

APPENDIX A

Public Consultation Records

APPENDIX A1

Notice of Commencement

NOTICE OF STUDY COMMENCEMENT

VAUGHAN METROPOLITAN CENTRE – BLACK CREEK RENEWAL MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT VAUGHAN, ONTARIO

The City of Vaughan recently completed the Black Creek Storm Water Optimization Study Master Plan Class Environmental Assessment. The study identified a range of alternative solutions to reduce flooding and flood damages, improve water quality and limit stream bank erosion in Black Creek. The preferred solution to address flooding was determined to be the reconstruction and renewal of Black Creek between the Edgely Pond (north of Highway 7) and Highway 407. The **Vaughan Metropolitan Centre (VMC) – Black Creek Renewal Class EA** will consider different potential alignments and physical forms for Black Creek within the study area and establish a plan for the renewal of Black Creek that satisfies all applicable regulatory criteria.



STUDY AREA

The study area is primarily located east of Jane Street, from just north of Highway 7 to just north of Highway 407 as highlighted on the Map (left).

SCHEDULE 'C' CLASS EA

The City of Vaughan has selected The Municipal Infrastructure Group Ltd. to complete the Municipal Class Environmental Assessment Study. The Study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 2007 & 2011). Phases 1 and 2 of the Environmental Assessment were addressed in the Black Creek Storm Water Optimization Master Plan. The **VMC Black Creek Renewal Class EA** will fulfill the requirements of Schedule 'C' Phases 3 and 4 and will address alternative designs, their impacts and all mitigating measures. The preferred design(s) will be determined based on engineering requirements, environmental considerations, public input and information gathered during the study.

CONSULTATION

Opportunities to provide input to the planning and design process are provided throughout the Study. This Notice of Study Commencement is being issued to notify the public of the project and to invite comments. To further facilitate public input, we encourage those with an interest in the study to provide their input at any of the scheduled Public Information Forums held by the City. Two Public Information Forums (PIF's) have been proposed as part of the Study. The first PIF will be held later this year to present alternative designs and receive public input prior to evaluating the alternatives. The notices of the PIFs will be published in local newspapers with details of the location and time. At the completion of the Study, a comprehensive Environmental Study Report will be filed for public review.

COMMENTS OR QUESTIONS

The Study Team is interested in receiving any comments that you may have about the Study. Should you have any questions or comments, require further information, or wish to be added to the study mailing list, please contact one of the Study Team members:

Mr. Saad Yousaf, P.Eng., PMP
Storm Drainage Engineer
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: (905) 832-8585 ext. 8251
Fax: 905-832-6145
Email: saad.yousaf@vaughan.ca

Mr. Abe Khademi, P.Eng., PMP
Consultant Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 237
Fax: 905-738-0065
Email: akhademi@tmig.ca

Please note that information related to this Study will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments received will become part of the public record and may be included in Study documentation prepared for public review. Thank you for your interest in this study.

Andrew Pearce, Director of Development & Transportation Engineering

This notice was issued on July 5th 2012





July 24, 2012

**Re: Notice of Study Commencement
Vaughan Metropolitan Centre – Black Creek Renewal
Municipal Class Environmental Assessment**

Dear Sir/Madam:

The City of Vaughan recently completed the Black Creek Storm Water Optimization Study Master Plan Class Environmental Assessment. The study identified a range of alternative solutions to reduce flooding and flood damages, improve water quality and limit stream bank erosion in Black Creek. The preferred solution to address flooding was determined to be the reconstruction and renewal of Black Creek between the Edgely Pond (north of Highway 7) and Highway 407. The Vaughan Metropolitan Centre (VMC) – Black Creek Renewal Class EA will consider different potential alignments and physical forms for Black Creek within the study area and establish a plan for the renewal of Black Creek that satisfies all applicable regulatory criteria. A map of the study area is attached. The legal description is Lots 3, 4 and 5, concessions 4 and 5, in the former Township of Vaughan.

The Study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 2007 & 2011). Phases 1 and 2 of the Environmental Assessment were addressed in the Black Creek Storm Water Optimization Master Plan. The VMC Black Creek Renewal Class EA will fulfill the requirements of Schedule 'C' Phases 3 and 4 and will address alternative designs, their impacts and all mitigating measures. The preferred design(s) will be determined based on engineering requirements, environmental considerations, public input and information gathered during the study.

The Ontario Ministry of the Environment (MOE) advised us to contact you to determine potentially affected Aboriginal communities in the project area.

We would appreciate it if you could provide us with a list of aboriginal communities and their contact information. We will then inform these communities about the project and the upcoming public information forums.

Sincerely,

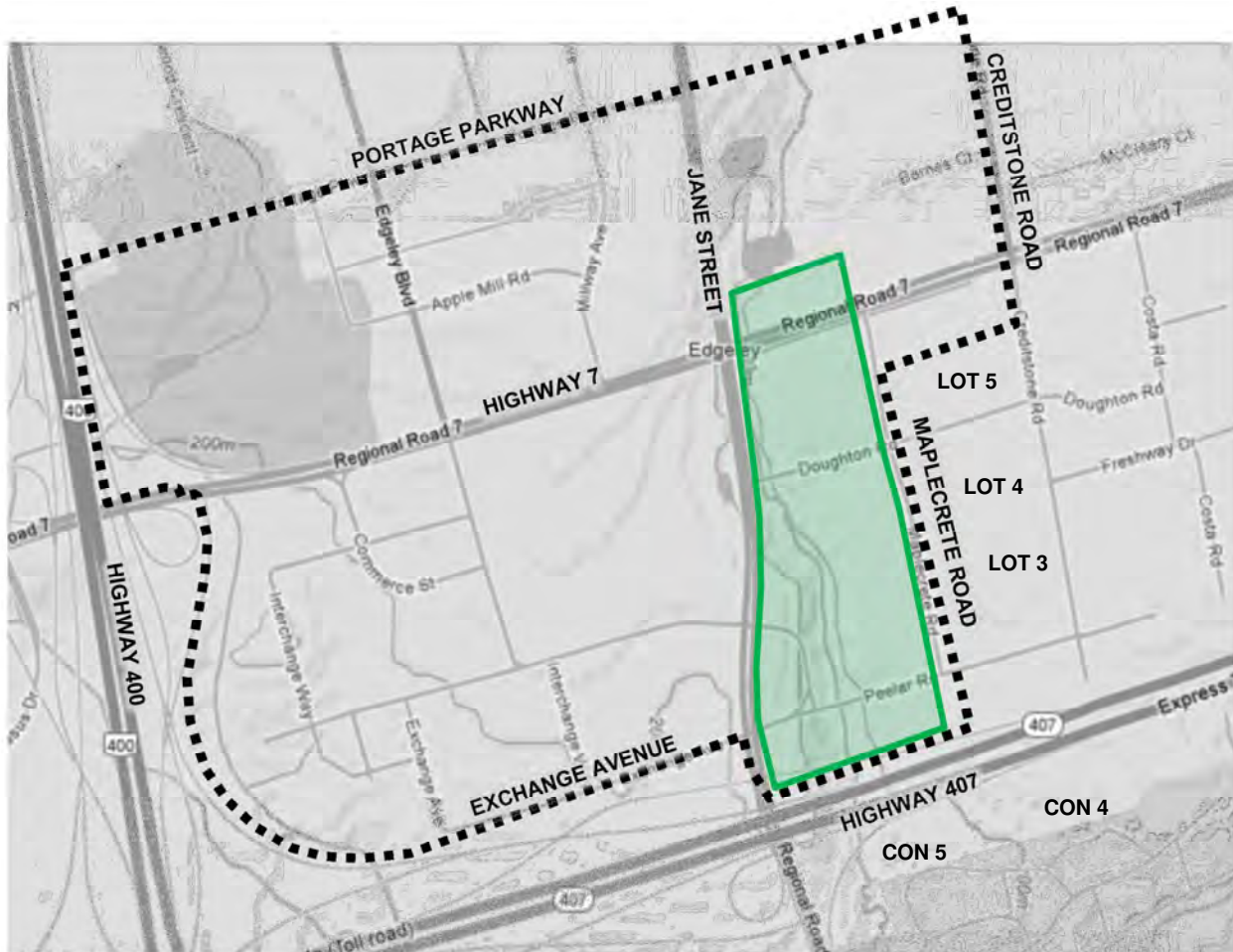
The Municipal Infrastructure Group Ltd.

Abe Khademi, P.Eng. PMP
Consultant Project Manager
akhademi@tmig.ca

cc: Saad Yousaf, Storm Drainage Engineer, City of Vaughan

8800 Dufferin Street, Suite 200
Vaughan, Ontario
Canada L4K 0C5
Tel: 905-738-5700
Fax: 905-738-0065
1 888-449-4430
www.tmig.ca

KEY MAP



- VAUGHAN METROPOLITAN CENTRE (VMC) SECONDARY PLAN AREA
- ▭ APPROXIMATE VMC BLACK CREEK RENEWAL STUDY AREA BOUNDARY

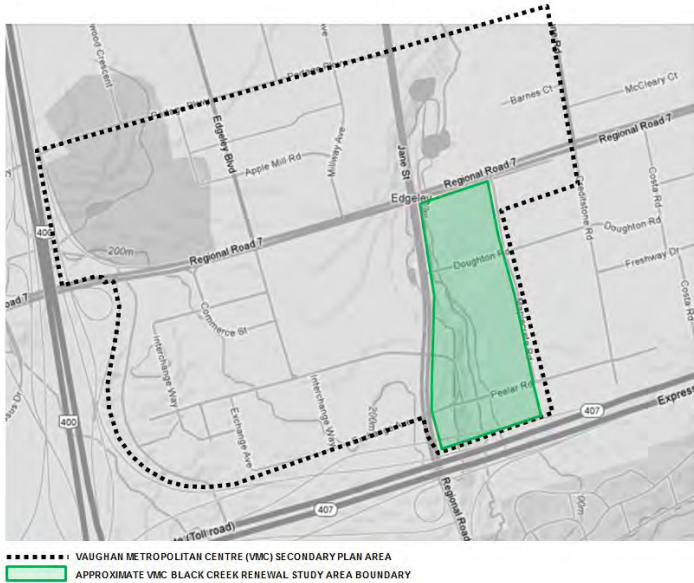
APPENDIX A2

Project Status Update

PROJECT STATUS UPDATE

VAUGHAN METROPOLITAN CENTRE – BLACK CREEK RENEWAL MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT VAUGHAN, ONTARIO

The City of Vaughan previously completed the Black Creek Storm Water Optimization Study Master Plan Class Environmental Assessment (EA) in 2012. The study identified a range of alternative solutions to reduce flooding and flood damages, improve water quality and limit stream bank erosion in Black Creek. The preferred solution to address flooding was determined to be the reconstruction and renewal of Black Creek between the Edgely Pond (north of Highway 7) and Highway 407. The **Vaughan Metropolitan Centre (VMC) – Black Creek Renewal Class EA** was initiated in 2012 to consider different potential alignments and physical forms for Black Creek within the study area and establish a plan for the renewal of Black Creek that will be compatible with the proposed land uses within the study area. The Black Creek Renewal Class EA was suspended shortly thereafter due to a number of land use planning issues affecting the study area. The land use planning issues have now been sufficiently resolved to allow the Black Creek Renewal Class EA to proceed.



STUDY AREA

The study area is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407 as highlighted on the Map (left).

SCHEDULE 'C' CLASS EA

The City of Vaughan has selected The Municipal Infrastructure Group Ltd. to complete the Municipal Class Environmental Assessment Study. The Study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 2007, 2011 & 2015). The **VMC Black Creek Renewal Class EA** will address alternative designs, their impacts and all mitigating measures. The preferred design(s) will be determined based on engineering requirements, environmental considerations, public input and information gathered during the study.

CONSULTATION

Opportunities to provide input to the planning and design process are provided throughout the Study. This Project Status Update is being issued to notify the public of the project's re-initiation and to invite comments. To further facilitate public input, we encourage those with an interest in the study to provide their input at a Public Information Forum (PIF) scheduled for Winter 2017. The notice of the PIF will be published in local newspapers with details of the location and time. At the completion of the Study, a comprehensive Environmental Study Report will be filed for public review.

COMMENTS OR QUESTIONS

The Study Team is interested in receiving any comments that you may have about the Study. Should you have any questions or comments, require further information, or wish to be added to the study mailing list, please contact one of the Study Team members:

Jennifer Cappola-Logullo, P.Eng
Project Manager, Vaughan Metropolitan Centre
Development Engineering & Infrastructure Planning
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: (905) 832-8585 ext. 8433
Fax: 905-832-6145
Email: Jennifer.Logullo@vaughan.ca

Steven Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Fax: 905-738-0065
Email: shollingworth@tmig.ca

Under the Municipal Freedom of Information and Protection of Privacy Act, unless otherwise stated in the submission, any personal information included in a submission will become part of the public record.

Thank you for your interest in this study.



Andrew Pearce, Director of Development & Transportation Engineering





Vaughan City Hall
 2141 Major Mackenzie Dr. 905.832.2281
 Vaughan, ON L6A 1T1 www.vaughan.ca

8800 Dufferin Street, Suite 200 905.738.5700
 Vaughan, Ontario L4K 0C5 www.tmig.ca

January 16, 2017

██████████
 ██████████
 ██████████

Dear ██████████

**Re: VMC Black Creek Renewal, City of Vaughan
 Project Status Update of Municipal Class Environmental Assessment Study**

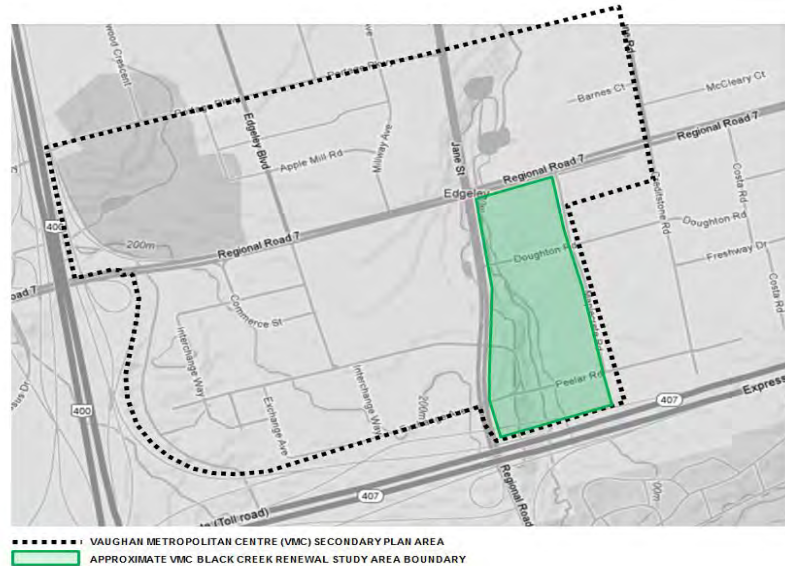
This letter is intended to provide a Project Status Update for the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Study given a considerable length of time has passed since the Notice of Commencement for the EA Study was first issued on July 5, 2012.

The VMC Black Creek Renewal Municipal Class Environmental Assessment (EA) Study, which is intended to establish the alignment and form of Black Creek through the south-east quadrant of the VMC Secondary Plan Area, initially started in 2012. Early in the process, it became apparent there were a number of conflicting interests in the size, alignment and configuration of a reconstructed and renewed Black Creek valley corridor between the landowners and review agencies. An extensive consultation and facilitation process took place over 2013 and 2014 with directly affected landowners and agencies to better understand key issues, opportunities and constraints.

Subsequent to the consultation and facilitation process described above, the Black Creek Financial Strategy and Development Charge Background Study was carried out to establish the framework for funding a number of projects within the VMC Secondary Plan, including potential realignment and renewal of Black Creek. The financial strategy was approved by Vaughan Council in June 2016.

It remains a requirement to refine and evaluate alternative alignments and configurations for the renewal of Black Creek and complete the EA Study that was initiated in 2012. Given the length of time that has passed since the Notice of Commencement was issued, we would like to confirm that our contact information is up to date and provide you with another opportunity to provide input to the development and evaluation of alternative solutions.

We have enclosed a copy of the original Notice of Commencement dated July 5th, 2012 along with a reply form. We would appreciate if you could complete and return the form to either of the undersigned. Note that the project contacts listed on the Notice of Commencement have been superseded by the undersigned, and there has been a slight modification to the original EA Study area boundaries. The revised EA Study area boundary is shown in the Map below.



The alternatives and the recommended solution will be presented at a Public Information Forum (PIF), tentatively scheduled for March 2017, with the final Environmental Study Report and Notice of Completion anticipated for May and June, 2017, respectively. We welcome your input and support throughout the remainder of the VMC Black Creek EA Study and look forward to seeing you at the PIF in the new year. Please contact Jennifer Cappola-Logullo or Steve Hollingworth (contact information below) with any questions or comments.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

Steve Hollingworth, P. Eng.
 Project Manager
shollingworth@tmig.ca
 905-738-5700 x359

CITY OF VAUGHAN

Jennifer Cappola-Logullo, P. Eng.
 Project Manager
Jennifer.Logullo@vaughan.ca
 905-832-8585 x8433

cc:

APPENDIX A3

Agency Meetings and Correspondence



agenda

DATE/TIME: Wednesday, May 9, 2012 **OUR FILE:** 12122

LOCATION: City of Vaughan

SUBJECT: Startup Meeting - Black Creek Optimization Study Class EA

1. Introductions
2. Project Schedule and Milestones
3. Key Objectives and Challenges
4. Stakeholder Consultation Strategy
5. Data Requirements
6. Other



agenda

DATE/TIME:	Tuesday, October 30, 2012	OUR FILE:	12122
LOCATION:	City of Vaughan		
SUBJECT:	VMC Black Creek Renewal Class EA Progress Meeting		

1. Introductions
2. Project Overview
3. Progress to Date
4. Draft Valley Corridor Concepts
5. Next Steps



agenda

DATE/TIME:	Monday, November 5, 2012	OUR FILE:	12122
LOCATION:	City of Vaughan		
SUBJECT:	VMC Black Creek Renewal Class EA Stakeholder Meeting		

1. Introductions
2. Project Overview
3. Progress to Date
4. Corridor Opportunities and Constraints
5. Next Steps



Meeting Notes
VMC Black Creek Renewal Class EA
Re: Black Creek Channel Concepts

Date: October 30, 2012, 9:00 am
Held: City of Vaughan

Attendees:

TMIG

David Ashfield
Abe Khademi
Steve Hollingworth

Schollen & Company

Mark Schollen

TRCA

Carolyn Woodland
Suzanne Bevan
June Little
Dan Hipple

City of Vaughan

John MacKenzie
Saad Yousaf
Christina Napoli
Maira Wilson
Rob Bayley
Anna Sicilia
Andrew Pearce
Carlos Coutto
Martin Tavares
Diana Birchall

The following key issues were discussed:

1. The Jane Street right-of-way (ROW) will be 45 m, not 54 m as envisioned in the adopted VMC Secondary Plan. The west limit of the Jane Street ROW will remain consistent with the west limit from the VMC Secondary Plan (which generally matches existing property boundaries along the west side of Jane Street)
2. The TRCA requested a 10 m buffer on both side of the channel, measured from the top of bank (not from the limit of the Regional flood plain). Trails, walkways and other 'soft' features could be placed within the 10 m buffer
3. The 25 m linear park proposed adjacent the east side of the channel corridor is under revision. It will likely be variable in width, with 'bump-outs' along the corridor. The VMC Black Creek Renewal Class EA project will not show the park on any of the concept plans.

Other items discussed included the following:

- TRCA staff had some concerns with the hard edges along the low flow channel proposed in the Option 3 concept plan
- City of Vaughan had some concerns with hard infrastructure in the flood plain (above the 5 year flood level) proposed in the Option 3 concept plan



October 30, 2012
Project 12122

- Hearings of necessity will likely be required to secure some of the property needed for full implementation of the Black Creek corridor. There must be defensible, technical justification for the extent of the Black Creek corridor.
- City staff requested that the phasing/implementation recommendations highlight a few key projects that could be reasonably implemented in the relatively near future.

Meeting Notes
VMC Black Creek Renewal Class EA
Re: Black Creek Channel Concepts

Date: November 5, 2012, 1:00 pm
Held: City of Vaughan

Attendees:

TMIG

David Ashfield
Abe Khademi

Valdor Engineering

David Giugouaz
Peter Zourntus

City of Vaughan

Saad Yousaf
Carlos Couto
Michael Frieri
John MacKenzie
Martin Tavares
Anna Sicilia
Moir Wilson

Omega Developments

Joe Pandolfo

SCS

Steve Schaefer

ZZEN Group

Sam Speranza

UEL

Rosario Sacco

Evans Planning

Joanna Fast

Cortel Group

Luka Kot
Peter Cortellucci

Bratty & Partners

Caterina Facciolo

Other Landowners

Tony Di Benedetto
Carmen Coppola

Liberty Development

Michael Uster
Fred Darvish
Marco Filice

Copies provided to all attendees

Copy:

Paul Jankowski – Commissioner of Engineering & Public Works
Andrew Pearce – Director of Development/Transportation Engineering
Jack Graziosi – Director of Engineering Services

1. TMIG staff provided a summary of some of the factors influencing the extent of the channel corridor, including
 - a. Conveyance of the Regulatory (Regional) storm
 - b. Meander Belt
 - c. The (future) Jane Street right-of-way
 - d. Aquatic and terrestrial habitat
2. TMIG indicated that, at an earlier meeting, the Toronto and Region Conservation Authority requested a 10 m buffer on both sides of the corridor (beyond the top of bank), but indicated some flexibility in terms of what can be located within the buffer.
3. TMIG staff presented a concept plan for a future channel configuration, sized to convey the Regional storm and including a 10 m buffer on both sides of the channel. Upgraded crossings are proposed at Highway 7, Doughton Road, Interchange Way and Peelar Road. The channel alignment is generally consistent with the previous Phase 1&2 EA report for Black Creek and with the amended VMC Secondary Plan. A large trunk sanitary sewer on the east side of Jane Street prevents the channel alignment from continuing adjacent Jane Street south of Interchange Way.

4. TMIG and City of Vaughan staff noted that a separate Streetscape and Open Space Master Plan study for the VMC area is being co-ordinated with the VMC Black Creek Renewal EA.
5. There was some discussion regarding alternative alignments. TMIG indicated that the alignment was established through Phase 1 and 2 work, but that alternative alignments have been reviewed leading to the current 'working model' of the channel. The potential alternative alignments will be documented in the final EA report, with appropriate justification for the preferred alignment
6. There was some discussion regarding the enclosure of the section between Highway 7 and the Edgeley Pond. TMIG indicated that enclosure is technically feasible and will be explored through the EA, but noted that any enclosure would be subject to acceptance by TRCA and input from Urban Design. Treatment of the reach north of Highway 7 will also be influenced by the relationship between the proposed retrofit of the Edgeley Pond and the channel.
7. There was some discussion regarding the need to renew Black Creek through the study area, and the contribution of upstream development to the extent of regional floodplain. TMIG explained that the extent of regional floodplain in this area is a function of local constraints (culverts and channel configuration), as well as local topography, and less related to upstream development and stormwater management. TMIG also explained that the Edgeley Pond is proposed for retrofit to further reduce peak flows and provide water quality treatment, but this would not affect the regional flow and flood limits downstream.
8. There was some discussion regarding the property at the south limit of the study area and the opportunity to modify the channel alignment. TMIG staff indicated that the 407 culvert at the south end of the study area is a fixed point, but that some flexibility in the channel configuration might be possible subject to all other design considerations, and all reasonable channel alignments will be explored and evaluated through the EA process.
9. There was some discussion regarding the expected cost and sources of funding for channel work. TMIG and City staff indicated that costs are subject to further advancing the channel concept, and that the funding approach is also under review. Input from the affected landowners is desired, and the City is considering use of development charges to fund works.
10. There was some discussion regarding the project schedule. TMIG staff indicated that additional meetings need be scheduled, including two public information centres, but that the overall study is targeted for completion in Spring 2013.

At the end of the meeting the City and Study Team requested that all attendees provide written comments and feedback within 2 weeks of the meeting date. However, given the delay in issuing these meeting notes, the deadline for comments has been extended to Friday November 30 2012.

Meeting Notes
VMC Black Creek Renewal Class EA
Channel Design Workshop

Date: December 11, 2012, 1:30 pm
Held: TRCA

Attendees:

TMIG

David Ashfield
Abe Khademi

Schollen & Company

Mark Schollen

TRCA

Carolyn Woodland
Suzanne Bevan
June Little
Dan Hipple
Sameer Dhalla
Leslie Piercey

City of Vaughan

Saad Yousaf

The following items were discussed:

1. TRCA staff requested that the EA report quantify the area of natural cover through the study area for both existing and proposed conditions
2. TRCA staff expressed concerns about hard landscaping below the top of bank, and further stated that a concrete lined channel (i.e. 'Option 3') could not be supported by staff
3. It was agreed that trails and other 'soft' features could be located below the top of bank, but above the 100 year flood level.
4. Access for maintenance (major repairs of the channel as well as routine debris removal) should be considered in the design of the system.
5. TRCA staff stated that the corridor must include 10 m buffers from the future top of bank, and that the buffer is required under the TRCA's regulation, the City's Official Plan policies and the VMC Secondary Plan policies
6. TRCA staff stated that the 10 m buffer is to be taken from the edge of the Jane Street right-of-way (not from the edge of pavement). However, it was agreed that a features such as a bike path could be located within the buffer between the channel and Jane Street.
7. It was agreed that portions of the urban promenade can be included within the 10 m buffer, and the buffer and linear park on the east side of the channel are to be fully integrated.
8. Structures for unique stormwater treatment (i.e. Sherbourne Commons) could be considered within the corridor, but not applied to the flow in Black Creek.

9. TRCA staff indicated that there may be some flexibility for encroachment into the 10 m buffer for channel grading in isolated areas for trails or other soft features below top of bank. However S. Dhalla stated that there must be a 10 m buffer from the Regional flood plain.
10. There was a discussion on the reach of Black Creek between the proposed retrofit Edgely Pond and Highway 7. A. Khademi stated that the owners of the parcel on the north-east corner of Jane Street and Highway 7 expressed a desire to enclose Black Creek north of Highway 7 in the recent landowners meeting for the EA. TRCA staff directed TMIG to clearly present and evaluate different alternatives for the treatment of this reach, which could include enclosure. TRCA staff expressed a desire to keep this reach of Black Creek open.
11. There was some discussion about the flood prone property between Highway 407 and Peelar Road. TMIG noted that, regardless of the preferred solution for Black Creek, Peelar Road will continue to be overtopped during a Regional Storm (due to the backwater from Highway 407). It was agreed that the location and configuration of the channel through this reach should be established through the EA, but TRCA staff may consider relaxing the requirement for safe access into any remaining developable portion of the property if it is not zoned for residential use.
12. There was some discussion on stormwater management criteria for the south-east quadrant of the VMC secondary plan area. The master servicing plan for the area proposed an end-of-pipe stormwater management pond sized to control flows from the area to the Humber River unit rates. However, if development in the area is only required to control peak flow rates to pre-development conditions, it may be possible to meet stormwater management criteria with innovative on-site controls, including low-impact development practices. S. Dhalla agreed to discuss the application of unit rates to re-development internally and provide direction to TMIG shortly.



Meeting Notes
VMC Black Creek Renewal Class EA
Consolidated Urban Vision Presentation

Date: March 19, 2013 10:00 am
Held: City of Vaughan

Attendees:

TMIG

Abe Khademi
Steve Hollingworth

Schollen & Company

Mark Schollen

TRCA

Carolyn Woodland
Sameer Dhalla
June Little

City of Vaughan

John MacKenzie
Saad Yousaf
Christina Napoli
Maira Wilson
Rob Bayley
Anna Sicilia
Andrew Pearce
Martin Tavares

Abe K and Steve H presented a brief overview and history of the project, and Mark S walked through the Consolidated Urban Design Vision for the Black Creek channel corridor through the study area. The Consolidated Urban Design Vision is founded on the VMC Secondary Plan, and integrates the Black Creek channel corridor with the Jane Street ROW and associated streetscape, the linear park and urban square east of the channel corridor, and the built form between the channel and the future north-south local street.

The key items from the subsequent discussion are as follows:

1. Andrew P and others requested that the costs for the channel corridor are to be kept separate from the costs for the landscape / urban design elements within and adjacent the channel.
2. The Paradise Banquet hall may have an easement or agreement for their existing access from Jane Street. Vaughan staff are to confirm, and the access is to be taken into consideration in TMIG's phasing and implementation recommendations
3. Carolyn W confirmed that the 10 m buffers beyond the top of bank on each side of the channel are required by the TRCA.
4. Christina N stated that the owner of the property at the south-east corner of Jane Street and Hwy 7 has appeared at a number of public meetings and has raised concerns about the impacts of the VMC Black Creek Renewal on his building and underground parking.
5. There was considerable discussion regarding the Zzen Developments property at the north – east corner of Jane Street and Hwy 7. The owners have made it known that they wish to enclose the reach of Black Creek between the on-line Edgeley Pond and Highway 7. It is

also recognized that the treatment of this reach of Black Creek needs to be integrated with the future design for the retrofit of the existing Edgeley Pond (which is not within the scope of the VMC Black Creek Renewal EA and has not yet been initiated). Christina N agreed to forward the latest development plan submitted by Zzen Developments to TMIG. Carolyn W agreed to discuss the potential for enclosure with other TRCA staff and respond with TRCA's position on the possibility of enclosure.

6. TMIG/Schollen were directed to create a figure that more clearly illustrates the extent of developable area before (considering the existing Regional flood plain) and after implementation of the recommended channel corridor. TMIG/Schollen were also directed to create a table of developable areas before and after implementation.
7. Phasing/Implementation of the recommendations is critical for the success of the project. TMIG confirmed that implementation is part of the study scope, but cannot be initiated until the ultimate channel corridor concept has been finalized and accepted.
8. TMIG agreed to upload digital copies of the drawings presented at the meeting to an ftp site, and provide an updated project schedule.
9. Comments are to be received on the information presented within 1 week (on or before March 26), and a brief meeting is to be scheduled in 2 weeks (April 2 +/-) to review comments and schedule the landowners meeting.

