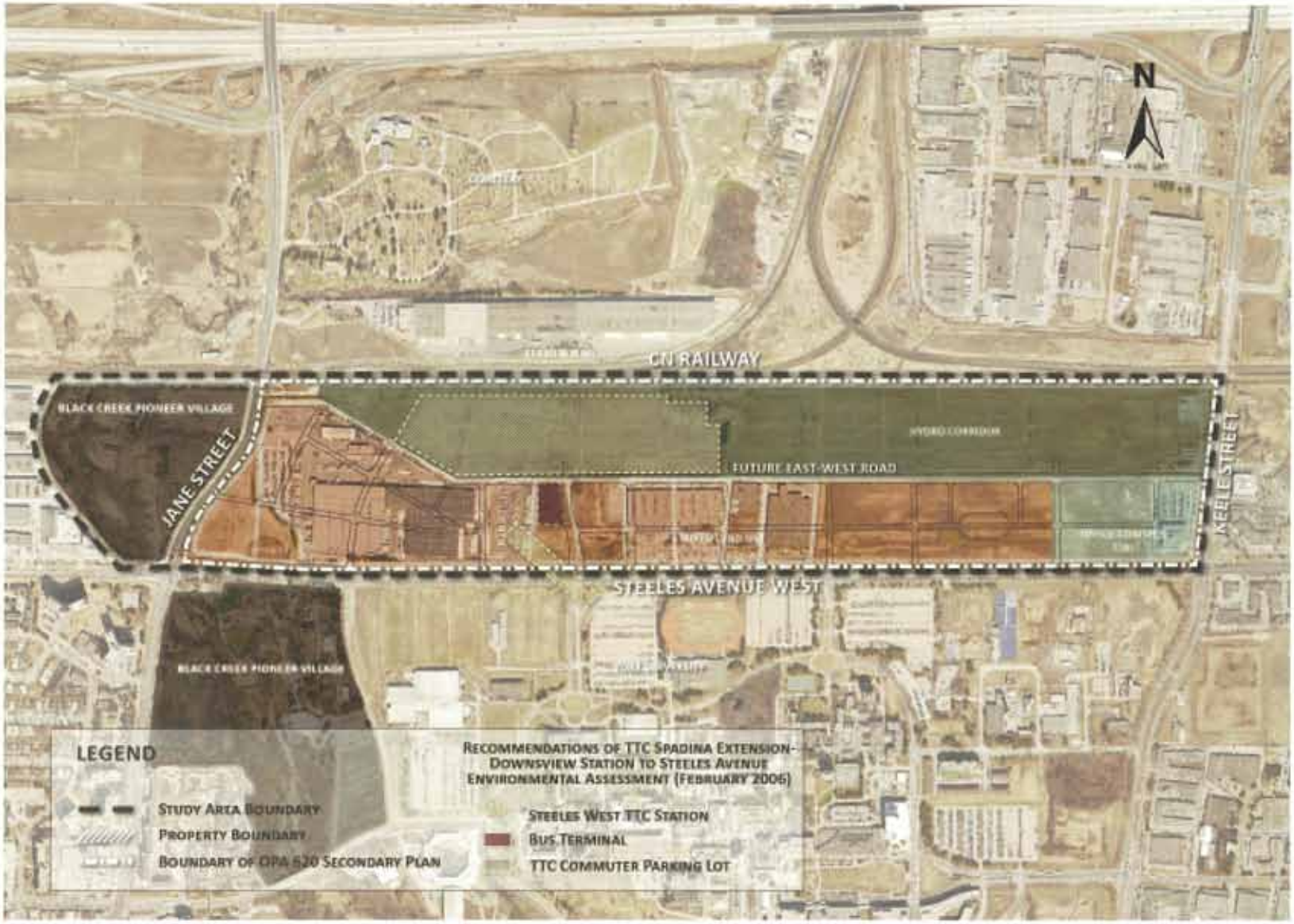


Figure 1 | **Study Area**

2. Master Plan Process

The Municipal Class Environmental Assessment (MEA Class EA) process identifies four (4) approaches for conducting Master Plans. The City of Vaughan has prepared this Master Plan broadly based on Approach 2. Approach 2 involves the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Municipal Class EA process where the level of investigation, consultation and documentation are sufficient to fulfill the requirements for Schedule B projects.

2.1 Class Environmental Assessment

This section of the report describes the environmental assessment process and specific requirements for the preparation of master plans.

2.1.1 Environmental Assessment Act

The planning of major municipal projects or activities in Ontario is subject to Ontario's Environmental Assessment Act, R.S.O. 1990, Chapter E.18. The Act was passed in 1975 and proclaimed in 1976. The EA Act requires proponents to examine and document the environmental effects that might result from major projects or activities and their alternatives. The Act defines the environment broadly as:

1. Air, land or water
2. Plant and animal life, including man
3. The social, economic and cultural conditions that influence the life of man or a community
4. Any building, structure, machine or other device or thing made by man
5. Any solid, liquid, gas odour, heat, sound, vibration or radiation resulting directly or indirect from activities of man
6. Any part or combination of the foregoing and the interrelationships between any two or more of them

The purpose of the EA Act is for *"the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management of the environment in Ontario (RSO1990, c. 18, s.2)."*

For the purpose of this Act*, "environment"* includes social, economic, cultural and natural conditions. As set out in Section 5(3) of the EA Act, an EA document must include:

1. A description of the purpose of the undertaking

    (i) The undertaking
    (ii) The alternative methods of carrying out the undertaking
    (iii) Alternatives to the undertaking

2. A description of:

   (i) The environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking or alternatives to the undertaking
   (ii) The effects that will be caused or that might reasonably be expected to be caused to the environment by the undertaking or alternatives to the undertaking
   (iii) The actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment by the undertaking or alternatives to the undertaking

3. An evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking (RSO 1990, c. 18, s.2)

2.1.2 Principles of Environmental Planning

The Act sets a framework for a systematic, rational and replicable environmental planning process that is based on five key principles, as follows:

7. **Consultation with affected parties.** Consultation with the public and government review agencies is an integral part of the planning process. Consultation allows the proponent to identify and address concerns cooperatively before final decisions are made. Consultation should begin as early as possible in the planning process.
8. **Consideration of a reasonable range of alternatives.** Alternatives include functionally different solutions, “alternatives to” the proposed undertaking and “alternative methods” of implementing the preferred solution. The “do nothing” alternative must also be considered.
9. **Identification and consideration of the effects of each alternative** on all aspects of the environment. This includes the natural, social, cultural, technical, and economic environments.
10. **Systematic evaluation of alternatives** in terms of their advantages and disadvantages, to determine their net environmental effects. The evaluation shall increase in the level of detail as the study moves from the evaluation of “alternatives to” to the evaluation of “alternative methods”.
11. **Provision of complete documentation of the planning process** followed, to allow “traceability” of decision-making with respect to the project. The planning process must be documented in such a way that it may be repeated with similar results.

2.1.3 Municipal Class Environmental Assessment

The *Municipal Class Environmental Assessment* process was developed by the Municipal Engineers Association (MEA 2000, amended 2007), to streamline the EA process for recurring municipal projects that are similar in nature, usually limited in scale, and with a predictable range of environmental effects that are responsive to mitigating measures. The Municipal Class EA planning and design process is outlined on **Figure 2.**

Projects undertaken by municipalities vary in their potential for environmental impact. As a result, projects are classified according to their potential for adverse environmental effect. The classifications under the Municipal Class EA process are:

Schedule A

These projects are limited in scale, have minimal adverse environmental effects, and typically consist of normal maintenance and operational activities. These projects are considered pre-approved and may proceed without following the full Class EA planning process.

Schedule A+

These projects are also limited in scale, have minimal adverse environmental effects, and are considered pre-approved, but there is a requirement for public notification prior to construction or implementation of the project. The purpose of the notification is to inform the public of projects occurring in their local area. Although the public is informed of the project, there is no appeal mechanism to the MOE; concerns are addressed at municipal council.

Schedule B

These projects have the potential for some adverse environmental effects, thus requiring a screening process involving mandatory contact with directly affected public and relevant review agencies, and completion of Phases 1 and 2 of the planning process. If all concerns can be adequately addressed, the project may proceed. These projects generally include improvements and minor expansions to existing facilities.

Schedule C

These projects have potential for significant environmental effect and are subject to the full planning and documentation procedures specified in the Class EA document. An Environmental Study Report must be prepared and submitted for review by the public and relevant review agencies. If all public and agency comments and issues are resolved during the public review period, the project may proceed to implementation. These projects generally include construction of new facilities or major expansions to existing facilities.

This study has been undertaken following the Schedule 'B' Class EA process.

This Master Plan documents the Class EA process that was followed, including the steps outlined below. It is important to note that consultation with all stakeholders occurs throughout each step of the process. Details of the public consultation program have been consolidated and presented in **Section 10.0** of this report.

Phase 1 – Problem or Opportunity

Step 1 Identification and description of the problem or opportunity

Step 2 Issuance of a Notice of Study Commencement

Phase 2 – Alternative Solutions

Step 1 Identification of alternative solutions to the problem

Step 2 Inventory and description of the natural, social, economic and cultural environments in the study area

Step 3 Evaluation of the alternative solutions relative to the environmental features identified in Step 2
Step 4 Preliminary identification of a preferred solution
Step 5 Consultation with the public and review agencies
Step 6 Confirmation of the preferred solution
Step 7 Documentation of the Class EA planning process in a file or report
Step 8 Filing of a Notice of Study Completion and provision of project files for public review
Step 9 Address comments and conclude the Class EA process

The completion of this Master Plan and filing of the Notice of Study Completion concludes the Class EA process for this project. The report is made available to the public for review upon request for thirty (30) calendar days. If concerns regarding the project cannot be resolved in discussion with the City, a person or party may request that the Minister of the Environment make an order for the project to comply with Part II of the *Environmental Assessment Act* (referred to as a Part II Order), which requires an Individual Environmental Assessment. Requests must be received by the Minister within the 30-day review period. If no new or outstanding concerns are brought forward during the review period, the City of Vaughan may proceed with detailed design and construction of the Schedule B projects at their discretion.

2.1.4 Master Planning Process

The benefits of the overall planning approach of the Master Plan to the municipality is that it provides a comprehensive plan for projects with common elements such as geography and function. The Municipal Class EA for Water and Wastewater Projects recognizes the importance of master plans as the basis for sound environmental planning. The Class EA defines master plans as:

> *"Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects in order to outline a framework for planning for subsequent projects and/or developments."*

Master plans have distinguishing features that set them apart from project specific studies. These features include the following:

- Master plans are broad in scope and focus on the analysis of a system for the purpose of outlining a framework for the provision of future works and developments
- Recommendations on a group of related projects which are distributed throughout a study area and form part of a larger management system. The projects may be implemented as specific projects and will likely occur over an extended period

According to the Class EA document, a master plan must **at least** address the requirements of Phases 1 and 2 of the Class EA process and incorporate the five key principles of environmental assessment planning, as identified in Section 2.1.2. Facilitating and documenting public and agency consultation is integral during each phase of the Master Plan study, and a reasonable range of alternative solutions must be identified and systematically evaluated.

This Master Plan is based on the analysis and evaluation previously undertaken. The approach for the Master Plan is to confirm the projects required to implement the recommendations of Official Plan Amendment 620 (OPA 620).

2.2 Consultation Program

A Public Consultation Plan was developed at the initiation of the Master Plan. The consultation activities are described in the following sections. Effective consultation and communication are required elements under the Class EA master planning process.

Complete documentation of the consultation program is contained within the appendices to this report.

2.2.1 Public Access to Information

A stakeholder list was maintained by the City. Any member of the public requesting relevant project information was sent the material in the format requested.

2.2.2 Public Information Centres

Phases 1 and 2 of the Municipal Class EA requires proponents to consult the public once alternative solutions to the problem being addressed have been evaluated and a preferred option selected. This was undertaken at the following Public Information Centres:

- Municipal Servicing Master Plan PIC #1 held at Black Creek Pioneer Village on June 17 2010
- Municipal Servicing Master Plan PIC #2 held at Black Creek Pioneer Village on August 17 2010
- Municipal Servicing Master Plan PIC #3 held at Black Creek Pioneer Village on May 17 2011

The Public Information Centres were advertised in *The Vaughan Citizen*, *The Thornhill Liberal* and *The North York Mirror* in order to notify the public of the opportunity to become involved in the master planning process.

All of the materials presented at the PIC's are included in **Appendix 2** – Public Consultation, to this document.

2.2.3 Stakeholder and Agency Workshop

Stakeholder workshops were held to provide the opportunity for focused discussion on the development and evaluation of the servicing strategies and for detailed discussion on special technical and logistical issues.

The stakeholder workshops included:

- Black Creek Pioneer Village Workshop
- Toronto/York Spadina Subway Extension (TYSSE) Meetings
- Hydro One Meetings

This study fulfilled Phase 1 & 2, satisfying the requirements for any Schedule 'A' and 'B' projects and outlined any Schedule 'C' projects.

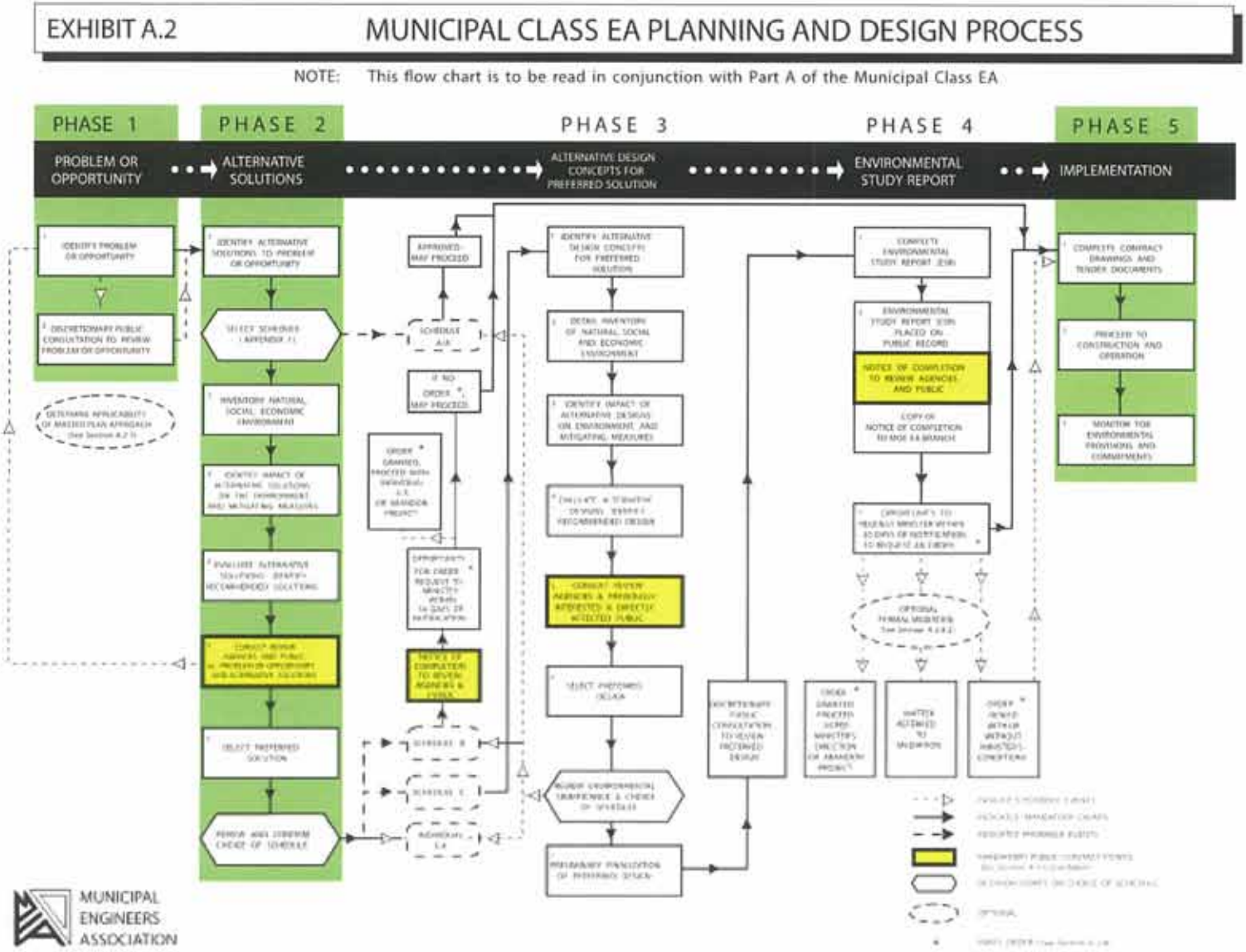


Figure 2 | **Municipal Class EA Planning & Design Process**

3. Problem/Opportunity Statement

3.1 Study Area

The study area for the Municipal Servicing Master Plan is bounded by Keele Street to the east, Steeles Avenue to the south, Black Creek to the west and the CN Railway to the north as depicted on **Figure 1**.

The study area is governed by land use policies set out in the office consolidation of the Official Plan, namely the City of Vaughan Official Plan 2010. Where the area is covered by The Parkway Belt West Plan, Special Provincial Plans are in effect that take precedence over the Official Plan.

3.2 Planning Context

There are a number of provincial initiatives that provide direction on growth management and planning issues. These initiatives include the Provincial Policy Statement (PPS), Places to Grow Growth Plan and Bill 51 (Planning Act Amendment).

The study area is governed by land use policies set out in the official consolidation of the Official Plan, referred to as the Vaughan Official Plan which was amended in 2010 to conform with Provincial planning policies of the approved Growth Plan for the Greater Golden Horseshoe 2006 and the Region of York's Official Plan.

This Master Plan is based on growth requirements of the Places to Grow Plan for greenfield growth within existing urban areas in accordance with the Official Plan to the year 2031.

Sustainable Vaughan

The City of Vaughan must operate within the administrative, legislative and financial framework established by senior levels of government. Following is a summary of provincial initiatives that were considered in the development of this Master Plan:

- Provincial Policy Statement
- Parkway Belt West Plan
- Places to Grow Growth Plan for the Greater Golden Horseshoe

3.2.1 City of Vaughan Official Plan (2010)

The study area is governed by land use policies set out in the office consolidation of the City of Vaughan Official Plan (2010). The City undertook a three year project to create a new Official Plan as part of the City's integrated Growth Management Strategy. Council adopted the new Vaughan Official Plan on September 7 2010. The City of Vaughan Official Plan incorporates current provincial planning policy requirements and York Region Official Plan (2009).

OPA 620 provides the basis for planning population estimates that were used in the Master Plan process.

3.2.2 Provincial Policy Statement (PPS) 2005

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario's policy-led planning system, the Provincial Policy Statement sets the policy foundation for regulating the development and use of land. It also supports the provincial goal to enhance the quality of life for citizens of Ontario.

The Provincial Policy Statement provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural environment. The Provincial Policy Statement supports improved land use planning and management, which contributes to a more effective and efficient land use planning system.

PPS compliance and factors considered in the preparation of the Municipal Servicing Master Plan are:

- The PPS focuses growth within settlement areas and away from significant or sensitive resources and areas. Land use must be carefully managed to accommodate appropriate development to meet the full range of current and future needs
- Ensure the necessary infrastructure is provided to support comment on projected needs
- Efficient development patterns optimize the use of land, resources and public investment in infrastructure and public service facilities
- Support of the financial well-being of the Province and municipalities over the long term, minimizes the undesirable effects of development, including impacts on air, water and other resources
- The Province's natural heritage resources, water, agricultural lands, mineral resources, cultural heritage and archaeological resources provide important environmental, economic and social benefits. The wise use of these resources are managed in a sustainable way to protect essential ecological processes and public health and safety, minimize environmental and social impacts, and meet its long-term needs

3.2.3 Parkway Belt West Plan

The Parkway Belt West Plan (**Figure 3)** provides a system of linked natural areas and protected utility corridors originating in Hamilton running through the Regions of Halton, Peel and York, terminating in Markham. The study area is located within the Northern Link (Markham/Woodbridge) of the Plan. The Secondary Plan was reviewed and taken into consideration during the preparation of the Municipal Servicing Master Plan.

3.2.4 Places to Grow Growth Plan for the Greater Golden Horseshoe (2005)

The Growth Plan for the Greater Golden Horseshoe (GGH) has been prepared under the Places to Grow Act which received Royal Assent in June 2005. The Plan is a framework for implementing the Government of Ontario's vision for building healthy and prosperous communities by better managing growth throughout Ontario.

The Plan provides the framework for infrastructure investments in the GGH, so that existing infrastructure and future investments are optimized to serve growth to 2031 and beyond.

Growth Plan policies were considered in the preparation of the Municipal Servicing Master Plan with specific objective compliance and factors considered as follows:

Water and Wastewater Systems

Municipalities are encouraged to plan and design municipal water and wastewater systems that return water to the Great Lake watershed from which the withdrawal originates.

Construction of new, or expansion of existing, municipal or private communal water and wastewater systems should only be considered where the following conditions are met:

a. Strategies for water conservation and other water demand management initiatives are being implemented in the existing area.

b. Plans for expansion or for new services are to serve growth in a manner that supports achievement of the intensification target and density targets.

Municipalities that share a receiving water body, should coordinate their planning for potable water, stormwater and wastewater systems to ensure that water quality and quantity is maintained or improved.

Municipalities, in conjunction with conservation authorities, are encouraged to prepare watershed plans, and use plans to guide development decisions and water and wastewater servicing decisions.

Growth Forecasts

The Places to Grow Growth Plan states that the population and employment forecasts contained within the plan will be used as the basis for planning and managing growth in the Greater Golden Horseshoe, which includes the City of Vaughan.

The general intensification policies of the Plan defines that by the year 2015 and for each year thereafter, a minimum of 40% of all residential development occurring annually within upper and single-tier municipalities will be within the built-up area.

Municipal planning decisions must be “consistent with” the Provincial Policy Statement and must “conform to” the Places to Grow Growth Plan. Therefore, the City’s planning recommendations must be consistent with the Provincial Policy Statement and must also conform to the Places to Grow Growth Plan.

3.3 Population and Employment Projections

The distribution of population and employment growth for the study area were provided in Official Plan Amendment 620 (OPA 620). The amendment area is anticipated to accommodate approximately 5,000 – 5,500 residential units and a residential population of approximately 10,000 – 11,000 at full buildout. Approximately 100,000 – 120,000m^2 of office/commercial uses is also planned, generating an estimated 4,000 – 5,000 employees.

3.4 Inter-Regional Servicing

Water and wastewater servicing in York Region is multi-jurisdictional, based on the location of the Region, two-tier municipal governance structure and inter-regional servicing agreements with the City of Toronto, Peel Region and Region of Durham.

The urban areas of Vaughan (including the OPA 620 study area) are serviced by treated water from Lake Ontario from treatment facilities that also service the City of Toronto and Peel Region.

The majority of wastewater in the City of Vaughan (including the OPA 620 study area) is collected in the York-Durham Sewage System and treated at the Duffins Creek Water Pollution Control Plant in Pickering before it is discharged into Lake Ontario.

For both water and wastewater servicing, the Region supports the supply, treatment, storage, pumping and transmission of water and the trunk sewers, pumping and treatment of wastewater. Area municipalities distribute water to customers and are responsible for local wastewater collection.

3.5 Problem or Opportunity Statement

The identification and description of the problem or opportunity helps define the scope of a project or set of projects. For this Master Plan the problem or opportunity statement has been defined as:

> *OPA 620 requires analysis with respect to timing and costs for the water and wastewater (including stormwater) infrastructure projects required to service growth within the OPA 620 neighbourhood reflecting the following factors:*
>
> - *The City, through OPA 620, has identified the need to accommodate growth within the study area*
> - *The City of Vaughan is required to conform with provincial planning initiatives*
> - *Water and wastewater infrastructure upgrades will be required to service future residential and non-residential lands*
> - *New infrastructure upgrades will be required to address water quality issues*
> - *Satisfy Phases 1 and 2 of the Municipal Engineers Class EA process as per section A.2.7 Master Plans (October 2000, as amended in 2007)"*

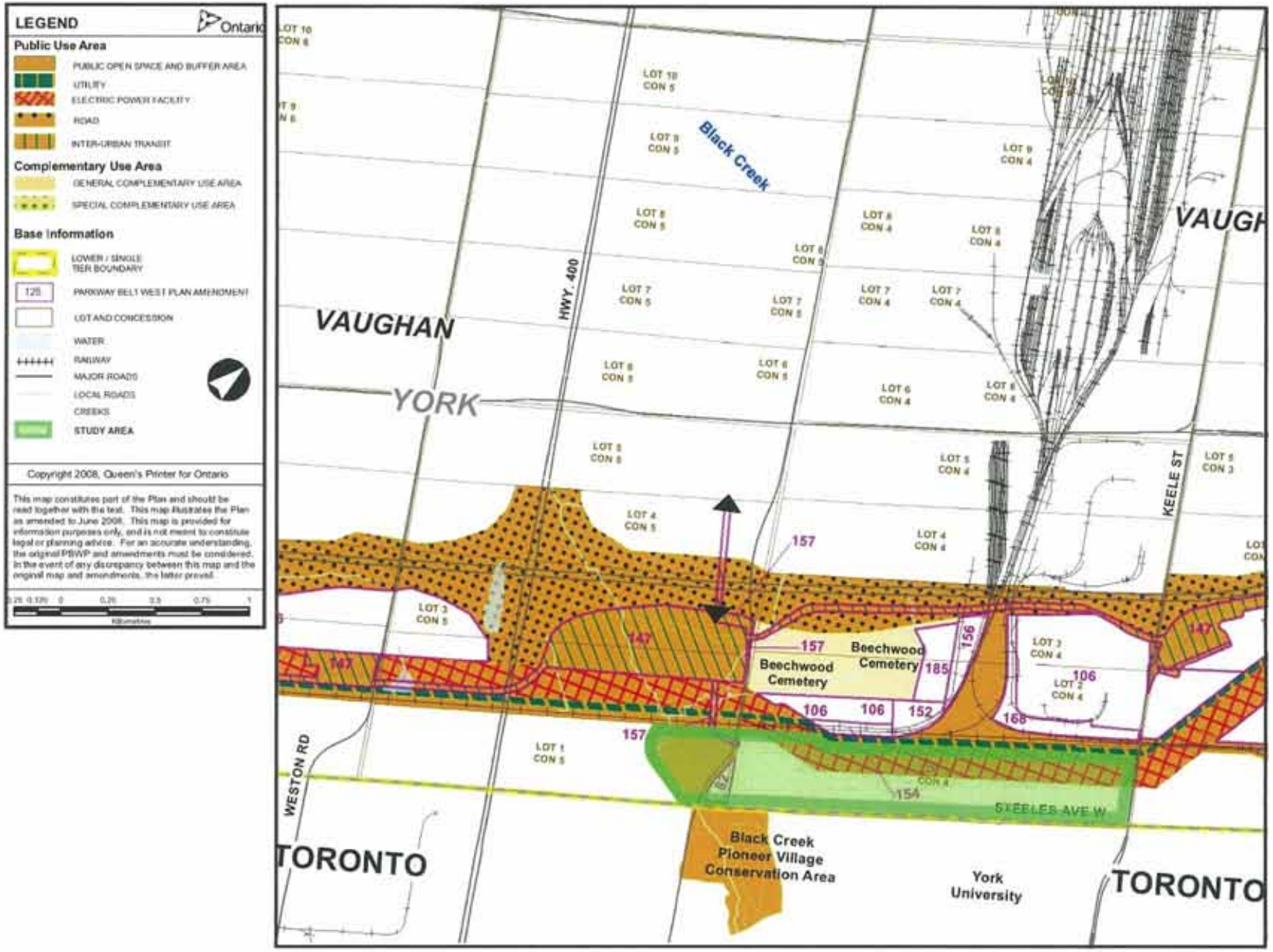


Figure 3 | **Parkway Belt West Plan**

4. Master Plan Methodology

A variety of tasks, analysis and evaluations were carried out as part of the Master Plan process. These tasks including analyzing planning information, developing water demands, wastewater flows and modelling stormwater systems to serve the interest of the proponent.

The Master Plan approach followed the evaluation of impacts as broadly described in the Municipal Class EA Document including:

Natural Environment

- Impact on vegetation, fish and wildlife, surface drainage and groundwater, soil and geology
- Impact on areas of natural and scientific interest (ANSI's) and environmentally sensitive areas (ESA's)

Social Environment

- Impact on existing and proposed development
- Impact on recreational areas
- Coordination with proposed roadway development

Cultural Environment

- Impact on cultural heritage resources
- Impact on agricultural resources

Economic Environment

- Best use of existing infrastructure
- Construction, operation, maintenance costs
- Property costs
- Impact on other utilities
- Flexibility for scheduling works

Technical Factors

- Meeting legislated criteria and regulations
- Security of service, % level of service
- Impacts to existing infrastructure
- Constructability

4.1 Implementation and Scheduling

The City through the preparation of the Steeles West Secondary Plan, has determined that scheduling of infrastructure upgrades should be based on 100% of full capacity.

It is good engineering practice to provide sufficient capacity to meet future requirements, particularly for larger diameter trunk piping. The sizing and capacity needs determined for the 2031 needs (or full buildout) must provide a level of service to new growth in addition to ensuring efficient integration with existing infrastructure with no long term negative impacts to the existing operations of the system.

5. Existing Conditions

The Province of Ontario provides guidance for the identification of areas to be protected through the Provincial Policy Statement (PPS 2005). With PPS guidelines and City policies including Green Directions Vaughan and Regional planning policies, the following areas were identified as constrained and warranted special consideration to minimize and mitigate impacts. **Figure 4** shows the existing conditions for the study area.

5.1 Toronto & Region Conservation Authority (TRCA)

The Master Plan recognizes the importance of watershed management and the pressure to these systems when there are pressures brought about through planning policies that will generate population and employment growth. The Master Plan team engaged Toronto & Region Conservation Authority (TRCA) at the outset of the project to discuss the scope of work, anticipated projects that would have a direct impact on the watershed and to discuss ways to minimize impacts to the watershed.

5.1.1 Black Creek Watershed

Black Creek flows southerly through Black Creek Pioneer Village, located along the western edge of the study area. The Black Creek Watershed (part of the Humber River Watershed) is approximately 6,460 ha, of which approximately 1500 ha is located within the City of Vaughan.

5.2 Natural Environment

The Toronto & Region Conservation Authority, through a request for information, provided information from their database and the Natural Heritage Information Centre (NHIC) database. The records indicate one Fauna node with a TRCA species of concern and 4 nodes indicating Flora – TRCA species of concern on the Black Creek Pioneer Village north property. Some NHIC records may be historic. These records should be reviewed at detailed design to characterize whether these species of concern still exist and if they do whether they would be characterized as sensitive or rare.

5.2.1 Environmentally Significant Areas

Environmentally Significant Areas (ESA's) are natural areas that have been identified as worthy of protection based on their ecology, hydrology and geology. The City of Vaughan uses ESA's as a means of protecting natural areas, including wetlands, woodlands, fish habitat, habitat of rare species and areas of groundwater recharge or discharge. A review of Schedule 3 of the City's Official Plan revealed there are no ESA's in the study area.

5.2.2 Areas of Natural and Scientific Interest

The Ministry of Natural Resources identifies areas of natural and scientific interest (ANSI's) within the Province of Ontario. ANSI's are established to protect significant features crucial to maintaining biodiversity and the conservation of natural heritage. A review of Schedule 3 of the City's Official Plan revealed there are no ANSI's in the study area.

5.2.3 Parkway Belt West Plan

The Parkway Belt West Plan provides a system of linked natural areas and protected utility corridors, the Hydro corridor lands and Black Creek Pioneer Village lands are subject to the policies of the Plan. The Plan was reviewed and considered during the development of the Municipal Servicing Master Plan.

5.2.4 Significant Woodlands

The City of Vaughan recognizes the importance of trees and woodlands to the health and quality of life of their residents. The City's policies with regard to the protection of trees were considered where infrastructure projects are proposed.

5.3 Biophysical Environment of the Study Area

5.3.1 Surficial Geology

In general, the local surficial geology is characterized by glacial ice deposits referred to as Young tills which consist of predominantly clayey silt till and sandy silt till (**Figure 5**).

5.3.2 Subsurface Geology

Subsurface characteristics of underlying bedrock are important in understanding regional scale aquifers and groundwater protection. Given the depth of the surficial till and relatively shallow impacts anticipated with the water and wastewater projects, disruption to regional scale aquifers or groundwater is not anticipated. Project specific geotechnical investigations should be undertaken at the detailed design phase of each project to confirm subsurface conditions and ensure there is no impact on groundwater and/or to recommend mitigation measures.

5.3.3 Hydrology

The study area generally drains in a south-westerly direction toward Steeles Avenue and Jane Street. The two exceptions to this include a portion of the lands at the north-east corner that drains toward Keele Street and a central portion of the ORC lands that drains northerly and is captured by the CN rail ditch. This latter area of approximately 9 ha is conveyed westerly in the CN ditch and then directed southerly through a culvert under the UPS site access road and into a storm sewer that crosses under Jane Street discharging to the Black Creek. Figure 3 from the Preliminary Master Stormwater Management Strategy Report (Sernas 2009) included in **Appendix 1A** depicts the general existing drainage trends and areas.

Topographically, there is a local low point in the lower central portion of the study area, however any overflow would continue to follow the general drainage trend to the south-west. Overall, surface gradients range from approximately 1.5-3.5% going up to higher slopes exceeding 10% in some of the westerly parts of the study area.

5.4 Socio-Economic and Cultural Environment

5.4.1 Cultural Heritage

The Ministry of Culture has established guidelines used for the purpose of identifying, interpreting and preserving cultural heritage features, built cultural heritage structures, archaeological resources and cultural heritage landscapes. The Region of York and City of Vaughan supports these guidelines by the inclusion of cultural heritage policies within their Official Plan. Ministry, Regional and Municipal guidelines and policies were considered in the preparation of this Municipal Servicing Master Plan.

5.4.2 Open Space and Recreation

Recreational opportunities within the study area are predominantly passive with the presence of Black Creek Pioneer Village and proposed parkettes envisioned for the future urban development.

The preservation of open space and recreational opportunities were considered in the preparation of the Municipal Servicing Master Plan.

5.4.3 Agricultural Areas

The utility corridor to the north of the study area, between Jane Street and Keele Street, is leased by individuals who actively farm. This use is permitted by Hydro One's secondary land use policy. The tenants hold leases issued by Hydro One. The agricultural activity was considered in the preparation of this municipal servicing master plan.

CULTURAL ENVIRONMENT
BUILT CULTURAL HERITAGE RESOURCES

1. James Dalziel House, 1870
2. Schmidt Dalziel Barn, 1809
3. John Dalziel House, 1808
4. Sawyer's House, 1835
5. Robert Nesbitt Sawmill, 1889

ARCHAEOLOGY

- Stage 1 Archaeological Assessment Conducted
- Stage 2 Archaeological Assessment Conducted
- Stage 2 Archaeological Assessment should be conducted if proposed project impact these lands
- Area currently being assessed by TRCA
- Approximate extent of Dalziel Family Cemetery

NATURAL ENVIRONMENT
HABITAT & SPECIES

WETLAND COMMUNITIES

- Cattail Mineral Shallow Marsh
- Mineral Meadow Marsh Ecosite
- Pondweed Submergent Shallow Aquatic Type
- Bur Oak Mineral Deciduous Swamp Type

CULTURAL COMMUNITIES

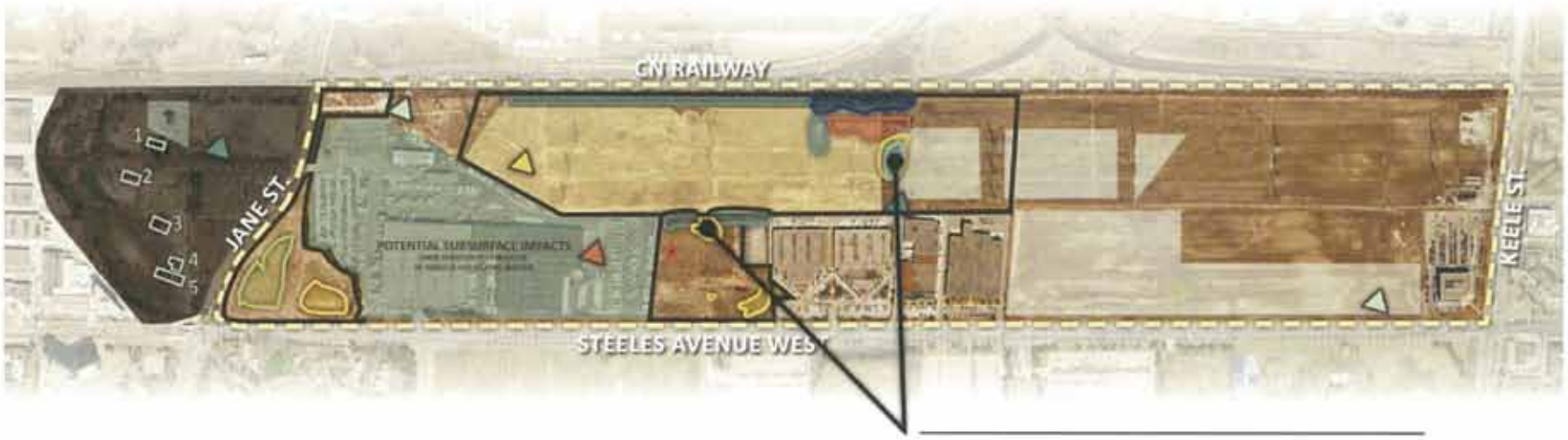
- Mineral Cultural Meadow Ecosite
- Mineral Cultural Thicket Ecosite
- Basswood Deciduous Plantation Type

UPLAND COMMUNITIES

- Fresh-Moist Bur Oak Deciduous Forest Type

SOCIAL ENVIRONMENT

- Water Well Used for Water Supply
- Water Well Used for Observation
- Water Well Abandoned
- Water Well Status Unknown



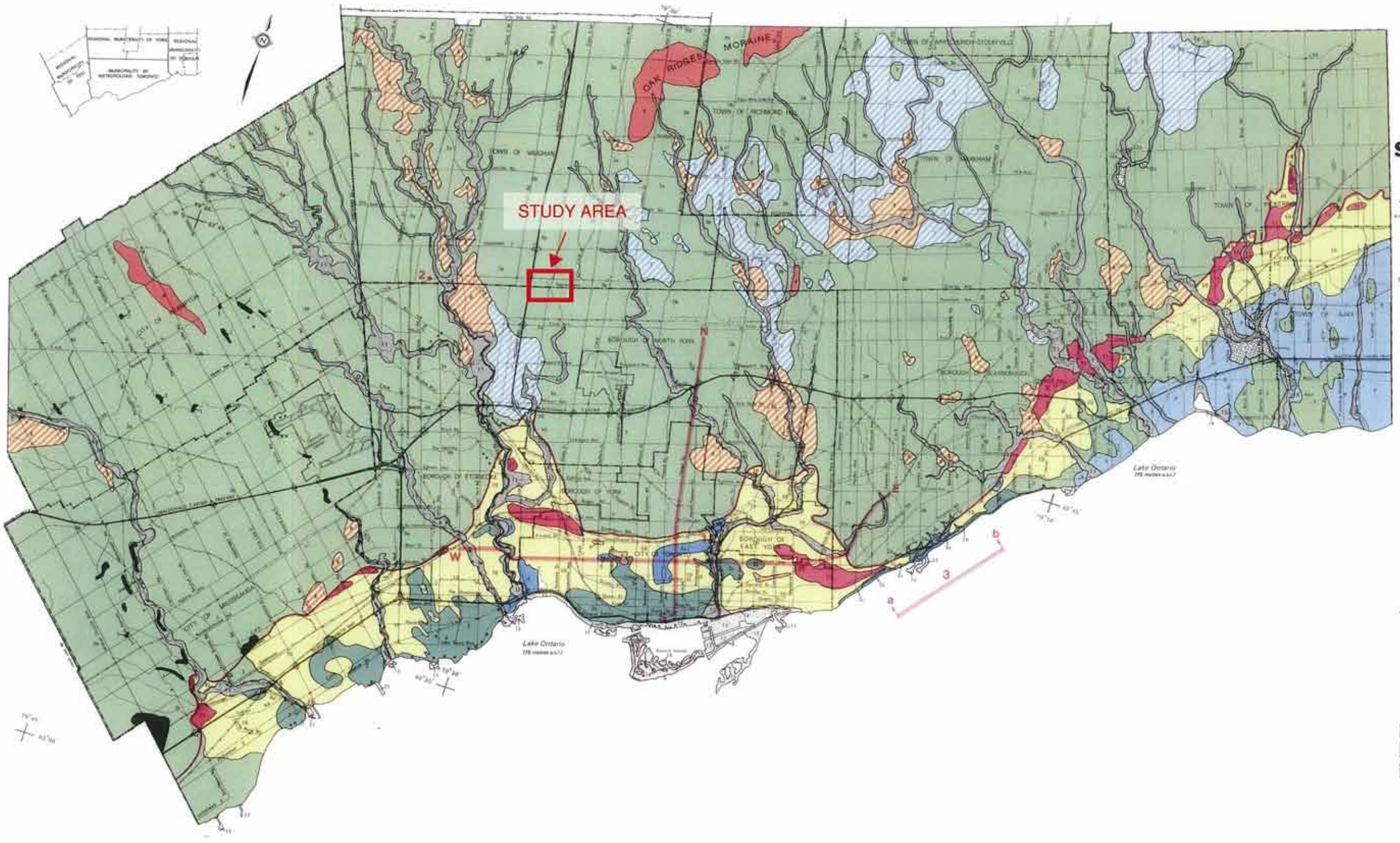
COMMON SPECIES:


GREEN FROG
AMPHIBIAN BREEDING ACTIVITY


AMERICAN TOAD


LEOPARD FROG
POTENTIAL AMPHIBIAN BREEDING ACTIVITY

Figure 4 | **Existing Conditions**



Ontario Geological Survey
MINES LIBRARY
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Figure 5 | **Surficial Geology**

6. Water Distribution

6.1 Existing Water Distribution System

The City of Vaughan is serviced via a lake based water distribution system, supplied by the Region of York. The Region of York is responsible for the production, treatment, storage and transmission of water to the area municipalities. The City of Vaughan is responsible for the distribution of water within OPA 620.