The key action items from the above discussion are as follows:

- **Vaughan staff are to provide information regarding the easement and/or agreement for the access from Jane Street into the Paradise Banquet Hall**
- **Christina N is to forward the latest concept for the Zzen development at the north-east corner of Jane Street and Highway 7**
- **TMIG/Schollen are to illustrate and tabulate the developable area under current and future conditions**
- **TRCA is to provide a position on enclosure of Black Creek north of Highway 7 within 1 week**
- **All attendees are to provide comments on the information presented within 1 week (March 26, 2013).**
- **A meeting is to be schedule on or around April 2 to discuss any comments received and to plan for the upcoming landowners meeting**

**Meeting Notes
VMC Black Creek Renewal
Presentation of Conceptual Design Vision**

Date / Time: April 16, 2014 / 1:00 pm

Location: TRCA (Highland Room)

Attendees:

TRCA	Carolyn Woodland, June Little, Sameer Dhalla
City of Vaughan	Amy Roots, Jennifer Cappola-Logullo
TMIG	Steve Hollingworth, Abe Khademi
Schollen & Company Inc.	Mark Schollen, Paul Nodwell
Public Work	Marc Ryan

The following is a brief summary of the key issues discussed at the meeting

1. M Schollen presented the latest concept for Black Creek, which reflects the input received from all stakeholders (including TRCA) over the past several months. M Schollen noted that the conceptual design addresses many of the issues of concern that were identified by the landowners and reflects the comments provided by City staff
 - a. North of Highway 7: It is planned to extend the Edgeley Pond closer to Highway 7, with a terraced edge on the east side and a naturalized edge against Jane Street. M Schollen stated that this concept was reviewed and generally supported by Zzen, who are planning the development on the north-east corner of Jane Street and Highway 7
 - b. South of Highway 7: The west channel slope, 10 m buffer and Jane Street (56 m) ROW east of the travelled lanes will be naturalized, while the east valley wall will be a hard, terraced urban feature. Both the terracing and 10 m buffer will be "amenitized". M Schollen and P Nodwell explained that the relatively steep terracing at the north end of the channel (near Highway 7) was needed to achieve the minimum reasonable width east of the channel for the building forms envisioned.
 - c. South of Interchange Way: A large area outside the channel corridor will be naturalized, up to Jane Street. A smaller passive recreation area is proposed east of the channel corridor.
 - d. Copies of the plan and sections were distributed at the meeting
2. M Schollen noted that stormwater management could be integrated into the urban edge on the east side of the channel, in the form of underground storage tanks. Integrating stormwater management with the channel could facilitate removal of the stormwater management pond south of Peelar Road that was identified in previous studies.
3. M Schollen presented the interim condition concept, in which retaining walls could be used in the interim to continue the channel between Jane Street and the condominium building north of Interchange Way.
4. M Ryan presented a series of graphics illustrating the urban design opportunities associated with the new structure plan. The vision elaborates on the principle of having a 'naturalized' west bank and an 'amenitized' east bank, along with additional thematic elements ('Black Mountain', Urban Square, green streets, etc.)

5. C Woodland commended the design team, and indicated that the **TRCA is supportive of the general approach with the wide naturalized area against Jane Street and the urban amenitized edge on the east side of the channel.**
6. S Dhalla re-iterated the above, and added that this should be viewed as TRCA's 'give' or concession through the stakeholder consultation exercise. All agreed that the significant increase in naturalized area in the southern portions of the plan (i.e. 'Black Mountain') achieves a 'net gain' and should prevent this case being used as precedent for narrowing channel corridors in other redeveloping areas in TRCA's jurisdiction
7. C. Woodland observed that the urban edge looked relatively steep in the functional cross-sections, and suggested that the terraced width be expanded to better incorporate Public Work's urban design imagery.
8. M Schollen agreed to add Parkland wedges to the east of the channel, where feasible (closer to Interchange Way) to create space for a widened terrace
9. S Dhalla requested that other flood levels be added to the cross sections
10. S Dhalla requested a copy of the HEC-RAS hydraulic model for review as soon as it is available
 - a. **TMIG will send a copy of the HEC-RAS model to S Dhalla as soon as possible (likely next week)**
11. C Woodland requested copies of the refined plans in advance of the presentation to the landowners.
 - a. **M Schollen/M Ryan will send C Woodland a copy of the refined concept early next week.**

MEETING AGENDA

PROJECT	VMC Black Creek Renewal EA	
CLIENT / MUNICIPALITY	City of Vaughan	
DATE / TIME	February 15, 2017 / 9:00 am – 11:00 am	
LOCATION	Vaughan City Hall, 2141 Major Mackenzie Drive, Vaughan, ON (Boardroom Public Works)	
MEETING PURPOSE	Black Creek Alignment Concept Designs	
INVITEES	TMIG	Steve Hollingworth, Tony Dang
	City of Vaughan	Andy Lee, Jennifer Cappola-Logullo, Michael Frieri, Gerardo Paez Alonso, Amy Roots, Saad Yousaf
	York Region	Vi Bui
	TRCA	June Little, Sameer Dhalla, Donald Ford, Lori Cook, Ali Shirazi, Carolyn Woodland, Dan Hipple
PROJECT NUMBER	12122	

AGENDA ITEMS

1. Introductions
2. Update on project progress and schedule
3. Present alignment concept designs and preferred design
4. Access issues at southeast corner of intersection between Highway 7 and Jane Street
5. Update on SWM analysis for VMC southeast quadrant

MEETING MINUTES

PROJECT	Vaughan Metropolitan Centre Southeast Quadrant SWM Analysis	
CLIENT / MUNICIPALITY	City of Vaughan	
DATE / TIME	July 21, 2017 / 1:00 pm	
LOCATION	Toronto and Region Conservation Authority, 101 Exchange Ave, Vaughan	
MEETING PURPOSE	Discuss VMC southeast quadrant SWM strategy	
ATTENDEES	TRCA	Dan Hipple
	TMIG	Steve Hollingworth, Tony Dang
TMIG PROJECT NUMBER	12122	

ITEM	DISCUSSION	ACTION BY
1	<p>S. Hollingworth – Provided overview of study area and the SWM strategy presented in the VMC Municipal Servicing Master Plan completed in 2012. Discussed the need for a new SWM strategy because the land requirements for a SWM pond are inconsistent with more recent changes to land use planning and will make the strategy unfeasible in the foreseeable future.</p>	n.a.
2	<p>S. Hollingworth, T. Dang – Discussed TMIG's proposed changes to the SWM strategy developed on behalf of the City of Vaughan. They include on-site control for all developments to 2-year post development flow rate, 15 mm on-site retention for all development areas, and 15 mm retention on all ROWs, to be achieved by LIDs on ROWs (likely pervious pipe and/or Silva Cells). Hydrological modelling results were presented for the proposed SWM strategy, which demonstrated a reduction in peak flows compared to existing conditions for the area. Water quality will be at an Enhanced level of protection from development sites. In ROWs, the LIDs will provide water quality treatment by retaining first 15 mm and will also include pretreatment where needed.</p> <p>D. Hipple – Asked how the 15 mm retention on ROWs compares to Humber River unit flow rates for peak flow release, which are targets consistent with the Master Plan SWM strategy.</p> <p>S. Hollingworth, T. Dang – For peak release, the unit flow rates for will be lower than the 15 retention, however, to achieve unit flow rates, underground storage tanks will need to be constructed at the end of each storm sewer plus oil/grit separators for quality treatment, which may not be feasible at all ROWs in the VMC southeast quadrant due to space and grade constraints. TMIG will complete hydrologic analysis using unit flow rates for comparison purposes.</p>	TMIG
3	<p>D. Hipple – Confirmed that the TRCA does not prefer underground storage tanks in the naturalized Black Creek corridor due to concerns over maintenance access and replacement works causing major disturbances to vegetation, etc. Agreed that 15 mm retention on ROWs is more technically feasible and the appropriate</p>	TMIG

ITEM	DISCUSSION	ACTION BY
	<p>strategy for the VMC southeast quadrant (in combination with on-site controls for developments). Although not preferred, underground storage tanks in the channel corridor may be necessary in the future and appropriate maintenance access will need to be considered.</p> <p>S. Hollingworth – Stated that TMIG will provide the TRCA with a technical memorandum outlining the SWM strategy analysis for review</p>	

PLEASE NOTE: If these minutes do not agree with your records of the meeting, or if there are any omissions, please advise, otherwise we will assume the contents to be correct.

DISTRIBUTION	All Attendees	
	TRCA	Dan Hipple
	TMIG	Steve Hollingworth, Tony Dang

MINUTES PREPARED BY Tony Dang

TMIG Staff Member

Steve Hollingworth

From: Abe Khademi
Sent: July 16, 2012 4:52 PM
To: Steve Hollingworth
Subject: FW: Vaughan Metropolitan Centre - Black Creek Renewal EA

FYI

From: Bates, Michelle (MNR) [<mailto:Michelle.Bates@ontario.ca>]
Sent: Monday, July 16, 2012 11:27 AM
To: saad.yousaf@vaughan.ca; Abe Khademi
Cc: Burkart, Jackie (MNR)
Subject: Vaughan Metropolitan Centre - Black Creek Renewal EA

Good morning,

Ministry of Natural Resources (MNR) Staff have reviewed the study area identified in your Notice of Study Commencement: Vaughan Metropolitan Centre – Black Creek Renewal. It appears that this project will not impact the policies or programs of this Ministry. However, since the study area includes a portion of Black Creek, we would recommend that you contact the Conservation Authority regarding your project prior to starting works.

Should you have any further questions, please contact Jackie Burkart at (905) 713-7368 or respond to this e-mail.

Sincerely,
Michelle Bates

Michelle Bates

Planning
Aurora District Ministry of Natural Resources
50 Bloomington Road
Aurora, ON L4G 0L8

Ministry of
Transportation

Highway Engineering –
York/Simcoe

1201 Wilson Avenue
Downsview, ON M3M 1J8
Tel.: 416-235-5581
Fax: 416-235-3576

Ministère des
Transports

Génie Routier –
York et Simcoe

1201, avenue Wilson
Downsview, ON M3M 1J8
Tél.: 416 235-5581
Télééc.: 416 235-3576

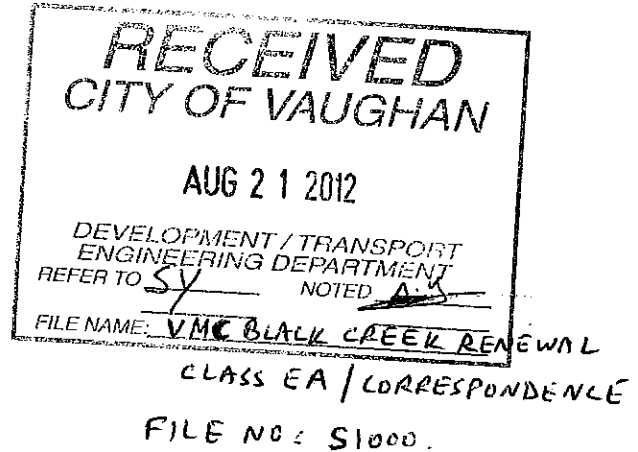


August 10, 2012

Mr. Saad Yousaf, P.Eng., PMP
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON
L6A 1T1

AND

Mr. Abe Khademi, P.Eng. PMP
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, ON
L4K 0C5



Dear Mr. Yousaf and Mr. Khademi:

The Ministry of Transportation (MTO) has received the Notice of Commencement regarding the Vaughan Metropolitan Centre – Black Creek Renewal Class EA. We confirm that the MTO has an interest in this project and requests to be kept informed and be involved throughout the EA process.

The MTO contact for this study will be Sabina Merey, Corridor Management Engineer. Please direct any questions or future correspondence to her attention. Her contact information is:

Sabina Merey, P.Eng.
Corridor Management Engineer
Ministry of Transportation
Corridor Management Section
1201 Wilson Avenue
Building D, 7th Floor
Toronto, ON M3M 1J8

Tel: (416) 235-4876

Email: Sabina.merey@ontario.ca

Thank you,

A handwritten signature in black ink, appearing to read "B. Stephenson".

Bob Stephenson, P.Eng.
Head – Planning and Design, York/Simcoe Section
Ministry of Transportation

C: Y. Mah, Manager – Strategic Highway Management Office
H. Glass, Senior Project Manager – Planning and Design Office

RESPONSE FORM

VAUGHAN METROPOLITAN CENTRE – BLACK CREEK RENEWAL
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
VAUGHAN, ONTARIO

Contact Name:	SABINA MEREY.
Ministry or Agency (if applicable)	MINISTRY OF TRANSPORTATION
Address	CORRIDOR MANAGEMENT SECTION 1201 WILSON AVENUE
	BUILDING D, 7 TH FLOOR
	TORONTO, ONTARIO M3M 1J8
Comments	
	Please see attached letter requesting MTO be keep in the loop regarding details of this study, as there is may be impacts to provincial infrastructure within the vicinity of this study's limits.

Do you wish to be notified for continued involvement in this process?

Yes

No

Please return this form to:

Mr. Abe Khademi, P.Eng., P.M.P
Consultant Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0G5
Phone: 905-738-5700 Ext. 237
Fax: 905-738-0065
Email: akhademi@tmig.ca





Ministry of the Environment

Central Region
Technical Support Section

5775 Yonge Street, 8th Floor
North York, Ontario M2M 4J1

Tel.: (416) 326-6700
Fax: (416) 325-6347

Ministère de l'Environnement

Région du Centre
Section d'appui technique

5775, rue Yonge, 8^{ème} étage
North York, Ontario M2M 4J1

Tél. : (416) 326-6700
Télé. : (416) 325-6347

July 18, 2012

File: EA01-06-04

Saad Yousaf, P. Eng., PMP
Storm Drainage Engineer
City of Vaughan
2141 Major Mackenzie Drive
Vaughan ON L6A 1T1

**RE: TSS Comments:
Vaughan Metropolitan Centre- Black Creek Renewal
City of Vaughan
Class Environmental Assessment
Response to Notice of Study Commencement**

Dear Mr. Yousaf,

This letter is our response to the Notice of Study Commencement for the above noted project. This response acknowledges that the City of Vaughan has indicated that its study is following the approved environmental planning process for a Schedule 'C' project under the *Municipal Engineers Association Municipal Class Environmental Assessment (Class EA)*.

Based on the information submitted, we have identified the following areas of interest with respect to the proposed undertaking:

- Ecosystem Protection and Restoration
- Surface Water
- Groundwater
- Air Quality, Dust and Noise
- Servicing and Facilities
- Contaminated Soils
- Mitigation and Monitoring
- Planning and Policy
- Class EA Process
- Aboriginal Consultation

We are providing the following general comments to assist you and your project team members in effectively addressing these areas of interest:

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The Environmental Study Report (ESR) should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.
- All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. Our records confirm that watercourse and woodlots are located within or adjacent to the Study Area. We recommend consulting with the Ministry of Natural Resources (MNR), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional study will be necessary to

preserve and protect these sensitive features.

Surface Water

- The ESR must include a sufficient level of information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the Study Area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.
- The ministry's *Stormwater Management Planning and Design Manual* (2003) should be referenced in the ESR and utilized when designing stormwater control methods. We recommend that a Stormwater Management Plan should be prepared as part of the Class EA process that includes:
 - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
 - Watershed information, drainage conditions, and other relevant background information
 - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
 - Information on maintenance and monitoring commitments.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the potential construction or decommissioning of water wells is identified as an issue, the ESR should refer to Ontario Regulation 903, Wells, under the *Ontario Water Resources Act*.
- Appropriate information to define existing groundwater conditions should be included in the ESR. Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.
- Any potential approval requirements for groundwater taking or discharge should be identified in the ESR. In particular, a Permit to Take Water (PTTW) under the *Ontario Water Resources Act* will be required for any water takings that exceed 50,000 litres per day. For more information on the application and approval process, we suggest you refer to the ministry's *Permit to Take Water Manual* (April 2005), found at http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079439.pdf

Air Quality, Dust and Noise

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the Study Area are not adversely affected during construction activities.

Servicing and Facilities

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with the Environmental Approvals Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

Contaminated Soils

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act (EPA)* and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. We recommend contacting the ministry's Durham York District Office in Ajax for further consultation if contaminated sites are present.
- The location of any underground storage tanks should be investigated in the ESR. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.
- Any current or historical waste disposal sites should be identified in the ESR. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the *Environmental Protection Act* may be required for land uses on former disposal sites.
- The ESR should identify any underground transmission lines in the Study Area. The owners should be consulted to avoid impacts to this infrastructure, including potential spills.

Mitigation and Monitoring

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.
- All waste generated during construction must be disposed of in accordance with ministry requirements.
- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the ESR and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly. The proponent's construction and post-construction monitoring plans should be documented in the ESR.

Planning and Policy

- The study area is subject to the *Growth Plan for the Greater Golden Horseshoe* and policies within the *Provincial Policy Statement*. The ESR should demonstrate how the proposed study adheres to the relevant policies in these plans.

Class EA Process

- The ESR should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making. The ESR must also demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all public consultation efforts undertaken during the planning process. Additionally, the ESR should identify all concerns that were raised and how they have been addressed throughout the planning process. The Class EA also directs proponents to include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments.
- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment. The ESR should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments) such that all potential impacts can be identified and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the ESR.
- Please include in the ESR a list of all subsequent permits or other approvals that may be required for the implementation of the preferred alternative, including Permits to Take Water, Environmental Compliance Approvals, approval under the *Canadian Environmental Assessment Act* (CEAA), and conservation authority permits.
- Please note that ministry guidelines and other information related to the issues noted above are available at www.ene.gov.on.ca under the publications link. We encourage the proponent to review all the available guides and to reference any relevant information in the ESR.

Aboriginal Consultation

- Please note that as part of the required stakeholder and agency consultation, proponents are advised to contact the Ministry of Aboriginal Affairs and the Department of Indian and Northern Affairs to determine potentially affected Aboriginal communities in the project area. Please refer to the website <http://www.ene.gov.on.ca/en/eaab/aboriginal-resources.php> for a list of appropriate government contacts.
- Once identified, you are advised to provide notification directly to the Aboriginal communities who may be affected by the project and provide them with an opportunity to participate in any planned public consultation sessions and comment on the project.

Thank you for the opportunity to comment on this project. A draft copy of the ESR should be sent to this office prior to the filing of the final draft, allowing approximately 30 days review time for the ministry's technical reviewers to provide comments. Please also forward our office the Notice of Completion and ESR when completed. Should you have any questions regarding the above, please contact me at (416) 326-3469.

Yours sincerely,

Dorothy Moszynski
 Environmental Resource Planner and EA Coordinator
 Air, Pesticides and Environmental Planning

- c. D. Fumerton, Manager, York Durham District Office, MOE
 A. Khademi, Consultant Project Manager, Municipal Infrastructure Group Ltd.
 Central Region EA File

A & P File

July 11, 2012

CFN 47476
Xref CFN 42241

BY MAIL AND EMAIL (akhademi@tmig.ca)

Mr. Abe Khademi, P. Eng., PMP
Consultant Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, Ontario
L4K 0C5

Dear Mr. Khademi:

**Re: Response to Notice of Commencement
Vaughan Metropolitan Centre – Black Creek Renewal
Municipal Class Environmental Assessment - Schedule C
Humber Watershed; City of Vaughan; Regional Municipality of York**

Toronto and Region Conservation Authority (TRCA) staff received the Notice of Commencement for the above noted Environmental Assessment (EA) on July 9, 2012. It is our understanding that this undertaking involves consideration of different potential alignments and physical forms for Black Creek within the study.

TRCA Areas of Interest

Staff has identified the following Areas of Interest within the study area:

Regulated Areas

- Regulation Limit
- Crest of Slope
- Meander Belt
- Regulatory Flood Plain
- Watercourses

TRCA Program and Policy Areas

- Aquatic Species and Habitat
- Aquifers and Hydrogeological Features
- Living City Programs:
 - Living City Trails (TBD)
- Terrestrial Natural Heritage Strategy
- Terrestrial Species and Habitat

Staff notes that available mapping and program information regarding these Areas of Interest will be sent under separate cover. Please ensure that the status, potential impacts and opportunities for enhancement related to these Areas of Interest are documented and assessed through a review of background material, technical study, field assessment and detailed evaluation, as appropriate.

Selection of Alternatives

In consideration of TRCA's *Valley and Stream Corridor Management Program*, Ontario Regulation 166/06, and TRCA's other programs and policies, staff requires that the preferred alternative meets the following criteria:

1. Prevents the risk associated with flooding, erosion or 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.

TRCA staff recommends that a summary of detailed design commitments be included in the EA as a Pre-design Brief. This summary should include, but not be limited to:

- a. An aerial photo indicating the study area, regulated area, existing conditions and preferred solution/design;
- b. Text indicating the preferred alternative solution/design;
- c. A Reference list of alternative solutions and designs considered;
- d. A synopsis of all TRCA requirements and technical commitments.

It is intended that the proponent and their consultants, as well as TRCA, would use the Pre-design Brief during the preliminary stages of detailed design. In the Pre-design Brief, commitments made during the EA would be clearly articulated in order to facilitate a 90 % detailed design submission to TRCA for all required permits. TRCA staff would then be able to review the required studies, reports or plans; and confirm any additional study requirements or revisions to the submitted materials. Ideally, the completion of the Pre-Design Brief will result in a more timely and streamlined permit approval process in the future.

TRCA Review

In addition, please add TRCA's Watershed Specialist Gary Wilkins to the project mailing list to receive any public information updates.

A copy of the TRCA Environmental Assessment Review Program Service Delivery Standards, and a summary chart is enclosed for your reference. We recommend you refer to these submission standards during the study to facilitate TRCA review. Please provide the following submissions to expedite TRCA review.

- Notices of public meetings and display material and handouts
- Four hard copies of the Draft EA Document and one digital copy, and
- One hard copy and one digital copy of the Final EA Document.

Further to discussions between Beth Williston, Senior Manager, Environmental Assessments and Paul Jankowski, Commissioner of Engineering and Public Works fees will be addressed under separate cover.

Should you have any questions, please contact me at extension 5759 or by email at sbevan@trca.on.ca.

Yours truly,



Suzanne Bevan

Senior Planner, Environmental Assessment Planning
Planning and Development

Encl.: TRCA Areas of Interest Summary Table
Service Delivery Standards - Recommended TRCA Contact Points

BY EMAIL

cc:

City of Vaughan:

Saad Yousaf (saad.yousaf@vaughan.ca)

TRCA:

Carolyn Woodland, Director, Planning and Development

Beth Williston, Senior Manager, Environmental Assessments

June Little, Manager, Development, Planning and Regulation

Gary Wilkins, Humber Watershed Specialist

Sameer Dhalla, Senior Manager, Water Resource Engineering

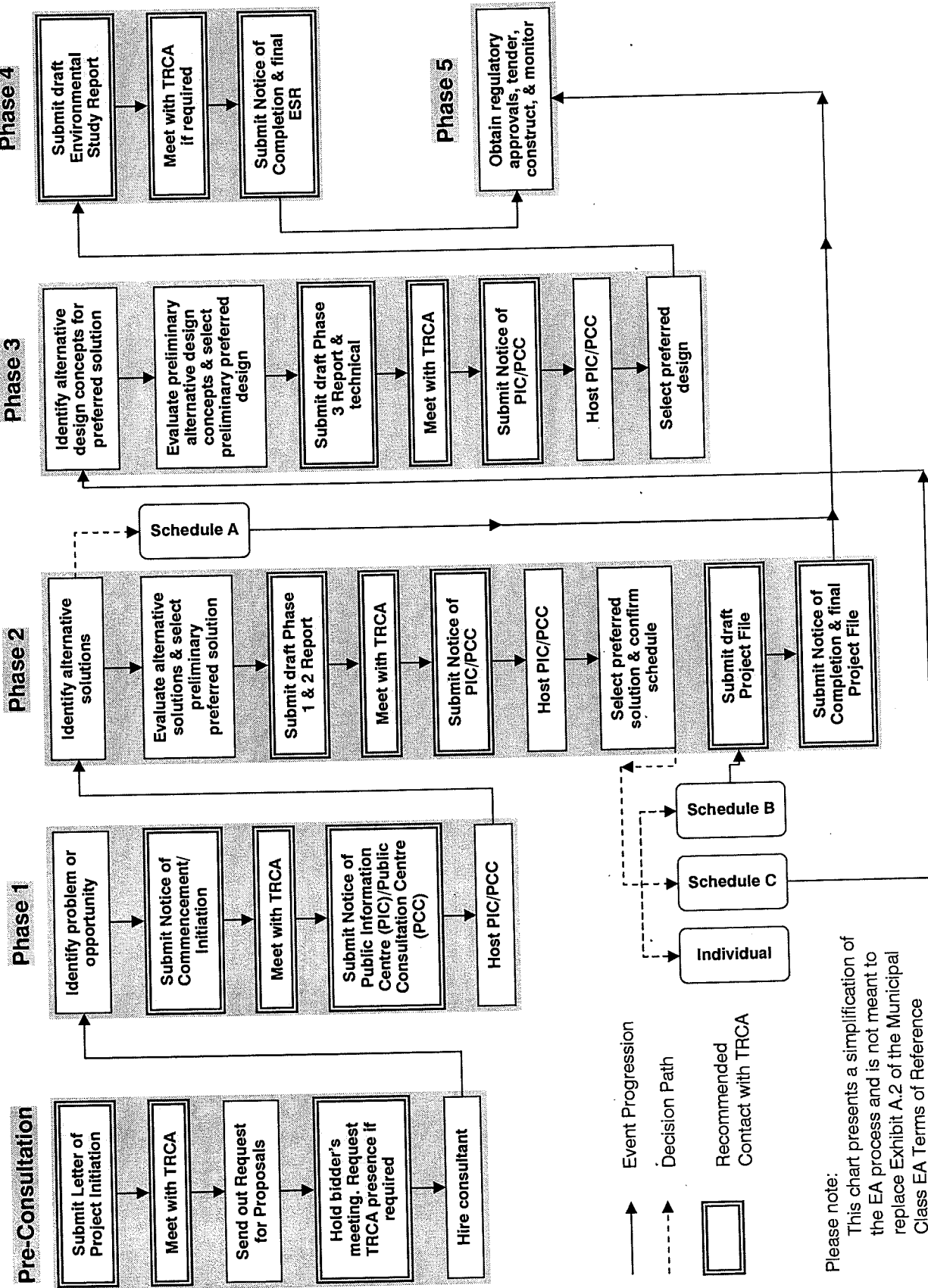
EA Requirements

Document and assess the status, potential impacts and opportunities for enhancement that relate to the following Areas of Interest through a review of background material, technical study, field assessment and detailed evaluation, as appropriate. Make reference to the applicable Program and Policy documents. Include in the EA Document appendices any minutes, structure summary sheets for watercourses or wetlands, or other material collected through meetings with TRCA staff. Natural features may need to be confirmed on site by TRCA staff.

Area of Interest / Data Availability	Program and Policy Concerns
TRCA REGULATED AREAS	
<p>Regulation Limit GIS data available</p>	<p>In accordance with Ontario Regulation 166/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), a permit is required from the TRCA prior to any development (e.g. construction) if, in the opinion of TRCA, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected. The Regulation Limit defines the greater of the natural hazards associated with Ontario Regulation 166/06 (listed below).</p> <p>NOTE: The Regulation Limit provides a geographical screening tool for determining if Ontario Regulation 166/06 will apply to a given proposal. Through site assessment or other investigation, it may be determined that areas outside of the defined Regulation Limit require permits under Ontario Regulation 166/06. In these instances, it is the text of the regulation that will prevail; modifications to the regulation line may be required.</p> <p>Any development within the Regulation Limit must comply with the applicable sections of TRCA's <i>Valley and Stream Corridor Management Program</i>.</p>
<p>Crest of Slope</p>	<p>Valley and stream corridors are dynamic systems that provide important natural functions and linkages for the physical, chemical and biological processes of wildlife, watercourses, and other natural features. The Crest of Slope identifies the physical limit of these corridors; however, due to ecological sensitivities, development restrictions typically extend beyond the actual Crest of Slope.</p>
<p>Meander Belt</p>	<p>Channel migration has a significant impact on infrastructure, structures and property located near river systems. Determining channel stability is important to ensure that damage from erosion, down-cutting or other natural channel processes is avoided.</p> <p>TRCA may require a meander belt delineation study or fluvial geomorphology analysis to confirm that any development does not conflict with natural channel processes.</p>
<p>Regulatory Flood Plain Engineered maps may be available</p>	<p>The Regulatory Flood Plain is the approved standard used in a particular watershed to define the limit of the flood plain for regulatory purposes. Within TRCA's jurisdiction, the Regulatory Flood Plain is based on the greater of the regional storm, Hurricane Hazel, and the 100 year flood.</p> <p>Any development or alterations to existing structures within the Regulatory Flood Plain may introduce risk to life or property, and may not be compatible with existing natural features. TRCA's framework for Flood Plain Management is the <i>Valley and Stream Corridor Management Program</i>.</p> <p>TRCA may require a flood study or hydraulic update to confirm that there will be no impacts to the storage or conveyance of flood waters.</p>
<p>Watercourses Partial GIS data available</p>	<p>Typically, watercourses are associated with aquatic species and habitat. Any alteration or interference to a watercourse (e.g. straightening, diverting, realigning, altering baseflow) has the potential to impact fish communities, but may also affect the Regulatory Flood Plain, erosion or other natural channel processes. TRCA may require an environmental study or site confirmation of watercourse locations.</p>

TRCA PROGRAM AND POLICY AREAS	
<i>Note: Additional program and policy information may be available at www.trca.on.ca, or by request.</i>	
<p>Aquatic Species and Habitat</p> <p>GIS data available</p>	<p>Under the <i>Fisheries Act</i>, the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat is prohibited, unless authorized by Fisheries and Oceans Canada (DFO). TRCA reviews projects under the <i>Fisheries Act</i> based on our Level III Agreement with DFO to ensure that any potential impacts to fish habitat are appropriately mitigated, or that adequate compensation is provided where a HADD is unavoidable. Alternatives should be designed with appropriate mitigation measures to avoid a HADD. If a HADD is unavoidable, a suitable compensation plan must be developed, and Authorization from DFO will be required.</p> <p>TRCA may require a quantification and assessment of existing conditions and proposed changes to fish habitat and communities to confirm impacts to these resources.</p>
<p>Aquifers and Hydrogeological Features</p>	<p>The extraction and discharge of groundwater has the potential to negatively impact surrounding natural features. Even small amounts of groundwater extraction may reduce contributions to groundwater dependent features such as wetlands, springs, or fish spawning habitat. In addition, the discharge of groundwater must be controlled to avoid impacts to watercourses and fish habitat from erosion, sedimentation and water quality concerns.</p> <p>TRCA may require geotechnical or hydrogeological investigations to confirm dewatering and discharge requirements, and to identify appropriate mitigation measures with respect to potential impacts to natural features (i.e., wetlands, watercourses, natural features and aquatic habitat).</p>
<p>Living City Programs</p>	<p>The Living City is a vision adopted by TRCA for a new kind of community, where human settlement can flourish forever as part of nature's beauty and diversity. The key objectives of the Living City are: healthy rivers and shorelines; regional biodiversity; sustainable communities; and business excellence.</p> <p>Programs associated with TRCA's Living City include: trails enhancement, renewable energy, sustainable communities, and the <i>Sustainable Technologies Evaluation Program (STEP)</i>.</p>
<p>Terrestrial Natural Heritage System Strategy</p> <p>GIS data available</p>	<p>TRCA has identified the need to improve both the quality and quantity of terrestrial habitat. TRCA's <i>Terrestrial Natural Heritage System Strategy</i> sets measurable targets for attaining a healthier natural system by creating an expanded and targeted land base. It includes strategic directions for stewardship and securement of the land base, a land use policy framework to help achieve the target system, and other implementation mechanisms.</p>
<p>Terrestrial Species and Habitat</p> <p>GIS data available</p>	<p>The terrestrial system includes landscape features, vegetation communities and flora and fauna species. Terrestrial species and habitat should be assessed based on their conservation status according to sensitivity to disturbance and specialized ecological needs, as well as rarity.</p> <p>TRCA may require a site assessment and terrestrial inventory to confirm impacts to these resources. TRCA's <i>Terrestrial Natural Heritage Strategy</i> may be applicable to any work that impacts terrestrial species and habitat. In addition, relevant legislation (e.g. <i>Migratory Bird Convention Act</i>, <i>Species at Risk Act</i>) should be applied.</p>

Service Delivery Standards Recommended TRCA Contact Points in the Municipal Class EA Planning & Design Process



Please note:
 This chart presents a simplification of the EA process and is not meant to replace Exhibit A.2 of the Municipal Class EA Terms of Reference

REPLY FORM

To: Steve Hollingworth, TMIG

Date: _____

Fax: (905) 738-0065

E-mail: shollingworth@tmig.ca

RE: **Black Creek Renewal, Municipal Class Environmental Assessment**

NAME:

STEVE MOTA

TITLE:

PROGRAM MANAGER - TRANSPORTATION PLANNING

ORGANIZATION/AGENCY:

YORK REGION / TRANSPORTATION SERVICES

ADDRESS:

17250 YONGE STREET

NEWMARKET, ON

POSTAL CODE:

L3Y 7Y5

PHONE:

905-830-4444 x 75056

FAX:

E-MAIL:

Steve.mota@york.ca

Please indicate the appropriate response:



My group/agency **is interested** in providing input regarding this Study.
Please include me on the Study Mailing List.



My group/agency **is not interested** in providing input regarding this Study, but
would like to be kept informed. Please include me on the Study Mailing List.



Please **remove** my group/agency from Study Mailing List.

Area of interest or concern/preliminary comments:

Please keep me on the mailing list for now,
although I'm not aware of any issues
that would impact York Transportation Services.
Best Regards. Steve

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;

- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;
- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;

- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;
- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant information;
- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigate any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Ministry of the Environment
and Climate Change

Central Region
Technical Support Section

5775 Yonge Street, 8th Floor
North York, Ontario M2M 4J1

Tel.: (416) 326-6700
Fax: (416) 325-6347

Ministère de l'Environnement et de
l'Action en Matière de Changement Climatique

Région du Centre
Section d'appui technique

5775, rue Yonge, 8^{ème} étage
North York, Ontario M2M 4J1

Tél. : (416) 326-6700
Télééc. : (416) 325-6347



February 16, 2017

File No.: EA 01-06-02

Jennifer Cappola-Logullo (BY EMAIL ONLY)
Project Manager
City of Vaughan

Re: **Vaughan Metropolitan Centre (VMC) Black Creek Renewal Study**
City of Vaughan
Municipal Class EA – Schedule C
Response to Project Update and Notice of Commencement

Dear Ms. Cappola-Logullo:

This letter is in response to your January 16, 2017 letter regarding the re-initiation of the above noted project. The Ministry of the Environment and Climate Change (MOECC) acknowledges that the City of Vaughan has indicated that its study is following the approved environmental planning process for a Schedule C project under the Municipal Class Environmental Assessment (Class EA).

The attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please identify the areas of interest which are applicable to your project and ensure they are addressed. Proponents who address all of the applicable areas of interest can minimize potential delays to their project schedule.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

Your proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to your proposed project, **the MOECC is delegating the procedural aspects of rights-based consultation to you through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown's preliminary assessment you are required to consult with the following communities who have been identified as potentially affected by your proposed project.

- Alderville First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of the New Credit First Nation
- Mississaugas of Scugog Island First Nation

The Huron-Wendat should be notified if there is potential for archaeological remains to be discovered.

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link: <https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process>

Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information.

You must contact the Director of Environmental Approvals Branch under the following circumstances subsequent to initial discussions with the communities identified by MOECC:

- Aboriginal or treaty rights impacts are identified to you by the communities
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right
- Consultation has reached an impasse
- A Part II Order request or elevation request is expected

The Director of the Environmental Approvals Branch can be notified either by email with the subject line "Potential Duty to Consult" to EAASIBgen@ontario.ca or by mail or fax at the address provided below:

Email:	EAASIBGen@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Approvals Branch 135 St. Clair Avenue West, 1 st Floor Toronto, ON, M4V 1P5

The MOECC will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play in them.

A draft copy of the ESR should be sent to this office prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments. Please also forward the Notice of Completion and final ESR to me when completed.

Should you or any members of your project team have any questions regarding the material above, please contact me at emilee.oleary@ontario.ca or 416-326-3469.

Yours truly,

A handwritten signature in cursive script that reads "Emilee O'Leary".

Emilee O'Leary
Regional Environmental Assessment Coordinator
Air, Pesticides and Environmental Planning

cc: Paul Martin, Supervisor, Technical Support Section, MOECC
Celeste Dugas, Manager, York Durham District Office, MOECC
Steve Hollingworth, Project Manager, The Municipal Infrastructure Group

Central Region EA File
A & P File

AREAS OF INTEREST

It is suggested that you check off each applicable area after you have considered / addressed it.

Source Water Protection (all projects)

The Clean Water Act, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include are Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- As part of the project, the proponent should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed, whether there were any source protection plan policies that applied, and if so, how they impacted the project, as well as identify mitigating measures to address any negative environmental impacts to those sources (considering natural, economic and social/cultural environmental impacts). As you may be aware, in October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. Given this requirement, the proponent should include a section in the Project File/ESR on source water protection.
- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.
- In order to determine if this project is occurring within a vulnerable area, proponents can use this mapping tool: <http://www.applications.ene.gov.on.ca/swp/en/index.php> . The mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.
- For further information on the maps or source protection plan policies which may relate to their project, proponents should contact the Project Manager for Drinking Water Source Protection at the local source protection authority (i.e., conservation authority).

More Information

For more information on the Clean Water Act, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the Clean Water Act. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MOECC.

□ **Ecosystem Protection and Restoration**

- Any impacts to ecosystem form and function must be avoided where possible. The Project File/ESR should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.
- All natural heritage features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
 - Areas of Natural and Scientific Interest (ANSIs)
 - Rare Species of flora or fauna
 - Watercourses
 - Wetlands
 - Woodlots

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, you may consider the provisions of the Rouge Park Management Plan if applicable.

□ **Surface Water**

- The Project File/ESR must include a sufficient level of information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.
- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's [Stormwater Management Planning and Design Manual \(2003\)](#) should be referenced in the Project File/ESR and utilized when designing stormwater control methods. We recommend that a Stormwater Management Plan should be prepared as part of the Class EA process that includes:
 - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
 - Watershed information, drainage conditions, and other relevant background information
 - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
 - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the Ontario Water Resources Act (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the Project File/ESR should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

□ **Groundwater**

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the Project File/ESR.
- If the potential construction or decommissioning of water wells is identified as an issue, the Project File/ESR should refer to Ontario Regulation 903, Wells, under the OWRA.
- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.
- Any potential approval requirements for groundwater taking or discharge should be identified in the Project File/ESR. In particular, a Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 litres per day.

□ **Air Quality, Dust and Noise**

- The report should include a qualitative discussion of the existing air quality conditions in the area. Additionally, it should include a discussion of the potential air quality impacts that could arise from this project during both construction and operation, address any air quality impacts to present and future sensitive receptors and provide any mitigation measures.
- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.
- Please note that the ministry recommends that non-chloride dust suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures, please refer to Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities. Report prepared for Environment Canada. March 2005.
<http://www.bieapfrempp.org/Toolbox%20pdfs/EC%20-20Final%20Code%20of%20Practice%20-%20Construction%20%20Demolition.pdf>
- The Project File/ESR should consider the potential impacts of increased noise levels during the operation of the undertaking due to potentially higher traffic volumes resulting from this project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

□ Servicing and Facilities

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with the Environmental Approvals Access and Service Integration Branch (EAASIB) to determine whether a new or amended ECA will be required for any proposed infrastructure.
- We recommend referring to the ministry's "D-Series" guidelines – Land Use Compatibility to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

□ Contaminated Soils

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the ministry's District Offices for further consultation if contaminated sites are present.
- Any current or historical waste disposal sites should be identified in the Project File/ESR. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites.
- The location of any underground storage tanks should be investigated in the Project File/ESR. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.
- The Project File/ESR should identify any underground transmission lines in the study area. The owners should be consulted to avoid impacts to this infrastructure, including potential spills.

□ Mitigation and Monitoring

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.
- All waste generated during construction must be disposed of in accordance with ministry requirements.
- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the Project File/ESR and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly. The proponent's construction and post-construction monitoring plans should be documented in the Project File/ESR.

□ Planning and Policy

- Parts of the study area may be subject to the [Oak Ridges Moraine Conservation Plan](#), [Niagara Escarpment Plan](#), [Greenbelt Plan](#), [Lake Simcoe Protection Plan](#), or [Growth Plan for the Greater Golden Horseshoe](#). The Project File/ESR should demonstrate how the proposed study adheres to the relevant policies in these plans.
- The [Provincial Policy Statement](#) (2014) contains policies that protect Ontario's natural heritage and water resources, including designated vulnerable areas mapped in source water protection assessment reports under the *Clean Water Act* (CWA). Applicable policies should be referenced in the Project File/ESR, and the proponent should demonstrate how this proposed project is consistent with these policies. Assessment reports can be found on the Conservation Ontario website at: <http://www.conservation-ontario.on.ca/uncategorised/143-otherswpreionsindex>.

□ Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. The Master Plan should clearly indicate the selected approach for conducting the plan, in particular by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the *Environmental Assessment Act* (EAA), although the plan itself would not be.
- The Project File/ESR should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making. The Project File/ESR must also demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all public consultation efforts undertaken during the planning process. Additionally, the Project File/ESR should identify all concerns that were raised and how they have been addressed throughout the planning process. The Class EA also directs proponents to include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments.
- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment. The Project File/ESR should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments) such that all potential impacts can be identified and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the Project File.
- Please include in the Project File/ESR a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including MOECC's PTTW and ECAs, conservation authority permits, and approval under the *Canadian Environmental Assessment Act* (CEAA).
- Ministry guidelines and other information related to the issues above are available at <http://www.ontario.ca/environment-and-energy/environment-and-energy> under the publications link. We encourage you to review all the available guides and to reference any relevant information in the Project File/ESR.

**Ministry of Tourism,
Culture and Sport**

Heritage Program Unit
Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314 7147
Fax: 416 212 1802

**Ministère du Tourisme,
de la Culture et du Sport**

Unité des programmes patrimoine
Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416 314 7147
Télé: 416 212 1802



February 24, 2017 (EMAIL ONLY)

Steve Hollingworth, P. Eng.
Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
E: shollingworth@tmig.ca

RE: MTCS file #: 0005174
Proponent: City of Vaughan
Subject: Notice of Commencement and Project Status Update
VMC Black Creek Renewal
Location: City of Vaughan, Ontario

Dear Mr. Hollingworth:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Commencement and Project Status Update for your project. MTCS's interest in this EA project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land-based and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Aboriginal communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Aboriginal communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Archaeological Resources

Your EA project may impact archaeological resources and you should screen the project with the MTCS [Criteria for Evaluating Archaeological Potential](#) to determine if an archaeological assessment is needed. MTCS archaeological sites data are available at archaeology@ontario.ca. If your EA project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licenced under the *OHA*, who is responsible for submitting the report directly to MTCS for review.

Built Heritage and Cultural Heritage Landscapes

The MTCS [Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes](#) should be completed to help determine whether your EA project may impact cultural heritage resources. The Clerk for the City of Vaughan can provide information on property registered or

designated under the *Ontario Heritage Act*. Municipal Heritage Planners can also provide information that will assist you in completing the checklist.

If potential or known heritage resources exist, MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's [Info Sheet #5: Heritage Impact Assessments and Conservation Plans](#) outlines the scope of HIAs. Please send the HIA to MTCS for review, and make it available to local organizations or individuals who have expressed interest in heritage.

Environmental Assessment Reporting

All technical heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MTCS whether any technical heritage studies will be completed for your EA project, and provide them to MTCS before issuing a Notice of Completion. If your screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank you for consulting MTCS on this project: please continue to do so through the EA process, and contact me for any questions or clarification.

Sincerely,

Dan Minkin
Heritage Planner
Dan.Minkin@Ontario.ca

Copied to: Jennifer Cappola-Logullo, P. Eng., City of Vaughan

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

APPENDIX A4

Public Meetings and Correspondence

Mr. Andrew Pearce, Director of Development/Transportation Engineering
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON, L6A 1T1

Dear Mr. Pearce:

Re: Black Creek Optimization Study – Class EA Comments

We are writing on behalf of several landowners within the south-east quadrant of the Vaughan Metropolitan Centre (VMC) with regard to the City's Black Creek Optimization Study Class EA and the associated impacts to their lands on the east side of Jane Street, north of Hwy 407. The properties included are:

Potestas Properties Inc. (7725 Jane Street)
Royal Overhead Doors (126 Peelar Road)
Luigi Bros. Paving Company Ltd. (126-146 Peelar Road)
Dibenedetto lands, (south side of Peelar Road, east of Jane Street)

We understand that the City has retained a The Municipal Infrastructure Group to complete the Phase 3 and 4 component of the Schedule C Class EA Process. We also understand that the preferred solution includes channelization and realignment of the Black Creek corridor to eliminate existing Regional Storm spill areas onto existing development areas.

We request that the following comments and suggestions be considered in the implementation of the Black Creek Class EA process:

Location of the Black Creek Channel

We understand that the preferred approach identified in Phase 1 and 2 of the Class EA was that the subject lands be protected in a Regional Storm flooding event through a combination of channel improvements and culvert replacements. The channel location was to be determined through the Phase 3 and 4 process, which is underway.

We propose that the channel be maintained within existing public lands o the extent possible.

With regard to the channel alignment adjacent to the existing Peelar Road, the channel is currently shown extending easterly onto the existing businesses at 126 and 146 Peelar Road. The VMC Master Plan envisions closure of the north-south portion of Peelar Road in the future, and creation of a new north-south road along the eastern edge of the channel. The existing north-south Peelar Road alignment and the existing

channel block both appear to be located on lands owned by MTO. We request that the ultimate channel alignment be modified by shifting it to the west to utilize the existing Peelar Road alignment. This would substantially decrease the land acquisition costs associated with the properties on the eastern side of the channel.

With regard to the Dibenedetto lands, on the south side of Peelar Road, located on the existing channel alignment, we request that the proposed channel alignment be centered on the existing channel alignment to equally distribute the resultant impact area on each side of the existing low flow channel.

With regard to the alignment parallel to Jane Street, adjacent 7725 Jane Street (immediately south of Hwy 7), the channel will have full access along the eastern streetline of Jane Street. As a result, the use of a 10m buffer along the western limit of the channel should be reconsidered based on the urban nature of this proposed channel and based on the continuous access opportunities along Jane Street.

Channel Width and Buffer

We understand the current proposal is to utilize a 15m wide meander belt and a 30m wide overall channel width using 3:1 slopes. We also understand that TRCA is requesting 10m wide buffers beyond both sides of the channel based on the Valley and Stream Corridor Management Policy.

We support the pursuit of a 15m wide meander belt and we request the City's consideration of up to 2:1 channel slopes to assist with the overall conveyance capacity of the channel and to provide flexibility in the design.

We also request that based on the "urban" nature of this channel, the need for 10m wide buffers should be reconsidered in any area where access to the channel can be obtained through other means (i.e. Jane Street, parks, private parking lots or new public roads). This applies to all of the properties listed above.

The cost of the overall Black Creek channel realignment works will be significant. Increased costs due to land acquisition can be minimized through integration of park and buffer uses and by re-evaluating the need for buffers where public access can be obtained through other means as noted above.



Please contact the undersigned if you have any questions or require any additional information.

Sincerely,

SCS Consulting Group Ltd.



Steve Schaefer, P. Eng.

Principal

sschaefer@scsconsultinggroup.com

Attachments: Land Ownership and Proposed Channel Alignment

- c. Ms. Jennifer Cappola-Lugullo, P, Eng., City of Vaughan
- Mr. Abe Khadami, The Municipal Infrastructure Group
- Mr. Jack Wong, Weston Consulting
- Mr. Giovanni Marcelli, Potestas Properties Inc. (7725 Jane Street)
- Mr. Joe Guarascio, Royal Overhead Doors (126 Peelar Road)
- Mr. Peter Buttarazzi & Ms. Vera D'Alessandro, Luigi Bros. Paving Company Ltd. (126-146 Peelar Road)
- Mr. Tony Dibenedetto, (south side of Peelar Road, east of Jane Street)

P:\1546\Correspondence\Letters\City-sms-black creek optimization-25apr13.docx



City of Vaughan

Mr. Andrew Pearce, Director of Development/Transportation Engineering
2141 Major Mackenzie Drive
Vaughan, ON, L6A 1T1

Dear Mr. Pearce:

**Re: Municipal Servicing Strategy Master Plan Class Environmental Assessment Study
Vaughan Metropolitan Centre (VMC), City of Vaughan**

We are writing on behalf of several landowners (noted below) within the south-east quadrant of the Vaughan Metropolitan Centre with regard to our review during the 30 day review period of the above noted Master Plan. We recognize that any outstanding issues must be addressed prior to April 26, 2013, otherwise a Part II Order may need to be submitted to the Minister of the Environment for the specific project of issue.

In general, we believe the report is well written and provides a thorough overview of both the existing and proposed servicing scenarios. We appreciate the opportunity to provide the following comments and request your response prior to the commenting period deadline:

Sanitary and Water

The Master Plan identifies that the Regional infrastructure is sufficient to service the VMC build-out and that several municipal watermain and sanitary sewer improvements and new sewers and watermains along new roads will be required to service the area.

Table 6-1 of the Master Plan identifies population projections for the general area of the lands in the south-east quadrant of the VMC.

Can you please confirm the average population density or job density assumed for the lands noted below:

**Potestas Properties Inc. (7725 Jane Street)
Royal Overhead Doors (126 Peelar Road)
Luigi Bros. Paving Company Ltd. (126-146 Peelar Road)
Dibenedetto lands, (south side of Peelar Road, east of Jane Street)**

This information is being requested to ensure the Master Plan assumptions are sufficient and consistent with the future development expectations for these parcels.

Storm

The south-east quadrant of the VMC is unique in that it is an older and more established area with no existing stormwater management controls. The lands include numerous individual ownerships with established businesses that have varying objectives and timelines related to participation in the ultimate VMC landuse plan. As such, it is very likely that as development does proceed, each individual development site will be responsible for addressing the full range of stormwater management controls to the satisfaction of TRCA and the City on an individual basis, without the presence of a downstream SWM facility. The currently proposed downstream SWM facility is proposed on a currently active banquet hall site and is not readily available for construction of a pond. As a result, we have the following comments and questions related to the stormwater management section of the Master Plan:

- 1) An alternative and more realistic option should be considered based on the existing businesses and land ownership in the south-east quadrant of the VMC, which utilizes only on-site controls (by the landowners) for any infill development and future municipal SWM controls within the existing right-of-way of the current road network (by the City).
- 2) If Low Impact Development Techniques (LID's) are used, there should be recognition in the SWM pond sizing (if a pond is ultimately used) to decrease the pond block accordingly. Section 11.4 currently suggests that any savings in the pond area could be attributed to "open space" which would have no land value. LID's add considerable cost and their contribution should be recognized accordingly.
- 3) A 14m setback is typically required by MTO from the property limit, within which a SWM pond berm would not be allowed. Has MTO confirmed that the proposed SWM pond block grading as shown in Figure 11-5 is acceptable.
- 4) Section 11.4 recommends the consideration of various LID's within the public right of ways (i.e. infiltration trenches/linear bio-retention trenches). Has the City accepted the use of these techniques in your design guidelines for use on public roads? Has the impact on the overall size of the right of way and utility locations been considered?
- 5) The proposed SE quadrant SWM pond block is shown on the east side of the Black Creek corridor. If required, the pond block should be established based on a Black Creek channel width that is established based on an equal distance from the centerline of the existing creek.

In conclusion, we request that the proposed stormwater management scheme for the south-east quadrant be modified to reflect the realities of land ownership, phasing and costs associated with the currently proposed drainage scheme which includes an end of pipe SWM facility on a property with an active and newly renovated business. An alternative approach should be considered which recognizes that the properties with this drainage shed may re-develop over a multi-year period and have the ability to provide their own on-site controls, similar to any infill development scenario. If necessary, the City can also incorporate a variety of quantity and quality control measures directly into the right of way to accommodate the drainage from City lands. The primary purpose of this request is to eliminate the cost associated with the currently proposed SWM facility, which will likely not be constructed within the next 10 to 20 years, if at all, based on the nature of the existing landownership and businesses in the south-east drainage area.

Comments will be provided in separate correspondence related to the Black Creek Optimization Study Class EA.



Re: **Municipal Servicing Strategy Master Plan Class Environmental
Assessment Study
Vaughan Metropolitan Centre (VMC), City of Vaughan**

File #: 1546
April 25, 2013
Page 3 of 3

Thank you for the opportunity to provide comments on the Master Plan. We look forward to your response regarding the above comments, in sufficient time before the end of the 30 day review period.

Please contact the undersigned if you have any questions or require any additional information.

Sincerely,

SCS Consulting Group Ltd.



Steve Schaefer, P. Eng.

Principal

sschaefer@scsconsultinggroup.com

Attachments:

- c. Ms. Jennifer Cappola-Lugullo, P, Eng., City of Vaughan
- Mr. Abe Khadami, The Municipal Infrastructure Group
- Mr. Giovanni Marcelli, Potestas Properties Inc. (7725 Jane Street)
- Mr. Joe Guarascio, Royal Overhead Doors (126 Peelar Road)
- Mr. Peter Butterazzi & Ms. Vera D'Alessandro, Luigi Bros. Paving Company Ltd. (126-146 Peelar Road)
- Mr. Tony Dibenedetto, (south side of Peelar Road, east of Jane Street)
- Mr. Jack Wong, Weston Consulting

P:\1546\Correspondence\Letters\City-sms-municipal servicing strategy-25apr13.docx



Mr. Michael Frieri, C.E.T.
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON, L6A 1T1

Dear Mr. Frieri:

**Re: Black Creek Optimization Study and VMC Municipal Servicing Master Plan
Comments with regard to the Vaughan City Square Lands (Pandolfo Group – 7601 and
7551 Jane Street)**

Further to our letter of August 30, 2012 and the stakeholder meeting on November 5, 2012, we are writing with regard to the City's Black Creek Optimization Study Class EA and the Vaughan Metropolitan Centre Master Plan Class EA and the associated impacts to the Vaughan City Square lands on the east side of Jane Street, north of Hwy 407 (Pandolfo Group – 7601 and 7551 Jane Street).

We understand that the City has recently retained a The Municipal Infrastructure Group to complete the Phase 3 and 4 component of the Schedule C Class EA Process. We also understand that the preferred solution includes channelization and realignment of the Black Creek corridor to eliminate existing Regional Storm spill areas onto existing development areas.

It is also our understanding that the City is currently in the process of finalizing your Vaughan Metropolitan Centre Municipal Servicing Strategy Master Plan Class EA Study. This study is currently proposing a combination of on-site Low Impact Development techniques to attenuate the first 15mm of rainfall runoff as well as a proposed downstream stormwater management facility for the lands south of Hwy 7 and east of Jane Street. The implementation of this solution depends on acquisition of private lands to facilitate the stormwater management pond.

As discussed at our meeting on August 21, 2012, we request that the following comments and suggestions be considered in the implementation of the two studies noted above:

Location of the Black Creek Channel

We understand that the preferred approach identified in Phase 1 and 2 of the Class EA was that the subject lands be protected in a Regional Storm flooding event through a combination of channel improvements and culvert replacements. The channel location was to be determined through the Phase 3 and 4 process, which has recently been initiated.

As shown on the attached land ownership figure, the existing channel winds behind an existing condominium retail building (#10), and then continues south through the Vaughan City Square (PANDOLFO GROUP – 7601 and 7551 Jane Street) and MTO lands and ultimately through the DiBenedetto lands (#3) to the existing Hwy 407 culvert.

We propose that the channel be re-aligned within primarily public lands by extending it along the front of the condominium retail lands (#10), along the York Region owned lands (#5) and MTO owned lands (#4) and then bend back just north of Peelar Road, to the existing alignment south of Peelar Road to the existing Hwy 407 culvert (see the blue line on the attached figure).

This alignment would serve as a linear corridor along Jane Street. It could provide both recreational and amenity opportunities as well as the benefit of serving as a buffer between Jane Street and the adjacent development areas to the east.

Our client recently met with City Staff and a member of Council to discuss this proposed channel alignment through the public vacant lands between Jane Street and Peelar Road. We understand that the proposed alignment was favourably received and that staff were open to considering this alignment due to the potential for an adjacent linear park or potential stormwater management facility location within the public vacant lands.

We understand that there is currently a trunk sanitary sewer and watermain within this alignment and that there is a grade difference between Jane Street and Peelar Road, however we request that the feasibility of this option be further investigated relative to the use of privately owned lands.

Should the alignment along Jane Street not prove to be feasible, a second alternative would be to consider more gentle bend around the existing condo commercial building (#10 in the attached figure) to minimize impacts on private lands. This alignment would be a longer term solution that would be implemented together with the re-alignment of the future Interchange Way extension, east of Jane Street. A sketch of this alternative is shown in red on the attached Figure 2.

Channel Width and Buffer

We understand the current proposal is to utilize a 15m wide meander belt and a 30m wide overall channel width using 3:1 slopes. We also understand that TRCA is requesting 10m wide buffers beyond the channel based on the Valley and Stream Corridor Management Policy.

We support the pursuit of a 15m wide meander belt and we request the City's consideration of 2:1 channel slopes to assist with the overall conveyance capacity of the channel and to provide flexibility in the design.

We also suggest that based on the "urban" nature of this channel, the 10m wide buffers should be reconsidered in any area where access to the channel can be obtained through other means (i.e. Jane Street, parks, private parking lots or roads).

Development Charges

We understand that the works included in the Black Creek Optimization Study are being considered to be included in a future Development Charge by-law.

The landowner requests that based on the important nature of this corridor to the City's vision for the Vaughan Metropolitan Centre, the works should be considered as a City wide development charge. The considerable cost associated with the required channelization and culvert replacement could otherwise jeopardize the future re-development potential for these areas.

Channel Crossings and Implementation

We understand that preliminary culvert sizings have been completed for Hwy 7, Doughton Road, Interchange Way (extension) and Peelar Road and that the existing driveway culverts have been assumed to be removed. We note that based on the multiple ownerships involved and the varying timelines of development anticipated, there will likely be a phased approach to the overall channel construction. As such, the impacts of the four existing driveway culverts should be considered in the analysis or options prepared to eliminate them. With regard to the driveway access to 7601 and 7551 Jane Street, we note that these driveway access location will be required to be maintained to provide sufficient access to the properties.

With regard to the existing driveways to the Paradise Banquet Hall and the Iceplex (7601 and 7551 Jane Street), we appreciate your position that interim solutions to expedite development on these lands will be considered, provided that they do not have any negative impact on the ultimate channel implementation.

A Site plan application was filed by the Pandolfo Group in 2009 for 7601 and 7551 Jane Street. They are continuing to expedite the development proposal. Evaluations were undertaken to provide interim floodplain reduction solutions through two culvert improvements on the property. Based on the fragmented ownership in the study area and the resultant timing implications, we request that the City's scope of work include an analysis of alternatives to replace or remove the culverts in the interim to advance the site plan process for the 7601 and 7551 Jane Street properties. We also request that enclosure options be considered where existing building or property constraints limit the ability to provide a sufficient channel width (i.e. at the channel bend north of Peelar Road)

Stormwater Management

The currently proposed stormwater management proposal for the lands east of Jane Street, between Hwy 7 and Hwy 407 includes a SWM facility immediately north of Hwy 407.

As you are aware, the lands on which the SWM pond is proposed are privately owned and are not currently part of a re-development proposal. As such, delivery of the SWM facility will be unlikely during the initial phases of re-development in this area.

We request that alternative SWM solutions be considered for the re-development areas which could utilize innovative on-site solutions to provide the required stormwater quantity, quality, erosion and water balance controls required by the City, TRCA and MOE. Examples could include underground storage chambers, oil-grit separators, green roofs, rooftop storage, rainwater harvesting cisterns for irrigation, pervious pavements, rain-gardens etc. Based on the value of land in this area, alternative

downstream storage solutions could also be considered for the municipal road system including Stormtrap stormwater storage cells, which can provide quality and quantity control for these areas, resulting in a reduced land requirement. The use of increased on-site control will minimize the requirement for the municipal stormwater facilities. We note that a similar approach has recently been taken in the high density areas of Markham Centre and has received MOE, TRCA and City approval.

Please contact the undersigned if you have any questions or require any additional information.