OPA 620 is within the York Water System (YWS) which receives its water from the City of Toronto through an agreement with the Region of York. The York Water System is divided into a number of pressure districts (PD), each extending approximately 30-40m in elevation. OPA 620 is within the pressure district 6 (Vaughan PD6). A map of the pressure zone, Vaughan PD6, is provided in **Figure 6** as extracted from York Water and Wastewater Supply and Demand Monitoring Report dated September 2010 (Genivar and XCG). This report anticipates the development of the OPA 620 lands and does not indicate the need for external upgrades to the water supply or distribution system to service the area. **Figure 7** shows the City of Vaughan water supply map.

Vaughan PD6 is supplied from the Toronto Keele PD6 Pumping Station located near the intersection of Keele Street and Steeles Avenue. Based on the September 2008 Water and Wastewater Master Plan Baseline Report (Genivar and XCG) the supply capacity to PD6 from the City of Toronto is 84.1 ml/day.

The OPA 620 lands are presently well serviced by external watermains. There is a 900mm diameter main on Keele Street, which is the main feedermain for Vaughan PD6 from the pumping station located in Toronto. There is a 400mm diameter watermain along Steeles Avenue that runs from Keele Street to approximately 100m east of Jane Street. There is also a 300mm diameter watermain running from Steeles Avenue northerly where it follows Jane Street about 200m north of Keele Street (as shown on **Figure 9**).

6.2 Water Distribution System Alternatives

6.2.1 Water Distribution Modelling

The City's WaterCAD model was provided to SRM Associates to undertake water distribution modelling resulting from the development of OPA 620. The City's model was used as the base and was assessed to ensure that for areas outside of OPA 620 that the model input was reasonable based on City design criteria.

The City's model was modified to include the development of OPA 620 for the following scenarios:

- Maximum Day plus Fire Flow
- Peak Hour Demand

Based on the modelling results, the City's existing water supply infrastructure will be adequate for the OPA 620 lands as presently envisioned.

6.3 Alternatives and Evaluation Process

The alternatives for servicing OPA 620 are shown on **Figure 8.**

DO NOTHING

When alternatives are generated for consideration the Class EA document recommends that the “do nothing” approach must be considered and addressed. This alternative basically considers what would happen if no improvement were to be undertaken. This alternative would provide a good basis or benchmark to compare all other alternatives to.

Do nothing would mean that no changes be undertaken to the existing system for the OPA 620 lands. This would significantly affect the growth potential for the OPA 620 area and would be contrary to both the City’s and Region’s Official Plan for growth within OPA 620. As such the “do nothing” alternative would not be an acceptable solution for water supply and distribution.

ALTERNATIVE 1 – UTILIZE EXISTING TRUNK WATERMAIN INFRASTRUCTURE

This alternative would utilize the existing 400mm trunk watermain on Steeles Avenue and provide connections to future development from Steeles Avenue. The alternative would lack the security of supply as there would only be one trunk watermain, therefore this alternative was not considered further.

ALTERNATIVE 2 – NEW TRUNK WATERMAIN ALONG FUTURE EAST/WEST ROAD

This alternative would construct a new 400mm trunk watermain from Keele Street to Jane Street along the future east/west road located at the north limit of OPA 620 with smaller distribution watermains on future internal streets. This alternative provides improved security for the water distribution system, as well as flexibility in phasing the system in accordance with the development of OPA 620.

This alternative was not carried forward due to the conflict with the UPS lands, thereby not providing the desired security in the system.

ALTERNATIVE 3 – NEW TRUNK ON FUTURE EAST/WEST ROAD (PREFERRED ALTERNATIVE)

This alternative envisions the construction of a new 400mm trunk watermain along a portion of the future east/west road along the north limit of OPA 620 from Keele Street to the east limit of the United Parcel Services (UPS) property with smaller 300mm distribution watermains on future internal streets. This alternative provides for the full redevelopment of the OPA 620 lands east of the UPS property. The remaining portion of the 400mm trunk watermain could be constructed when the UPS lands develop. This is the preferred alternative, as shown on **Figure 9**.

As part of each alternative, the portion of the existing 300mm watermain that is not on the realigned Jane Street will be relocated onto Jane Street and the 400mm watermain on Steeles Avenue extended to the Jane Street intersection.

6.4 Recommended Water Distribution System Strategy

As mentioned in the previous section, the preferred strategy is Alternative 3. The main reasons for this alternative were as follows:

- Does not require construction of a watermain through the UPS lands on a future road right-of-way

- Provides for the ability to complete the 400mm trunk to Jane Street when UPS lands redevelop
- Does not inhibit redevelopment of the remaining lands in OPA 620 while UPS continues to operate
- Initial costs would be lower as the section across UPS lands will not be constructed until UPS redevelops

The estimated cost for this alternative is included in **Appendix 1G**. Please note the assumptions that accompany the estimate.

6.4.1 Proposed Implementation Schedule

Because the specific development details are unknown at this time, including size, location and servicing demands, the specific servicing requirements will need to be determined at the development application stage.

The majority of the proposed watermain infrastructure is within the OPA 620 lands, therefore the timing of construction will need to coincide with development.

The need for and timing of the proposed 400mm watermain at the Steels Avenue/Keele Street intersection will be determined either by the modelling in conjunction with a development application, or the need to expand the existing stormwater management facility near the intersection (see Section 8.0).

6.4.2 Permitting and Approval Requirements

For the proposed watermain infrastructure, it is anticipated that approvals will be required from the Region of York, City of Vaughan and the MOE in conjunction with the development applications.

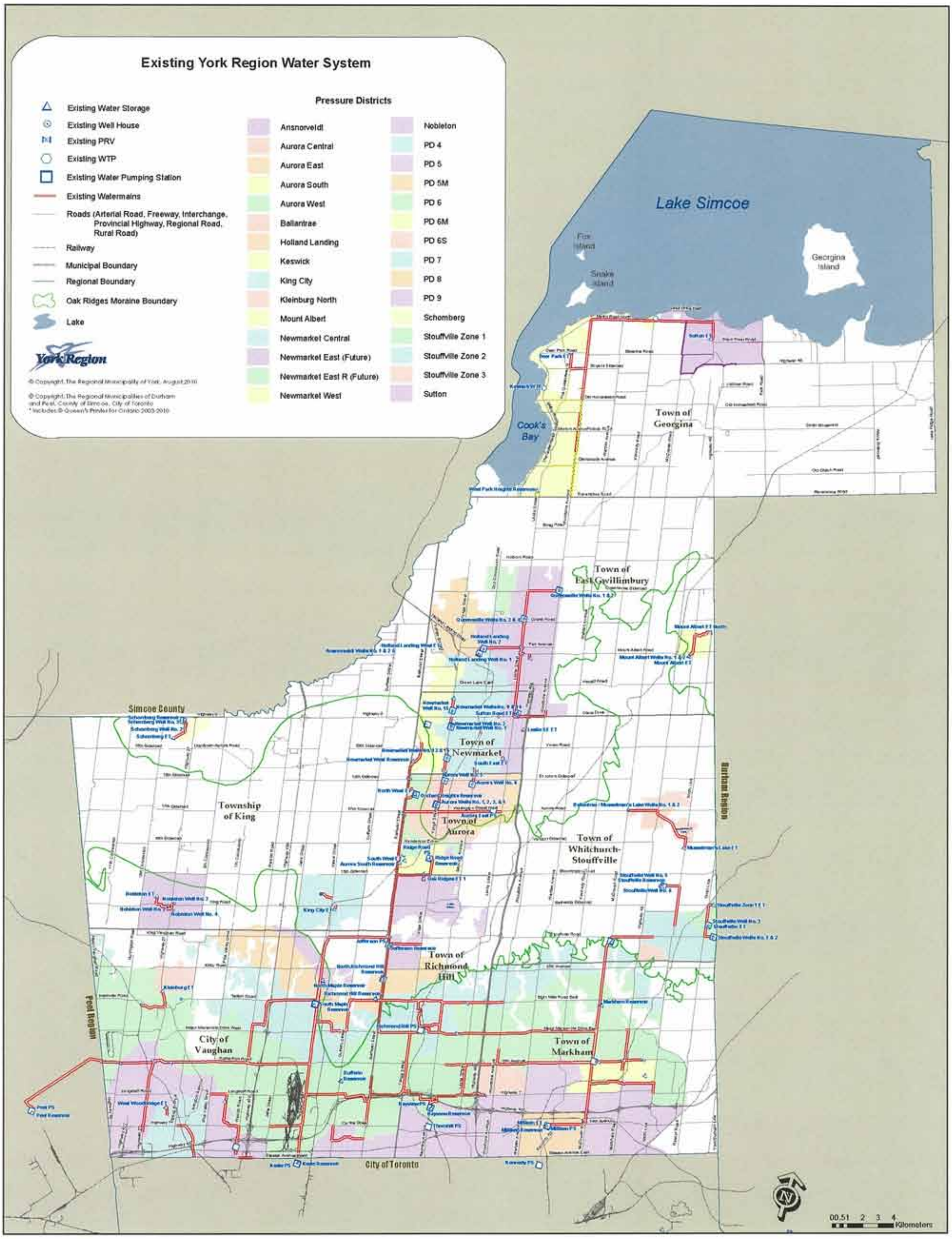


Figure 6 | **York Region Water System Map**

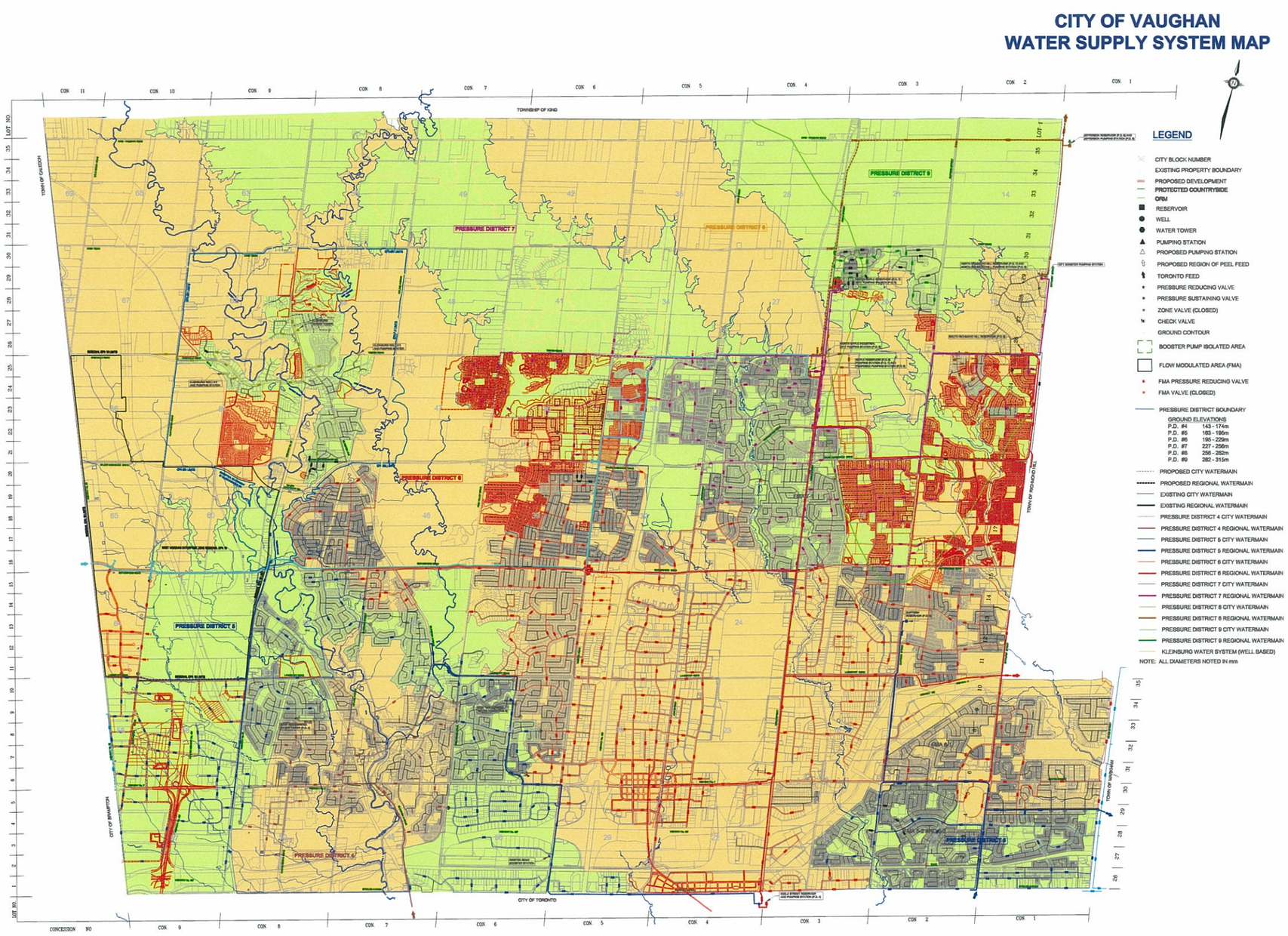


Figure 7 | **City of Vaughan Water System Map**

WATERMAIN EVALUATION OF ALTERNATIVES

LEGEND | Existing Trunk Watermain | Proposed Trunk Watermain | Proposed Distribution Watermain | Watermain to be Abandoned

1

USING EXISTING TRUNK INFRASTRUCTURE

Local servicing to be extended from existing trunk watermain on Steeles Avenue

ALTERNATIVE 1

Alternative 1 proposes to use the existing trunk infrastructure on Steeles Avenue and provides watermain connections to future development from Steeles Avenue.

Negative Effects:
- Security of water system at risk due to one distribution system

Positive Effects:
- Utilizing existing infrastructure

ALTERNATIVE 1 NOT CARRIED FORWARD DUE TO SECURITY OF WATER SYSTEM AT RISK WITH ONE DISTRIBUTION SYSTEM

2

NEW TRUNK WATERMAIN ON FUTURE EAST-WEST ROAD

Local servicing to be extended from existing trunk watermain on Steeles Avenue for south portion of site, local servicing to be extended from trunk watermain on future east-west road for north portion of site, interconnection between trunk watermain provided on select internal streets

ALTERNATIVE 2

Alternative 2 includes a new trunk watermain on the future East-West Road and smaller distribution watermains on the internal streets as shown on the OPA 620 road network.

Negative Effects:
- Increased capital cost
- Conflict with existing land uses

Positive Effects:
- Second trunk watermain provides improved security to water distribution system
- Provides flexibility for phasing in the water distribution system in accordance with OPA 620

ALTERNATIVE 2 NOT CARRIED FORWARD DUE TO CONFLICT BETWEEN EXISTING LAND USE AND PROPOSED LAND USE

3

NEW TRUNK WATERMAIN ON FUTURE EAST-WEST ROAD

Local servicing to be extended from existing trunk watermain on Steeles Avenue for south portion of site, local servicing to be extended from trunk watermain on future east-west road for north portion of site, interconnection between trunk watermain provided on select internal streets while accommodating existing land uses

ALTERNATIVE 3

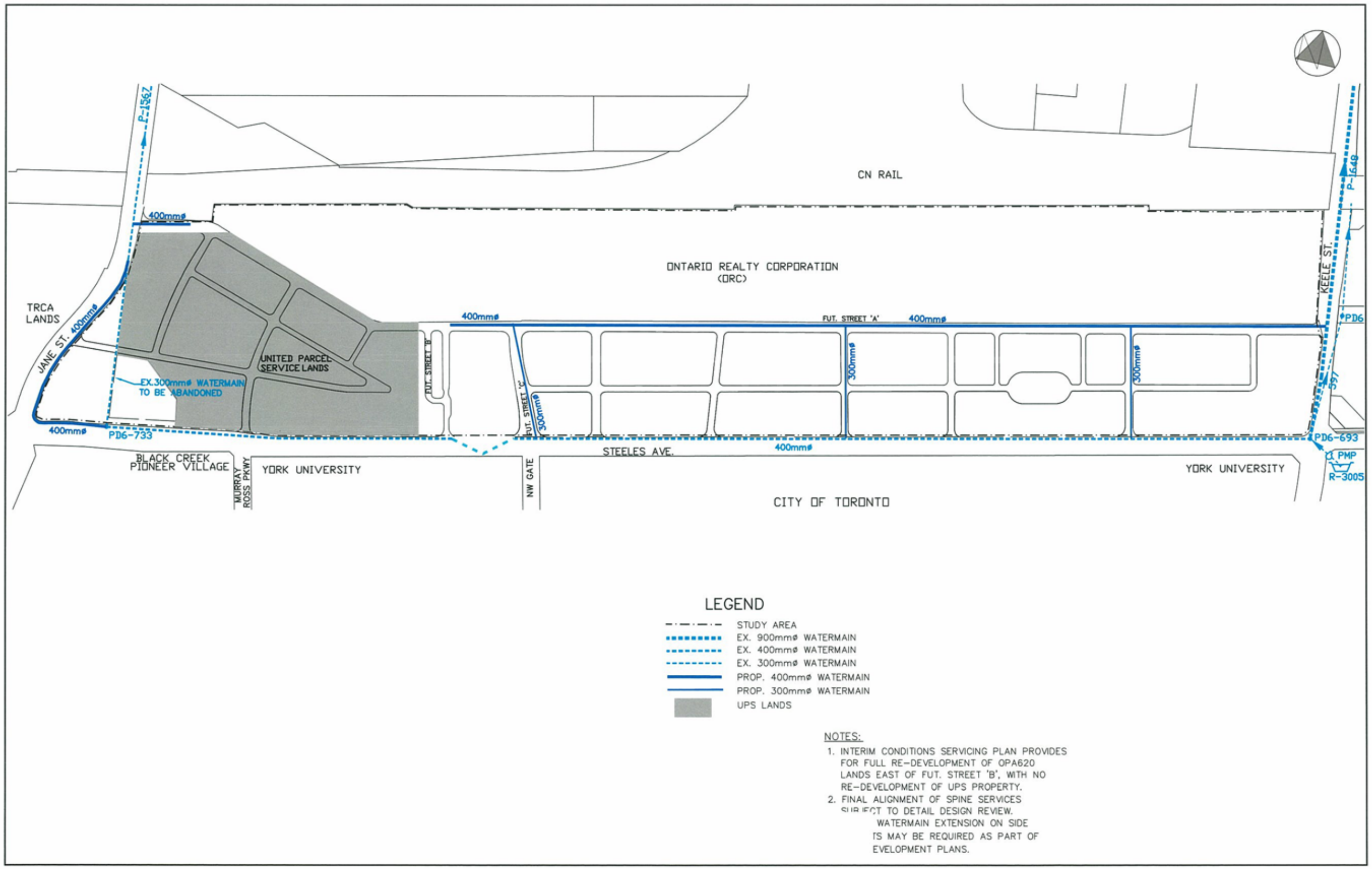
Alternative 3 includes a new trunk watermain of the future East-West Road east of UPS property with smaller distribution mains connecting to existing watermain on Steeles Avenue.

Positive Effects:
- Provides for full redevelopment of OPA 620 lands east of UPS property

ALTERNATIVE 3 IS THE PREFERRED ALTERNATIVE. SPECIFIC SERVICING REQUIREMENTS WOULD BE DETERMINED AT THE DEVELOPMENT APPLICATION STAGE.

Figure 8 | Watermain Evaluation of Alternatives

VAUGHAN | GHD



LEGEND

- STUDY AREA
- EX. 900mmø WATERMAIN
- EX. 400mmø WATERMAIN
- EX. 300mmø WATERMAIN
- PROP. 400mmø WATERMAIN
- PROP. 300mmø WATERMAIN
- UPS LANDS

NOTES:

1. INTERIM CONDITIONS SERVICING PLAN PROVIDES FOR FULL RE-DEVELOPMENT OF OPA620 LANDS EAST OF FUT. STREET 'B', WITH NO RE-DEVELOPMENT OF UPS PROPERTY.
2. FINAL ALIGNMENT OF SPINE SERVICES SUBJECT TO DETAIL DESIGN REVIEW. WATERMAIN EXTENSION ON SIDE STS MAY BE REQUIRED AS PART OF DEVELOPMENT PLANS.