Sincerely,

SCS Consulting Group Ltd.



Steve Schaefer, P. Eng.

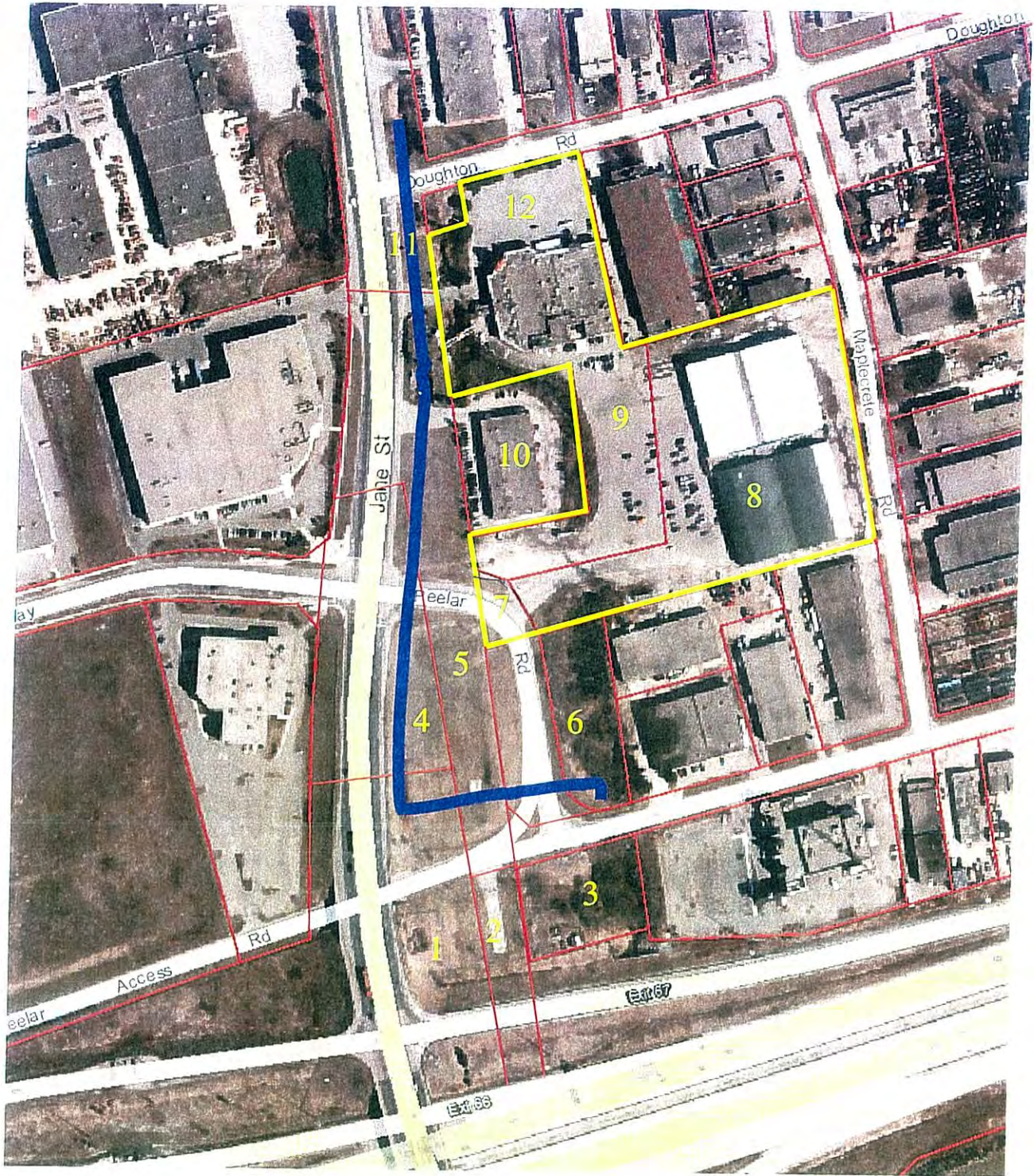
Principal

sschaefer@scsconsultinggroup.com

Attachments: Land Ownership and Proposed Channel Alignment

- c. Mr. Saad Yousaf, City of Vaughan
- Mr. Abe Khademi, TMIG
- Mr. J. Pandolfo, Vaughan City Centre

P:\1499 - Pandolfo - Jane Street\Correspondence\Letters\Vaughan-sms-Black Creek Optimization Study Comments-12dec12.docx



1. MTO
2. Vaughan
3. Di Benedetto
4. MTO
5. York
6. MTO
7. Vaughan
8. 785343 Ontario Limited (Pandolfo Group)
9. Vaughan City Square (Pandolfo Group)
10. Private Condo
11. MTO
12. Vaughan



**WESTON
CONSULTING**

planning + urban design

Development Planning Department
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario L6A 1T1

November 29, 2012
File 5052

Attn: John MacKenzie, Commissioner of Planning

Dear Mr. MacKenzie:

RE: VMC Black Creek Renewal Class EA and Request for Submissions re: Channel Concepts

Further to our multiple submissions and appearances before Committee of the Whole on the VMC Secondary Plan (VCMSP) regarding modifications on behalf of our client ZZEN Group of Companies Ltd. ("ZZEN"), we wish to respond formally to the request for comments on the VMC Black Creek Renewal Class EA.

As you are aware, the subject lands are located just east of the northeast corner of Jane Street and Highway 7 within the VMC, and are immediately abutting the publically owned lands designated as "Environmental Open Space" on revised Schedule D of the VCMSP (see attached). Part of our submission on the latest proposed VMC modifications was that the City consider an "urban square" symbol designation on these public lands as they are strategically located at a busy gateway and transit and pedestrian node at the Jane/Highway 7 intersection. We further submitted that the City consider the undertaking of a precinct plan at this quadrant of the VCM Planning Area to look at the feasibility of a creek enclosure/urban square design feature which would complement the proposed highrise developments, future at-grade retail uses and the extension of a future urban park surrounding Edgeley Pond.

We would draw your attention to the Minutes of the last VMC Black Creek Renewal Class EA meeting (see attached), specifically bullet point # 6 which states the following:

"6. There was some discussion regarding an enclosure of the section between Highway 7 and the Edgeley Pond. TMIG indicated that enclosure is technically feasible and will explore through the EA, but noted any enclosure would be subject to acceptance by TRCA and input from Urban Design. Treatment of the reach north of Highway 7 will also be influenced by the relationship between the proposed retrofit of the Edgeley Pond and the channel."

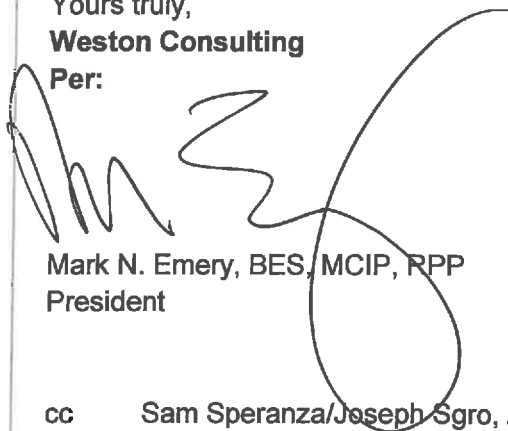
In our opinion, the option of an enclosure with an innovatively designed public urban square on publically owned lands at this strategic location, connecting these lands to a future urban park and pond feature demonstrates good planning by integrating creative urban design, pedestrian

accessibility and presents an exciting opportunity for the City to create a unique urban open space facility. Our client's landscape architect is currently in the process of generating alternative design options that could implement this unique urban feature, and we would request the opportunity to continue our discussions with both the City and TRCA staff before any final decisions are made.

We would request your positive consideration of our submission and would be pleased to discuss the matter further.

Yours truly,
Weston Consulting

Per:

A large, stylized handwritten signature in black ink, appearing to be 'M. Emery', is written over the typed name and extends upwards into the 'Per:' line.

Mark N. Emery, BES, MCIP, RPP
President

cc Sam Speranza/Joseph Sgro, Zzen Group of Companies
Jim Levac, Weston Consulting
Rosario Sacco, UEL
Michael Frieri, City of Vaughan
Andrew Pearce, City of Vaughan
Abe Khademi, TMIG

November 23, 2012

City of Vaughan
Development / Transportation Engineering Department
2141 Major Mackenzie Drive
Vaughan, Ontario
L6A 1T1

Attention: Mr. Saad Yousaf, MSc, P.Eng.,PMP
Storm Drainage Engineer

Dear Sir:

**Re: Stakeholder Meeting Response
Vaughan Metropolitan Centre – Black Creek Renewal
Municipal Class Environmental Assessment**

We are writing on behalf of 1834371 Ontario Inc, the owners of three parcels known municipally as 2951 Highway 7 West, 190 Maplecrete Road, and 180 Maplecrete Road which are located at the southwest corner of Highway 7 and Maplecrete Road and within your study area for the above noted Municipal Class Environmental Assessment.

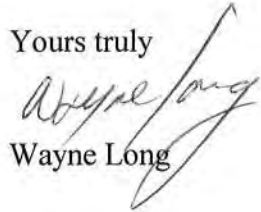
We attended the November 5, 2012 stakeholder meeting together with our consultant, Valdor Engineering Inc., to hear the presentation on the City's Black Creek Renewal Project. As requested we have considered the information presented and we provide our comments as follows:

1. Given the retro-fit nature of the works and the various physical constraints, consideration should be given to the incorporation of special design measures to minimize the width of the proposed channel including reduced buffers and a combination of steeper side slopes and the use of armour stone retaining walls, or, a fully covered box culvert with a linear park above.
2. Furthermore, given that the subject watercourse has a significant upstream drainage area (approximately 767 hectares) which contributes to the existing floodplain through the study area, the cost of the proposed works could be funded through a City Wide Development Charge, or, perhaps more appropriately, through a local improvement tax.

-
3. As previously stated our properties are not in the floodplain (with the exception of an insignificant portion) and our development should not be delayed due to the optimization works.

We respectfully request your consideration in this regard and we thank you for hosting the meeting. Should you have any questions, please do not hesitate to contact us.

Yours truly



Wayne Long

- c.c. Mr. Paul Jankowski
- c.c. Mr. Abe Khademi
- c.c. Mr. David Giugovaz

Steve Hollingworth

From: Abe Khademi
Sent: July 17, 2012 11:39 AM
To: Rebecca Stewart
Cc: Steve Hollingworth
Subject: FW: Black Creek Renewal: EA

Hi Rebecca, please add to our contact list for Black Creek. Thanks,

Abe

From: Georgez@dynexconstruction.com [<mailto:Georgez@dynexconstruction.com>]
Sent: Tuesday, July 17, 2012 11:11 AM
To: saad.yousaf@vaughan.ca
Cc: Abe Khademi
Subject: Black Creek Renewal: EA

Good Morning Saad,

As a long time property owner in this area we would like to be added to the study's mailing list. We are not only a property owner in the area, our company is a well-respected stream restoration contractor in Ontario. We are very interested in seeing how the City will be dealing with Black Creek.

All correspondence can be forwarded to our office at the address below. My e-mail link and web site information are also included below.

Regards,

George Zeppieri

Dynex Construction Inc.

80 Costa Road

Concord, Ontario

L4K 1N2

Phone: 905-669-5923

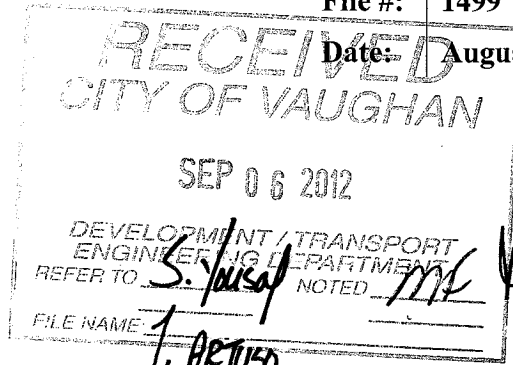
Fax: 905-669-9380

georgez@dynexconstruction.com

www.dynexconstruction.com

File #: 1499

Date: August 30, 2012



Mr. Michael Frieri, C.E.T.
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON, L6A 1T1

Dear Mr. Frieri:

Re: **Black Creek Optimization Study and VMC Municipal Servicing Master Plan
Comments with regard to the Vaughan City Square Lands**

We are writing with regard to the City's Black Creek Optimization Study Class EA and the Vaughan Metropolitan Centre Master Plan Class EA and the associated impacts to the Vaughan City Square lands on the east side of Jane Street, north of Hwy 407.

We understand that the City has recently retained a consultant to complete the Phase 3 and 4 component of the Schedule C Class EA Process. We also understand that the preferred solution includes channelization and realignment of the Black Creek corridor to eliminate existing Regional Storm spill areas onto existing development areas.

It is also our understanding that the City is currently in the process of finalizing your Vaughan Metropolitan Centre Municipal Servicing Strategy Master Plan Class EA Study. This study is currently proposing a combination of on-site Low Impact Development techniques to attenuate the first 15mm of rainfall runoff as well as a proposed downstream stormwater management facility for the lands south of Hwy 7 and east of Jane Street. The implementation of this solution depends on acquisition of private lands to facilitate the stormwater management pond.

As discussed at our meeting on August 21, 2012, we request that the following comments and suggestions be considered in the implementation of the two studies noted above:

Location of the Black Creek Channel

We understand that the preferred approach identified in Phase 1 and 2 of the Class EA was that the subject lands be protected in a Regional Storm flooding event through a combination of channel improvements and culvert replacements. The channel location was to be determined through the Phase 3 and 4 process, which has recently been initiated.

As shown on the attached land ownership figure, the existing channel winds behind an existing condominium retail building (#10), and then continues south through the Vaughan City Square and MTO lands and ultimately through the DiBenedetto lands (#3) to the existing Hwy 407 culvert.

We propose that the channel be re-aligned within primarily public lands by extending it along the front of the condominium retail lands (#10), along the York Region owned lands (#5) and then bend back just north of Peelar Road, to the existing alignment through the DiBenedetto lands (see the blue line on the attached figure). Should the DiBenedetto lands be acquired by the City through this process, the bend could occur south of Peelar Road.

This alignment would serve as a linear corridor along Jane Street. It could provide both recreational and amenity opportunities as well as the benefit of serving as a buffer between Jane Street and the adjacent development areas to the east.

Development Charges

We understand that the works included in the Black Creek Optimization Study are being considered to be included in a future Development Charge by-law.

We request that based on the important nature of this corridor to the City's vision for the Vaughan Metropolitan Centre, the works should be considered as a City wide development charge. The considerable cost associated with the required channelization and culvert replacement could otherwise jeopardize the future re-development potential for these areas.

Stormwater Management

The currently proposed stormwater management proposal for the lands east of Jane Street, between Hwy 7 and Hwy 407 includes a SWM facility immediately north of Hwy 407.

As you are aware, the lands on which the SWM pond is proposed are privately owned and are not currently part of a re-development proposal. As such, delivery of the SWM facility will be unlikely during the initial phases of re-development in this area.

We request that alternative SWM solutions be considered for the re-development areas which could utilize innovative on-site solutions to provide the required stormwater quantity, quality, erosion and water balance controls required by the City, TRCA and MOE. Examples could include underground storage chambers, oil-grit separators, green roofs, rooftop storage, rainwater harvesting cisterns for irrigation, pervious pavements, rain-gardens etc. Based on the value of land in this area, alternative downstream storage solutions could also be considered for the municipal road system including Stormtrap stormwater storage cells, which can provide quality and quantity control for these areas, resulting in a reduced land requirement. The use of increased on-site control will minimize the requirement for the municipal stormwater facilities. We note that a similar approach has recently been taken in the high density areas of Markham Centre and has received MOE, TRCA and City approval.

Consultation

As discussed, we request the opportunity to meet with you again prior to the proposed overall landowner meeting, to review the proposed channel alignment and associated SWM strategy.

Re: **Black Creek Optimization Study and VMC Municipal Servicing Master Plan Comments with regard to the Vaughan City Square Lands**

File #: 1499
August 30, 2012
Page 3 of 3

Please contact the undersigned if you have any questions or require any additional information.

Sincerely,

SCS Consulting Group Ltd.



Steve Schaefer, P. Eng.

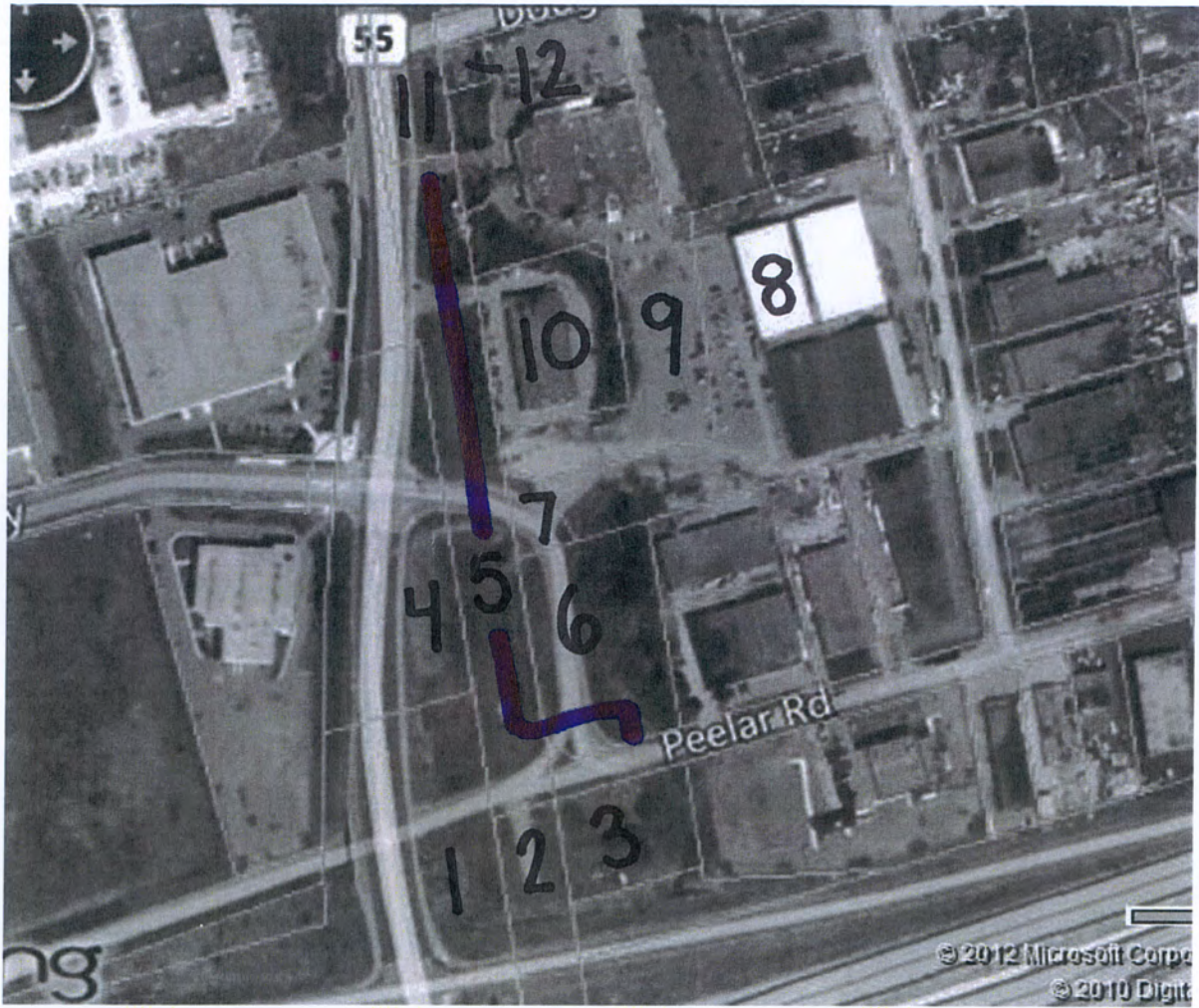
Principal

sschaefer@scsconsultinggroup.com

Attachments: Land Ownership and Proposed Channel Alignment

c. Mr. J. Pandolfo, Vaughan City Centre

P:\1499 - Pandolfo - Jane Street\Correspondence\Letters\Vaughan-sms-Black Creek Optimization Study Comments-23aug12.docx



- 1 - MTO
- 2 - Vaughan
- 3 - Di Benedetto
- 4 - MTO
- 5 - York
- 6 - MTO
- 7 - Vaughan
- 8 - 785343 Ontario Limited
- 9 - Vaughan City Square
- 10 - Private Condo.
- 11 - MTO
- 12 - Vaughan

July 12, 2012

City of Vaughan
Development / Transportation Engineering Department
2141 Major Mackenzie Drive
Vaughan, Ontario
L6A 1T1

Attention: **Mr. Saad Yousaf, MSc, P.Eng.,PMP**
Storm Drainage Engineer

Dear Sir:

Re: **Vaughan Metropolitan Centre – Black Creek Renewal**
Municipal Class Environmental Assessment
City of Vaughan

As you may be aware, we are the owners of three parcels known municipally as 2951 Highway 7 West, 190 Maplecrete Road, and 180 Maplecrete Road which are located at the southwest corner of Highway 7 and Maplecrete Road. Based on your Notice of Study Commencement, our lands are located within your study area for the above noted Municipal Class Environmental Assessment.

As a land owner within the study area and given that we have submitted development applications with the City, we respectfully request to be placed on your study mailing list so that we are advised of any public information forums.

Furthermore, if the City or its consultant requires any information regarding our development proposal we encourage you to contact our office or our consulting engineer, Valdor Engineering Inc.

We thank you for your assistance in this regard. Should you have any questions, please do not hesitate to contact us.

Yours truly

1834371 Ontario Inc. (Liberty Development Corporation)



Lezlie Phillips

c: **Abe Khademi**, The Municipal Infrastructure Group Ltd. (City's Consultant)
c: **David Giugovaz**, Valdor Engineering Inc.



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: (Please check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input checked="" type="checkbox"/> Outside the Study Area | <input checked="" type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past? NO

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
Class Environmental Assessment



Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

Yes

5. Are there any other ideas or suggestions you would like to share?

Please provide your contact information below: (please print)

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: JOHN DI SANTE
 Address: 79 PEEUAR RD VAUGHAN, ON
L4K 1A3
 Telephone No.: 905-660-9664
 Email Address: JOHN@HITECHSTRUCTURES.COM

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by **May 26, 2017** to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
 2141 Major Mackenzie Drive
 Vaughan, ON L6A 1T1
 Tel: 905-832-8585 Ext: 8433
 Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
 8800 Dufferin Street, Suite 200
 Vaughan, ON L4K 0C5
 Tel: (905) 738-5700 Ext. 359
 Email: shollingworth@tmig.ca



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
 Class Environmental Assessment
 Comment Form and Questionnaire
 Public Information Centre
 May 10, 2017



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: *(Please check all that apply)*

- | | |
|--|--|
| <input checked="" type="checkbox"/> Within the Study Area <i>PARTIAL</i> | <input type="checkbox"/> Residential property |
| <input checked="" type="checkbox"/> Outside the Study Area | <input checked="" type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input checked="" type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past? *NO*

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?

PRESERVE EXISTING ACCESS POINTS FROM JANE ST TO ADJACENT PROPERTIES.



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
Class Environmental Assessment



Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

YES.

5. Are there any other ideas or suggestions you would like to share?

PER DISCUSSIONS WITH REGION/CITY/TWOA/YCC 499/
ZZON & LIBERTY ACCESS FROM JANE STREET TO
YCC/ZZON ARE CRITICAL TO FUNCTIONAL ACCESS
TO THESE PROPERTIES.

Please provide your contact information below: *(please print)*

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: WAYNE CONG

Address: LIBERTY

Telephone No.: _____

Email Address: _____

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by **May 26, 2017** to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca

Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: (Please check all that apply)

- Within the Study Area Interest
- Outside the Study Area Interest
- General interest
- Regulatory interest
- Other (please specify): Environmental, Parks and Transit
- Residential property
- Commercial/industrial property
- Recreational property

2. Has your property been impacted by flooding in the past? N/A

- No Standing water on your property How often? _____
- No Water flowing through your property How often? _____
- No Water entering buildings on your property How often? _____
- No Damage to vehicles parked on your property How often? _____
- No Other (please specify): _____ How often? _____

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?

Noise pollution, Air Pollution, Having a trail that connects all the parks together (present and future), future subway, Future Jane Street Rapid Bus Transit. Flood was in 2005. Why does it take

Not part of public record.

12
1 Year?

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

I agree. more environmental protection and enforcement.

5. Are there any other ideas or suggestions you would like to share?

What is causing the floods? Can we get to the root cause? prevention more important than reaction. Have environmental events by Jane Street and Highway 7. Example: Flood prevention Day!

Please provide your contact information below: (please print)

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: _____
Address: _____
Telephone No.: _____
Email Address: _____

prevention Day!
August 19/20,
Annual Event

Do you want to be added to the project mailing list? [] Yes [X] No

Please mail or e-mail your completed comment form by May 26, 2017 to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca

Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: *(Please check all that apply)*

- | | |
|---|--|
| <input checked="" type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input type="checkbox"/> Outside the Study Area | <input checked="" type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past? *No*

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property <i>No</i> | How often? _____ |
| <input type="checkbox"/> Water flowing through your property <i>No</i> | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property <i>No</i> | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property <i>No</i> | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?

We are concerned about access and remaining land available to be built on.



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
Class Environmental Assessment



Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

Not sure - I would like to know
How much developable land
do I have at the end -

5. Are there any other ideas or suggestions you would like to share?

Please provide your contact information below: *(please print)*

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: Domenica Peruzzo
Address: 7581 Jane Str -

Telephone No.: 416-735-8500

Email Address: dperuzzo44@gmail.com

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by May 26, 2017 to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: *(Please check all that apply)*

- | | |
|---|--|
| <input checked="" type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input type="checkbox"/> Outside the Study Area | <input checked="" type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past? *No*

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?

we are concerned about access to the Property and the land would left to develop after realignment



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
Class Environmental Assessment



Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

I would prefer to have the size of creek be reduced to maximize the developable land.

5. Are there any other ideas or suggestions you would like to share?

Please provide your contact information below: *(please print)*

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: Reza Fakhim
Address: 7581 Jane st unit 10611
L4K 1X3
Telephone No.: 905 505 5709
Email Address: Reza@mapleair.com

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by May 26, 2017 to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
 Class Environmental Assessment
 Comment Form and Questionnaire
 Public Information Centre
 May 10, 2017



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: (Please check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input checked="" type="checkbox"/> Outside the Study Area | <input type="checkbox"/> Commercial/industrial property |
| <input checked="" type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past?

No

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?

It's nothing pleasant to look at.

Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

Yes, it seems to make sense in that it reduces erosion, and I like that there's a larger area dedicated to containing water from flooding.

5. Are there any other ideas or suggestions you would like to share?

I'd like for more effort and imagination to go into the design of the urban park. There is significant potential for this to be a destination for recreational purposes. I'd also like to see some ideas for planting native species ~~and~~ along the new river re-alignment area.

Please provide your contact information below: (please print)

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: Jean-Francois Obregon
Address: 2 Laurel Valley Crt.
Concord, ON L4K 2B3
Telephone No.: 647-996-0520
Email Address: jfobregon7@gmail.com

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by May 26, 2017 to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
 Class Environmental Assessment
 Comment Form and Questionnaire
 Public Information Centre
 May 10, 2017



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: (Please check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input type="checkbox"/> Outside the Study Area | <input type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past?

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
Class Environmental Assessment



Comment Form and Questionnaire
Public Information Centre
May 10, 2017

4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

5. Are there any other ideas or suggestions you would like to share?

Please provide your contact information below: *(please print)*

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: Serge Babah

Address: _____

Telephone No.: _____

Email Address: _____

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by **May 26, 2017** to:

Jennifer Cappola-Logullo, P.Eng.
Project Manager
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1
Tel: 905-832-8585 Ext: 8433
Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group
8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel: (905) 738-5700 Ext. 359
Email: shollingworth@tmig.ca



Thank you for attending tonight's Public Information Centre!

Your views are important to us. Please take a moment to complete this comment form and questionnaire. You can deposit it in the comments box, or complete it later and submit it by mail or e-mail.

The City of Vaughan is undertaking a Class Environmental Assessment (EA) Study to reduce flooding and flood damages along Black Creek within the Vaughan Metropolitan Centre (VMC). The EA's purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor.

1. My property / interest is: (Please check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Within the Study Area | <input type="checkbox"/> Residential property |
| <input checked="" type="checkbox"/> Outside the Study Area | <input type="checkbox"/> Commercial/industrial property |
| <input type="checkbox"/> General interest | <input type="checkbox"/> Recreational property |
| <input type="checkbox"/> Regulatory interest | |
| <input type="checkbox"/> Other (please specify): _____ | |

2. Has your property been impacted by flooding in the past?

- | | |
|---|------------------|
| <input type="checkbox"/> Standing water on your property | How often? _____ |
| <input type="checkbox"/> Water flowing through your property | How often? _____ |
| <input type="checkbox"/> Water entering buildings on your property | How often? _____ |
| <input type="checkbox"/> Damage to vehicles parked on your property | How often? _____ |
| <input type="checkbox"/> Other (please specify): _____ | How often? _____ |

If yes to any of the above, please provide the address of the impacted property:

3. Do you have any comments or concerns regarding the existing conditions within the Study Area?



Vaughan Metropolitan Centre (VMC) Black Creek Renewal
 Class Environmental Assessment
 Comment Form and Questionnaire
 Public Information Centre
 May 10, 2017



4. Do you agree with the selection of 'Meander North of Peelar' as the preliminary preferred alignment design? Are there other alternatives that could be considered?