Figure 9 | Watermain Preliminary Preferred Alternative

7. Wastewater Collection System

7.1 Existing Wastewater Collection System

The study area is located within the City's Steeles Avenue Collector which drains to the York Region's Black Creek Sewage Pumping Station (BCSPS), which in turn pumps sewage to the York-Durham sewage system where the effluent is treated at the Duffins Creek Water Pollution Control Plant in Pickering as shown on **Figure 10** from the Water and Wastewater Supply and Demand monitoring Report dated September 2010.

The BCSPS collects sanitary sewage from four sub-trunks. They are:

- Steeles Avenue Collector – services the area east of Jane, west of Keele, south of the CN Railway and north of Steeles (OPA 620)
- Adessco Drive Collector – services the area west of Jane Street and South of the CN Railway
- Jane Street West Collector – services area west of Jane Street and north of Highway 7
- Jane Street East Collector – services area east of Jane Street and north of Highway 7

In reviewing the Vaughan Metropolitan Centre Master Servicing Strategy prepared by the Municipal Infrastructure Group in September 2009, it is noted that the Jane Street Collector (comprised of both East and West) has a limiting capacity of 910 L/s. In addition the "Draft" Jane Street Sanitary Trunk Study prepared by the City of Vaughan in July, 2001 noted that the Adessco Drive Collector has a design capacity of 83 L/s.

Black Creek Sewage Pumping Station Capacity	
Station Pumping Capacity (per C of A)	1350 L/s
Jane Street Collector	910 L/s
Adessco Collector	83 L/s
Steeles Avenue Collector	Available capacity 357 L/s

In reviewing the BCSPS data, there would be 357 L/s available to the Steeles Avenue Collector.

There is an existing 375mm sanitary sewer along Steeles Avenue from approximately 200m west of Keele Street, extending westerly to a point approximately 200m east of Jane Street where it turns northerly and follows Jane Street about 200m north of Steeles Avenue. The sewer continues north until it enters the Black Creek Sewage Pumping Station just north of the CN Rail right-of-way (**Figure 11**).

The sanitary sewer analysis reflects the proposed densities for the OPA 620 lands. The residential density within OPA 620 is based on 165 units/ha, and 2.5 persons/unit. This would result in a density of 413 persons/ha.

The analysis of the sewer system indicates that the OPA 620 lands will generate about 175 L/s which is well below the available capacity of 357 L/s presently available.

7.2 Wastewater Collection System Alternatives

ALTERNATIVES CONSIDERED

Figures 12 and 13 show the alternatives considered for the wastewater collection system.

DO NOTHING

When alternatives are generated for consideration the Class EA document recommends that the "do nothing" approach must be considered and addressed. This alternative basically considers what would happen if no improvement were to be undertaken. This alternative would provide a good basis or benchmark to compare all other alternatives to.

Do nothing would mean that no changes be undertaken to the existing sanitary system for the OPA 620 lands. This would significantly affect the growth potential for the OPA 620 area as the proposed increases in population densities would not be possible and as such would be contrary to both the City's and Region's Official Plan for growth within OPA 620. As such the "do nothing" alternative would not be an acceptable solution for wastewater collection.

ALTERNATIVE 1 – UTILIZE EXISTING TRUNK INFRASTRUCTURE

This alternative would utilize the existing sanitary sewers along Steeles Avenue for collection of sanitary flows. The sewer would be extended to the east to pick up all lands to Keele Street and extended westerly along Steeles Avenue to Jane Street and then northerly along Jane Street for about 200m to connect into the existing sewer again. The extension along Steeles Avenue to Jane Street would remove a conflict to allow the development of the lands at the northeast corner of Steeles Avenue and Jane Street. In addition there will be a 'jog' to allow the subway extension across Steeles Avenue.

Due to the proposed increased densities within OPA 620, portions of the sewer will have to be upgraded to accommodate the increase flows. Due to the capacity restrictions, this alternative is not carried forward.

ALTERNATIVE 2 – NEW TRUNK ON FUTURE EAST-WEST ROAD

This alternative would construct an additional trunk sewer on the future east-west road located at the northern limit of the OPA 620 lands. The southern half of the lands would drain to the existing sewer and the northern half to the new trunk sewer. The existing sewer on Steeles Avenue will still have to be extended to the east, around the TTC station and westerly to Jane Street and along Jane Street to allow development of the northeast corner of Jane Street and Steeles Avenue. The existing sewers along Jane Street north of the future east/west road to the BCPS will need to be increased in size.

This alternative alleviates the need for increasing the size of the existing sewer on Steeles Avenue, but requires agreement with UPS to cross their lands. Due to the conflict with the existing land use on UPS, this alternative is not carried forward.

ALTERNATIVE 3 – NEW TRUNK ON FUTURE EAST-WEST ROAD AND DIVERSION OF STEELES AVENUE TRUNK

The alternative would construct a new trunk sewer along the future east-west road located at the northern limit of the OPA 620 lands. The existing Steeles Avenue sewer would be

diverted to the new trunk sewer just east of the proposed TTC Subway Station. The Steeles Avenue sewer would still be extended to the east and extended along Steeles Avenue to Jane Street and along Jane Street to allow development of the northeast corner of Steeles Avenue and Jane Street. The existing sewers along Jane Street north of the future east/west road to the BCPS will need to be increased in size.

This alternative alleviates the need to increase the size of sewer along Steeles Avenue and Jane Street but will require an agreement with UPS to cross their lands. Due to the conflict with the UPS lands, this alternative is not carried forward.

ALTERNATIVE 4 – NEW TRUNK ON FUTURE EAST-WEST ROAD AND NEW SEWER ON STEELES AVENUE AND JANE STREET (PREFERRED ALTERNATIVE)

This alternative would construct a new sanitary trunk along the future east-west road. The trunk sewer would follow Street 'C' to Steeles Avenue and then westerly along Steeles Avenue to Jane Street and northerly on Jane Street to the Black Creek Pumping Station. The existing Steeles Avenue sewer would still be extended from it easterly limit to pick up all lands to Keele Street.

This alternative will not require crossing of the UPS lands and will allow greater flexibility in the development of the OPA 620 lands. This preferred alternative is shown on **Figure 14**.

7.3 Recommended Wastewater Servicing Strategy

Alternative 4 was the preferred alternative for the following reasons:

- Provides the greatest flexibility for the development of OPA 620
- Does not require crossing of the UPS site with the trunk sewer
- Provides a new trunk sewer along the section of Steeles Avenue and Jane Street where the present sewer would have capacity issues with the new densities.

The estimated cost for this alternative is included in **Appendix 1H**. Please note the assumptions that accompany the estimate.

7.3.1 Proposed Implementation Schedule

Because the specific development details are unknown at this time, including size, location and servicing demands, the specific servicing requirements will need to be determined at the development application stage.

The proposed sanitary infrastructure is both internal and external to the OPA 620 lands. The timing of required infrastructure upgrades or new sewers will be determined by the location, size and timing of development.

The need for and timing of the new sewer at the Steeles Avenue and Jane Street intersection and abandoning the north/south sewer will be dictated either by the need for increased capacity or the need to expand the existing stormwater management facility (see Section 8.0).

All proposed works shall ensure compliance with the MOE "D-Series" guidelines (Land Use Compatibility) to ensure that all applicable Ministry procedures are followed in planning and designing the wastewater infrastructure.

7.3.2 Permitting and Approval Requirements

Approvals will be required from the Region of York, City of Vaughan and the MOE in conjunction with the development applications.

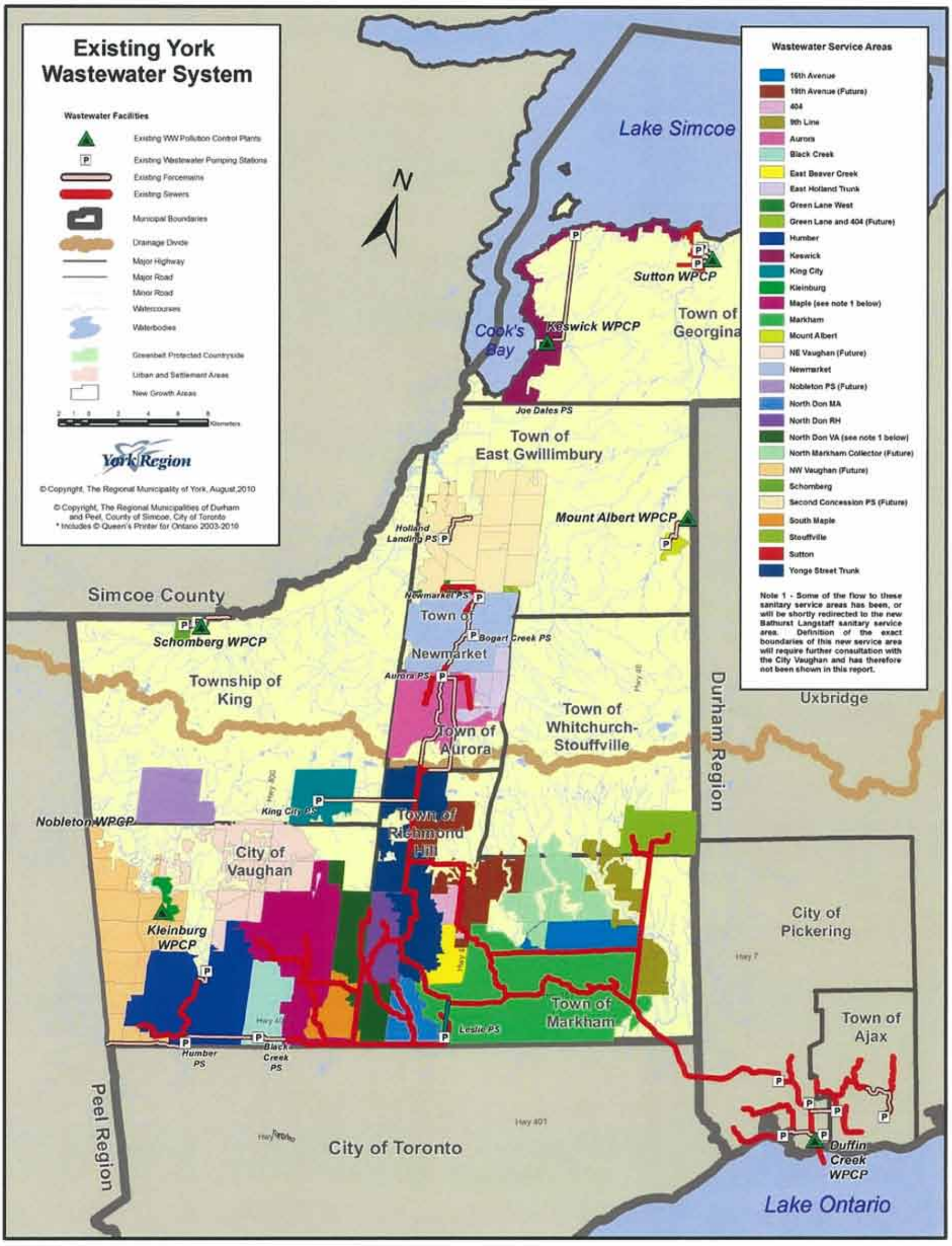


Figure 10 | York Region Existing Wastewater System

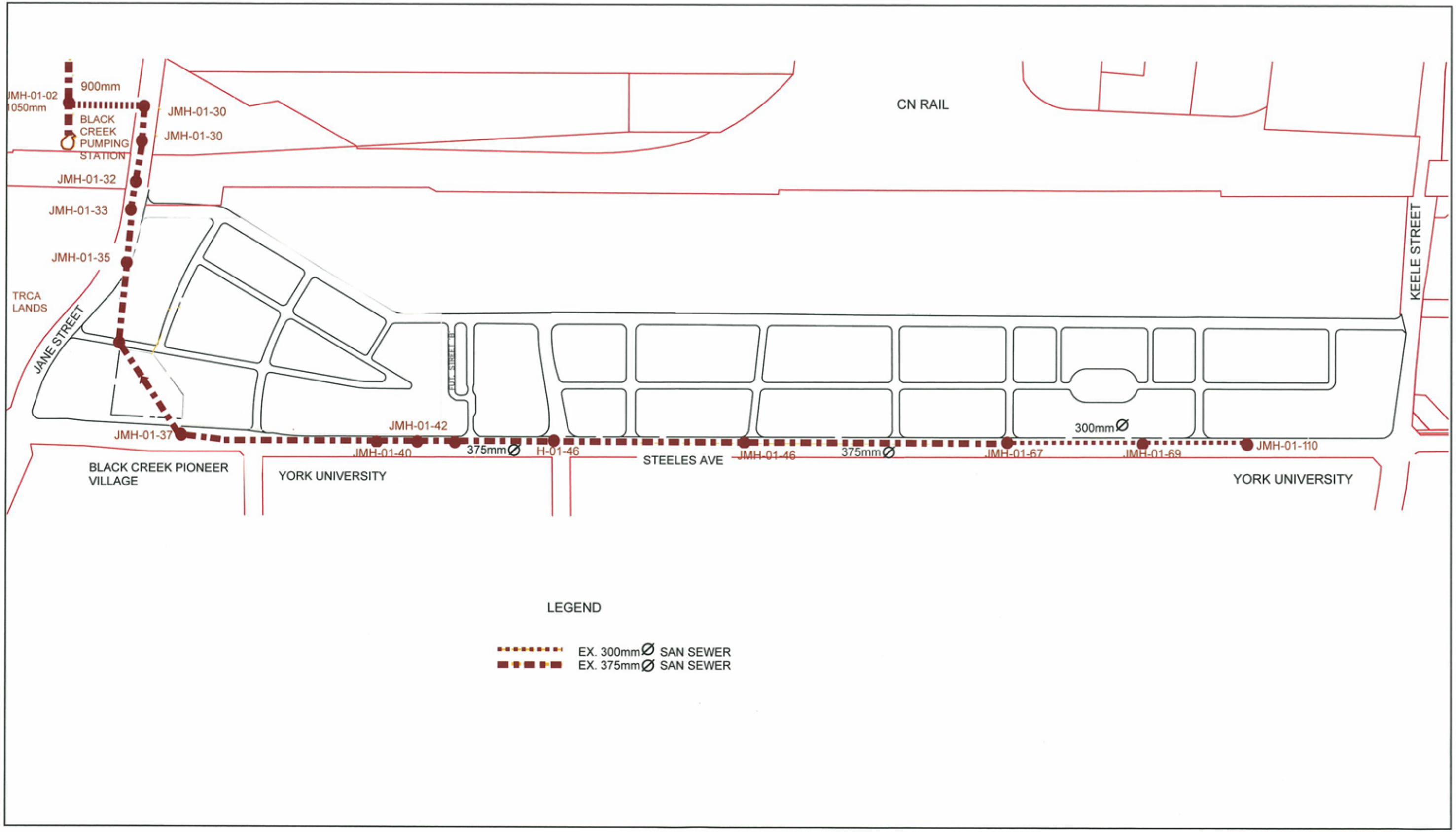


Figure 11 | Existing Wastewater Collection System

SANITARY SEWER EVALUATION OF ALTERNATIVES

LEGEND

Existing Sanitary Sewer | Proposed Sanitary Sewer | Sanitary Sewer to be Abandoned | Existing Black Creek Pumping Station | Future TTC Subway Station

1

UTILIZE EXISTING TRUNK INFRASTRUCTURE

All wastewater would be directed to the existing sewer on Steeles Avenue and Jane Street

ALTERNATIVE 1

Alternative 1 utilizes the existing sanitary sewer on Steeles Avenue, with an extension to the east to service all lands within OPA 620, a realignment around the future TTC subway station, and a possible realignment of the existing sewer at the northeast corner of Steeles Avenue and Jane Street (if required to avoid conflicts with existing sewer route and development plans within OPA 620).

Negative Effects:

- Sewer replacement along Jane Street anticipated to accommodate increased flows

Positive Effects:

- Provides sanitary services to accommodate growth envisioned by OPA 620 and addresses potential conflicts with future land uses

ALTERNATIVE 1 NOT CARRIED FORWARD DUE TO CAPACITY RESTRICTION IN EXISTING SEWER

2

CONSTRUCT NEW TRUNK SEWER ON FUTURE EAST-WEST ROAD

Drainage from south portion of site is directed to Steeles Avenue sewer, while north portion of site is directed to new sewer on future East-West Road

ALTERNATIVE 2

Alternative 2 proposes a new sanitary sewer on the future East-West Road as shown on the OPA 620 road network, a realignment around the future TTC subway station, and a possible realignment of the existing sewer at the northeast corner of Steeles Avenue and Jane Street.

Negative Effects:

- Increased capital cost
- Conflict with existing land uses

Positive Effects:

- Flows are decreased to Jane Street thereby eliminating the need to replace the existing sewer on Jane Street
- Provides flexibility for phasing of construction of the system in accordance with OPA 620

ALTERNATIVE 2 NOT CARRIED FORWARD DUE TO CONFLICT BETWEEN EXISTING LAND USE AND PROPOSED LAND USE

Figure 12 | Sanitary Sewer Evaluation of Alternatives

SANITARY SEWER
EVALUATION OF ALTERNATIVES

LEGEND | Existing Sanitary Sewer | Proposed Sanitary Sewer | Sanitary Sewer to be Abandoned | Existing Black Creek Pumping Station | Future TTC Subway Station

3

CONSTRUCT NEW TRUNK SEWER ON FUTURE EAST-WEST ROAD WITH DIVERSION OF STEELES AVENUE SEWER AT TTC STATION

Same as Alternative 2, plus flow from south-east portion of site is diverted to new sewer on future East-West Road (addresses sewer capacity issue on Jane Street)

ALTERNATIVE 3

Alternative 3 proposes a new sanitary sewer on the future East-West Road as shown on the OPA 620 road network, a diversion around the future TTC subway station, and a possible realignment of the existing sewer at the northeast corner of Steeles Avenue and Jane Street.

Negative Effects:

- Further increased capital cost from Alternative 2 for diversion from Steeles to future East-West Road
- Conflict with existing land uses

Positive Effects:

- Flows are decreased to Jane Street thereby eliminating the need to replace the existing sewer
- Provides flexibility for phasing of construction of the system in accordance with OPA 620

ALTERNATIVE 3 NOT CARRIED FORWARD DUE TO CONFLICT BETWEEN EXISTING LAND USE AND PROPOSED LAND USE

4

CONSTRUCT NEW TRUNK SEWER ON FUTURE EAST-WEST ROAD WITH NEW SEWER ON STEELES AVENUE

Flow split between Steeles Avenue sewer and new sewer on future East-West Road

ALTERNATIVE 4

Alternative 4 proposed a new sanitary sewer on the future East-West Road, a realignment around the future TTC subway station sewer replacement on Steeles Avenue, and a possible realignment of the existing sewer at the northeast corner of Steeles Avenue and Jane Street (if required to avoid conflicts with existing sewer route and development plans within OPA 620).