JANE ST ALIGNMENT

5. Are there any other ideas or suggestions you would like to share?

Please provide your contact information below: *(please print)*

Please Note: Your name and address are required for your comments to be considered in the EA process

Name: GEORGE ZEPHERO

Address: 80 COSTA RICA
CONCORD, ON

Telephone No.: 905-669-5923

Email Address: GEORGE@DYNEXCONSTRUCTION.COM

Do you want to be added to the project mailing list? Yes No

Please mail or e-mail your completed comment form by May 26, 2017 to:

Jennifer Cappola-Logullo, P.Eng.
 Project Manager
 City of Vaughan
 2141 Major Mackenzie Drive
 Vaughan, ON L6A 1T1
 Tel: 905-832-8585 Ext: 8433
 Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
 Consultant Project Manager
 The Municipal Infrastructure Group
 8800 Dufferin Street, Suite 200
 Vaughan, ON L4K 0C5
 Tel: (905) 738-5700 Ext. 359
 Email: shollingworth@tmig.ca

REPLY FORM

To: Steve Hollingworth, TMIG

Date: 27/1/2017

Fax: (905) 738-0065

E-mail: shollingworth@tmig.ca

RE: Black Creek Renewal, Municipal Class Environmental Assessment

NAME:

Ian Fleming

TITLE:

ORGANIZATION/AGENCY:

Zayo

ADDRESS:

POSTAL CODE:

PHONE:

FAX:

E-MAIL:

Utility Circulations

Please indicate the appropriate response:



My group/agency **is interested** in providing input regarding this Study.
Please include me on the Study Mailing List.



My group/agency **is not interested** in providing input regarding this Study, but
would like to be kept informed. Please include me on the Study Mailing List.



Please **remove** my group/agency from Study Mailing List.

Area of interest or concern/preliminary comments:

Zayo has facilities within the study area, primarily along Jane. Please keep us informed as the project progresses so that we
may take measures to protect our plant, if needed. Thank you.

REPLY FORM

To: Steve Hollingworth, TMIG

Date: Jun 23, 2017.

Fax: (905) 738-0065

E-mail: shollingworth@tmig.ca

RE: **Black Creek Renewal, Municipal Class Environmental Assessment**

NAME:

HENRIK NOMMIK

TITLE:

UTILITY MARK-UP AND PERMIT SPECIALIST

ORGANIZATION/AGENCY:

COBECO PEER 1

ADDRESS:

413 HORNOR AVE

TORONTO, ON

POSTAL CODE:

M8W 4W3

PHONE:

416 847-0848

FAX:

E-MAIL:

UTILITY.CIRCULATIONS @ COBECOPEER1.COM

Please indicate the appropriate response:

My group/agency **is interested** in providing input regarding this Study.
Please include me on the Study Mailing List.

My group/agency **is not interested** in providing input regarding this Study, but
would like to be kept informed. Please include me on the Study Mailing List.

Please **remove** my group/agency from Study Mailing List.

Area of interest or concern/preliminary comments:

COBECO PEER 1 DOES NOT HAVE ANY STRUCTURE
IN THE OUTLINED AREA. A. Henn

APPENDIX A5

Demonstration Plan



APPENDIX A6

Aboriginal Correspondence

Aboriginal Consultation Summary

Community	Dates and Form of Contact ^{(1) (2)}	Date(s) and Form of Follow-up Contact	Date Response Received	Comments
Alderville First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
BeauSoleil First Nations	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	2017-01-25 (L)	No interests, but request to keep on Study Mailing List. Request for digital copy of UCEA and archaeological issues or concerns.
Chippawas of Rama First Nation (Mnjikaning)	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	2017-01-20 (E) 2017-05-11 (E)	Co-ordinator forwarded letter to Council. Council to review letter. Acknowledged receipt of Notice of PIC
Chippewas of Georgina Island First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Curve Lake First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	-	
Hiawatha First Nation (Mississaugas of Rice Lake)	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	-	
Mississauga's of Scugog Island First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	-	
Williams Treaties First Nations	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Kawartha Nishnawbe First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Mississaugas of the New Credit First Nation	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	-	-	
Peterborough and District Wapiti Métis Council	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Georgian Bay Métis Council	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Moon River Métis Council	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	

Community	Dates and Form of Contact ^{(1) (2)}	Date(s) and Form of Follow-up Contact	Date Response Received	Comments
Oshawa and Durham Region Métis Council	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	
Métis Nation of Ontario	2012-07-24 (L) 2017-01-16 (L) 2017-04-24 (L)	2018-05-01 (E)	-	

1. Dates of contact correspond to the following consultation events: Notice of Commencement – July 24, 2017; Project Status Update – January 16, 2017; Notice of Public Information Centre – April 24, 2017; Notice of Completion – August 9, 2018.
2. Forms of Contact refer to letter (L), telephone (T) or email (E).



July 24, 2012

**Re: Notice of Study Commencement
Vaughan Metropolitan Centre – Black Creek Renewal
Municipal Class Environmental Assessment**

Dear Sir/Madam:

The City of Vaughan recently completed the Black Creek Storm Water Optimization Study Master Plan Class Environmental Assessment. The study identified a range of alternative solutions to reduce flooding and flood damages, improve water quality and limit stream bank erosion in Black Creek. The preferred solution to address flooding was determined to be the reconstruction and renewal of Black Creek between the Edgely Pond (north of Highway 7) and Highway 407. The Vaughan Metropolitan Centre (VMC) – Black Creek Renewal Class EA will consider different potential alignments and physical forms for Black Creek within the study area and establish a plan for the renewal of Black Creek that satisfies all applicable regulatory criteria. A map of the study area is attached. The legal description is Lots 3, 4 and 5, concessions 4 and 5, in the former Township of Vaughan.

The Study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 2007 & 2011). Phases 1 and 2 of the Environmental Assessment were addressed in the Black Creek Storm Water Optimization Master Plan. The VMC Black Creek Renewal Class EA will fulfill the requirements of Schedule 'C' Phases 3 and 4 and will address alternative designs, their impacts and all mitigating measures. The preferred design(s) will be determined based on engineering requirements, environmental considerations, public input and information gathered during the study.

The Ontario Ministry of the Environment (MOE) advised us to contact you to determine potentially affected Aboriginal communities in the project area.

We would appreciate it if you could provide us with a list of aboriginal communities and their contact information. We will then inform these communities about the project and the upcoming public information forums.

Sincerely,

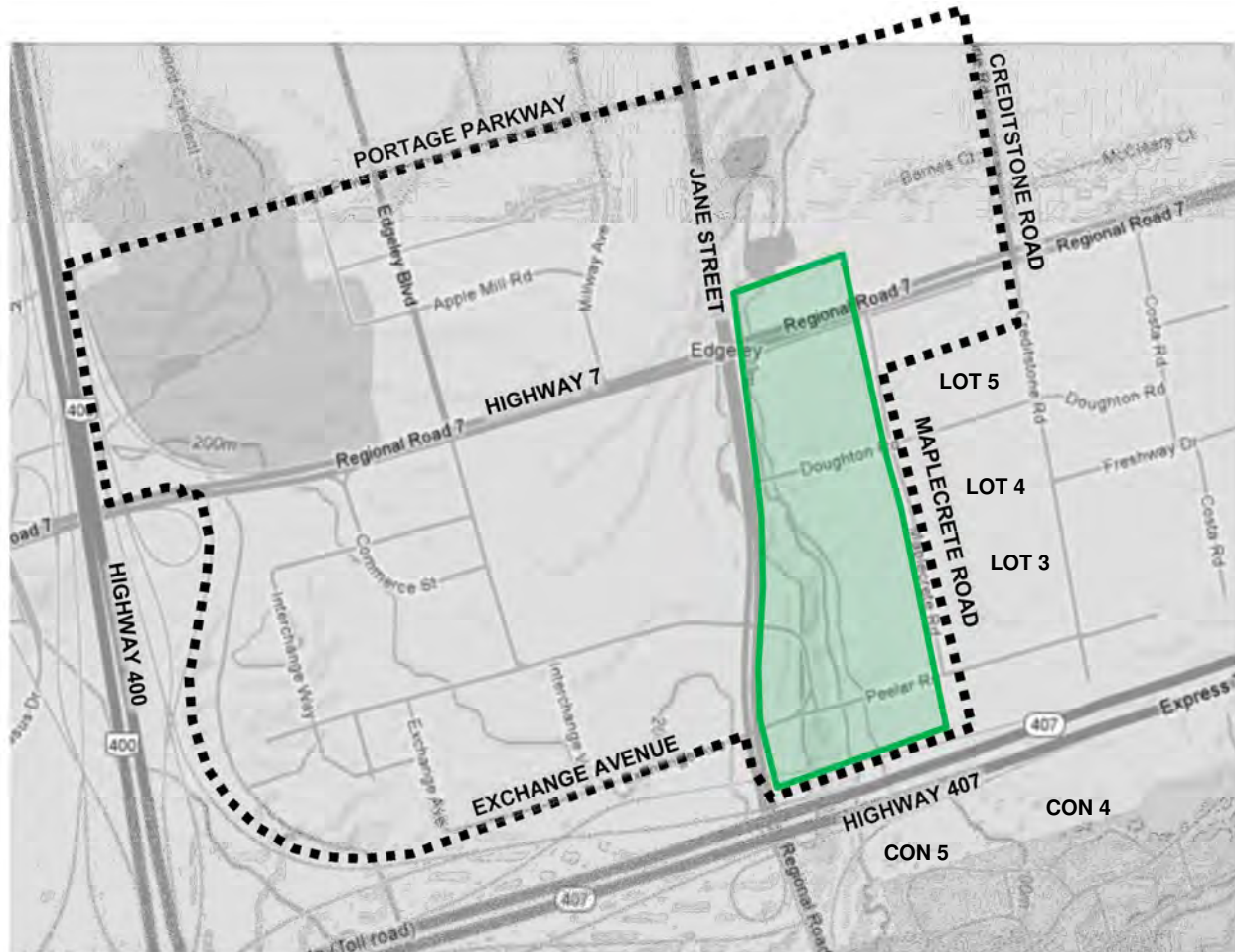
The Municipal Infrastructure Group Ltd.

Abe Khademi, P.Eng. PMP
Consultant Project Manager
akhademi@tmig.ca

cc: Saad Yousaf, Storm Drainage Engineer, City of Vaughan

8800 Dufferin Street, Suite 200
Vaughan, Ontario
Canada L4K 0C5
Tel: 905-738-5700
Fax: 905-738-0065
1 888-449-4430
www.tmig.ca

KEY MAP



- VAUGHAN METROPOLITAN CENTRE (VMC) SECONDARY PLAN AREA
- ▭ APPROXIMATE VMC BLACK CREEK RENEWAL STUDY AREA BOUNDARY



Vaughan City Hall
 2141 Major Mackenzie Dr. 905.832.2281
 Vaughan, ON L6A 1T1 www.vaughan.ca

8800 Dufferin Street, Suite 200 905.738.5700
 Vaughan, Ontario L4K 0C5 www.tmig.ca

January 16, 2017

██████████
 ██████████
 ██████████

Dear ██████████

**Re: VMC Black Creek Renewal, City of Vaughan
 Project Status Update of Municipal Class Environmental Assessment Study**

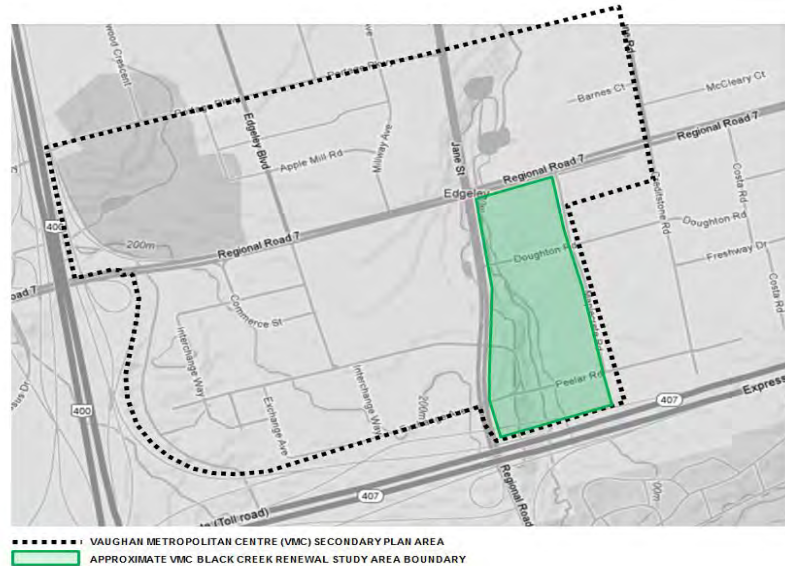
This letter is intended to provide a Project Status Update for the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Study given a considerable length of time has passed since the Notice of Commencement for the EA Study was first issued on July 5, 2012.

The VMC Black Creek Renewal Municipal Class Environmental Assessment (EA) Study, which is intended to establish the alignment and form of Black Creek through the south-east quadrant of the VMC Secondary Plan Area, initially started in 2012. Early in the process, it became apparent there were a number of conflicting interests in the size, alignment and configuration of a reconstructed and renewed Black Creek valley corridor between the landowners and review agencies. An extensive consultation and facilitation process took place over 2013 and 2014 with directly affected landowners and agencies to better understand key issues, opportunities and constraints.

Subsequent to the consultation and facilitation process described above, the Black Creek Financial Strategy and Development Charge Background Study was carried out to establish the framework for funding a number of projects within the VMC Secondary Plan, including potential realignment and renewal of Black Creek. The financial strategy was approved by Vaughan Council in June 2016.

It remains a requirement to refine and evaluate alternative alignments and configurations for the renewal of Black Creek and complete the EA Study that was initiated in 2012. Given the length of time that has passed since the Notice of Commencement was issued, we would like to confirm that our contact information is up to date and provide you with another opportunity to provide input to the development and evaluation of alternative solutions.

We have enclosed a copy of the original Notice of Commencement dated July 5th, 2012 along with a reply form. We would appreciate if you could complete and return the form to either of the undersigned. Note that the project contacts listed on the Notice of Commencement have been superseded by the undersigned, and there has been a slight modification to the original EA Study area boundaries. The revised EA Study area boundary is shown in the Map below.



The alternatives and the recommended solution will be presented at a Public Information Forum (PIF), tentatively scheduled for March 2017, with the final Environmental Study Report and Notice of Completion anticipated for May and June, 2017, respectively. We welcome your input and support throughout the remainder of the VMC Black Creek EA Study and look forward to seeing you at the PIF in the new year. Please contact Jennifer Cappola-Logullo or Steve Hollingworth (contact information below) with any questions or comments.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

Steve Hollingworth, P. Eng.
 Project Manager
shollingworth@tmig.ca
 905-738-5700 x359

CITY OF VAUGHAN

Jennifer Cappola-Logullo, P. Eng.
 Project Manager
Jennifer.Logullo@vaughan.ca
 905-832-8585 x8433

cc:



Vaughan City Hall
2141 Major Mackenzie Dr. 905.832.2281
Vaughan, ON L6A 1T1 www.vaughan.ca



8800 Dufferin Street, Suite 200 905.738.5700
Vaughan, Ontario L4K 0C5 www.tmig.ca

April 24, 2017

PROJECT NUMBER 12122

Skye Anderson
Consultation Support
Alderville First Nation Authority
11696 2nd Line Road P.O. Box 46
Alderville, ON K0K 2X0

Dear Ms. Anderson:

**Re: VMC Black Creek Renewal Study, City of Vaughan
Municipal Class Environmental Assessment
Notice of Public Information Centre**

The City of Vaughan is undertaking the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Municipal Class Environmental Assessment Study, intended to establish the alignment and form of Black Creek through the southeast quadrant of the VMC Secondary Plan Area.

The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 and 2015). The study will refine and evaluate a range of alternative designs for the renewal of Black Creek within the VMC and determine the preferred alternative in order to proceed to detailed design and implementation. Findings will be documented in an Environmental Study Report at the conclusion of the study.

Enclosed is a notice for the Public Information Centre (PIC) for the project, to be held on Wednesday, May 10 from 6 p.m. to 8 p.m. at Vaughan City Hall (2141 Major Mackenzie Dr., Vaughan, ON). We will be providing an overview of the project, the goals and objectives of the study, the problems and opportunities to be addressed, the alternative alignments considered, the preliminary preferred design and our next steps.

We look forward to seeing you at the PIC. If you are not able to attend, the display materials will be available on the City's website (vaughan.ca/BlackCreek) shortly after the PIC. Should you have any questions or require additional information, please contact the undersigned at (905) 738-5700 ext. 359, or Jennifer Cappola-Logullo with the City of Vaughan at (905) 832-8585 ext. 8433.

Thank you for your assistance with this study and we look forward to working with you.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

Steve Hollingworth, P.Eng.
Consultant Project Manager
shollingworth@tmig.ca

cc: Jennifer Cappola-Logullo, City Project Manager, City of Vaughan
Encl.: Notice of Public Information Centre

Jenny Pathmanapan

From: Jenny Pathmanapan
Sent: Tuesday, May 1, 2018 11:24 AM
To: 'sanderson@alderville.ca'; 'jbmarsden@alderville.ca'
Cc: Tony Dang
Subject: Vaughan Metropolitan Centre Black Creek Renewal Class Environmental Assessment (EA)

Hello,

The Vaughan Metropolitan Centre Black Creek Renewal Class Environmental Assessment (EA) is approaching completion. The project was initiated for the reconstruction and renewal of Black Creek between Edgeley Pond (north of Highway 7) and Highway 407, in Vaughan, Ontario, to reduce flooding, improve water quality, and limit stream bank erosion in Black Creek.

The project was originally initiated in 2012 and re-initiated in 2017. More recently, a Public Information Centre (PIC) was held on May 10, 2017. You were notified about this project by The Municipal Infrastructure Group as part of the public consultation process for the events noted above. For more information on the Black Creek Renewal Class EA, please see the project's website at www.vaughan.ca/blackcreek. When the project is completed, you will be informed through the Notice of Completion and an electronic copy of the Environmental Study Report will be made available for viewing.

We welcome your input and support throughout the remainder of the project. To date, we have not received any communication from you. If you do not have comments or interests about this project, please kindly acknowledge receipt of this e-mail.

Best regards,

Jenny Pathmanapan, B.Sc
Junior Water Resource Analyst

TMIG | The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x231 | f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

Sumera Yacoob

From: Steve Hollingworth
Sent: Friday, January 20, 2017 4:04 PM
To: Sumera Yacoob; Tony Dang
Subject: FW: VCM Black Creek Renewal, City of Vaughan – Project Status Update of Municipal Class Environmental Assessment Study

From: Hollie Nolan [mailto:hollie@ramafirstnation.ca] **On Behalf Of** Chief Rodney Noganosh
Sent: Friday, January 20, 2017 4:02 PM
To: Steve Hollingworth <shollingworth@tmig.ca>; Jennifer.Logullo@vaughan.ca
Cc: Chief Rodney Noganosh <chief@ramafirstnation.ca>
Subject: re: VCM Black Creek Renewal, City of Vaughan – Project Status Update of Municipal Class Environmental Assessment Study

Dear Steve & Jennifer;

Thank you for your letter re: VCM Black Creek Renewal, City of Vaughan – Project Status Update of Municipal Class Environmental Assessment Study.

Please be advised that we reviewed your letter. I have shared it with Council and we've forwarded the information to Karry Sandy McKenzie, Williams Treaties First Nation Process Co-ordinator/Negotiator. Ms. McKenzie will review your letter and take the necessary action if required. In the interim, should you wish to contact Ms. McKenzie directly, please do so at k.a.sandy-mckenzie@rogers.com

Thank you,

Chief Rodney Noganosh

Hollie Nolan

Executive Assistant to the Chief, Administration

Chippewas of Rama First Nation

(ph) 705-325-3611, 1216

(cell)

(fax) 705-325-0879

(url) www.ramafirstnation.ca

This email is intended only for the named recipient(s) and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. No waiver of privilege, confidence or otherwise is intended by virtue of communication via the internet. Any unauthorized or copying is strictly prohibited. If you have received this e-mail in error, or are not named as a recipient, please immediately notify the sender and destroy all copies of this e-mail.

By submitting your or another individual's personal information to Chippewas of Rama First Nation, its service providers and agents, you agree and confirm your authority from such other individual, to our collection, use and disclosure of such personal information in accordance with our privacy policy.

 Please consider the environment before printing this e-mail.

REPLY FORM

To: Steve Hollingworth, TMIG

Date: January 25, 2017

Fax: (905) 738-0065

E-mail: shollingworth@tmig.ca

RE: Black Creek Renewal, Municipal Class Environmental Assessment

Jennifer Logullo@vaughan.ca

NAME: Susan Copegog
TITLE: Lands Consultation Liaison
ORGANIZATION/AGENCY: Beausoleil First Nation
ADDRESS: 11. O-Semaa Miikan
Christian Island, ON
POSTAL CODE: L9M 0A9
PHONE: 1-705-247-8981 ext 256
FAX: 1-705-247-2239
E-MAIL: lcl@chimissing.ca

Please indicate the appropriate response:

- My group/agency **is interested** in providing input regarding this Study. Please include me on the Study Mailing List.
- My group/agency **is not interested** in providing input regarding this Study, but would like to be kept informed. Please include me on the Study Mailing List.
- Please **remove** my group/agency from Study Mailing List.

Area of interest or concern/preliminary comments:

Requesting digital copy of MCEA and any archaeological issues or concerns, if any.

Thank you - SUE COPEGOG.

Jenny Pathmanapan

From: Steve Hollingworth
Sent: Thursday, May 11, 2017 7:47 AM
To: Tony Dang
Cc: Sumera Yacoob
Subject: FW: VMC Black Creek Renewal Study, City of Vaughan – Municipal Class Environmental Assessment – Notice of Public Information Centre

For stakeholder tracking

We also copied Karry on the mailing.

Steve

From: Hollie Nolan [mailto:hollie@ramafirstnation.ca] **On Behalf Of** Chief Rodney Noganosh
Sent: Friday, May 5, 2017 11:02 AM
To: Steve Hollingworth <shollingworth@tmig.ca>
Subject: re: VMC Black Creek Renewal Study, City of Vaughan – Municipal Class Environmental Assessment – Notice of Public Information Centre

Dear Steve;

Thank you for your letter re: VMC Black Creek Renewal Study, City of Vaughan – Municipal Class Environmental Assessment – Notice of Public Information Centre.

Please be advised that we reviewed your letter. I have shared it with Council and we've forwarded the information to Karry Sandy McKenzie, Williams Treaties First Nation Process Co-ordinator/Negotiator. Ms. McKenzie will review your letter and take the necessary action if required. In the interim, should you wish to contact Ms. McKenzie directly, please do so at k.a.sandy-mckenzie@rogers.com

Thank you,

Chief Rodney Noganosh

Hollie Nolan

Executive Assistant to the Chief, Administration

Chippewas of Rama First Nation

(ph) 705-325-3611,1216

(cell)

(fax) 705-325-0879

(url) www.ramafirstnation.ca

This email is intended only for the named recipient(s) and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. No waiver of privilege, confidence or otherwise is intended by virtue of communication via the internet. Any unauthorized or copying is strictly prohibited. If you have received this e-mail in error, or are not named as a recipient, please immediately notify the sender and destroy all copies of this e-mail.

By submitting your or another individual's personal information to Chippewas of Rama First Nation, its service providers and agents, you agree and confirm your authority from such other individual, to our collection, use and disclosure of such personal information in accordance with our privacy policy.

 Please consider the environment before printing this e-mail.

APPENDIX A7

Public Information Centre

NOTICE OF PUBLIC INFORMATION CENTRE

VAUGHAN METROPOLITAN CENTRE – BLACK CREEK RENEWAL MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

The City of Vaughan is undertaking a Municipal Class Environmental Assessment (EA) Study to establish the alignment and form of Black Creek through the southeast quadrant of the Vaughan Metropolitan Centre (VMC) Secondary Plan Area. The study area is shown in the key map below. The study will evaluate a range of alternative designs for the renewal of Black Creek within the VMC.



The study is being conducted in accordance with Schedule 'C' of the Municipal Class Environmental Assessment process.

To facilitate public input, a Public Information Centre (PIC) will be held, as follows:

Date: Wednesday, May 10, 2017
Time: 6 p.m. – 8 p.m.
Location: Vaughan City Hall (Multi-Purpose Room)
2141 Major Mackenzie Dr., Vaughan, ON

The purpose of the PIC is to provide an overview of the project, the goals and objectives of the study, the problems and opportunities to be addressed, the alternative creek alignments considered, and the preliminary preferred design. Representatives from the City of Vaughan and the consulting team will be available at the PIC to explain the information presented, discuss any issues or concerns you may have, and receive information for consideration throughout the study.

This Notice of PIC is being issued to notify the public of the project and invite comment. Should you have any questions or comments, require further information, or wish to be added to the study mailing list, please contact one of the following study team members:

Jennifer Cappola-Logullo, P.Eng.
Project Manager, Vaughan Metropolitan Centre
Development Engineering & Infrastructure Planning
2141 Major Mackenzie Dr.
Vaughan, ON L6A 1T1
Tel: 905-832-8285 ext. 8433
Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group Ltd
8800 Dufferin St., Suite 200
Vaughan, ON L4K 0C5
Tel: 905.738.5700 ext. 359
shollingworth@tmig.ca

This notice issued **April 27, 2017.**

Under the Municipal Freedom of Information and Protection of Privacy Act, unless otherwise stated in the submission, any personal information included in a submission will become part of the public record.



Vaughan City Hall
2141 Major Mackenzie Dr. 905.832.2281
Vaughan, ON L6A 1T1 www.vaughan.ca



8800 Dufferin Street, Suite 200 905.738.5700
Vaughan, Ontario L4K 0C5 www.tmig.ca

April 24, 2017

PROJECT NUMBER 12122

[REDACTED]

Dear

**Re: VMC Black Creek Renewal Study, City of Vaughan
Municipal Class Environmental Assessment
Notice of Public Information Centre**

The City of Vaughan is undertaking the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Municipal Class Environmental Assessment Study, intended to establish the alignment and form of Black Creek through the southeast quadrant of the VMC Secondary Plan Area.

The study is being carried out in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 and 2015). The study will refine and evaluate a range of alternative designs for the renewal of Black Creek within the VMC and determine the preferred alternative in order to proceed to detailed design and implementation. Findings will be documented in an Environmental Study Report at the conclusion of the study.

Enclosed is a notice for the Public Information Centre (PIC) for the project, to be held on Wednesday, May 10 from 6 p.m. to 8 p.m. at Vaughan City Hall (2141 Major Mackenzie Dr., Vaughan, ON). We will be providing an overview of the project, the goals and objectives of the study, the problems and opportunities to be addressed, the alternative alignments considered, the preliminary preferred design and our next steps.

We look forward to seeing you at the PIC. If you are not able to attend, the display materials will be available on the City's website (vaughan.ca/BlackCreek) shortly after the PIC. Should you have any questions or require additional information, please contact the undersigned at (905) 738-5700 ext. 359, or Jennifer Cappola-Logullo with the City of Vaughan at (905) 832-8585 ext. 8433.

Thank you for your assistance with this study and we look forward to working with you.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

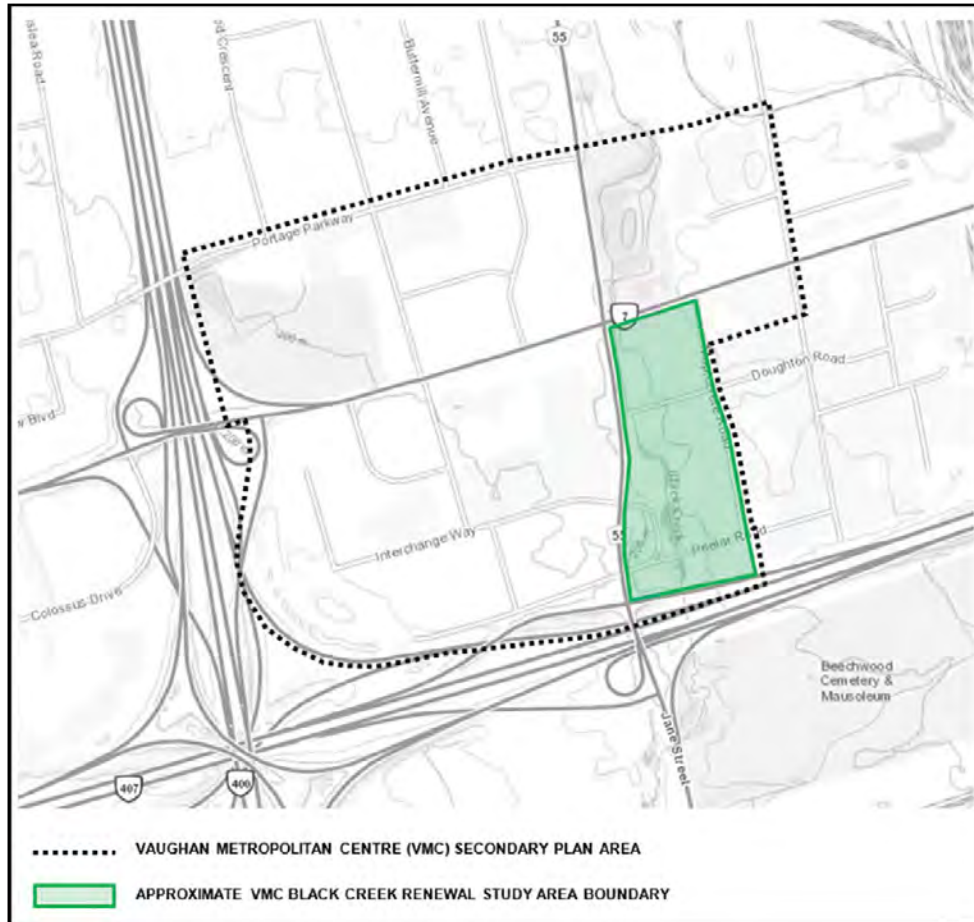
Steve Hollingworth, P.Eng.
Consultant Project Manager
shollingworth@tmig.ca

cc: Jennifer Cappola-Logullo, City Project Manager, City of Vaughan
Encl.: Notice of Public Information Centre

PUBLIC INFORMATION CENTRE

Vaughan Metropolitan Centre (VMC) Black Creek Renewal CLASS ENVIRONMENTAL ASSESSMENT

Wednesday, May 10, 2017
6:00 p.m. to 8:00 p.m.