Negative Effects:

- Sewer replacement along a portion of Steeles Avenue and Jane Street anticipated to accommodate increased flows

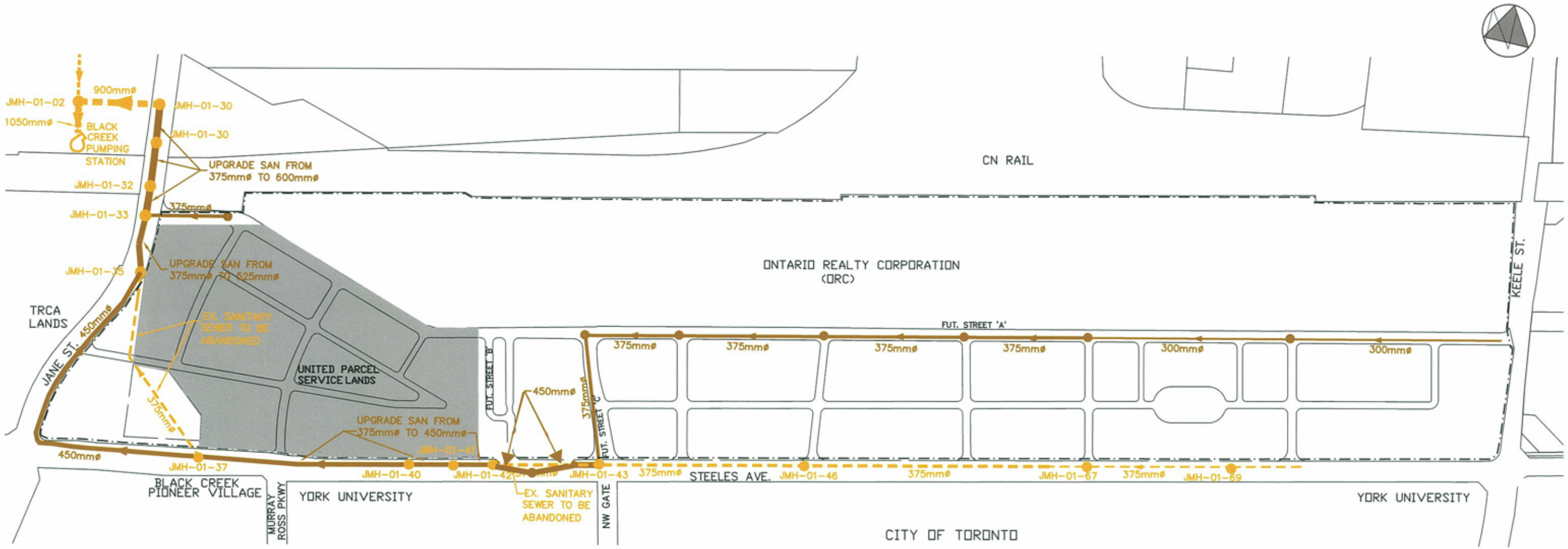
Positive Effects:

- Provides sanitary services to accommodate growth envisioned by OPA 620 and addresses potential conflicts with future land uses

ALTERNATIVE 4 IS THE PREFERRED ALTERNATIVE. SPECIFIC SERVICING REQUIREMENTS WOULD BE DETERMINED AT THE DEVELOPMENT APPLICATION STAGE

Figure 13 | **Sanitary Sewer Evaluation of Alternatives**

VAUGHAN | GHD



NOTE:
PROPOSED ROAD PATTERN TAKEN FROM CITY OF VAUGHAN OFFICAL PLAN AMENDMENT BACKGROUND STUDIES

LEGEND

- EX. 300mmø SAN SEWER
- EX. 375mmø SAN SEWER
- PROP. 300mmø SAN SEWER
- PROP. 375mmø SAN SEWER
- PROP. 450mmø SAN SEWER
- PROP. 525mmø SAN SEWER
- PROP. 600mmø SAN SEWER
- UPS LANDS

NOTES:
1. INTERIM CONDITIONS SERVICING PLAN PROVIDES FOR FULL RE-DEVELOPMENT OF OPA620 LANDS EAST OF FUT. STREET 'B' WITH NO RE-DEVELOPMENT OF UPS PROPERTY.
2. FINAL ALIGNMENT OF SPINE SERVICES SUBJECT TO DETAIL DESIGN REVIEW.
3. SANITARY SEWER BETWEEN JMH-01-40 AND JMH-01-41 TO BE UPGRADED CONCURRENTLY WITH RE-ALIGNMENT AROUND TTC STATION.

Figure 14 | Preliminary Preferred Wastewater Alternative

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8. Stormwater Collection and Management

8.1 Existing Stormwater Collection System

The majority of the OPA 620 drainage area is captured by a trunk storm sewer that runs within an easement on the north side of Steeles Avenue, where there is also a trunk sanitary sewer. This trunk storm sewer was designed in the late 1980's by Andrew Brodie Associates Inc. exclusively for the subject lands whereas an older existing storm sewer under Steeles Avenue captures the roadway drainage. The existing storm sewer under Steeles Avenue is a City of Toronto sewer that discharges south of Steeles Avenue.

Figure 4 from the Preliminary Master Stormwater Management Strategy Report (Sernas 2009) included in **Appendix 1A** shows the design drainage areas assumed for the existing storm sewer. It is noted that this sewer has been extended easterly from its original terminus approximately midway between Jane Street and Keele Street to service the existing Milestone Group building at the northwest corner of Keele Street and Steeles Avenue.

The sewer design was based on the following assumptions for the subject lands:

- 30% roof area taken at 100% imperviousness, released at 40 L/s/ha
- 55% asphalt parking lot areas taken at 82% imperviousness, released at 250 L/s/ha
- 15% roadways/boulevards taken at 65% imperviousness, captured uncontrolled
- No overland flow shall enter Steeles Avenue up to the 1:100 year storm event

EXISTING STORMWATER POND ON BLACK CREEK PIONEER VILLAGE NORTH (BCPVN)

There is an existing stormwater management facility just east of Black Creek within the valley lands owned by the Toronto & Region Conservation Authority (TRCA) that are northwest of Jane Street and Steeles Avenue. The March 1982 Design Brief prepared by Ander Engineering & Associates Limited, indicates the intent of the quantity pond is to provide post-to-pre-development controls for the 1:2 and 1:5 year storm events for the contributing 22 ha industrial area immediately west of the Black Creek valley lands. The characteristics outlined in the Design Brief (Ander Engineering & Associates Limited 1982) are summarized in **Table 1** below. Flow values noted below were derived by hand calculation using an approach described by the U.S. Soil Conservation Service. While the Design Brief (Ander Engineering & Associates Limited 1982) outlines a proposed pond on tableland to address this issue, the facility was actually constructed within the Black Creek valley on the east side of the watercourse. Based on a review of the local topography the Preliminary Master Stormwater Strategy Report (Sernas 2009) concluded that the quantity pond contains approximately 6,500m^3 of storage volume and is fed by a storm sewer that goes under the Black Creek from the industrial tributary area.

Table 1: Existing Black Creek SWM Facility Characteristics

Storm Event	Uncontrolled Flows (cms)	Target Flow (cms)	Required Volume (m^3)
1:2 year	1.7	0.3	1,950
1:5 year	2.8	0.8	2,820

TABLE LAND POND ON CITY OF VAUGHAN PROPERTY

The trunk sewer on Steeles Avenue outlets to an existing dry pond (i.e. no quality control provided) designed to control flows to pre-development levels for the 1:2 year and 1:100 year storms of 1.42 cms and 5.31 cms respectively for the entire OPA 620 lands that are tributary to the dry pond. The existing characteristics of the pond are shown in **Table 2** below, as summarized from the January 1987 report prepared by Andrew Brodie Associates Inc. Flow values noted below were originally derived from the OTTHYMO hydrologic model.

Table 2: Existing City SWM Facility Characteristics

Storm Event	Uncontrolled Flows (cms)	Controlled Flow (cms)	Available Volume (m^3)
1:2 year	5.82	1.44	7,200
1:5 year	10.47	5.20	16,000

STORMWATER CONTROLS

As described above, under existing conditions stormwater management for the OPA 620 area is being achieved within the existing table land pond; however, the proposed redevelopment of the OPA 620 lands will necessitate the stormwater management plan to be updated to reflect new stormwater best management practices and criteria.

8.2 Stormwater Collection and Management Alternatives

Stormwater management design criteria for erosion, quality and quantity control have been established for this study area by the City of Vaughan, Toronto & Region Conservation Authority (TRCA) and the Ontario Ministry of the Environment (MOE) Stormwater Management Planning and Design Manual (2003) and includes the following:

QUALITY CONTROL

For stormwater quality control, the MOE Stormwater Management Planning and Design Manual (2003) requires a permanent pool volume based on the need to protect the fish habitat. The protection levels outlined in the manual are Basic, Normal, and Enhanced; with Enhanced representing the greatest amount of protection for more sensitive aquatic habitat. For the purposes of this report, Enhanced quality protection will be required for the Black Creek for fish habitat.

For water quality erosion control, the Toronto & Region Conservation Authority requires the runoff from a 25mm storm to be detained for 48 hours.

QUANTITY CONTROL

Control of post-development peak flow rates will utilize the Unit Flow Equations established in the Humber River Watershed Study, prepared by Aquafor Beech (1997). The allowable release rate for the OPA 620 lands is established by applying the unit rate equations to the 83.7 ha pre-development drainage area (see **Figure 17**). The resulting allowable release rates are shown in **Table 3** below. The stormwater management options will provide the total storage requirements needed to achieve the allowable release rates.

Table 3: OPA 620 Target Flows

Storm Event	Unit Flow Equations	Unit Release Rates (l/s/ha)	Allowable Release Rates (cms)
1:2 year	Q=7.745-0.762 ln (A)	4	0.37
1:5 year	Q=11.468-1.123 ln (A)	7	0.54
1:10 year	Q=13.877-1.342 ln (A)	8	0.66
1:25 year	Q=17.381-1.690 ln (A)	10	0.82
1:50 year	Q=20.164-1.973 ln (A)	12	0.96
1:100 year	Q=22.973-2.256 ln (A)	13	1.09

The Preliminary Master Stormwater Management Strategy Report (Sernas 2009) recognized that the existing development on OPA 620 that drains to the existing City pond adjacent to UPS, inclusive of the Phase I expansion that UPS has undertaken will exceed unit rate targets until such time as the redevelopment occurs.

INFILTRATION TARGETS

Provision of groundwater recharge, to the best extent possible, with the intent of matching pre-development infiltration levels.

GREEN TECHNOLOGIES

Consideration of innovative source and conveyance controls, where feasible, in accordance with the principle of sustainable water management practices should be considered in the development of the OPA 620 lands. These practices shall include, but not be limited to, the consideration of practices such as green roofs, rainwater harvesting, underground storage and permeable pavements.

The stormwater management approach endorsed by the Ministry of the Environment (MOE) is to preserve the natural hydrologic cycle. However, the strategy acknowledges that individual development plans cannot explicitly address cumulative effects. The trend in resource management is for the promotion of the “treatment train approach” as well as “sustainable practices”. These concepts are encouraged in particular by the Toronto & Region Conservation Authority (TRCA), the agency having jurisdiction within the Black Creek subwatershed, through their involvement with the Sustainable Technologies Evaluation Program (STEP).

The “treatment train approach” advocates for assessment of stormwater management measures in the following order:

1. stormwater lot level controls
2. stormwater conveyance controls, and
3. end-of-pipe stormwater management facilities

Lot level controls would include such measures as: rainwater leaders discharging to infiltration areas; rainwater leaders discharging to a subsurface soak away pit; reducing grassed site grading to a minimum of 0.5%; separate foundation drains and routing of storm runoff along grassed swales. Additional lot level measures that can be considered as part of the treatment train may include rainwater harvesting, green roofs, porous pavement, and/or bio-retention areas.

Conveyance controls would include perforated storm sewers, pervious catchbasins, and grassed swales. The selection of conveyance control is very much dependent on municipal requirements. It must be an acceptable form of servicing for a municipality and the municipality must be willing to implement and maintain these controls.

End-of-pipe facilities receive water from the conveyance system and discharge water to the receiving system. The March 2003 MOE Stormwater Management Planning and Design (SWMPD) Manual includes nine categories of end-of-pipe facilities as follows; wet ponds, wetlands, dry ponds, infiltration basins, infiltration trenches, filter strips, buffer strips, sand filters, and oil/grit separators.

A number of Best Management Practices (BMPs) which are available to meet the various aspects of water quality control were considered through the Preliminary Master Stormwater Management Strategy Report (Sernas 2009). The report (Sernas 2009) investigated lot level controls including; roof leader to ponding area and/or soak away pit, reduced lot grading, rainwater harvesting, green roofs, porous pavement, bio-retention areas and vegetative filter strips as well as stormwater conveyance controls including; pervious pipe systems, pervious catchbasins and grassed swales (curbless roads). Each of the above measures were investigated as they relate to the OPA 620 development and the applicability and possible usage were discussed in detail. It was determined that soak away pits, rainwater harvesting, green roofs, porous pavement / permeable pavers and bio-retention areas are feasible within the OPA 620 area and should be considered at the detailed design phase of development.

Ultimately the Preliminary Master Stormwater Management Strategy Report (Sernas 2009) recommended that on-site water quality and water balance criteria be established that would require capture/re-use/infiltration of 15mm of rainfall from 50% of the total developments roof areas and capture/infiltration of 7.5mm of rainfall for the remaining roof and site area. These criteria have been incorporated into the stormwater management alternatives. Adoption of these criteria will allow for specific green technologies to be required at the detailed design phase of development.

The Preliminary Master Stormwater Management Strategy Report (Sernas 2009) also investigated end-of-pipe facilities. Based on the investigation which considered physical suitability, technical effectiveness, conformity to plan and cost, the report recommended an extended detention wet pond as the preferred end-of-pipe SWMP for the OPA 620 area.

The MOE Guideline B-6, “Evaluating Construction Activity Impacting on Water Resources” was reviewed and consulted in derivation of the alternatives. The alternatives considered impacts on existing natural features or ecological function of any watercourse in the study area. As discussed in Section 5.2, there are no natural or ecologically significant features in the study area.

ALTERNATIVES CONSIDERED

Figures 15 and 16 show the alternatives considered for the stormwater management system. The estimated costs of these alternatives are included in **Appendix 1I**.

As introduced above, there are details of the stormwater management plan which are common to the OPA 620 stormwater management alternatives:

- On-site capture/re-use/infiltration of 15mm of rainfall from 50% of the total developments roof areas
- On-site capture/infiltration of 7.5mm of rainfall for the remaining roof and site area
- On-site control to 180 L/s/ha for all of the OPA 620 area
- Provision of an oil/grit separator (if required) for runoff directed into the BCPV lands south of Steeles Avenue
- Provision of a roof runoff leader to provide ‘clean’ runoff for the BCPV land south of Steeles Avenue

DO NOTHING

The do nothing alternative means that the existing stormwater management infrastructure and controls would be left alone. This alternative is not feasible because once the OPA 620 lands redevelop the existing infrastructure will not be able to achieve the stormwater management criteria.

ALTERNATIVE A

Alternative A incorporates three (3) stormwater management ponds; a new quality and quantity control facility within the Hydro One corridor, a retrofit quality and quantity control facility within the City/Region lands (expanded footprint from the existing City Pond) and a new quantity control facility within the BCPV lands. The Hydro Corridor Pond is made up of three cells which would provide over-control to a release rate of $0.1m^3/s$. Given that the Hydro Corridor Pond would be limited by design constraints imposed by Hydro One, the pond would not meet the City of Vaughan’s standards. Within the retrofitted City/Region pond the 2 year – 5 year storms would be controlled to unit release rates. Within the BCPV Pond the 10 year – 100 year storms would be controlled to unit release rates. **Table 4** below provides the quantity control volume required in each pond to meet the unit release rates.

Table 4: Stormwater Management Alternative A – Quantity Control Volume Calculations

Pond	Quantity Control Objective	Volume Required (m^3)
Hydro Corridor Pond	Control to 0.1 m^3/s	24,100
City/Region Pond	Control of the 2 year – 5 year storms	7,000
BCPV Pond	Control of the 10 year – 100 year storms	7,500

This alterative did not receive approval from Hydro One/ORC for locating these ponds on their property, therefore is not carried forward.

ALTERNATIVE B

Alternative B incorporates two (2) stormwater management ponds; a retrofit quality and quantity control facility within the City/Region lands (significantly expanded footprint from the existing City Pond) and new quantity control facility within the BCPV lands. Within the expanded and retrofitted City/Region pond the 2 year – 50 year storms would be controlled to unit release rates. Within the BCPV pond the 100 year storm would be controlled to unit release rates. **Table 5** below provides the quantity control volume required in each pond to meet the unit release rates.

Table 5: Stormwater Management Alternative B – Quantity Control Volume Calculations

Pond	Quantity Control Objective	Volume Required (m^3)
City/Region Pond	Control of the 2 year – 25 year storms	30,000
BCPV Pond	Control of the 50 year – 100 year storms	7,500

Alternative B would require expansion of the existing City pond in conjunction with the first development with the OPA 620 lands, and would encroach significantly into the developable lands at the northeast corner of Jane Street and Steeles Avenue. This alternative was therefore not carried forward.

ALTERNATIVE C (PREFERRED ALTERNATIVE)

Alternative C incorporates three (3) stormwater management ponds; a new quality and quantity control facility on the Milestones property, a retrofit quality and quantity control facility within the City/Region lands (expanded footprint from the existing City Pond) and a new quantity control facility (dry pond) within the BCPV lands. Within the Milestones Pond the 2 year – 10 year storms would be controlled to unit release rates, based on the contributing area. Within the City/Region Pond the 2 year – 50 year storms would be controlled to unit release rates. Within the BCPV pond the 50 year – 100 year storms would be controlled to unit release rates. **Table 6** below provides the quantity control volume required in each pond to meet the unit release rates.

Table 6: Stormwater Management Alternative C – Quantity Control Volume Calculations

Pond	Quantity Control Objective	Volume Required (m^3)
Milestones Pond	Partial control of the 2 year – 10 year storms	19,000
City/Region Pond	Partial control of the 2 year – 50 year storms	13,000
BCPV Pond	Control of the 50 year – 100 year storms	7,500

Alternative C is preferred because it provides maximum flexibility in developing the OPA 620 lands by making use of existing infrastructure and provides for future upgrades in stages.

8.3 Recommended Stormwater Management Strategy

As stated above, Alternative C is the preferred alternative, and is shown on **Figure 16**. Phases of the development process have been illustrated in **Figures 18 – 20**. These figures show the drainage areas to each pond, as well as all other areas and a brief description of the development conditions and key points of the stormwater management strategy. A copy of the Visual OTTHYMO models are included in a rear pocket. The recommended stormwater management strategy includes a new quality and quantity control facility on the Milestones property which would accept drainage from the east OPA 620 lands. Initially this pond would service just the Milestones lands however, it would later be expanded to service a portion of the OPA 620 lands west of the Milestones property. Similarly, the retrofit quality and quantity control facility on the City/Region lands will accept drainage from the east OPA 620 lands. Initially this pond will service some OPA 620 lands adjacent to the Steeles West Station and some lands to the east. Once the UPS site redevelops, a larger pond will be required and the City/Region Pond will need to be expanded onto the UPS site area. The proposed quantity control pond with the BCPV lands would be constructed as a dry pond, and only receive flows during infrequent storm events. The construction of this pond will coincide with the redevelopment of the BCPV lands. **Table 7** below provides the storage volumes for the preferred alternative as well as for interim volumes.

Table 7: Recommended Stormwater Strategy – Storage Volumes and Interim Volumes

Pond	Quantity Control Objective	Quantity Volume (m^3)		Permanent Pool Volume (m^3)	Extended Detention Volume (m^3)	Pond Outflow (m^3/s)	
		Provided	Required			Allowable	Actual
Milestones	Partial control of 2-10 year storms	Total = 21,800 w/o Freeboard = 18,500	10 yr = 10,800 100 yr = 16,600	5,900	5,400	Q_2 = 0.21 Q_5 = 0.31 Q_{10} = 0.38	Q_2 = 0.21 Q_5 = 0.31 Q_{10} = 0.37
Interim Milestones (1)		Total = 15,300 w/o Freeboard = 13,800	100 yr = 13,300	3,500	3,800	Q_2 = 0.17 Q_5 = 0.26 Q_{10} = 0.31 Q_{25} = 0.39 Q_{50} = 0.45 Q_{100} = 0.51	Q_2 = 0.17 Q_5 = 0.26 Q_{10} = 0.31 Q_{25} = 0.39 Q_{50} = 0.45 Q_{100} = 0.51
City/Region	Partial control of 2-50 year storms	Total = 18,000 w/o Freeboard = 15,600	50 yr = 11,900 100 yr = 13,300	7,000	6,900**	Q_2 = 0.36 Q_5 = 0.53 Q_{10} = 0.65 Q_{25} = 0.81 Q_{50} = 0.93	Q_2 = 0.36 Q_5 = 0.53 Q_{10} = 0.65 Q_{25} = 0.81 Q_{50} = 0.92
Interim City/ Region (2)		Total = 13,700 w/o Freeboard = 11,700	100 yr = 7,100	3,500	6,100**	Q_2 = 0.61 Q_{100} = 2.01	Q_2 = 0.61 Q_5 = 0.97 Q_{10} = 1.22 Q_{25} = 1.53 Q_{50} = 1.77 Q_{100} = 2.01
BCPV	Control of the 50 & 100 yr storms	Total = 7,500	100 yr = 3,400	-	-	Q_{50} = 0.11 Q_{100} = 0.13	Q_{50} = 0.03 Q_{100} = 0.13

** Extended detention values for City/Region Pond excludes area addressed by Milestones pond

(1) Interim Milestones - only Milestone lands are developed and tributary to pond. TTC lands developed with their own on site controls. Remaining lands as per previous SWM controls

(2) Interim City/Region – All lands except UPS developed/redeveloped

The roof runoff from the various homes/commercial sites will provide “clean” runoff to be discharged into an existing pond south of Steeles Avenue West. This connection will be made possible via a roof runoff leader connected to a storm sewer pipe as shown in drawing **SWM-101** (in rear pocket). The rooftops that will be used in the collection of this rainwater are shown as hatched areas within this drawing. Note that there is another pond connected to this existing pond that is located to the south called the Mill Pond.