Project Management, Environmental Assessment,
Stormwater Management

TMIG | The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200
Vaughan, ON L4K 0C5
Tel. 905-738-5700
www.tmig.ca

The purpose of this Public Information Centre (PIC) is to:

- Provide you with a background of the Study
- Inform you of our progress to date
- Obtain your feedback

The major elements presented today are:

- Municipal Class EA Process
- Study Overview
- Background and Existing Conditions
- Evaluation Process and Criteria
- Alternative Alignment Designs
- Preferred Alignment Design
- Next Steps

You are invited to:

- Sign in to receive future updates
- Walk around and view the display boards
- Talk to representatives of the Study Team
- Submit comments via comment forms or through email, by May 26, 2017
- Visit project website at: www.vaughan.ca/BlackCreek

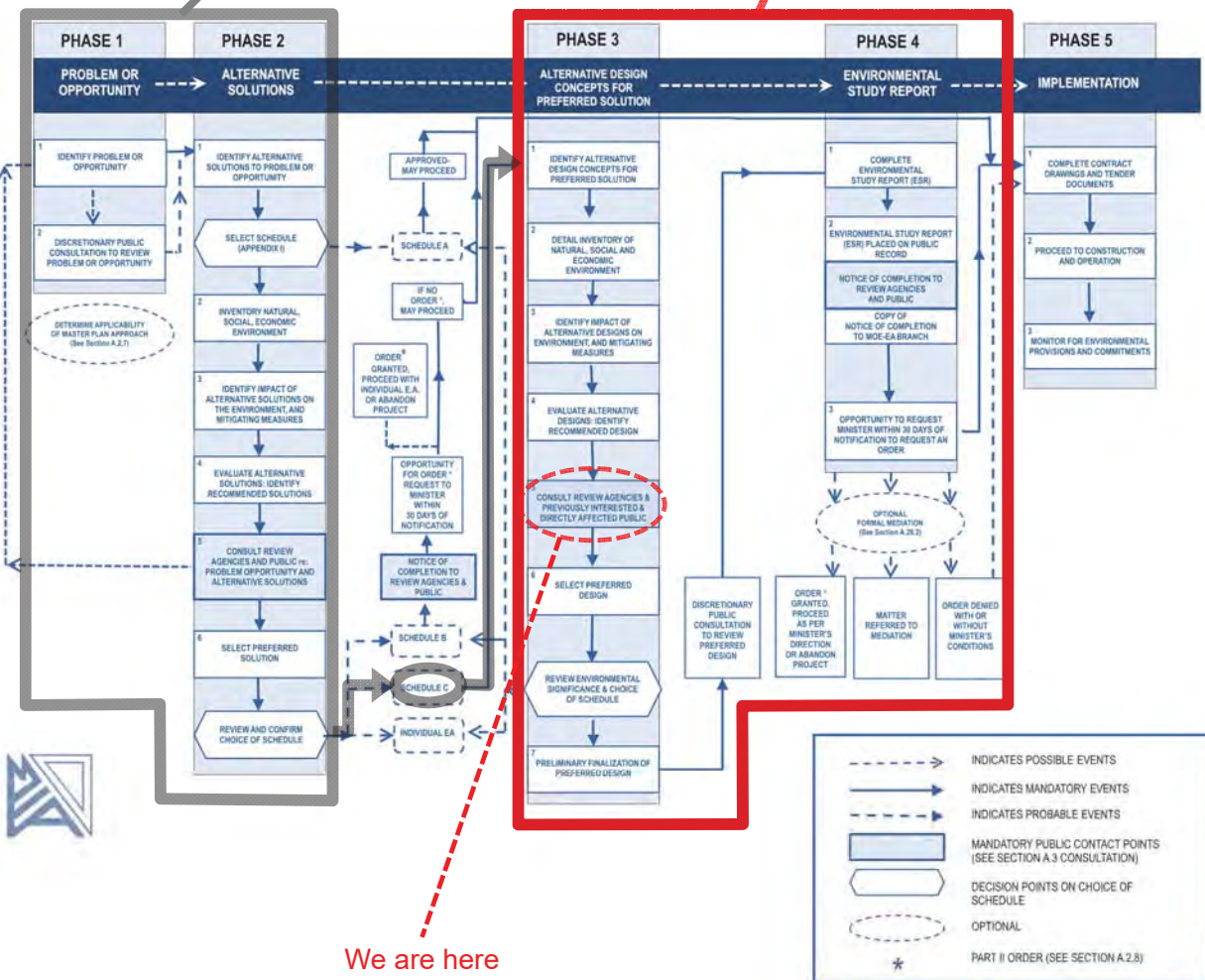


Black Creek Channel Culvert at Highway 7 looking south

- This project is subject to the Municipal Engineers Association Municipal Class Environmental Assessment (2000, as amended in 2007, 2011, and 2013)
- The Municipal Class EA is a planning and design process approved by the Ministry of the Environment and Climate Change (MOECC) to meet the requirements of the Ontario *Environmental Assessment Act*
- This study follows the Class EA process for **Schedule C** projects

The Black Creek Stormwater Optimization Study covered Phases 1 and 2

The Black Creek Renewal EA covers Phases 3 and 4



We are here

Chronology Preceding Black Creek Renewal EA

August 2005

Major storm causing flooding in Black Creek within VMC

2008 to ongoing

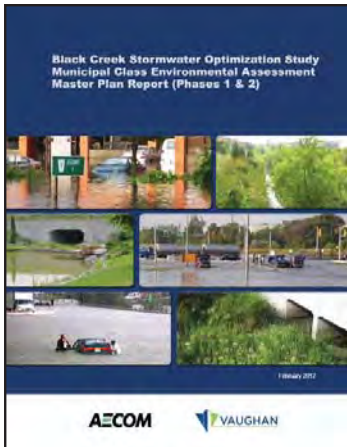
VMC Secondary Plan

- Constitutes the Official Plan for the VMC and establishes the context, planning framework and policies that will guide development for the next 20 to 25 years.
- Renewal of Black Creek is critical for redevelopment within the VMC Secondary Plan area.



2009 to 2012

Black Creek Stormwater Optimization Study EA
(Phases 1 and 2 of Municipal Class EA)



- Completed to address stormwater related issues in the broader Black Creek watershed within the City of Vaughan, including flooding in areas adjacent to the Black Creek channel.
- Preferred solution was to reduce flooding by the reconstruction and renewal of Black Creek in the VMC.

2009 to 2012

VMC Municipal Servicing Class EA Master Plan

- Completed to identify the required improvements and expansions to the City's watermain, sanitary sewer and stormwater management systems to support planned growth in the VMC.

EA Study: Key Milestones to Date

<p>July 2012 to present</p>	<p>VMC Black Creek Renewal EA (Phases 3 and 4 of Municipal Class EA) Notice of Commencement issued July 2012</p>
-----------------------------	---

The VMC Black Creek Renewal EA’s purpose is to develop and evaluate potential alternative designs for the renewal of the Black Creek corridor to reduce flooding.

<p>June 2013 to May 2014</p>	<p>Black Creek Consultation and Facilitation Process</p>
----------------------------------	--

- Consultation and facilitation process was completed with directly affected landowners and agencies to better understand key issues, opportunities and constraints.

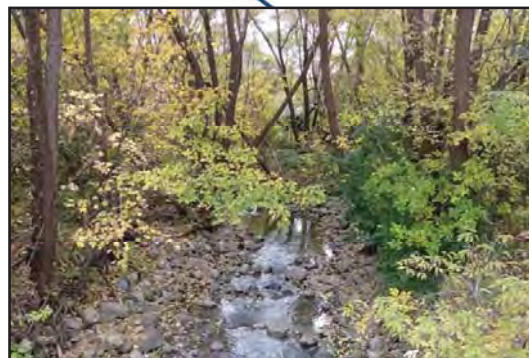
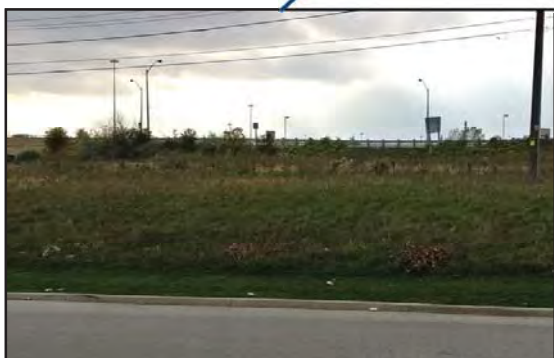
<p>July 2014 to May 2016</p>	<p>Allocation of Funding Sources Report and Development Charge Background Study – Black Creek Financial Strategy</p>
----------------------------------	--

- Study established the framework for funding a number of projects within the VMC Secondary Plan, including the renewal of the Black Creek corridor.

<p>January 2017 to May 2017</p>	<p>Project Status Update, continuation of Phase 3 and Public Information Centre</p>
-------------------------------------	--

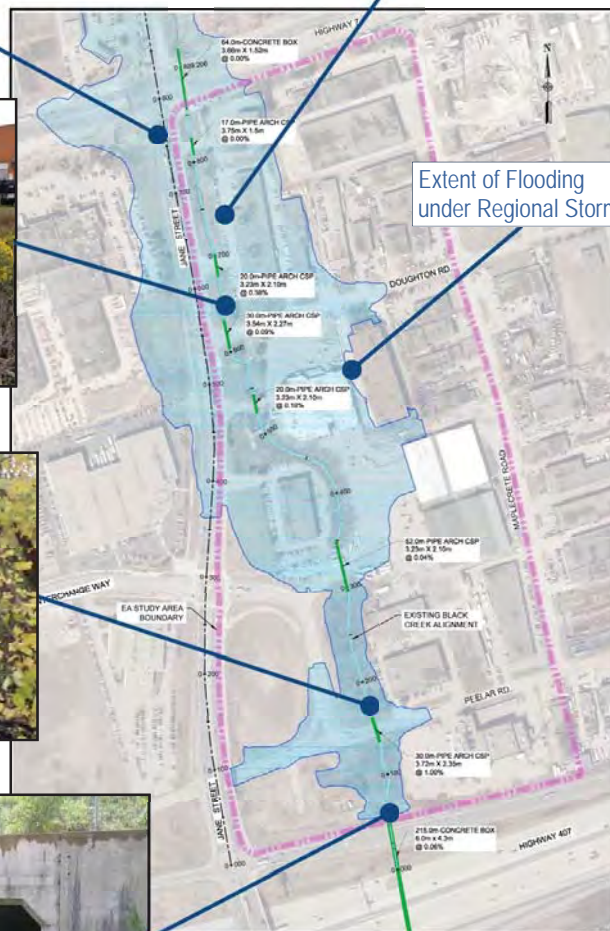
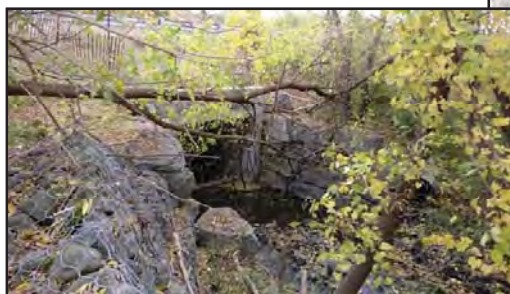
Existing Natural Environment

- Field surveys indicate that existing aquatic and riparian areas provide low-quality, size-limited, and fragmented natural habitat opportunities
- No significant ecological features or functions present (i.e., no significant wetlands or environmentally sensitive areas)
- No presence of species at risk or their habitat



Existing Hydraulic Environment

- The reach of Black Creek between Highway 407 and Highway 7 is prone to flooding
- The size of the existing channel and some of the driveway and road crossings are unable to convey peak flows from major storm events
- Major storm on August 19, 2005 caused widespread flooding to area



Extent of Flooding under Regional Storm

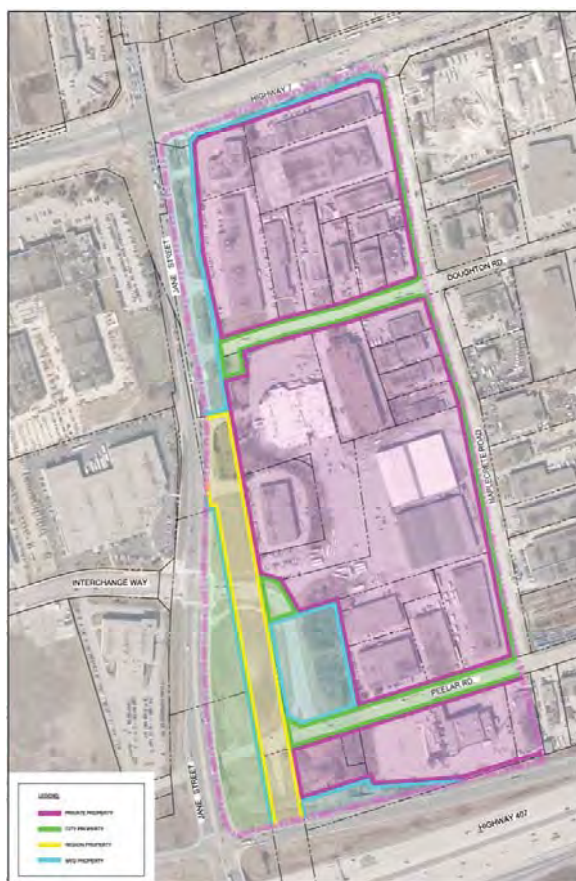
Other existing conditions that were considered for the alternative designs or in the alternative evaluation include:

- Existing utilities
- Existing land ownership
- Jane Street right-of-way
- Existing culverts at Highway 7 and Highway 407
- Existing buildings within the study area

Existing Utilities



Existing Land Ownership

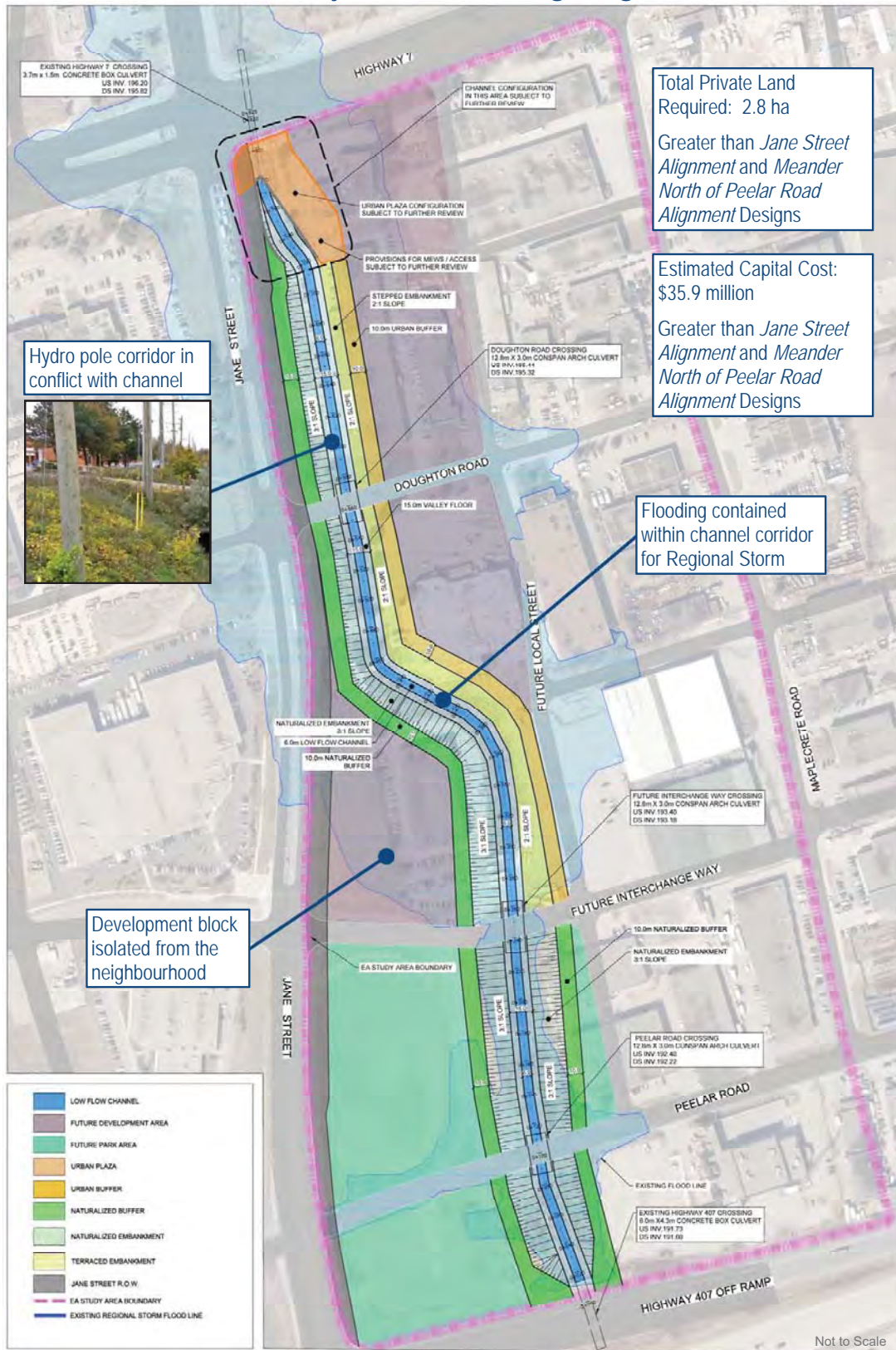


Evaluation Process and Criteria

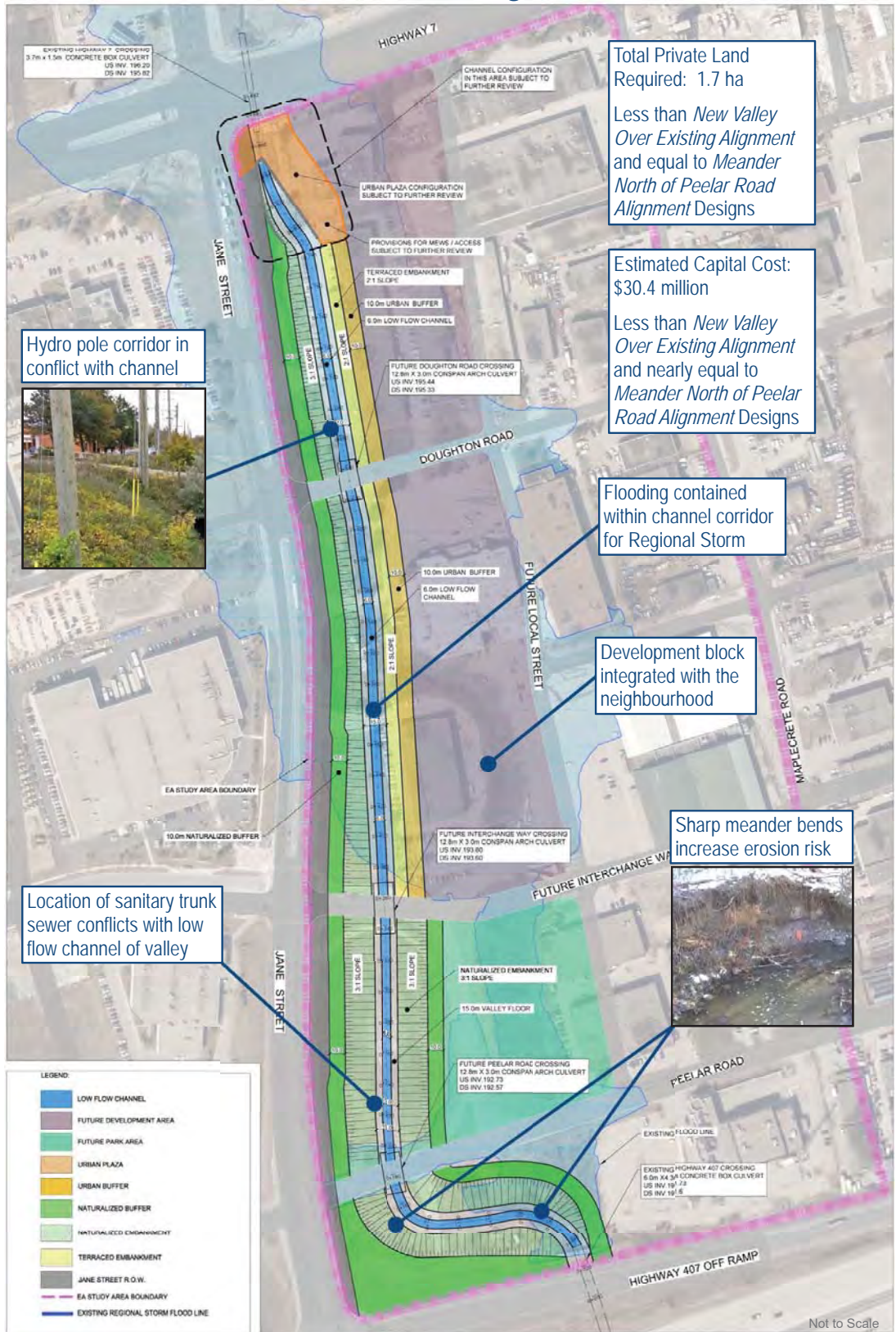
Alternative designs were comparatively and qualitatively evaluated based on the following criteria, developed within four main categories:

<p>Technical Environment</p>	<ul style="list-style-type: none"> • Safely convey Regional Storm • Operation and maintenance • Coordination with development within VMC • Approvals and permits • Constructability • Utility conflicts
<p>Natural Environment</p>	<ul style="list-style-type: none"> • Fish habitat and aquatic ecosystems • Terrestrial ecosystems • Species of Concern • Groundwater • Impacts during construction
<p>Social/Cultural Environment</p>	<ul style="list-style-type: none"> • Public safety • Private property acquisition • Integration with planned/future land uses in VMC • Impact on cultural heritage sites • Archaeologically undisturbed lands
<p>Financial Environment</p>	<ul style="list-style-type: none"> • Capital costs of implementation • Operation and maintenance costs

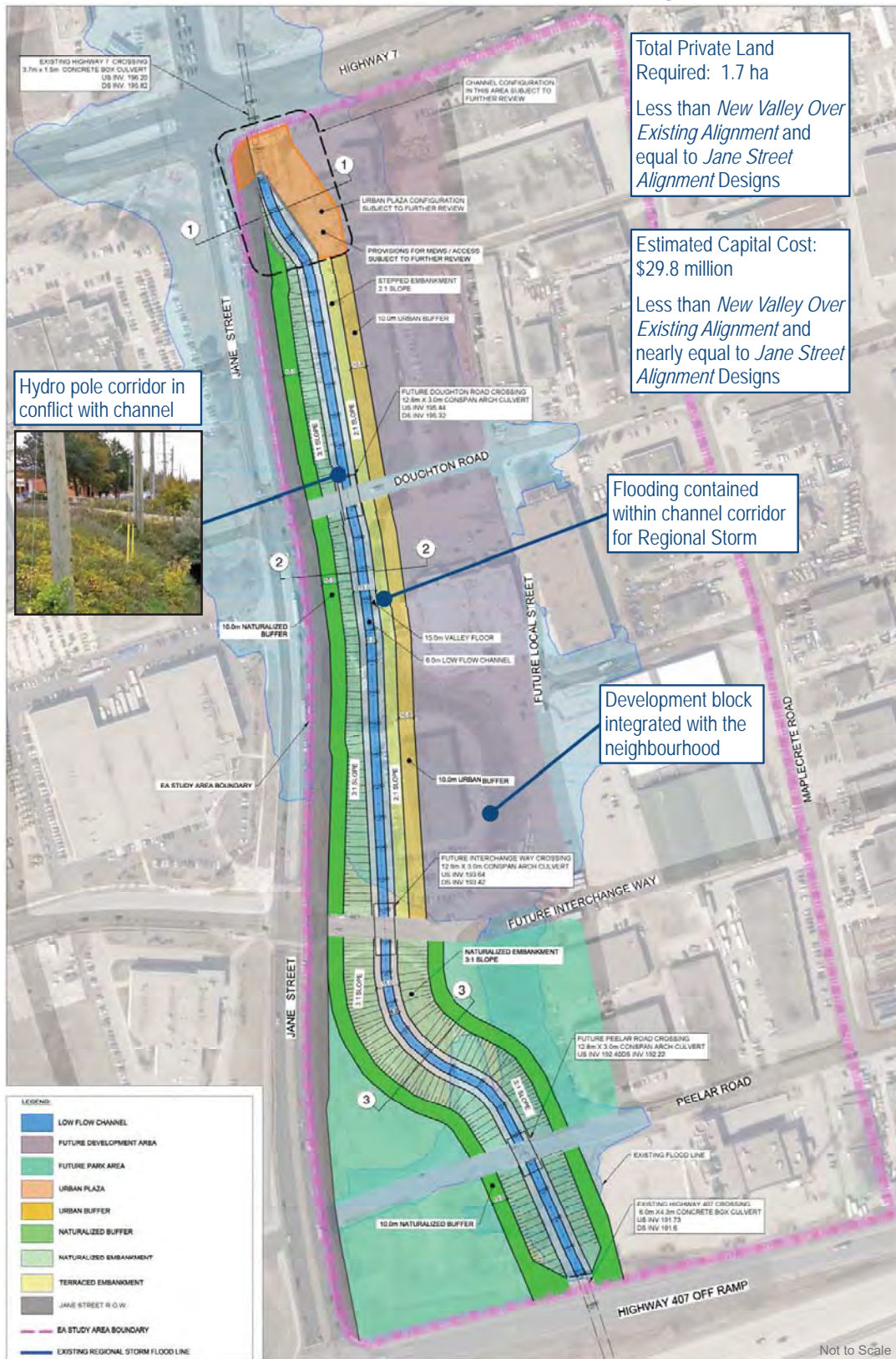
New Valley Over Existing Alignment



Jane Street Alignment



Meander North of Peelar Road Alignment



The 'Do Nothing' option is always investigated in the Environmental Assessment Process, in the event that all other alternatives result in unacceptable impacts.

Evaluation Summary

Alternative Design	Technical Environment		Natural Environment		Social/Cultural Environment		Overall		Financial Environment
	Challenges	Performance	Impacts	Benefits	Impacts	Benefits	Cumulative Impact	Cumulative Benefit	
Do Nothing	●	○	●	○	●	○	●	○	No capital cost but costs will be incurred from future flooding
New Valley over Existing Alignment	●	●	●	●	●	●	●	●	\$35.9 million in estimated capital costs
Jane Street Alignment	●	●	●	●	●	●	●	●	\$30.4 million in estimated capital costs
Recommended Alternative Alignment Design									
Meander North of Peelar Road Alignment	●	●	●	●	●	●	●	●	\$29.8 million in estimated capital costs

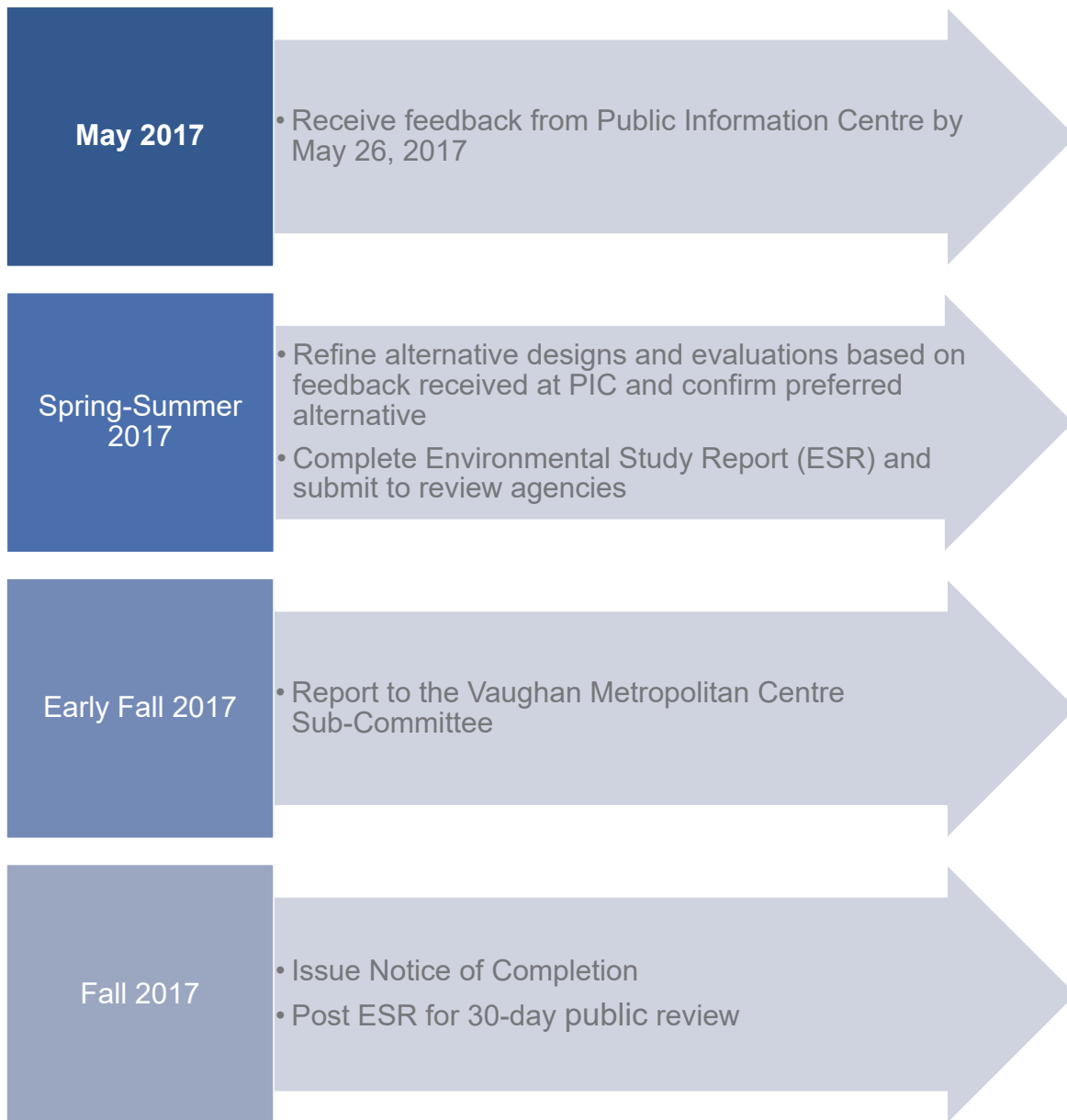
Least Impact or Greatest Benefit (Most Positive) ● → ○ Greatest Impact or Least Benefit (Least Positive)

Preferred Design Meander North of Peelar Road Alignment



Artistic rendering illustrating a terraced bank and urban buffer on the east side of the renewed Black Creek corridor near Doughton Road. The final configuration of the eastern embankment and urban buffer area will be established during detailed design of the renewed Black Creek corridor

Anticipated Timeline for Completion of the EA Study



Comments and Questions

Please share your comments with either Project Manager via the comment form or through email by May 26, 2017.

Project Managers:

Jennifer Cappola-Logullo, P.Eng.
Project Manager

City of Vaughan

2141 Major Mackenzie Drive

Vaughan, ON L6A 1T1

Tel: 905-832-8585 Ext: 8433

Email: Jennifer.Logullo@vaughan.ca

Steve Hollingworth, M.A.Sc., P.Eng.

Consultant Project Manager

TMIG | The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200

Vaughan, ON L4K 0C5

Tel: 905-738-5700 Ext. 359

Email: shollingworth@tmig.ca

Thank you for attending!

APPENDIX A8

Draft ESR Comment Responses

March 20, 2018

CFN 47476

BY E-MAIL (Jennifer.Logullo@vaughan.ca)

Development Engineering and Infrastructure Planning
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario L6A 1T1

**Attn: Jennifer Cappola-Logullo
Project Manager/Engineering**

**Re: Black Creek Renewal Class EA
Draft Environmental Study Report – November 2017**

This letter acknowledges receipt of the *Vaughan Metropolitan Centre Black Creek Renewal Class EA: Environmental Study Report – Draft Report November 2017* prepared by TMIG and received by TRCA on November 15, 2017.

TRCA staff has worked closely with the City and the consulting team in providing input into the alternative designs for Black Creek and have a level of comfort with the selected alternative number 4. We appreciate the efforts the City and consulting team have undertaken. The design continues to advance and TRCA staff acknowledges the challenge of addressing a number of the concerns while also ensuring the up-stream influencing factors of Edgeley Pond.

As the detailed design progresses, TRCA looks forward to being involved in this project and encourages the City to progress with a design which addresses both the natural hazards and natural functions resulting in a net benefit for the entire reach and system of the watercourse; specifically in relation to:

- Appropriate hydrological design to ensure the natural hazards are addressed both in the interim and final design stages;
- Comprehensive understanding of the design connectivity between the Edgeley pond and park, Hwy 7 culvert expansion and the Black Creek renewal south of Hwy 7;
- plaza and outlet design originating under Highway 7;
- implementation, timing and staging of proposed LID methods throughout this reach of the Black Creek channel and

Resolution of Hwy 7 and Jane Street, South East Plaza

TRCA staff thank the City for the opportunity to meet and discuss the South East corner of Hwy 7 and Jane Street on February 21, 2018.

Staff recognize the design challenge this area poses in resolving the issues of road access, public space, significant grade changes and reasonable design of the black creek channel. While the City acknowledges that TRCA preference for an open channel design which maintains as much open corridor as possible, TRCA is open to reviewing options which address the challenges noted above in a balanced manner which allows for a comprehensive and connected design. Please note that TRCA does not support expansion of private development at the expense of maintaining an adequate public corridor for Black Creek and the public plaza. At this time, TRCA asks for proposed options to be provided for review and discussion to ensure a mutually agreed upon design direction.

General Comments

Based on our review, TRCA staff has a number comments which have been detailed in Appendix 'B'. We ask that these comments be addressed and incorporated into the final copy of the EA.

TRCA staff reserves any further comments at this time, until we have had an opportunity to review the requested information. Please note that this letter is based on TRCA's current policies and regulation, which may change from time to time. Any future development proposal would be subject to the policies and regulation in effect at the time of application.

For future submission, the City is asked to provide TRCA with a letter detailing how each of our comments has been addressed and four (4) hard copies of all revised plans and reports, for our review. A digital pdf copy of all materials is also requested.

We trust these comments are of assistance. Should you have any questions, feel free to contact me at extension 5307 or at cbonner@trca.on.ca

Regards,



Colleen Bonner, MES, RPP
Senior Planner
Planning and Development
Extension 5307

c.c.: Carolyn Woodland - TRCA, cwoodland@trca.on.ca
June Little – TRCA, jlittle@trca.on.ca
Lori Cook – TRCA, lcook@trca.on.ca
Dan Hipple – TRCA, dhipple@trca.on.ca
Ali Shirazi – TRCA, ashirazi@trca.on.ca
Andrew Pearce – City of Vaughan, Andrew.Pearce@vaughan.ca
Gerardo Paez Alonso – City of Vaughan, Gerardo.PaezAlonso@vaughan.ca
Amy Roots – City of Vaughan, Amy.Roots@vaughan.ca
Dana Khademi – City of Vaughan, Dana.Khademi@vaughan.ca
Jamie Bronsema – City of Vaughan, Jamie.Bronsema@vaughan.ca
Rob Bayley – City of Vaughan, Rob.Bayley@vaughan.ca
Tony Dang – TMIG, tdan@tmig.ca
Steve Hollingworth – TMIG, shollingworth@tmig.ca

Appendix A: List of Materials Reviewed

October 6, 2017 Submission:

TMIG, *Vaughan Metropolitan Centre Black Creek Renewal Class EA: Environmental Study Report – Draft Report November 2017* prepared by TMIG and received by TRCA on November 15, 2017.

Appendix B: Application Specific Comments

Planning

1. The Edgeley Pond and Park design has advanced to 60% and has included an interim design to accommodate the Hwy 7 culvert. TRCA staff highly recommend the *Stormwater Management Report – Edgeley Pond and Park Draft 60%* submission prepared by WSP February 2018 be reviewed and that recommendations and final design be incorporated within the detailed design of this quadrant of Black Creek. Specific attention should occur on the Hwy 7 culvert options and final design.

Water Resources Engineering

2. Section 4.4.1 – Please provide the following:
 - a. The EA states that the SWM strategy for the Southeast Quadrant is being adjusted from the Master Plan recommendations, as the strategy “was determined to be unfeasible in the foreseeable future”. Part of an EA report centers around need and justification for the proposed efforts, the need must be clear. Please provide further details in this section of the EA as to why a change to the Master Plan strategy is required, including additional detailed information on storm sewer directions and feasibility of infrastructure realignment.
 - b. Although the remaining Quadrants are not within the scope of this report, please provide TRCA an update for when confirmation of the Master Plan SWM strategy will be forthcoming.
 - c. The report describes mitigation strategies for the ROW and development blocks. Please provide a figure outlining where the drainage area requiring the recommended Alternative SWM Strategy, or provide a clear reference to Appendix E for the plan.
 - d. In relation to the ROW SWM Strategy of retaining the first 15mm of rainfall, please provide more details on who will be undertaking the design and implementation of this, and the approximate timeline in relation to the Black Creek Renewal. Further, is it anticipated that some portion of the infrastructure to achieve the ROW LID measures may be required to be constructed in conjunction with the Black Creek Renewal? Please confirm.
3. Table 5-1 – The report and table discuss two options: 1) one crossing sized to convey the Regional storm under the structure, or 2) two crossings sized to convey the 100-year storm under the structure with the Regional Storm overtopping. As the intent of the Black Creek Renewal is to reduce the floodlines and overall risk of flood hazard in this area, please provide the conceptual sizing for these structures to convey the Regional storm and justification for not using this design storm should the second option be chosen.
4. Section 8.0 – In addition to the recommended Future Studies, please include the following:
 - e. for each crossing structure, please include that a structure sizing assessment

- using TRCA's *Crossing Guideline for Valley and Stream Corridors* including fluvial geomorphological, geotechnical, water resources engineering, and ecological requirements;
- f. fluvial geomorphological study for the design of the low flow channel;
 - g. include final grading assessment that confirms a minimum of 0.30m freeboard from the final Regional Storm water surface elevation to the top of bank, and geotechnical considerations for any floodproofed landforms that are required; and
 - h. staging and construction drawings, detailing channel construction, dewatering requirements as necessary, and access points.
5. Plan and Profile Drawings – The plan views show the conceptual grading requirements for the channel; however, the match lines at the edge of the grading show that additional cut or fill is required in some areas, including as much as 1.40m of proposed fill south of Peelar Road. TRCA understands that these are still preliminary drawings at this point; however, an understanding of how these grade differences will be met is believed to be required at this point to confirm that the proposed channel grading is feasible. For areas where fill is required to maintain the channel, TRCA recommends the use of the principles associated with landform structures, similar to the Lower Don Landform. Please contact TRCA staff for more details on the structural requirements for the landform.
6. Drawing 4 of 7 – The plan view shows the culvert length used in the hydraulic analysis for the Highway 7 crossing. However, this culvert is not consistent with the culvert sizing used as part of the SCS Feasibility Study. Please confirm the correct culvert size and length, and that the models incorporate the correct information.
7. Appendix H – The Hydraulic Modelling Summary discusses the preliminary low-flow channel design. Please confirm that the final channel design will be based on a fluvial geomorphological study that considers the realigned channel through Edgeley Pond and the crossing structure impacts.

Ecology

8. Page 17; please amend the Species at Risk paragraph to include bats.
9. Page 36: please note that the quantification of the grading for the buffer on Jane Street is documented as "XX m". Please provide figures.
10. Page 44; please note that the *Migratory Birds Convention Act* restricts tree removals or any other activity from April 1st to August 1st (and not April 15th to July 30th).
11. Figure 7-5 shows an extensive use of retaining walls just south of Highway 7. Please explore opportunities or technologies to reduce the use / length of these walls.
12. On Drawing 5 of 7 and Drawing 7 of 7, please show the 2 and 5 year water levels to reflect direct fish habitat. This will also be of interest to DFO. The channel floor appears

to be approximately 5m wide. Please provide a notched low flow channel within the identified channel.

13. Channel drawings don't show or address the incorporation of habitat features for fish i.e., pool / riffle sequences, instream cover etc. Please provide both plan view and cross sectional drawings showing the inclusion of fish habitat into the channel design.
14. Please demonstrate how the design achieves fish passage in terms of stream slope under normal flow conditions and flow through culvert crossings.
15. Please provide an analysis quantifying existing land base area of ELC communities as compared to the proposed naturalized areas shown in the preferred alternative.
16. Please provide a brief discussion on wildlife passage relevant to culvert sizing and treatment.

Geotechnical

17. A site specific geotechnical study is required at the detailed design stage to assess the ground condition and provide the geotechnical design recommendations.
18. As part of the geotechnical studies, the slope stability analysis is also required where the side slope of the proposed valley slope is steeper than 3H:1V (e.g. 2H:1V as shown on the drawings) to confirm that the reconstructed slope satisfies a minimum factor of safety of 1.50 against slope instability.
19. Cross-sections 1 to 4: The cross-section show that the reconstructed valley results in a low flow channel of 6 m wide and a valley floor of 15 m wide. The setback from the edge of low flow channel to the toe of the upper reconstructed valley slope is minimal. Therefore, the toe erosion allowance from the low flow channel area may impact the toe of the upper valley slope over the time, which can subsequently cause slope stability concerns for the reconstructed valley slope and potential hazard for the tableland. Please evaluate the implementation of the appropriate toe erosion protection for the area of the low flow channel as well as the toe of the reconstructed valley slope to ensure that the potential toe erosion cannot impact the stability of the reconstructed valley slope and the tableland in long-term. Please ensure that details of the design support fish passage and habitat where feasible.
20. Cross-section 4 shows a retaining wall, the retaining wall is required to be designed for both applicable geotechnical and structural failure modes at the detailed design stage. The global stability of the retaining wall is also to be verified by geotechnical engineer to confirm that a minimum factor of safety of 1.50 is met. Further, the proposed retaining wall requires toe protection to ensure that it cannot be undermined by toe erosion or undercutting over the time.
21. All engineering drawings including the cross-sections are to be prepared as per the detailed design for the retaining walls showing all necessary details, dimensions and specifications and must be signed and sealed by Licensed Professional Engineer prior to submission.

22. The proposed retaining wall shown on the Cross-section 4 is relatively high (up to about 3.5 m high), which may result in significant temporary excavation during construction. Please evaluate if the limit of the temporary excavations required during the construction of the retaining wall will impact the existing infrastructure running through the tableland.
23. The geotechnical engineer is to review the details of the proposed new valley slope including the specifications of the engineered fill materials; this information is to be stamped and signed by the engineer prior to submission.
24. At detailed design stage, the geotechnical studies are to provide appropriate design recommendations for the culvert footings and other structures. All engineering drawings as per the detailed design are to be signed and sealed by Licensed Professional Engineer prior to submission.

May 9, 2018

PROJECT NUMBER 12122

Colleen Bonner
Senior Planner, Planning and Development
Toronto and Region Conservation Authority
5 Shoreham Drive
Toronto, ON M3N 1S4

Dear Ms. Bonner:

**Re: VMC Black Creek Renewal Class Environmental Assessment
Response to TRCA Comments on Draft Environmental Study Report (CFN 47476)**

Thank you to the TRCA for working with the City and the consulting team throughout the duration of the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Class EA, and taking the time to review and provide comments on the Draft Environmental Study Report (ESR). We have reviewed the comments in your letter dated March 20, 2018, and have addressed them to extent possible in our Final ESR. Please refer to the following table, which summarizes the comments from your letter, our responses, and references to the revised sections of the Final ESR. Note that a copy of this letter will be appended to the Final ESR.

TRCA Comment	TMIG Response
Water Resources Engineering	
<p>1. Section 4.4.1 – Please provide the following:</p> <p>a. The EA states that the SWM strategy for the Southeast Quadrant is being adjusted from the Master Plan recommendations, as the strategy “was determined to be unfeasible in the foreseeable future”. Part of an EA report centres around need and justification for the proposed efforts, the need must be clear. Please provide further details in this section of the EA as to why a change to the Master Plan strategy is required, including additional detailed information on storm sewer directions and feasibility of infrastructure realignment.</p>	<p>The implementation of the Master Plan SWM Strategy is severely constrained due the need for a new storm sewer network across the VMC southeast quadrant along new ROWs to convey runoff to the proposed end of pipe facility. That is because the existing storm sewer network that has two main trunk sewers carrying flow into Black Creek via outlets on Doughton Road and Peelar Road (and not to the location of the end of pipe facility). According to the VMC Secondary Plan, there will be a new ROW through the centre of the VMC southeast quadrant that would be the location for a new trunk sewer.</p> <p>However, because the new ROW is located over existing development, the land for the ROW and associated storm sewer will need to be acquired or expropriated, essentially affecting the majority of the VMC southeast quadrant at one time. Even if the lands for the end-of-pipe facility were acquired, without the trunk sewer connection, any new development will need to tie into the existing storm sewer network and discharge untreated to Black Creek. The length of time required for the full re-development of the VMC southeast quadrant may be decades, which will effectively postpone the implementation of the Master Plan SWM Strategy until near full build-out conditions.</p> <p>Section 4.4.1 of the ESR and Appendix E have been updated with this information to justify the need for changing strategies.</p>

TRCA Comment	TMIG Response
<p>b. Although the remaining Quadrants are not within the scope of this report, please provide TRCA an update for when confirmation of the Master Plan SWM strategy will be forthcoming.</p>	<p>The detailed design of the Edgeley SWM Pond Retrofit currently underway is a major component of the Master Plan SWM strategy for the VMC northeast quadrant. In all other areas, updates will be provided to the TRCA when re-development is advanced in those quadrants.</p>
<p>c. The report describes mitigation strategies for the ROW and development blocks. Please provide a figure outlining where the drainage area requiring the recommended Alternative SWM Strategy, or provide a clear reference to Appendix E for the plan.</p>	<p>Figure 4-3 was added to Section 4.4.1 of the ESR and Figure 1-1 was added to Appendix E to outline the drainage area for the Alternative SWM Strategy.</p>
<p>d. In relation to the ROW SWM Strategy of retaining the first 15mm of rainfall, please provide more details on who will be undertaking the design and implementation of this, and the approximate timeline in relation to the Black Creek Renewal. Further, is it anticipated that some portion of the infrastructure to achieve the ROW LID measures may be required to be constructed in conjunction with the Black Creek Renewal? Please confirm.</p>	<p>Measures to achieve the applicable Alternative SWM Strategy criteria on municipal ROWs will be constructed by the developer of the lands containing the new roadways. These measures will be maintained by the developer until such time as the road ROWs and associated operation and maintenance responsibilities are conveyed to the City. In some instances, there may be strata agreements with the City and developer to allow parking structures or other private facilities to be constructed under new municipal roadways, and the presence of these structures may constrain the ability to achieve the 15 mm runoff retention criterion for the road ROW. These circumstances will be evaluated on a case-by-case basis to determine if runoff from roadways within strata agreements will be treated by independent SWM and LID measures within the ROW or will be treated by the private SWM and LID facilities for the associated development site.</p> <p>Where necessary or appropriate, some of the ROW LID measures may be constructed in conjunction with the Black Creek Renewal, because the anticipated implementation of the new channel corridor is triggered by the redevelopment of adjacent private lands (and associated parks). For example, it may be possible to construct LIDs within parks that are adjacent to the Black Creek Renewal, to treat runoff from the park as well as a portion of new or reconstructed municipal roadways. In these instances, the simultaneous construction of the LIDs and the Black Creek Renewal may be required.</p> <p>Appendix E – Section 2.2.2 was added to provide more information on the implementation of the alternative SWM strategy.</p>

TRCA Comment	TMIG Response
<p>2. Table 5-1 – The report and table discuss two options: 1) one crossing sized to convey the Regional storm under the structure, or 2) two crossings sized to convey the 100-year storm under the structure with the Regional Storm overtopping. As the intent of the Black Creek Renewal is to reduce the floodlines and overall risk of flood hazard in this area, please provide the conceptual sizing for these structures to convey the Regional storm and justification for not using this design storm should the second option be chosen.</p>	<p>The ESR presents the <i>minimum</i> required conveyance option for each of the three culverts. The Interchange Way crossing was sized to convey the Regional Storm without overtopping, while the crossings at Doughton Road and Peelar Road were sized to convey up to the 100-year storm under the structure. This design criteria was selected based on the ROW classifications under the VMC Secondary Plan, where Interchange Way is a major collector and will provide access across Black Creek in the Regional Storm Event.</p> <p>Because a major outcome of the EA is to determine the total width of new channel corridor, the alternative designs (and preliminary design) did not accommodate the Regional Storm Event at the Peelar Road and Doughton Road culverts as a conservative measure to account for site constraints in those areas.</p> <p>With respect to Peelar Road, the backwater from the Highway 407 crossing controls water levels beyond the Peelar Road crossing. For Doughton Road, the crossing must be at a low enough grade to facilitate the overland flow route from the Jane Street ROW to the new channel corridor. However, note that the culvert sizes presented in the ESR can nearly accommodate the Regional Storm and culvert sizing will be revisited in detailed design.</p> <p>Sections 5.3.1.3 and 7.1 of the ESR has been edited to clarify that the design flows presented in the EA are the <i>minimum</i> required for the crossings and that the crossing sizing will be refined in detailed design.</p>
<p>3. Section 8.0 – In addition to the recommended Future Studies, please include the following:</p> <p>a. for each crossing structure, please include that a structure sizing assessment using TRCA's Crossing Guideline for Valley and Stream Corridors including fluvial geomorphological, geotechnical, water resources engineering, and ecological requirements;</p>	<p>Sections 8.4 and 8.6 of the ESR has been added/ revised to describe the need for structure sizing assessments using the TRCA's Crossing Guideline for Valley and Stream Corridors.</p>
<p>b. fluvial geomorphological study for the design of the low flow channel;</p>	<p>Section 8.6 of the ESR has been added to describe the future fluvial geomorphological study.</p>
<p>c. include final grading assessment that confirms a minimum of 0.30m freeboard from the final Regional Storm water surface elevation to the top of bank, and geotechnical considerations for any floodproofed landforms that are required; and</p>	<p>Section 8.5 of the ESR was added to include the final grading assessment requirement. Section 8.4 in the ESR describes the geotechnical requirements for detailed design, and was updated based on Comments 16 to 23 from the TRCA.</p>
<p>d. staging and construction drawings, detailing channel construction, dewatering requirements as necessary, and access points.</p>	<p>Section 9.10 of the ESR was updated to provide more detail for TRCA permit requirements, which include staging and constructions drawings, and also makes reference to Section 9 for construction mitigation.</p>

TRCA Comment	TMIG Response
<p>4. Plan and Profile Drawings – The plan views show the conceptual grading requirements for the channel; however, the match lines at the edge of the grading show that additional cut or fill is required in some areas, including as much as 1.40m of proposed fill south of Peelar Road. TRCA understands that these are still preliminary drawings at this point; however, an understanding of how these grade differences will be met is believed to be required at this point to confirm that the proposed channel grading is feasible. For areas where fill is required to maintain the channel, TRCA recommends the use of the principles associated with landform structures, similar to the Lower Don Landform. Please contact TRCA staff for more details on the structural requirements for the landform.</p>	<p>The cut and fill depths (up to 1.4 m) required in the new channel corridor are within the typical range of depth for earthworks to realign a channel. As described in Section 7 of ESR, the proposed grading slopes that are 3:1 or flatter and will be subject to a future geotechnical assessment described in Section 8.3.</p>
<p>5. Drawing 4 of 7 – The plan view shows the culvert length used in the hydraulic analysis for the Highway 7 crossing. However, this culvert is not consistent with the culvert sizing used as part of the SCS Feasibility Study. Please confirm the correct culvert size and length, and that the models incorporate the correct information.</p>	<p>The Highway 7 crossing used in the hydraulic analysis was coordinated with the latest recommendations from the Edgeley Pond design, which superseded the SCS Feasibility Study.</p>
<p>6. Appendix H – The Hydraulic Modelling Summary discusses the preliminary low-flow channel design. Please confirm that the final channel design will be based on a fluvial geomorphological study that considers the realigned channel through Edgeley Pond and the crossing structure impacts.</p>	<p>Section 8.6 in the ESR has been added to describe the future fluvial geomorphological study.</p>
<p>Ecology</p>	
<p>7. Page 17; please amend the Species at Risk paragraph to include bats.</p>	<p>A memo from Palmer Environmental Consulting Group Ltd. (PECG) is attached that discusses the presence of bats in the study area and Section 4.2.6 of the ESR has been updated to discuss the need for bat surveys in future study.</p>
<p>8. Page 36: please note that the quantification of the grading for the buffer on Jane Street is documented as “XX m”. Please provide actual figures.</p>	<p>Section 7.1 of the ESR has been updated with the actual figures for grading in the buffer.</p>
<p>9. Page 44; please note that the Migratory Birds Convention Act restricts tree removals or any other activity from April 1st to August 1st (and not April 15th to July 30th).</p>	<p>Section 9.2 of the ESR has been updated with dates for tree removal restrictions provided by the City (April 1st to August 31st), which encompass the dates provided in Comment 9.</p>
<p>10. Figure 7-5 shows an extensive use of retaining walls just south of Highway 7. Please explore opportunities or technologies to reduce the use / length of these walls.</p>	<p>Limiting the use of retaining walls was explored throughout the alternative design and preliminary design stages, but the retaining walls shown in the ESR are necessary because of constraints in the area, mainly the proximity of the Highway 7 crossing to the Jane Street ROW. The location of Jane Street does not leave enough space for a 3:1 naturalized side slope on the right (west) bank and the need for pedestrian space (referred to as the urban plaza) at the intersection also limits the valley width on the left (east) bank immediately downstream of the intersection. Alternatively, to reduce the length of retaining walls, the channel downstream of Highway 7 can be enclosed up to a location where the creek will outlet to the full valley width. To note, the urban plaza is subject to future design coordination with the adjacent development and other improvements at the intersection.</p>

TRCA Comment	TMIG Response
<p>11. On Drawing 5 of 7 and Drawing 7 of 7, please show the 2 and 5 year water levels to reflect direct fish habitat. This will also be of interest to DFO. The channel floor appears to be approximately 5m wide. Please provide a notched low flow channel within the identified channel.</p>	<p>The 2-year and 5-year water levels will depend on the detailed design of the low flow channel, which will incorporate fluvial geomorphological and aquatic habitat features (i.e., pool-riffle sequences, toe erosion protection, bio-engineering techniques, etc.). As such, the 2-year and 5-year water levels are not shown on ESR drawings. Section 8.6 has been added to the ESR to describe the future detailed design of the low flow channel in more detail.</p>
<p>12. Channel drawings don't show or address the incorporation of habitat features for fish i.e., pool / riffle sequences, instream cover etc. Please provide both plan view and cross sectional drawings showing the inclusion of fish habitat into the channel design.</p>	<p>As described in the response to Comment 11, the detailed design of the low of channel will incorporate appropriate fish habitat. Section 8.6 has been added to the ESR to describe the future detailed design of the low flow channel in more detail.</p>
<p>13. Please demonstrate how the design achieves fish passage in terms of stream slope under normal flow conditions and flow through culvert crossings.</p>	<p>A memo from PEGC is attached that addresses this comment. Similar to the response to Comment 11, Section 8.6 has been added to the ESR to note future detailed design of the low flow channel to accommodate fish passage.</p>
<p>14. Please provide an analysis quantifying existing land base area of ELC communities as compared to the proposed naturalized areas shown in the preferred alternative.</p>	<p>A memo from PEGC is attached that addresses this comment.</p>
<p>15. Please provide a brief discussion on wildlife passage relevant to culvert sizing and treatment.</p>	<p>A memo from PEGC is attached that addresses this comment.</p>
<p>Geotechnical</p>	
<p>16. A site specific geotechnical study is required at the detailed design stage to assess the ground condition and provide the geotechnical design recommendations.</p>	<p>A geotechnical investigation will be completed to inform the detailed design, as described in Section 8.4 of the ESR.</p>
<p>17. As part of the geotechnical studies, the slope stability analysis is also required where the side slope of the proposed valley slope is steeper than 3H:1V (e.g. 2H:1V as shown on the drawings) to confirm that the reconstructed slope satisfies a minimum factor of safety of 1.50 against slope instability.</p>	<p>A geotechnical investigation will be completed to inform the detailed design, as described in Section 8.4 of the ESR.</p>

TRCA Comment	TMIG Response
<p>18. Cross-sections 1 to 4: The cross-section show that the reconstructed valley results in a low flow channel of 6 m wide and a valley floor of 15 m wide. The setback from the edge of low flow channel to the toe of the upper reconstructed valley slope is minimal. Therefore, the toe erosion allowance from the low flow channel area may impact the toe of the upper valley slope over the time, which can subsequently cause slope stability concerns for the reconstructed valley slope and potential hazard for the tableland. Please evaluate the implementation of the appropriate toe erosion protection for the area of the low flow channel as well as the toe of the reconstructed valley slope to ensure that the potential toe erosion cannot impact the stability of the reconstructed valley slope and the tableland in long-term. Please ensure that the approach is fish-friendly.</p>	<p>Appropriate toe erosion protection will be required for the low flow channel and will be implemented through the detailed design and coordinated between future geotechnical, fluvial geomorphological and fish habitat studies. Section 8.5 of the ESR has been updated to describe this commitment.</p>
<p>19. Cross-section 4 shows a retaining wall, the retaining wall is required to be designed for both applicable geotechnical and structural failure modes at the detailed design stage. The global stability of the retaining wall is also to be verified by geotechnical engineer to confirm that a minimum factor of safety of 1.50 is met. Further, the proposed retaining wall requires toe protection to ensure that it cannot be undermined by toe erosion or undercutting over the time.</p>	<p>Section 8.4 of the ESR, describing the future geotechnical study, has been updated to describe the requirement for analysis to support the retaining wall in detailed design.</p>
<p>20. All engineering drawings including the cross-sections are to be prepared as per the detailed design for the retaining walls showing all necessary details, dimensions and specifications and must be signed and sealed by Licensed Professional Engineer prior to submission.</p>	<p>All engineering drawings prepared for detailed design will signed and sealed by a Licensed Professional Engineer.</p>
<p>21. The proposed retaining wall shown on the Cross-section 4 is relatively high (up to about 3.5 m high), which may result in significant temporary excavation during construction. Please evaluate if the limit of the temporary excavations required during the construction of the retaining wall will impact the existing infrastructure running through the tableland.</p>	<p>The cursory review of existing infrastructure and utilities for the study area completed for the preliminary design indicate that hydro poles will need to be removed/relocated from the area and the existing commercial development will be disturbed (noting that the construction of any part of the new channel corridor will occur in conjunction with re-development on adjacent lands). Moreover, a detailed utilities investigation will be completed for detailed design to identify and plan for utilities conflicts, as described in Section 8.1 of the ESR.</p>
<p>22. The geotechnical engineer is to review the details of the proposed new valley slope including the specifications of the engineered fill materials; this information is to be stamped and signed by the engineer prior to submission.</p>	<p>A geotechnical engineer will be involved in the detailed design and review the design for submission. Section 8.4 of the ESR has been updated to describe this commitment.</p>
<p>23. At detailed design stage, the geotechnical studies are to provide appropriate design recommendations for the culvert footings and other structures. All engineering drawings as per the detailed design are to be signed and sealed by Licensed Professional Engineer prior to submission.</p>	<p>Section 8.4 of the ESR has been updated to describe the analysis required for culvert footings and other structures in detailed design.</p>

We trust that the above responses and revisions to the Environmental Study Report adequately address your comments. Please contact the undersigned if you have any remaining questions or concerns.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.



Steve Hollingworth, P.Eng.
Project Manager
shollingworth@tmig.ca

Encl. 'PECG Response to TRCA Ecology Review Comments for Black Creek Renewal EA', prepared by Palmer Environmental Consulting Group Ltd., May 8, 2018

cc: Jennifer Cappola-Logullo, Project Manager, City of Vaughan



PALMER
ENVIRONMENTAL
CONSULTING
GROUP INC.

74 Berkeley Street, Toronto, ON M5A 2W7

Memorandum

Date: May 8, 2018

Project: 131122 PECG

To: Steve Hollingworth, TMIG

From: Dirk Janas, Palmer Environmental

Subject: **PECG Response to TRCA Ecology Review Comments for Black Creek Renewal EA**

The following memo provides our responses to comments from the Toronto Region Conservation Authority (TRCA) provided on January 23, 2017 from their review of the Draft Environmental Study Report. Specifically, this memo provides responses to ecology comments #7, #13, #14 and #15. It is our understanding that TMIG has included responses to ecology comments #8, #9, #10, #11 and #12 as part of their response letter.

TRCA Comment #7

Page 17; please amend the Species at Risk paragraph to include bats.