8.3.1 Proposed Implementation Schedule

As discussed above, the schedule for implementation of the proposed stormwater management strategy will be determined at the individual development application stage.

The proposed dry pond and associated storm sewers within the BCPV lands northwest of the Steeles Avenue/Jane Street intersection will be constructed in conjunction with the enhancements to those lands.

The phasing of the retrofits to the existing City pond and the ponds proposed on the Milestones property will be determined by the timing of tributary developments.

8.3.2 Permitting and Approval Requirements

The evaluation of stormwater management options and preliminary design for the ponds included in the preferred alternative satisfy the requirements of the Municipal Class EA process, and therefore these ponds can proceed to detailed design as they are required.

Approvals will be required from the Region of York and City of Vaughan in conjunction with development applications, and permits required from TRCA and MOE will be required for the pond and storm outfall designs.

8.3.3 Evaluation Matrix

A copy of the evaluation matrix of the stormwater management alternatives is included on **Figures 15 and 16** and shows the evaluation of the impacts on the natural, social, economic and cultural environments, as well as a comparison of technical factors.

In general, there are no significant impacts anticipated from the preferred stormwater management strategy.

STORMWATER MANAGEMENT
EVALUATION OF ALTERNATIVES

WET PONDS in the 1990's wet ponds were commonly constructed to remove pollutants, provide flood and erosion controls/ protection and thereby improve water quality.

DRY PONDS were commonly constructed in the 1970's and 1980's to control flooding and erosion resulting from increased urbanization.

OIL GRIT SEPARATOR is a manufactured unit designed to capture sediment from stormwater and contain floatable pollutants within the unit.

LEGEND

Existing Storm Sewer

Proposed Storm Sewer

QUANTITY CONTROL	QUALITY CONTROL	QUALITY & QUANTITY CONTROL
Dry Pond	Wet Pond	Combined Pond
Underground Quantity Storage	Oil Grit Separator	

A

CONSTRUCT NEW QUANTITY CONTROL SWMF

RETROFIT EXISTING SWMF TO INCLUDE QUALITY AND QUANTITY CONTROL SWMF

CONSTRUCT NEW QUALITY & QUANTITY CONTROL SWMFs

PROPOSED ROOF RUNOFF

OIL GRIT SEPARATOR (IF REQUIRED)

B

CONSTRUCT NEW QUANTITY CONTROL SWMF

RETROFIT EXISTING SWMF TO INCLUDE QUALITY AND QUANTITY CONTROL SWMF

PROPOSED ROOF RUNOFF

OIL GRIT SEPARATOR (IF REQUIRED)

EVALUATION MATRIX

Category	Criterion	Measure	Option 'A'	Option 'B'	Option 'C'
Natural Environment	Habitat and Species	Extent of Disturbance	▼	▼	▼
		Sensitivity of Vegetation	▼	▼	▼
		Species at Risk	✓	✓	✓
	Woodlots	Extent of Disturbance	✓	✓	✓
	Watercourse	Risk to Fish Habitat	✓	✓	✓
Social Environment	Property		✱	✓	✓
		Visibility of Relevant Parcels	✱	▼	✓
	Community Disturbance(s)	Noise	▼	▼	▼
		Vibration	▼	▼	▼
		Dust	▼	▼	▼
		Air Quality	▼	▼	▼
	Conflicts with Other Land Uses		▼	✓	✓
	Water Wells		✓	✓	✓
Economic Environment	Capital Cost Infrastructure	Land - Detail pond way in km	✓	✱	✓
		Stormwater Management Facilities quantity	▼	✱	✓
		Storm Sewers	✓	▼	✓
	Maintenance Cost	Facility Maintenance	▼	✱	✓
Cultural Environment	Archaeological Resources	Presence of Known Artifacts	▼	✓	▼
	Heritage Landscape		✓	✓	✓
	Built Heritage		▼	▼	▼
Technical Factors	Construction	Technique/ Complexity	▼	✓	✱
	Maintenance	Ease of Accessibility	▼	✓	✓
		Resulting Snow Melted Drops	▼	✓	✓
		Phasing Flexibility (e.g. using existing infrastructure may allow to upgrade infrastructure in stages	▼	✓	✱
		Timing Approvals	▼	✓	✓
Overall			▼	✓	✱

✱ BEST ✓ GOOD ▼ POOR ✘ FAIL

Figure 15 | **Stormwater Management Evaluation of Alternatives**

VAUGHAN GHD

STORMWATER MANAGEMENT
PREFERRED ALTERNATIVE

LEGEND

Existing Storm Sewer

Proposed Storm Sewer

QUANTITY CONTROL
- Dry Pond

QUALITY CONTROL
- Wet Pond
- Oil Grit Separator

QUALITY & QUANTITY CONTROL
- Combined Pond
- Expansion Pond

Future TTC Subway Station

C

ALTERNATIVE C IS THE PREFERRED ALTERNATIVE.
Specific servicing requirements would be determined at the development application stage.

CONSTRUCT NEW QUANTITY CONTROL SWMF

PROPOSED ROOF RUNOFF

RETROFIT EXISTING SWMF TO INCLUDE QUALITY AND QUANTITY CONTROL (EXPAND SWMF ONCE UPS REDEVELOPS)

OIL GRIT SEPARATOR (IF REQUIRED)

CONSTRUCT NEW QUALITY AND QUANTITY CONTROL SWMF FOR MILESTONES LANDS (EXPAND SWMF ONCE OPA 620 LANDS TO THE WEST DEVELOP)

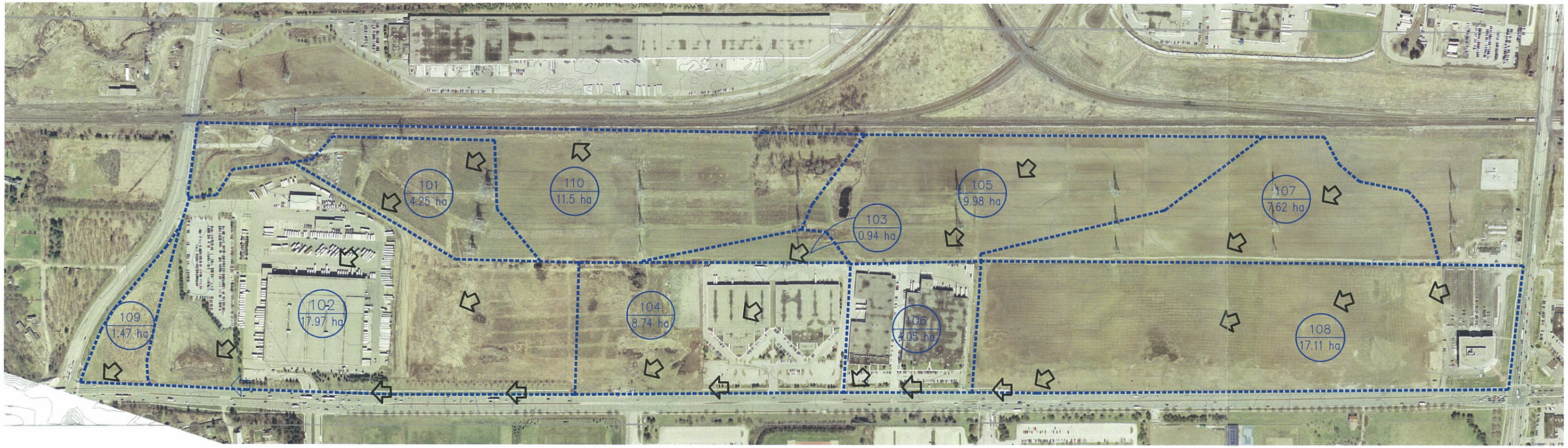
EVALUATION MATRIX

Category	Criterion	Measure	Option 'A'	Option 'B'	Option 'C'
Natural Environment	Habitat and Species	Extent of Disturbance	▼	▼	▼
		Sensitivity of Vegetation	▼	▼	▼
		Species at Risk	✓	✓	✓
	Woodlots	Extent of Disturbance	✓	✓	✓
	Watercourse	Risk to Fish Habitat	✓	✓	✓
Social Environment	Property		✸	✓	✓
		Viability of Remnant Parcels	✸	▼	✓
	Construction Disturbances	Noise	▼	▼	▼
		Vibration	▼	▼	▼
		Dust	▼	▼	▼
		Air Quality	▼	▼	▼
	Conflicts with Other Land Uses		▼	✓	✓
	Water Wells		✓	✓	✓
Economic Environment	Capital Cost Infrastructure	Land (total pond area in ha)	✓	✸	✓
		Stormwater Management facilities (ponds)	▼	✸	✓
		Storm Sewers	✓	▼	✓
	Maintenance Cost	Facility Maintenance	▼	✸	✓
Cultural Environment	Archaeological Resources	Presence of Historic Artifacts	▼	✓	▼
	Heritage Landscape		✓	✓	✓
	Built Heritage		▼	▼	▼
Technical Factors	Construction	Techniques/ Complexity	▼	✓	✸
	Maintenance	Ease of Accessibility	▼	✓	✓
		Resulting from SWMF Design	▼	✓	✓
		Phasing Flexibility (e.g. using existing infrastructure now/ ability to upgrade infrastructure in stages	▼	✓	✸
		Timing Approvals	▼	✓	✓
Overall			▼	✓	✸

✸ BEST ✓ GOOD ▼ POOR ✕ FAIL

Figure 16 | **Stormwater Management Preferred Alternative**

VAUGHAN | GHD



LEGEND

DRAINAGE BOUNDARY

101 / 4.25 ha — AREA I.D. / AREA (HECTARES)

FLOW DIRECTION

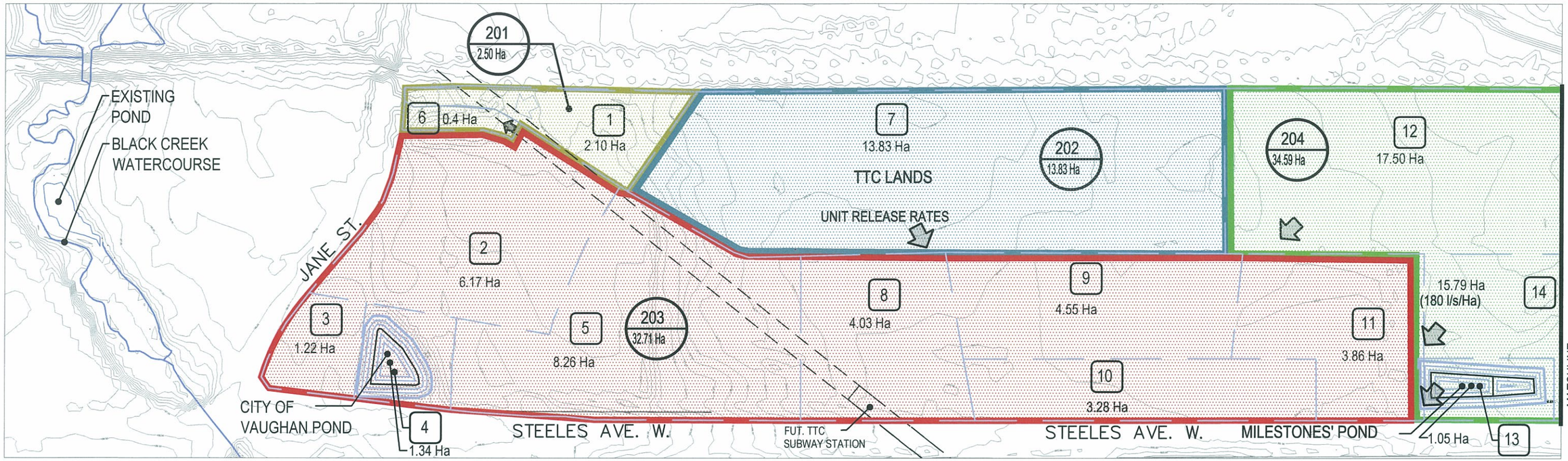
GHD

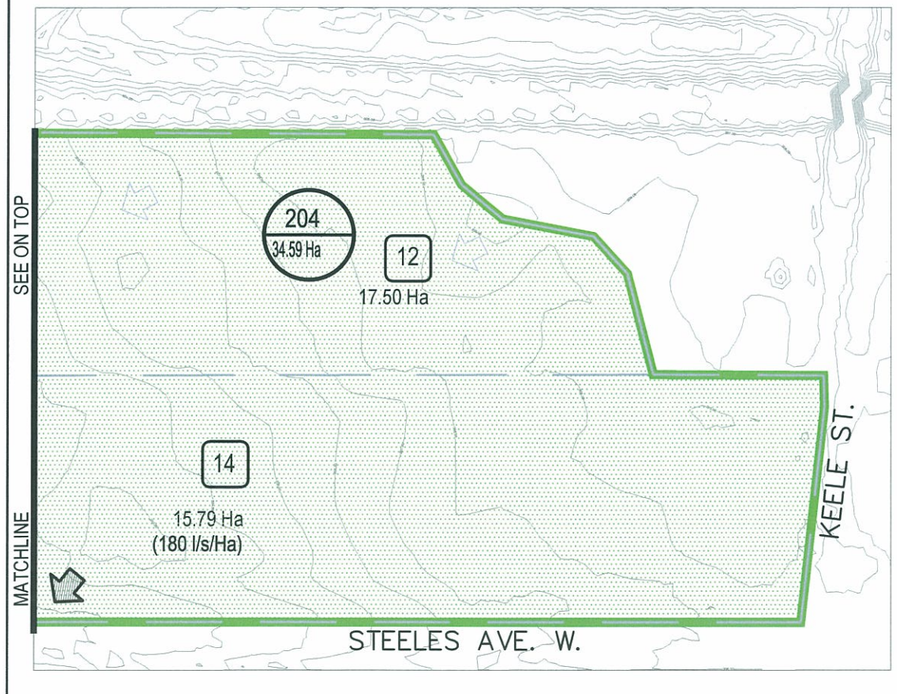
EXISTING DRAINAGE AREAS

OPA 620

SCALE N.T.S.	PROJECT No. 09321	FIGURE No. 17
DATE: SEP. 2012		
DRAWN BY : R.K.		

R/P Date = MAR. 02, 2007 File: 06452-FIGURES-EX.DWG





DESCRIPTION OF INTERIM #1 CONDITIONS

- MILESTONES' LAND IS DEVELOPED.
- NORTHWEST PORTION OF HYDRO CORRIDOR (TTC LANDS) WILL HAVE ON-SITE CONTROL TO UNIT RELEASE RATES.
- REMAINING AREAS DRAIN TO THE SAME LOCATIONS AS IN EXISTING CONDITIONS:
  1) THE BLACK CREEK WATERCOURSE, AND
  2) CITY OF VAUGHAN POND
- OVERALL REDUCTION OF THE CITY OF VAUGHAN POND DRAINAGE AREA OCCURS AS A RESULT OF THE MILESTONES' PROPERTY DEVELOPMENT AND TTC LANDS DEVELOPMENT.
- NO CHANGES TO THE CITY OF VAUGHAN POND.
- MILESTONES' POND IS A NEW QUALITY AND QUANTITY CONTROL FACILITY WITH THE 2-100 YEAR STORMS CONTROLLED TO UNIT RELEASE RATES.
- CITY OF VAUGHAN POND CONTINUES TO OUTLET TO THE BLACK CREEK WATERCOURSE.
- ALL OUTFLOW FROM THE MILESTONES' POND IS TO BE CAPTURED BY EXISTING STORM SEWERS ON STEELES.
- ON-SITE CONTROLS FOR THE MILESTONES' LANDS IN EFFECT (EXCEPT AREAS IN THE ROAD RIGHT-OF-WAY WHICH ARE LEFT UNCONTROLLED).
- NO ADDITIONAL CONTROLS FOR ALL OTHER AREAS.

LEGEND

- DRAINAGE AREA BOUNDARIES TO BLACK CREEK WATERCOURSE
- DRAINAGE AREA BOUNDARIES TO CITY OF VAUGHAN POND
- DRAINAGE AREA BOUNDARIES OF TTC LANDS
- DRAINAGE AREA BOUNDARIES TO MILESTONES' POND

202 / 13.83 Ha — DRAINAGE AREA, I.D. / DRAINAGE AREA, Ha

11 — VISUAL OTTHYMO MODELING ELEMENT NUMBERS

DIRECTION OF DRAINAGE RELEASE RATE TO STORM PIPE NETWORK

OVERLAND FLOW DIRECTION

4.03 Ha — VISUAL OTTHYMO MODELLING ELEMENT NUMBER DRAINAGE AREA

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6705 Millcreek Drive, Unit 1
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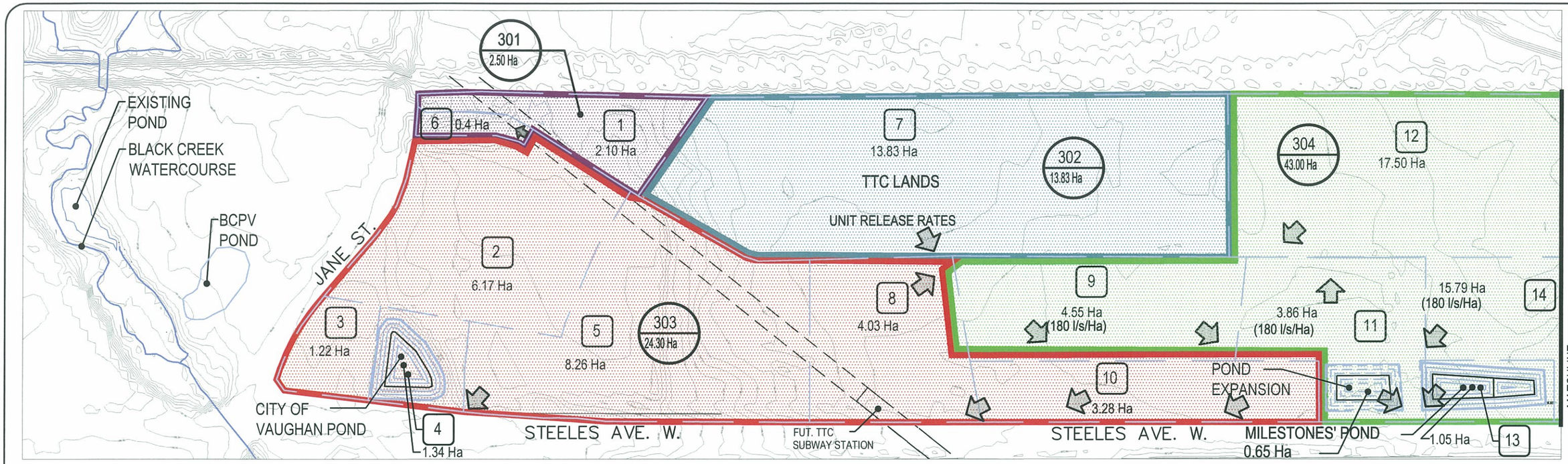
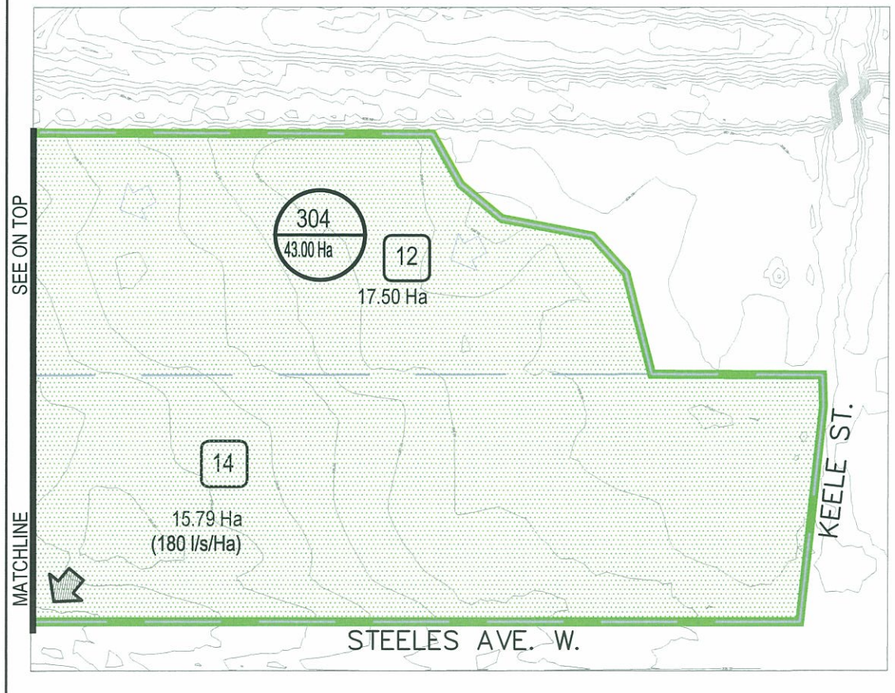
INTERIM #1 CONDITIONS
DRAINAGE BOUNDARIES

OPA 620

SCALE 1:5000	PROJECT No. 09321	FIGURE No. 18
DATE: SEP. 2012		
DRAWN BY : R.K.		





DESCRIPTION OF INTERIM #2 CONDITIONS

- ALL LANDS ARE DEVELOPED, WITH THE EXCEPTION OF THE UPS LANDS.
- LANDS WITHIN THE VISUAL OTTHYMO MODELING ELEMENTS 9 AND 11 ARE ADDED TO THE DRAINAGE AREA OF MILESTONES' PROPERTY POND.
- THIS INCREASE OF DRAINAGE AREA REQUIRES THAT THE MILESTONES' POND BE EXPANDED AND A POND ON THE BLACK CREEK PIONEER VILLAGE (TRCA) LANDS, ENTITLED THE BCPV POND, BE DEVELOPED (WEST OF JANE STREET).
- THE BCPV POND IS NEW QUANTITY CONTROL FACILITY (DRY POND) WITH THE 50-100 YEAR STORMS CONTROLLED TO UNIT RELEASE RATES.
- THE MILESTONES' POND WORKS IN SERIES WITH THE CITY OF VAUGHAN POND.
- THE CITY OF VAUGHAN POND OUTLETS WITH 50 AND 100 YEARS FLOWS GOING TO THE BCPV POND.
- ON-SITE LOT CONTROLS FOR ALL DEVELOPED AREA.
- THE ROAD RIGHT-OF-WAYS ARE UNCONTROLLED.
- DRAINAGE AREA ID 301 DRAINS DIRECTLY TO THE BCPV POND.

LEGEND

- DRAINAGE AREA BOUNDARIES TO THE BLACK CREEK PIONEER VILLAGE (BCPV) POND
- DRAINAGE AREA BOUNDARIES TO CITY OF VAUGHAN POND
- DRAINAGE AREA BOUNDARIES OF TTC LANDS
- DRAINAGE AREA BOUNDARIES TO MILESTONES' POND
- 301 / 2.50 Ha — DRAINAGE AREA, I.D. / DRAINAGE AREA, Ha
- 11 — VISUAL OTTHYMO MODELING ELEMENT NUMBERS
- DIRECTION OF DRAINAGE RELEASE RATE TO STORM PIPE NETWORK
- OVERLAND FLOW DIRECTION
- 4.03 Ha — VISUAL OTTHYMO MODELLING ELEMENT NUMBER DRAINAGE AREA

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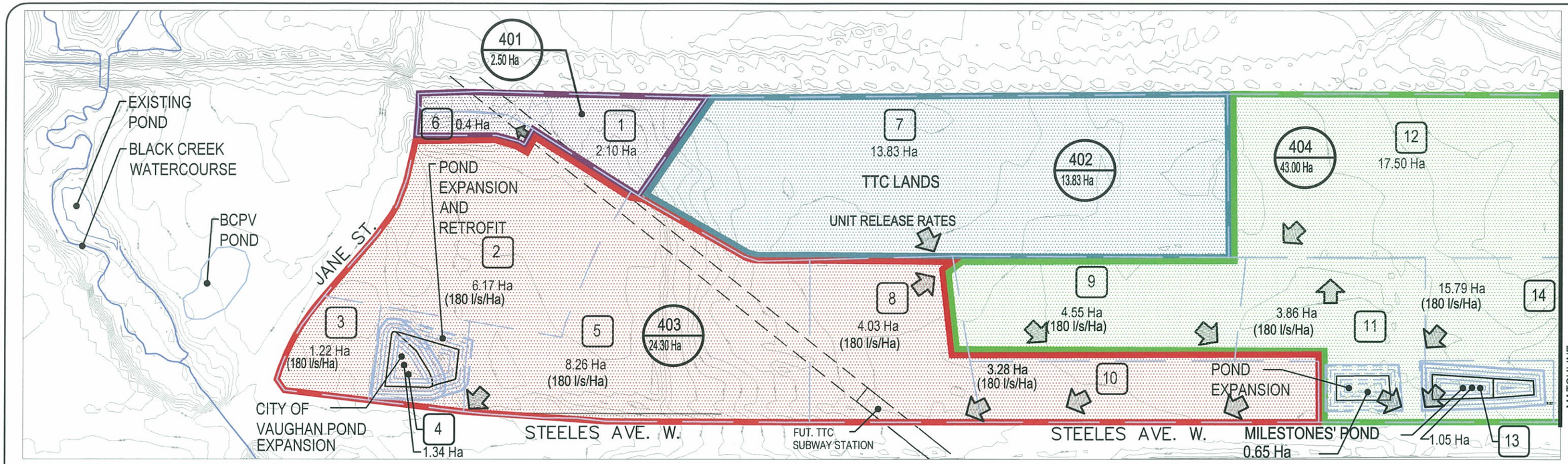
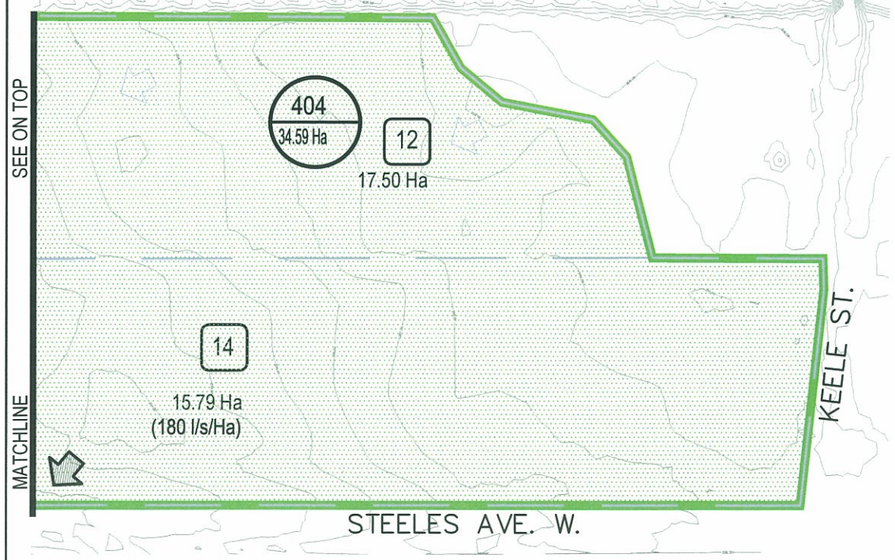
E ytomail@ghd.com W www.ghd.com

INTERIM #2 CONDITIONS DRAINAGE BOUNDARIES

OPA 620

SCALE 1:5000	PROJECT No. 09321	FIGURE No. 19
DATE: SEP. 2012		
DRAWN BY : R.K.		





DESCRIPTION OF ULTIMATE CONDITIONS

- UPS LANDS ARE DEVELOPED; CITY OF VAUGHAN POND IS EXPANDED TO ADDRESS UPS LANDS
- ALL LANDS ARE NOW DEVELOPED FOR OPA 620.
- CITY OF VAUGHAN POND IS RETROFITTED TO BECOME A QUALITY AND QUANTITY CONTROL FACILITY, WHICH CAN ACCOMMODATE THE 2-50 YEAR STORMS UNIT RELEASE RATES.
- DRAINAGE AREA ID 401 DRAINS DIRECTLY TO THE BCPV POND.
- THE MILESTONES' AND CITY OF VAUGHAN POND CONTINUE TO WORK IN SERIES AND OUTLET TO THE BCPV POND.
- ON-SITE LOT CONTROLS AT 180l/s/Ha IN EFFECT FOR ALL DEVELOPED LANDS EXCEPT THE TTC LANDS WHICH ARE CONTROLLED TO UNIT RATES.
- ROAD RIGHT-OF-WAY DRAINS UNCONTROLLED.

LEGEND

- DRAINAGE AREA BOUNDARIES TO THE BLACK CREEK PIONEER VILLAGE (BCPV) POND
- DRAINAGE AREA BOUNDARIES TO CITY OF VAUGHAN POND
- DRAINAGE AREA BOUNDARIES OF TTC LANDS
- DRAINAGE AREA BOUNDARIES TO MILESTONES' POND

404 / 34.59 Ha — DRAINAGE AREA, I.D. / DRAINAGE AREA, Ha

11 — VISUAL OTTHYMO MODELING ELEMENT NUMBERS

DIRECTION OF DRAINAGE RELEASE RATE TO STORM PIPE NETWORK

OVERLAND FLOW DIRECTION

4.03 Ha — VISUAL OTTHYMO MODELLING ELEMENT NUMBER DRAINAGE AREA

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ULTIMATE CONDITIONS
DRAINAGE BOUNDARIES

OPA 620

SCALE 1:5000	PROJECT No. 09321	FIGURE No. 20
DATE: SEP. 2012		
DRAWN BY : R.K.		

9. Implementation

The preferred servicing strategies support the short and long range servicing needs of the OPA 620 study area.

The completion of the Municipal Servicing Master Plan also represents completion of alternative solutions (Phase 2) of the EA process. Schedule A, A+ and B projects may proceed to implementation (Phase 5) once the thirty (30) day review period has expired and no Part II orders are received. It is anticipated that during implementation some of the projects may be subject to further study and analysis in order to provide refinements to sitings and alignments. The projects associated with these studies would not require further planning under the Class EA process.

Table 8: Water Projects and Class EA Schedule

ID	Project Description	Class EA Schedule	Notes
W1	Realigned trunk watermain at Steeles Avenue/Jane Street intersection (including abandoning ex. watermain)	A+	1
W2	New trunk watermain on future east-west road, including north-south interconnections	A+	1

Table 9: Sanitary Sewer Projects and Class EA Schedule

ID	Project Description	Class EA Schedule	Notes
S1	New trunk sanitary sewer on Steeles Avenue from east of VPS lands to Jane Street at CNR (including abandoning existing sewer)	A+	1
S2	Extension of existing trunk sanitary sewer on Steeles Avenue from current east limit towards Keele Street	A+	1
S3	New trunk sanitary sewer on future east-west road	A+	1

Table 10: Stormwater Management Projects and Class EA Schedule

ID	Project Description	Class EA Schedule	Notes
SWM1	Construct new quantity/quality control facility on Milestones property for east OPA 620 lands	B	1
SWM2	Retrofit/expand existing quantity control facility on City of Vaughan/Region of York lands	B	1
SWM3	Expand SWM2 facility to service redeveloped UPS lands	B	1
SWM4	Construct dry quantity pond on BCPV lands	B	1

Note:

1. The timing and scope for projects contained within this Master Plan is subject to change without amendment to this Master Plan in order to allow for developments to occur in an orderly fashion and to meet the objectives and timing of the overall plan. Minor modifications to locations, sizes and phasing may be required and will not require amendment to this Master Plan.

Following are requirements that may need to be addressed during subsequent phases of the projects:

- Confirmation of infrastructure size, location, phasing, etc.
- Confirmation of property requirements
- Refinement of alignments and sitings
- Completion of additional supporting studies such as geotechnical and hydrogeological studies, to establish construction requirements, evaluate potential impacts and provide recommended mitigation measures during construction. Particular emphasis on Black Creek Pioneer Village North lands is required to mitigate impacts on historical buildings. Additional studies such as vibration monitoring may be recommended before and during construction.
- Identification of mitigation measures to address site specific impacts during construction, maintenance and/or interruption of services, environmental management plan regarding contamination
- Identification of impacts and development of mitigation measures to alleviate impacts to water uses from construction or operational activities
- All stormwater measures shall include measures to address TRCA criteria including but not limited to:
  - TRCA's "Valley and Stream Corridor Management Program" need for permit under Ontario Regulation 166/06
  - Minimizes risk associated with flooding, erosion and slope stability
  - Provides for aquatic, terrestrial and linear access
  - Minimizes water/energy consumption and pollution
  - For the BCPV facility, addresses TRCA property and heritage resources concerns
- Erosion and siltation measures
- Maintenance of access for persons, businesses and transit
- Temporary impacts from noise, dust, vibration, air pollution and appropriate mitigation measures
- Approvals such as but not limited to:
  - Ministry of Environment (Certificate of Approval)
  - Ministry of Infrastructure (license or MOI Class EA)
  - Encroachment Permit from CN Railway
  - Approvals from the Region of York and City of Vaughan

  - Planning Act approvals (site plans, zoning, plans of subdivision or condominium, consent)
  - Permit approvals from Toronto & Region Conservation Authority
  - PTTW from the MOE
- Should potential construction or decommissioning of water wells be required, the proponent should have regard for Ontario Regulation 903, wells, under the *Ontario Water Resources Act*.
- In support of the Black Creek Pioneer Village Master Plan process, TRCA has undertaken a Natural Heritage Inventory of the existing natural features within Black Creek Pioneer Village. The Natural Heritage Inventory should be referenced by any proponent to inform the detailed design of the new stormwater management pond proposed on Black Creek Pioneer Village land.
- Within the hydro corridor lands, where development applications or engineering approvals anticipate removal of amphibian habitat, where feasible, consideration should be given to re-creation of habitat within the local area.
- The Black Creek Pioneer Village North Master Plan (see **Appendix 5**) is to be considered in relation to future development and detailed design.

10. Public and Review Agency Consultation

Consultation with the public and review agencies throughout the planning and design phases of a project is a key component of the Class EA process. Effective consultation provides an opportunity for all stakeholders to have a meaningful exchange of ideas and information. This collaborative approach results in better project design, less conflict and consistent application of relevant legislative and policy guidelines. **Section 2.0** of this report outlined Phases 1 and 2 of the Municipal Class EA planning and design process, indicating where points of public and agency consultation were mandatory. The following sections of the report provide the details of each of these consultations, and the overall approach to soliciting meaningful project input.

10.1 Stakeholders and Notice of Study Commencement

In Phase 1 of the Class EA process, the key project problem and opportunities were identified. At that time, a stakeholder list was compiled, representing all parties that could have an interest in the project and any agency that could have regulatory authority over any portion of the project. The stakeholder list was comprised of members of the public, government agencies, municipal staff, First Nations, special interest groups and individuals that expressed an interest in the project. The list of stakeholders is summarized below, with a full contact list provided in **Appendix 3.**

- Ministry of Environment
- City of Vaughan
- Regional Municipality of York
- City of Toronto
- Toronto & Region Conservation Authority
- Black Creek Pioneer Village
- TYSSE
- Ministry of Infrastructure
- Ministry of Culture
- Canadian National Railway
- Ministry of Municipal Affairs & Housing
- Black Creek Group
- German Heritage Society
- York University
- Milestone Group
- Indian and Northern Affairs Canada
- Ministry of Aboriginal Affairs
- Ministry of the Attorney General
- Utilities

A Notice of Study Commencement was prepared for the project and approved by the City of Vaughan. The Notice was distributed by mail on January 31 2010 and email on February 1 2010 to all stakeholders identified for the Study. Additionally, a Notice of Study Commencement was distributed by Black Creek Pioneer Village (BCPV) to stakeholders they identified, predominantly made up of members of BCPV and staff. The stakeholder list for Black Creek Pioneer Village is not included in an Appendix to this report as it contains confidential information collected for the purpose of membership and was collected for the sole use of BCPV. The notice was also advertised in *The Mirror* and *The Liberal* on January 31 and February 5 2010 and *The Citizen* on January 31 and February 4 2010. Copies of the Notice and advertisements are provided in **Appendix 2A.**

10.2 Consultation with Review Agencies

In response to the Notice of Study Commencement, comments were received from review and approval agencies, identifying their interests in the project. All Class EA related correspondence is provided in **Appendix 4. Table 11** summaries the issues that were raised by the review agencies, and the approach that was taken to address each of their comments.

Table 11: Legislative, Policy, and Management Plan Issues Identified by Review Agencies

Issue	Response	Report Section
MINISTRY OF ENVIRONMENT		
Any impacts to ecosystem form and function must be avoided where possible. The Master Plan should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.	Ecosystem form and function was studied as part of the existing environment documentation. Important features should be identified and considered during the planning and design phases of the project. General mitigation measures were outlined. Specific mitigation measures should be developed during the design phases of the project.	5.0 9.0
All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures.	A natural heritage inventory was conducted as part of the existing environment documentation. Mitigation measures for potential impacts were based on that assessment.	5.0 9.0
Consult with the MNR, DFO and the local Conservation Authority to determine sensitivity of the ANSI's, ESA's, rare species, watercourses, wetlands, and woodlots in the study area.	Each of these agencies was contacted to obtain relevant natural heritage information, and determine sensitivity of the features in the Study Area.	5.0
Demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the Study Area. The MOE Guidelines B-6, *Evaluating Construction Activities Impacting on Water Resources* should be used to plan and construct this project.	The B-6 guidelines are referenced in Section 8.2 of the report and there are no natural or ecologically significant features within the study area.	8.2
Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities are mitigated as part of the proposed undertaking.	Wording is provided in Section 9.0 to address this comment.	9.0

Issue	Response	Report Section
Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces.	Quality and quantity control for OPA 620 is discussed in Section 8.2.	8.2
MOE's *Stormwater Management Planning and Design Manual* (2003) should be referenced in the Master Plan and utilized when designing stormwater control methods.	The MOE SWMPD manual is referred to in the quality control section.	8.2
The status of and potential impacts to any well water supplies should be addressed. Appropriate information to define existing groundwater conditions should be included in the Master Plan.	A database report detailing water well information confirmed 8 water well information systems in the study area. The identified sites and the status of the wells should be determined at the detailed design stage.	Appendix 1F
If the potential construction or decommissioning of water wells is identified as an issue, the Master Plan should refer to Ontario Regulation 903, Wells, under the *Ontario Water Resources Act*.	There is no potential construction of water wells anticipated in this study. Should the need for a well or decommissioning of water wells be identified through detailed design, the proponent should have regard for Ontario Regulation 9003.	9.0 Appendix IF
Potential impacts to groundwater dependent natural features should be addressed, and appropriate mitigation measures provided.	There are no groundwater dependent natural features and in addition, this study intends to supply water to a surface feature within BCPV.	8.2
Any requirements for groundwater takings should be identified, and takings exceeding 50,000 L/day will require a Permit to Take Water under the *Ontario Water Resources Act*. Refer to the MOE *Permit to Take Water Manual* (April 2005).	PTTW is outlined in the implementation section.	9.0
Any potential air quality or odour impacts should be identified for this project to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment should be determined based on the potential effects of the proposed alternatives.	Any anticipated air quality or odour impacts are limited to the duration of construction and will be addressed through normal practices such as equipment maintenance and condition requirements.	9.0
Consult with the Environmental Assessment and Approvals Branch to determine whether a new or amended Certificate of Approval will be required for any proposed infrastructure.	All proposed water, sanitary and storm infrastructure will require a Certificate of Approval.	9.0

Issue	Response	Report Section
Refer to the MOE's "D-Series" guidelines – *Land Use Compatibility* to ensure that all applicable Ministry procedures are followed in planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.	The MOE "D-series" guidelines are referred to within the implementation section of the wastewater section.	7.3.1
Demonstrate consistency with applicable policies of the 2005 *Provincial Policy Statement*.	The *Provincial Policy Statement* was reviewed, and it was confirmed that the proposed project conforms with relevant policies.	3.2.2
Demonstrate adherence to the relevant policies in the *Places to Grow Plan*, including Section 3, which contains policies for infrastructure and growth.	*Places to Grow Plan* was considered in the development of this Master Plan, and it was confirmed that the proposed project conforms with relevant policies.	3.2.4
The Master Plan should clearly indicate the selected approach for conducting the plan by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects.	The level of investigation, consultation and documentation has been carried out to fulfill Phases 1 and 2 of the Municipal Class EA process and therefore requirements for Schedule B projects.	2.0
The Master Plan should include clear and complete documentation of the planning process in order to allow for traceability of decision-making.	Documentation of the planning process is incorporated into Appendix 2.	Appendix 2
Provide clear and complete documentation of the Class EA planning process, and demonstrate how public consultation requirements have been met.	Full public consultation was employed throughout the Class EA planning process with all required documentation provided within this Master Plan.	10.0 Appendix 4
Identify all potential impacts of the alternative solutions considered. Provide supporting studies referenced in the Class EA document.	Supporting studies for the Class EA are summarized in this report and are appended for public and agency review.	Appendix 1
Provide a list of all permits and approvals that are required for implementation of the preferred solution.	All required permits and approvals are identified, including those that could trigger a screening under the *Canadian Environmental Assessment Act*.	9.0
Contact the Ministry of Aboriginal Affairs and the Department of Indian and Northern Affairs to determine potentially affected Aboriginal peoples in the project area.	First Nations groups and the associated provincial and federal agencies responsible for First Nations affairs were contacted through the public consultation process for this Master Plan.	10.0 Appendix 4

Issue	Response	Report Section
Provide notification directly to the Aboriginal peoples who may be affected by the project, and provide an opportunity to participate in public consultation on the project.	Notification to specific First Nations groups identified as having an interest in the Study Area were contacted directly to solicit input and provide an opportunity for participation in consultations.	10.0 Appendix 4
MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING		
Ensure that any utility company that may have jurisdiction over the subject lands is satisfied with the proposal, and any required permits and/or approvals are secured.	Hydro One was consulted during the preparation of the Master Plan. During detailed design any project located adjacent to the Hydro corridor should be circulated to Hydro One for information and comment.	N/A
Ensure that the Ministry of Transportation and the Toronto & Region Conservation Authority comment on the proposed use of the subject lands.	There is no proposed use on the hydro corridor as part of the preferred solution.	N/A
Which agency will take ownership and manage the proposed stormwater facility within the Hydro Corridor?	There is no proposed use on the hydro corridor as part of the preferred solution.	N/A
Please note that the subject lands are designated as 'Electric Power Facility', 'Utility', 'Public Open Space and Buffer Area' and 'Inter Urban Transit' within the 'Public Use Area' of the Parkway Belt West Plan (PBWP). Section 5.4.1 of the PBWP outlines the permitted uses within the Public Use Area. PBWP Amendment No. 147 modified Section 5.4.1 b) to permit the following linear facilities: "Linear transportation, communication, and utility facilities, including necessary accessory facilities and installations such as interchanges, transit included stations, parking, maintenance/ storage yards, transformer stations, and treatment plants that are part of the linear distribution or collection networks."	Comment noted There is no proposed use on the hydro corridor as part of the preferred solution.	N/A

Issue	Response	Report Section
Section 6.5 of the PBWP outlines the specific objectives and implementation actions for lands located on Map 5: Northern Link (Woodbridge-Markham). As outlined in Section 6.5.2 n) 1) the subject lands, which are within the 'Electric Power Facility' designation, are to provide for transmission facilities from Claireview Transformer Station to Parkway Transformer Station. Moreover, abutting north of the hydro corridor is a 100 foot wide right-of-way (ROW) designated for future utilities as per Section 6.5.2 p). Based on the information provided, the proposed stormwater management facility on the subject lands is within close proximity to the utility ROW. Please ensure that any utility company that may have jurisdiction over the subject lands is satisfied with the proposal, and any required permits and/or approvals are secured.	Comment noted There is no proposed use on the hydro corridor as part of the preferred solution.	N/A
The subject lands are within the 'Public Open Space and Buffer Area' designation as part of the public open space area surrounding Black Creek. In addition, a 30 metre wide ROW is designated for the Inter-urban Transitway, which traverses through the subject lands west of Jane Street. Please ensure that the Ministry of Transportation and the Toronto & Region Conservation Authority comment on the proposed use.	Comment noted	5.2.3
CITY OF VAUGHAN RECREATION AND CULTURAL DEPARTMENT		
The study area is identified as a high potential for archaeological resources. Please include the Recreation and Cultural Department on the stakeholder list so that they can provide comment on the archaeological components of the study.	The City of Vaughan Recreation and Cultural Department was consulted through the planning process.	Appendix 3
YORK REGION EMERGENCY MEDICAL SERVICES BRANCH		
Please provide any information you may have on access routes, egress routes, duration of impediments, and possible impacts, if any, on the Emergency Services Sector.	Information on any impediments on the Emergency Services Sector should be provided to the York Region Emergency Medical Services Branch during detailed design.	10.0

Issue	Response	Report Section
TORONTO & REGION CONSERVATION AUTHORITY		
Ensure that the status, potential impacts and opportunities for enhancement related to the identified Areas of Interest are documented and assessed through a review of background material, technical study, field assessment and detailed evaluation, as appropriate.	Status, impacts and enhancement potentials are discussed and documented throughout the Stormwater Collection and Management section.	8.0
TRCA's *Valley and Stream Corridor Management Program*, Ontario Regulation 166/06 and TRCA's other programs and policies require that the preferred alternative meets the following criteria: 1. Prevents the risk associated with flooding, erosion and slope instability 2. Protects and rehabilitates existing landforms, features, and functions 3. Provides for aquatic, terrestrial and human access 4. Minimizes water/energy consumption and pollution 5. Addresses TRCA property and heritage resource concerns	Listed as part of the implementation requirements.	9.0
HYDRO ONE		
Detailed engineering plans must be submitted to System Investment for review and approval. The drawings must be scaled and must show boundaries of the Hydro One corridor, locations of all existing Hydro One structures, their centrelines as well as existing and proposed grades.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
Access to Hydro One facilities shall not be obstructed, at any time, during construction or after the completion of the project. If new access roads need to be built, they must be a minimum width of 6.0 metres and the proponent must bear all costs.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
A 15.0 metre radius around the existing Hydro One towers must remain undisturbed to preserve the work zone required for line maintenance.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A

Issue	Response	Report Section
Ensure that safe working clearances as specified in the *Ontario Health and Safety Act (OHSA)* for workers and equipment maintained at all times during construction activities.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
The installation of signs warning of overhead high voltage power lines are required as per OHSA and a dedicated signaller may also be required.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
There shall be no storage of any material on the hydro corridor without prior written permission of Hydro One. Any debris on the hydro corridor must be removed on an ongoing basis. There shall be no storage or tipping of garbage dumpsters, or storage or dispensing of gasoline or any other combustible substance on the hydro corridor.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
Light standards, flag poles, power distribution pole lines or other aerial installations are not permitted on the hydro corridor without prior written approval from Hydro One, Transmission Lines.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
A 6 metre wide access route to structures must be maintained at all times. Failure to do so will result in the proponents' responsibility for any costs incurred by Hydro One in regaining this access to perform maintenance or repairs.	Comment noted. There are currently no uses proposed on Hydro lands. Hydro One should be contacted should any work be required on their land prior to any work being considered.	N/A
Arrangements must be made for underground locates prior to digging, auguring or performing any excavation work on the hydro corridor.	Comment noted	N/A
Hydro One is not responsible for any damages or inquiries resulting from the effect of adverse weather conditions, including those from falling ice as a result of an ice storm.	Comment noted	N/A
All underground utilities must be designed to allow for vehicular traffic to pass over.	Comment noted	N/A

Issue	Response	Report Section
Any Hydro One transmission structures located within 10 metres of any construction activity related to this proposal shall have a temporary orange snow fence erected 3 metres around the tower footprint and this fence must be maintained in an upright position for the duration of construction. The proponents will be responsible for any damage to Hydro One facilities.	Comment noted	N/A
Plantings shall have a maximum mature height of 4 metres.	Comment noted	N/A
Based on preliminary investigations, how are you intending to provide services such as water and sewer from Keele Street to Jane Street? How does the east/west road fit in with your servicing strategy?	Provision of services from Keele Street to Jane Street are discussed through various sections in the report.	6.0, 7.0, 8.0
ENBRIDGE GAS DISTRIBUTION INC.		
Enbridge has buried plant in numerous locations throughout the planned work area. During the engineering design of the project please provide copies of plans for review.	Enbridge Gas Distribution Inc. should be consulted during the engineering design phase of the project(s).	9.0

10.3 Consultation with First Nations

To assist with developing a meaningful stakeholder list for the project and to fulfill the requirements of the Class EA process, the Notice of Study Commencement was initially forwarded to Indian and Northern Affairs Canada, Office of the Federal Interlocutor for Metis and Non-Status Indians, the Ministry of Aboriginal Affairs, the Ministry of the Attorney General, the Assembly of First Nations and the Chiefs of Ontario to identify which First Nations may have an interest in the project. The following First Nations were identified.

Mississaugas of Scugog Island First Nation

Chippewas of Georgina Island First nation

Alderville First Nation

Hiawatha First Nation

Curve Lake First Nation

Upon identification of the First Nations with potential interest in the project, individual mailings of project notices and information available from any previous consultation were provided. There were no responses received from individual First Nations. Full correspondence details are provided in **Appendix 4**.

10.4 Workshop at Black Creek Pioneer Village

In addition to the three public information centres, a stakeholder workshop was held to provide the opportunity for detailed discussion on the development and evaluation of the stormwater management strategy specifically on land owned and operated as Black Creek Pioneer Village. Copies of the Notice, sign-in sheet, presentation material and summary of comments is provided in **Appendix 2B**.

10.5 Public Information Centre #1

Phase 2 of the Class EA process involved identification and evaluation of various alternatives for the water and wastewater projects. After selection of the preliminary preferred solutions, a Public Information Centre (PIC) was held to describe the planning process to date and to receive feedback on the preliminary preferred solutions. The PIC introduced the study, described the Municipal Class EA process, presented existing environmental conditions of the study area, and presented the water, wastewater and stormwater alternatives that were being considered.

A Notice of the Public Information Centre was mailed and/or emailed directly to all stakeholders on June 3 2010. The Notice was also placed in *The North York Mirror* on June 3, 2010*, The Vaughan Citizen* on June 3 2010 and June 6 2010 and *The Vaughan Liberal* on June 3 and 6 2010. Copies of the Notice and advertisements are provided in **Appendix 2C**.

The PIC was held on Thursday, June 17 2010 at Black Creek Pioneer Village, Victoria Room, from 2:00 pm - 4:00 pm and 6:00 pm - 8:00 pm. A PowerPoint presentation of the material available as panels was conducted in both the afternoon and evening session. The presentation permitted an exchange of information between the Study Team and the Stakeholders. Representatives from the City of Vaughan, Sernas Associates and SRM Associates were available to answer questions. Eleven (11) members of the public and fifteen (15) agency staff attended the PIC.

Comment Sheets were offered throughout the meeting, three (3) comment sheets were received. A summary of comments received and responses is provided in **Section 10.8**. Copies of written comments are provided in **Appendix 2C**.

The sign-in sheet was retained for the study. The presentation material from the PIC was available on CD for those wanting to consider the information presented at a later time, and was available on request from the Study Team throughout the remainder of the study.

10.6 Public Information Centre #2

A second discretionary Public Information Centre was held on August 17 2010 to describe the planning process to date and to present and receive feedback on the refinements made to the preliminary preferred stormwater solutions. Refinements made to the SWMF solution were made as a result of input received from agency and stakeholders during and subsequent to PIC #1. PIC #2 was scheduled to coincide with the public information centre for the Black Creek Pioneer Village Master Plan which was conducted by Schollen & Company and Black Creek Pioneer Village. The rationale for combining the meetings was to recognize many of the stakeholders had interest in both studies and provide an opportunity to show how the recommendations of the Municipal Servicing Master Plan could be integrated into the Master Plan for BCPV.

A Notice of the Public Information Centre was mailed and/or e-mailed directly to all stakeholders on August 5 2010. The Notice was placed in *The North York Mirror* on August 5 2010, *The Vaughan Citizen* on August 5 and 8 2010 and *The Thornhill Liberal* on August 5 and 8 2010. Copies of the Notice and advertisements are provided in **Appendix 2D**.

The Public Information Centre was held at Black Creek Pioneer Village, Theatre Room, from 2:00 pm – 4:00 pm and 7:00 pm – 9:00 pm. The Study Team was available throughout the meeting to answer questions including representatives from the City of Vaughan, Sernas Associates and SRM Associates.

Sixteen (16) members of the public and twenty (20) agency staff attended the PIC.

Comment Sheets were offered throughout the meeting, one (1) was received. A summary of comments received and responses is provided in **Section 10.8**. Copies of written comments are provided in **Appendix 2D**.

The sign-in sheet was retained for the study. Presentation material from the PIC was available on CD for those wanting to consider the information presented at a later time and was available on request from the Study Team throughout the remainder of the study.

10.7 Public Information Centre #3

A third discretionary Public Information Centre was held on May 17 2011 to present the preferred stormwater management solution and to receive feedback. The PIC reviewed the study progress to date, described the Municipal Class EA process and presented next steps in the study.

A Notice of the Public Information Centre was mailed and/or e-mailed directly to all stakeholders on May 3 2011. The Notice was placed in *The North York Mirror* on May 5 2011, *The Vaughan Citizen* on May 5 2011 and *The Thornhill Liberal* on May 5 2011. Copies of the Notice and advertisements are provided in **Appendix 2E**.

The Public Information Centre was held at Black Creek Pioneer Village, Victoria Room, from 2:00 pm – 4:00 pm and 7:00 pm – 9:00 pm. The Study Team was available throughout the meeting to answer questions. Six members of the public and ten agency staff attended the PIC.

Comment Sheets were offered throughout the meeting, two (2) comment sheets were received. A summary of comments received and responses is provided in **Section 10.8**. Copies of written comments are provided in **Appendix 2E**.

The sign-in sheet was retained for the study. Presentation material from the PIC was available on CD for those wanting to consider the information presented at a later time and was available on request from the Study Team throughout the remainder of the study.

10.8 Correspondence with Stakeholders

Table 12: Consultation with Public Stakeholders

Issue	Response	Report Section
What are the potential impacts on buildings of historical significance at the western end of the study area? Please note that the Dalziel Barn is over 200 years old and found directly within the study area.	The City has been in discussions with TRCA and Black Creek Pioneer Village throughout the study to minimize potential impacts to historical buildings. The stormwater alternative proposed in the vicinity of the buildings was altered during the planning process in discussion with TRCA and Black Creek Pioneer Village and in consideration of the ongoing Black Creek Pioneer Village Mater Plan. Specific construction management plans detailing how potential impacts are to be mitigated during any construction will be required for any work in the vicinity of the historic buildings.	9.0
Please be advised that there are a number of built cultural heritage features located within the study area including: Dalziel Barn Sawmill located on Black Creek Pioneer Village site Hoover House located on York University property Edgeley Mennonite Cemetery located north of Highway 7 east of Jane Street		9.0
Upon review of the panels shown at the Public Information Centre, one slide mentions the project is Category B under MEI Class EA, while previous slides refer to the Municipal EA. Is this project also proceeding under MEI's Class EA or just the Municipal Class EA?	The project is proceeding under the Municipal Class EA and MEI's Class EA. There is a hydro corridor within the study area and there are a number of options being considered which include the use of a portion of the corridor for stormwater management purposes. We discussed the project with Hydro One at the outset of our study and coordinated the notice to include identification of the MEI Class EA process. We have attached a copy of the Notice of PIC #1 for your reference and file.	Appendix 4

	Discussions are ongoing with Hydro One as to their acceptance of infrastructure on their site, we anticipate having their final comments prior to presenting the technically preferred stormwater management strategy at the second PIC which is scheduled for August 17th.	
Is the Conservation Authority on board with locating the proposed SWM pond in the Black Creek area?	With respect to the stormwater management options within the Black Creek Area, we have engaged TRCA and Black Creek Pioneer Village in our consideration of alternatives from the outset. In addition to discussions with technical staff, we conducted a workshop with technical staff and stakeholders including descendants of the property, Black Creek Pioneer Village members and others identified by Black Creek Pioneer Village as potentially having an interest in the study. The meeting was attended by approximately 35 stakeholders and proved invaluable in gaining insight to inform the alternatives being considered for the project.	Appendix 2 and 4
Stormwater Management Option F is the best. We would like to see implementation as soon as possible.	Comment noted	N/A
Our main concern is raising awareness of the impact of poor lighting on the night sky. York University's observatory is just South of Steeles and any poor lighting will impact the educational and research activities conducted at the telescope domes.	The City of Vaughan has hired a design consultant to develop Urban Design Guidelines and a Streetscape Master Plan for the OPA 620 Study Area. We are at the very beginning of the study process and welcome stakeholder participation. If you would like to attend our Stakeholder Interview please let us know and we would be pleased to add you to the list of attendees. The assigned consultant has been directed to include mitigation of light pollution as part of the Urban Design Guidelines and Streetscape Master Plan.The study scope of work does not include municipal street light design, however, it can be incorporated into sustainable Urban Design Guidelines and any pedestrian scale lighting within the Streetscape Master Plan.	N/A

What is the timing for completion of the project?	With respect to the timing/completion of the project, the second PIC will be held on August 17 2010 where the preferred solutions for stormwater management will be presented. The City intends to take a report to Council in September 2010 recommending approval of the preferred servicing strategy. The final Notice of Completion is expected to be issued in the fall of 2010.	N/A
How does the project impact existing development applications?	The servicing for all development applications within the OPA 620 Study Area shall conform to the final conclusions and recommendations of the OPA 620 Servicing Master Plan EA.	9.0
Who was notified and how for the March stakeholders meeting?	With respect to the March Stakeholders workshop at Black Creek Pioneer Village (BCPV) the stakeholders were identified by staff at BCPV, e.g. stakeholders with historical connection to the property, members of BCPV, etc. The stakeholders identified were notified of the workshop via e-mail directly through Black Creek Pioneer Village. The BCPV Stakeholder list is kept confidential by BCPV and as such the General Manager of BCPV facilitated the circulation of the notice.	Appendix 3
How was notification provided for this meeting and to whom?	The notification of PIC #1 was mailed to all stakeholders on our mailing list on June 3rd 2010. A copy of those mailings are attached for your reference. The company and personal names of the stakeholders (other than agencies) have been protected for privacy, however, the addresses of the stakeholders are provided. Additionally, the notification of PIC #1 was placed in the Vaughan Citizen and Vaughan Liberal on Thursday June 3rd and Sunday June 6th and in the North York Mirror on June 3rd 2010.	Appendix 2 and 3 Appendix 2 and 3

How were stormwater pond sizes determined?	In general the sizes of the proposed ponds are governed by the quantity control volume requirements. For OPA 620 post-development peak runoff rates are to be controlled to pre-development Unit Flow Rates. This requirement was established in the Humber River Watershed Study (Aquafor Beech, 1997). Ponds were sized using Visual OTTHYMO hydrology modelling which reflects the OPA 620 plan and takes into account on-site controls and the recommended sustainable technologies. Each pond area shown on the plans represents the area needed to retain the required quantity control volume given general assumptions in terms of grading, pond depth, pipe inverts, etc. Sustainable technologies are proposed to meet the requirement for on-site retention of 7.5mm of rainfall for site areas and 15mm of rainfall for 50% of the roof areas. There could be a number of technologies which could be used to meet these requirements. A ranking of these technologies were presented at the public information centre.	8.0
How realistic is the stormwater management alternative within the hydro corridor? Is Hydro One a willing party?	With respect to the proposed stormwater management facility in the hydro corridor, the City continues to have meaningful discussions on the details and logistics of accommodating a stormwater management facility within the hydro corridor lands with Hydro One.	Appendix 4
Has the Keele/Steeles site plan application been factored into your work?	The work carried out to date factored in the density and coverage envisioned through the policies of OPA 620. Site specific details from pending applications were not factored into the work, however should the application conform to the OPA 620 policies, the servicing strategies recommended in the Master Plan are designed to accommodate those developments.	N/A

Please provide cross-sections for the east/west road as related to water and sanitary service locations and sizing.	We have attached herein drawings providing the location and sizing of water and sanitary services within the OPA 620 study area. Note that the preferred solution has been slightly modified from those presented at PIC #1. The modifications were made in the vicinity of UPS lands to address comments from UPS received after the PIC. The project proposes alignments and sizing to accommodate existing and potential development within the study area. The detailed design and cross-sections of the services will be available in the future through the City at the detailed design/implementation stage which is beyond the scope of this Master Plan project.	N/A
Milestones requested a meeting with City staff to discuss details of the project, including timing of design, implementation, costing, etc.	As per your request we understand that City of Vaughan staff met with yourself and representatives of Milestones to discuss the timing of design, implementation, costing, etc. as it relates to the pending Site Plan application.	Appendix 4
We remain concerned with the stormwater management preferred plan and do not support the pond in the hydro corridor. We require confirmation that the process and its outcomes will not delay the on-going site plan application process being completed for the Milestone site. The City will continue to work with Milestone regarding interim servicing solutions as may be required to facilitate the next phase of development for Milestone in the absence of a final/long-term solution being in place.	Comment noted. The City has met with Milestones to address their concerns and continue to meet upon request.	N/A
We request confirmation that the Master Plan process will not delay the ongoing site plan application process.	The City met with Milestones to discuss their planning applications and to ensure information was provided to assure the landowner that the Master Plan process would not delay any planning act application.	Appendix 4

How is the stormwater management solution incorporated into Black Creek Pioneer Village?	The stormwater management pond proposed on the Black Creek Pioneer Village site will provide dry storage for water quantity control from the OPA 620 lands. When water is evident in the pond it will remain for less than 24 hours. 40,000m^2 of stormwater will be treated and diverted to the storm pond on Black Creek Pioneer Village. The stormwater strategy has been refined between PIC 1 and 2 to lessen the area required.	N/A

Respectfully submitted

GHD Inc.

Ken Chow, P.Eng.
Manager, Transit Infrastructure

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