PECG Response

Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Eastern Small-footed Myotis (*Myotis leibii*) and Tri-Colored Bat (*Perimyotis subflavus*) are all listed as Endangered under Ontario's *Endangered Species Act* (ESA) and are known to roost in treed habitats. There are three woodland blocks located along the east end of the study area. Based on the MNRF habitat suitability assessment protocol outlined in the *Survey Protocol for Species at Risk Bats* (MNRF 2017), maternity roosts in treed areas include deciduous, coniferous mixed forest communities. The ELC vegetation communities identified for the subject property include FOD7 and FOD7-3, with the presence of larger trees at least 10 cm dbh. Therefore, these woodland areas provide potential habitat opportunities for bat maternity roosts and should be further assessed to determine potential impacts to Species at Risk bats and ensure conformity to the ESA. Following completion of the Phase I (Bat Habitat Suitability Assessment), and Phase II (Identification of Suitable Maternity Roost Trees) surveys, the MNRF should be consulted regarding any further requirements under the ESA.

TRCA Comment #13

Please demonstrate how the design achieves fish passage in terms of stream slope under normal flow conditions and flow through culvert crossings.

PECG Response

Similar to responses to Comments #11 and #12 (see TMIG letter), the final stream slopes under different flow conditions and flows through culverts will be determined through detailed design. The design should ensure that future flows do not impede fish movement for the species that are known to occupy this reach, such as blacknose dace, creek chub and white sucker. The re-alignment design will provide for opportunities to improve the existing conditions to enhance fish passage and habitat through rehabilitation of the degraded conditions from urbanization that include garbage buildup and failing gabion walls. A key improvement for fish passage is in the area upstream of Peelar Road where there is an existing blockage across the channel that has resulted in a back-flooded pool. There was no to little flow observed in this reach during the field surveys and there is likely a barrier to fish habitat at this location.

TRCA Comment #14

Please provide an analysis quantifying existing land base area of ELC communities as compared to the proposed naturalized areas shown in the preferred alternative.

PECG Response

Five vegetation community types have been recorded from within the study area as illustrated on Figure 2 of the Natural Environment report. The following table provides a summary of the areas of each type of vegetation community, which amounts to about 4.43 ha. This is comprised of 30% forest, 64% cultural meadow, 5.5% cultural thicket and 0.5% shallow marsh. Note that for the purposes of the ELC mapping this includes the low flow channel area, which is calculated separately in the restoration plan for the realignment (see table below). The proposed realignment is designed to enhance the aquatic and riparian functions of the watercourse and therefore the valley floor and low flow channel represent 30% of the proposed restoration area. In the scenario of the naturalized buffer and naturalized embankment being restored with tree plantings, this would result in 2.33 ha of treed vegetation community. Once restored and established, this would represent an increase of approximately 1.0 ha of riparian tree cover that is distributed along the entire reach rather than along approximately half which is the current condition.

Existing Vegetation	Area (ha)	Treed Communities (ha)
Forest (FOD)	1.32	1.32
Cultural Meadow (CUM)	2.84	-
Cultural Thicket (CUT)	0.24	-
Shallow Marsh (MAS)	0.02	-
Total Existing	4.43	1.32
Restoration (ha)		
Naturalized Buffer	1.18	1.18
Naturalized Embankment	1.15	1.15
Valley Floor and Low Flow Channel	1.0	-
Total Proposed	3.33	2.33

TRCA Comment #15

Please provide a brief discussion on wildlife passage relevant to culvert sizing and treatment.

PECG Response

Wildlife passage opportunities for the project are located at three road crossings consisting of Doughton Road, Future Interchange Way and Peeler Road. As described in the Natural Environment report, the watercourse channel likely provides only very limited movement opportunities for wildlife such as turtles due to the highly urbanized setting. Amphibians such as American Toad (*Anaxyrus americanus*), are more likely to occur and would benefit from the ability to move along the re-aligned watercourse corridor. There are several studies that provide guidelines to be considered in the design and siting of wildlife passages along road corridors. The MTO (2006) has produced a document entitled the *Environmental Guide for Wildlife in the Oak Ridges Moraine*. During the detailed design stage the following ecological and the engineering considerations would be appropriate to review for this project.

- Location, length and width/diameter of passage: amphibians use passages exceeding 40 m in length; however shorter passages will allow for better light penetration. A passage with a diameter of at least 0.5 m to 1.0 m would be ideal and allow for multi-species use. Based on the initial design to accommodate the flow requirements under the existing roads, this will be easily achieved.
- Type of structure and material: There is a range of structure types and materials from which passages may be constructed (e.g., plastic or metal culvert, concrete box culvert, concrete elliptical culvert, corrugated steel arch culvert).
- Substrates: Placement of appropriate substrate in the passage will be important to replicate natural conditions. Substrate depth and potential future blockage from sedimentation should be considered to avoid impediments to movement of animals through the passage.

June 12, 2018

CFN 47476

BY E-MAIL (Jennifer.Logullo@vaughan.ca)

Development Engineering and Infrastructure Planning
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, Ontario L6A 1T1

Attn: Jennifer Cappola-Logullo
Project Manager/Engineering

Re: Black Creek Renewal Class EA
Environmental Study Report – Final Report – May 2018

This letter acknowledges receipt of the *Vaughan Metropolitan Centre Black Creek Renewal Class EA: Environmental Study Report – Final Report May 2018* prepared by TMIG and received by TRCA on May 18, 2018.

TRCA staff has worked closely with the City and the consulting team in providing input into the alternative designs for Black Creek and have a level of comfort with the selected alternative number 4. We appreciate the efforts the City and consulting team have undertaken.

TRCA has no further comment on the Final Environmental Study Report.

TRCA looks forward to being involved in this project throughout detailed design and encourages the City to progress with an approach which addresses both the natural hazards and natural functions resulting in a net benefit for the entire reach and system of the watercourse; specifically in relation to:

- Appropriate hydrological design to ensure the natural hazards are addressed both in the interim and final design stages;
- Comprehensive understanding of the design connectivity between the Edgeley pond and park, Hwy 7 culvert expansion and the Black Creek renewal south of Hwy 7;
- plaza and outlet design originating under Highway 7 to balance the constraints including: grade differential, constrained channel and Jane Street right-of-way width, existing culvert location, vehicular access requirements, land development potential and aquatic habitat needs and
- implementation, timing and staging of proposed LID methods throughout this reach of the Black Creek channel and

TRCA looks forward to working with the City and the consulting team on the detailed design. Should you have any questions, feel free to contact me at extension 5307 or at cbonner@trca.on.ca

Regards,



Colleen Bonner, MES, RPP
Senior Planner, Planning and Development

c.c.: Carolyn Woodland - TRCA, cwoodland@trca.on.ca
June Little – TRCA, jlittle@trca.on.ca
Lori Cook – TRCA, lcook@trca.on.ca
Dan Hipple – TRCA, dhipple@trca.on.ca
Ali Shirazi – TRCA, ashirazi@trca.on.ca
Andrew Pearce – City of Vaughan, Andrew.Pearce@vaughan.ca
Gerardo Paez Alonso – City of Vaughan, Gerardo.PaezAlonso@vaughan.ca
Amy Roots – City of Vaughan, Amy.Roots@vaughan.ca
Dana Khademi – City of Vaughan, Dana.Khademi@vaughan.ca
Jamie Bronsema – City of Vaughan, Jamie.Bronsema@vaughan.ca
Rob Bayley – City of Vaughan, Rob.Bayley@vaughan.ca
Tony Dang – TMIG, tdan@tmig.ca
Steve Hollingworth – TMIG, shollingworth@tmig.ca

Appendix A: List of Materials Reviewed

May 18, 2018 Submission:

TMIG, Vaughan Metropolitan Centre Black Creek Renewal Class EA: Environmental Study Report – Final Report May 2018 prepared by TMIG and received by TRCA on May 18, 2018.

December 7, 2017

File No.: EA 01-06-04

Jennifer Cappola-Logullo (BY EMAIL ONLY)
Project Manager
City of Vaughan

Re: **Vaughan Metropolitan Centre (VMC) Black Creek Renewal Study**
City of Vaughan
Municipal Class EA – Schedule C
Draft Environmental Study Report
Technical Support Section Comments

Dear Ms. Cappola-Logullo,

We have received the draft Environmental Study Report (ESR) for the above noted environmental assessment. This study builds upon the completed 2012 Black Creek Stormwater Optimization Study Master Plan Report (Phase 1 and 2). The preferred solution in the Master Plan was the reconstruction and renewal of Black Creek between the Edgeley Pond (north of Highway 7) and Highway 407. Our understanding that the preferred alternative for this study (phase 3 and 4) is alternative #4: Meander north of Peelar Road.

We provide the following comments below for your consideration.

Section 4 Existing Environments

1. Please include a discussion of the existing groundwater environment/features.
2. A coordinated review of Ontario's four land use plans (Growth Plan for the Greater Golden Horseshoe, Greenbelt Plan, Oak Ridges Moraine Plan and Niagara Escarpment Plan) began in 2015. The updated plans were released in May 2017. As the new provincial plans are now in effect as of July 1, 2017, all planning matters including those associated with the environmental assessment process must conform to the new 2017 plans. There are no transition provisions. Please review the new Growth Plan for the Greater Golden Horseshoe (<http://www.mah.gov.on.ca/Page10882.aspx>) and update section 4.1.3 accordingly.

Stormwater Management (Appendix E)

3. The Stormwater Management (SWM) Strategy for the southeast quadrant of the VMC was completed in 2012 as part of the VMC Municipal Servicing Master Plan. It was planned that a new SWM pond would be located northeast of Jane Street and Highway 407 intersection. According to the report, some changes in land use planning for the VMC southeast quadrant since 2012 limit the ability to implement all components of the SWM strategy. Specifically,

the stormwater management pond is unaffordable due to land requirements and availability. As a result, an Alternative SWM Strategy was developed for the area of interest with the goal to improve the existing stormwater conditions to the extent possible in the VMC southeast quadrant without an end-of-pipe stormwater management pond. In this Alternative strategy without the end-of-pipe facility, SWM controls are focused on individual developments and ROWs, which can be implemented sooner on a site by site basis. An additional provision to provide water quality treatment to Enhanced protection (80% long-term TSS removal) is proposed and should be achieved through oil/grit separators, filtration systems, grassed swales, and/or combinations of multiple types of SWM controls. In addition, 15 mm of rain retention over ROWs through the implementation of LID measures is recommended. In general, in the absence of the SWM pond, it is recommended that 15 mm of rain over the entire site area will be retained on-site. It is unclear though, how and where the proponent is planning to store 4,620 m³ of precipitation (30.8 ha x 15 mm) on-site. No details are provided. Is it achievable? Please provide some more detailed information.

4. In addition, it is our understanding that the earlier proposed SWM pond was supposed to control the entire southeast quadrant (30.8 ha) and adjacent area (62.8 ha) with total drainage area of 93.6 ha. It is unclear how the runoff from the remaining 62.8 ha will be controlled in the absence of the SWM pond. Please explain.
5. The Alternative SWM strategy provides negligible peak flow reduction versus the existing condition within NHYD 678 (only up to 15%) and in comparison with the Master Plan SWM strategy, which provides reduction up to 31% within NHYD 678 and up to 95% within the southeast quadrant. From the technical point of view, the Master Plan is the preferred option and the municipality should look for all possible options in order to implement it.

Indigenous Consultation

6. Several communities have indicated concerns and interest related to archaeological potential of the project. Please commit in the ESR to continued engagement with the Indigenous communities should there be any relevant archeological findings as a result of the Stage 2 Archaeological Assessment to be conducted.

Other

7. The last sentence in section 1.3 contains an error message.

Appendix A

8. The ESR should contain a complete record of consultation activities associated with the project (from initial commencement to present), including all relevant correspondence. Accordingly, please include in appendix A:
 - a. Copies of any meeting agendas and meeting minutes from meetings with stakeholders (agencies, the public etc.)
 - b. Copies of all correspondence received from agencies and Indigenous communities
 - c. Copies of any other correspondence received from the public offering comments on the project

Thank you for the opportunity to comment on this project. Should you or any members of your project team have any questions, please feel free to contact me at emilee.oleary@ontario.ca or 416-326-3469.

Please provide an accompanying response letter to support our review of the final draft of the report. Thank you in advance for your response to this ministry's comments as posed herein.

Sincerely,

A handwritten signature in cursive script that reads "Emilee O'Leary".

Emilee O'Leary
Regional Environmental Assessment Coordinator
Air, Pesticides and Environmental Planning

cc: Paul Martin, Supervisor, Technical Support Section, MOECC
Celeste Dugas, Manager, York Durham District Office, MOECC
Tony Dang, Project Team, The Municipal Infrastructure Group
Steve Hollingworth, Project Team, The Municipal Infrastructure Group

August 6, 2018

PROJECT NUMBER 12122

Emilee O'Leary
Regional Environmental Assessment Coordinator
Air, Pesticides and Environmental Planning
Ministry of the Environment, Conservation and Parks
Central Region, Technical Support Section
5775 Yonge Street, 9th Floor
North York, ON M2M 4J1

Dear Ms. O'Leary:

**Re: VMC Black Creek Renewal Class Environmental Assessment
Response to MOECP Comments on Draft Environmental Study Report (MOECP File: EA 01-06-04)**

Thank you for taking the time to review and provide comments on our Draft Environmental Study Report (ESR) for the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Class EA. We have reviewed the comments in your letter dated December 7, 2017, and have addressed them to extent possible in our Final ESR. Please refer to the following table, which includes the comments from your letter, our responses, and references to the revised sections of the ESR.

MOECP Comment	TMIG Response
<p>1. Please include a discussion of the existing groundwater environment/features.</p>	<p>A discussion of existing groundwater conditions in the vicinity of the study area has been added to Section 4.2.2 of the ESR based on background information from the VMC Municipal Servicing Master Plan (2012), which included the EA's study area.</p>
<p>2. A coordinated review of Ontario's four land use plans (Growth Plan for the Greater Golden Horseshoe, Greenbelt Plan, Oak Ridges Moraine Plan and Niagara Escarpment Plan) began 2015. The updated plans were released in May 2017. As the new provincial plans are now in effect as of July, 2017, all planning matters including those associated with the environmental assessment process must conform to the new 2017 plans. There are no transition provisions. Please review the new Growth Plan for the Greater Golden Horseshoe (http://www.mah.gov.on.ca/Page10882.aspx) and update section 4.1.3 accordingly.</p>	<p>The new Growth Plan for the Greater Golden Horseshoe (May 2017) was reviewed and Section 4.1.3 of the ESR has been updated with reference to the current plan in effect and policies regarding stormwater management, water resources systems, and natural heritage systems.</p>

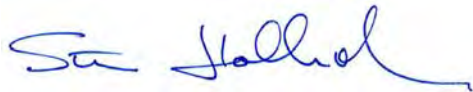
MOECP Comment	TMIG Response
<p>3. The Stormwater Management (SWM) Strategy for the southeast quadrant of the VMC was completed in 2012 as part of the VMC Municipal Servicing Master Plan. It was planned that a new SWM pond would be located northeast of Jane Street and Highway 407 intersection. According to the report, some changes in land use planning for the VMC southeast quadrant since 2012 limit the ability to implement all components of the SWM strategy. Specifically, the stormwater management pond is unaffordable due to land requirements and availability. As a result, an Alternative SWM Strategy was developed for the area of interest with the goal to improve the existing stormwater conditions to the extent possible in the VMC southeast quadrant without an end-of-pipe stormwater management pond. In this Alternative strategy without the end-of-pipe facility, SWM controls are focused on individual developments and ROWs, which can be implemented sooner on a site by site basis. An additional provision to provide water quality treatment to Enhanced protection (80% long-term TSS removal) is proposed and should be achieved through oil/grit separators, filtration systems, grassed swales, and/or combinations of multiple types of SWM controls. In addition, 15 mm of rain retention over ROWs through the implementation of LID measures is recommended. In general, in the absence of the SWM pond, it is recommended that 15 mm of rain over the entire site area will be retained on-site. It is unclear though, how and where the proponent is planning to store 4,620 m³ of precipitation (30.8 ha x 15 mm) on-site. No details are provided. Is it achievable? Please provide some more detailed information.</p>	<p>Additional clarification regarding the challenges of the Master Plan SWM Strategy was provided in Appendix E – Section 2.2.1. The reference to land requirements and availability applies the SWM pond as well as a new trunk sewer to convey runoff to the new facility, with respect to timing and expense. The new trunk sewer cannot be built until a new ROW through the centre of the VMC southeast quadrant is completed. The timing of these works would prevent the implementation of the Master Plan SWM Strategy until near full build-out conditions in the VMC southeast quadrant, which may take decades.</p> <p>15 mm retention (150 m³ per ha) will be achieved through a variety of LID measures implemented across re-developments, ROWs and potentially in the new channel corridor. As examples, a re-development may have a green roof, rainwater harvesting, infiltration based-LIDs, storage tanks or a combination of these and other emerging LID practices. On ROWs, retention can be achieved through Silva cells and/or an exfiltration pipe system. Details regarding the implementation of LIDs have been added to Appendix E – Section 2.2.2.</p>
<p>4. In addition, it is our understanding that the earlier proposed SWM pond was supposed to control the entire southeast quadrant (30.8 ha) and adjacent area (62.8 ha) with total drainage area of 93.6 ha. It is unclear how the runoff from the remaining 62.8 ha will be controlled in the absence of the SWM pond. Please explain.</p>	<p>The Master Servicing Plan for the VMC was only intended to treat runoff from 30.8 ha in the VMC southeast quadrant and did not include areas outside of its boundaries (i.e., the 62.8 ha that drains to Black Creek from outside of the southeast quadrant). The alternative SWM strategy is consistent with the treatment area from the Master Servicing Plan. Figure 1-1 was added to Appendix E to show the drainage area of the southeast quadrant from the Master Servicing Plan.</p>
<p>5. The Alternative SWM strategy provides negligible peak flow reduction versus the existing condition within NHYD 678 (only up to 15%) and in comparison with the Master Plan SWM strategy, which provides reduction up to 31% within NHYD 678 and up to 95% within the southeast quadrant. From the technical point of view, the Master Plan is the preferred option and the municipality should look for all possible options in order to implement it.</p>	<p>The Alternative SWM strategy was developed in consultation with the Toronto and Region Conservation Authority (TRCA) who are responsible for flood management in the watershed. The TRCA is in agreement with the approach and have not expressed a need for greater quantity control for the southeast quadrant. Also note that the differences in peak flow rates at Black Creek immediately downstream of the southeast quadrant under both strategies are within 2% of the existing peak flow rates at that location.</p>
<p>6. Several communities have indicated concerns and interest related to archaeological potential of the project. Please commit in the ESR to continued engagement with the Indigenous communities should there be any relevant archeological findings as a result of the Stage 2 Archaeological Assessment to be conducted.</p>	<p>Agreed. The ESR has been updated to reflect this commitment in Section 3.2.3 and Section 8.34.</p>

7. The last sentence in section 1.3 contains an error message.	Section 1.3 has been updated to remove the error message.
MOECP Comment	TMIG Response
<p>8. The ESR should contain a complete record of consultation activities associated with the project (from initial commencement to present), including all relevant correspondence. Accordingly, please include in appendix A:</p> <ul style="list-style-type: none"> a. Copies of any meeting agendas and meeting minutes from meetings with stakeholders (agencies, the public etc.) b. Copies of all correspondence received from agencies and Indigenous communities c. Copies of any other correspondence received from the public offering comments on the project 	<p>Appendix A has been updated to include the items referenced in Comment 8.</p>

We trust that the above responses and revisions to the Environmental Study Report adequately address your comments. Please contact the undersigned if you have any remaining questions or concerns.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.



Steve Hollingworth, P.Eng.
 Project Manager
 shollingworth@tmig.ca

cc: Jennifer Cappola-Logullo, Project Manager, City of Vaughan

May 9, 2018

PROJECT NUMBER 12122

Jennifer Cappola-Logullo
Project Manager, Vaughan Metropolitan Centre
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1

Dear Ms. Cappola-Logullo:

**Re: VMC Black Creek Renewal Class Environmental Assessment
Response to TRCA Comments on Draft Environmental Study Report (CFN 47476)**

Thank you to the City and its various departments for working with the consulting team throughout the duration of the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Class EA, and taking the time to review and provide comments on our Draft Environmental Study Report (ESR). We have reviewed the comments that you have forwarded to TMIG on December 21, 2017 and have addressed them to extent possible in the Final ESR.

Please refer to the following table, which summarizes the City’s comments, our responses, and references to the revised sections of the Final ESR. Note that this comment response letter will not be appended to the Final ESR.

City Comment	TMIG Response
Policy Planning and Environmental Sustainability – Ruth Rendon (November 29, 2017)	
1. Page 12, section 4.1.3 Growth Plan for the Greater Golden Horseshoe - this section needs to be updated to reference the new 2017 Growth Plan.	The new Growth Plan for the Greater Golden Horseshoe (May 2017) was reviewed and Section 4.1.3 of the ESR has been updated to reference the current plan in effect and acknowledge policies regarding stormwater management, water resources systems, and natural heritage systems.
2. Page 13, paragraph 1, section 4.1.5 City of Vaughan Official Plan – replace this paragraph with the following: “The City of Vaughan Official Plan (VOP) 2010 is a legal document approved by the City and York Region, which describes policies and objectives for future land use. It reflects a community vision for future change and development. The latest update of the VOP 2010 City Official Plan was completed and adopted by City Council on September 7, 2010, approved by the Ontario Municipal Board on July 23, 2013, and has subsequently been amended. The VOP 2010 and provides the basis for completion of Secondary Plans throughout the City.”	Section 4.1.5 of the ESR has been updated to include the revised wording as suggested.
3. Page 14, section 4.1.8 Toronto and Region Conservation Authority - this section needs to be updated to reference the 2014 Living City policies.	Section 4.1.8 has been updated to reference the 2014 Living City policies.

City Comment	TMIG Response
<p>4. Pages 16 and 17, section 4.2.5 Wildlife and Terrestrial Habitat - the wording "Road noise and garbage dumping are severe throughout the study area" that was in the Black Creek Renewal, Municipal Class EA – Natural Environment Conditions, July 6, 2017 document has been excluded. It does not appear that a commitment to clean up the garbage or mitigate for road noise is explicitly expressed. This commitment should be included in section 9.6.</p>	<p>Section 4.2.5 of the ESR has been updated to include the observations of road noise and garbage. A memorandum from Palmer Environmental Consulting Group Ltd. (PECG) is attached that further discusses road noise.</p> <p>With respect to garbage, a clean-up of the study area will be completed during the reconstruction of the channel.</p>
<p>5. Page 44, section 9 Potential Construction Impacts and Mitigation - Species at Risk Bat surveys should also be conducted prior to any tree removals. This can be deferred to detail design, but should be identified as a commitment in the ESR.</p>	<p>A memorandum from PECG is attached that discusses the presence of bats in the study area. Sections 4.2.6 and 9.2 of the ESR has been updated to discuss the need for bat surveys in future study.</p>
<p>6. Page 44, section 9.2 Breeding Birds - Environment Canada has identified that the Migratory Bird Convention Act bird breeding window for the City of Vaughan is from April 1st to August 31st. Please update the two instances the breeding window dates appear on page 44.</p>	<p>Section 9.2 of the ESR has been updated with the correct dates.</p>
<p>7. As per section 4.1.9 Source Water Protection, the site is within Source Water Protection Highly Vulnerable Aquifers (HVA). There is no subsequent reference in the report as to how HVA matters will be mitigated. We need to understand how best management practices are used, where practical, in the construction work to prevent contaminants from entering the groundwater (e.g. have spill kits where chemicals or fuel is stored or refueling of vehicles takes place, clean up any spills of chemicals such as fuel, have secondary containment for storage of large amounts of fuel or chemicals). We suggest adding another section called "Source Water Protection" in section 9 of the report.</p> <p>Also, 9.4 "Surface Water Protection" seems to be incorrect heading for this section and suggest this section be re-examined.</p>	<p>Section 9 of the ESR has been updated to describe mitigation recommendations for Source Water Protection and reorganized to clarify impacts and mitigation with respect to surface water, groundwater and aquatic habitat.</p>
<p>8. Appendix B: Natural Environment Inventory should be updated to address the comments above. Also, Appendix B should be renamed to "Natural Environment Assessment", as the report no longer focuses on existing conditions but provides an impact analysis of the proposed development.</p>	<p>The attached memorandum from PECG addresses the comments above and will be included as part of the ESR. The report was not renamed.</p>
<p>9. Lastly, we recommend that as a portion of the subject lands are municipally owned that Urban Forestry review and approve the Tree Inventory and Preservation Plan, as well as the Restoration Plan for this site at detailed design.</p>	<p>Section 9.10 of the ESR has been updated to include Urban Forestry review as part of the approvals process during detailed design.</p>

City Comment	TMIG Response
Parks Development – Gerardo Paez Alonso and Amy Roots (November 29 and 30, 2017)	
1. Figures ES-2, ES-3 and ES-4 are not legible. We suggest to use vectorized graphics rather than flattened images.	Figures ES-2 through ES-4 have been converted to paper size 11" by 17" for better legibility.
2. Add area parks to Figures ES-2, ES-3 and ES-4 as per redlined pdf. SAME REQUEST TO BE APPLIED to Figures 5-1, 5-2, 5-3, 5-4 a. Figure ES-2: Add as future park area and add to Figure 5-1. b. Figure ES-3: Add as future park area and add to Figure 5-2. c. Figure ES-4: Add as future park area and add to Figure 5-3.	The comments from the redlined PDF were address in an update of all figures for alternative alignments.
3. Pg. 19. Is there any back-up documentation (additional design information) that demonstrates the viability of the 15mm retention within ROWs?	Additional information has been provided in Appendix E to discuss the technical feasibility of implementing 15 mm retention within ROWs. In general, a variety of LID measures can be implemented, where the ultimate selection of LID measures will be coordinated with the City's Public Works department.
4. Pg. 36. If possible, the consultant should make emphasis on the substantial facilitation process in the second paragraph.	The VMC consultation and facilitation process was discussed in the ESR, but the report refrains from additional emphasis because the facilitation was completed outside of the Class EA process and was not fully open to the public.
5. Pg. 40 & 41 Cost Estimate. It is concerning to see that the consultant's cost estimate prepared for the EA is actually lower than the Black Creek Financial Strategy cost estimate prepared 3 years ago. Parks Development recommends to request from the consultant all available back-up information on the cost estimate (including a more comprehensive construction item list with unit rates) and request for additional detail regarding overheads, soft costs and contingencies foreseen for this project; the additional breakdown should include but not be limited to: - hard costs - soft costs (including General Requirements, Permits, Contractor overheads, etc) - escalation - design contingency - construction contingency Ideally, the cost estimate prepared for this EA should be also reconciled to the BCFS, and should be prepared by a Quantity Surveying company (not TMIG inhouse). Furthermore, the EA cost estimate / cost analysis should be pointing that an inflation rate should be applied to the project's budget over the 3 past years.	The cost discrepancy between the EA's cost estimate and Black Creek Financial Strategy (BCFS) is attributed to the differences in studies areas and proposed works that were included. The EA's cost estimate was prepared with unit rates that are similar to the BCFS. In general, the EA's cost estimate is within and similar to the BCFS's cost estimate for all directly comparable items. The cost estimate shown in the ESR was completed at a level of detail that is appropriate for a Municipal Class EA (i.e., high level with conservatisms). A more accurate cost estimate with a detailed construction item list and quantities cannot be completed until detailed design, when specifications for the channel works, urban design, landscaping, and etc. become known.

City Comment	TMIG Response
<p>6. Prior to finalizing Parks Development comments, staff need to evaluate the AutoCAD file within the context of the VMC Secondary Plan. Please request from TMIG the file inclusive of the preferred option with dimensions, existing topographic information (as a referenced file) and proposed grading information. File to include longitudinal and transversal sections.</p> <p>Further comments may arise from the review of the digital file(s).</p>	<p>The preliminary design AutoCAD file was forwarded by email. Refinements of the preliminary design shall take place in coordination with the detailed design.</p>
<p>7. The detailed policies related to Black Creek and its vision in the Secondary Plan should be outlined. No policy references are included.</p>	<p>Section 4.1.6 of the ESR has been updated to reference policies specific to the Black Creek Corridor.</p>
<p>8. More detailed description should be provided on the facilitation process and the collaboration with agencies and landowners. Some content from those sessions could be extracted.</p>	<p>As described above in the response to Parks Development – Comment 4, the VMC consultation and facilitation process was discussed in the ESR, but the report refrains from additional emphasis or details because the facilitation was completed outside of the Class EA process and was not fully open to the public.</p>
<p>9. Urban Design principles were developed as part of the facilitation process that are useful to include. Most importantly, the Urban Design Vision that was generated by Public Work for the preferred option should be included to describe the compromise that was met in creating a natural edge and urban promenade with address for development. It is important to note that TRCA supported this vision with an understanding that net ecological benefit should be achieved along the channel, allowing a balance of hard and soft edges.</p>	<p>As described above, the facilitation process was completed outside of the Class EA process and was not fully open to the public. The ESR recognizes the need to adhere to Urban Design principles that were generated from the facilitation process and from the VMC Streetscape and Open Space Plan. Moving forward, the urban design vision shall be coordinated between the City and consulting team responsible for detailed design of the channel works and landscaping.</p> <p>Section 3.2.2 of the ESR was updated to mention that the urban design vision for the new channel corridor was also established during the VMC consultation and facilitation process.</p>
<p>10. Section 8.5 Landscape and Urban Design should be flushed out to include the Public Work Urban Design Vision, and greater references to applying the placemaking framework through the detailed design process should be included (VMC Secondary Plan, Streetscape and Open Space Plan, Urban Design Guidelines, Culture and Public Art Framework)</p>	<p>The previous Section 8.5 of the ESR has been relabelled Section 8.7 and has been updated to provide more references to the urban design vision from the facilitation process and placemaking framework for the VMC.</p>
<p>Storm Drainage Engineering – Dana Khademi (December 12, 2017)</p>	
<p><i>Draft ESR, November 2017</i></p>	
<p>1. Please ensure the quoted costs for Alternatives 2-4 are consistent within the text of the report and the tables. For example, Section 6.3.4 listed the cost for Alternative 2 to be \$40.6M, but is quoted to be \$35.9M in Table 6.3.</p>	<p>The costs have been checked and updated for consistency throughout the ESR.</p>
<p>2. Please provide a digital copy of all hydrologic and hydraulic models utilized for this EA.</p>	<p>A digital copy of the HEC-RAS hydraulic model has been forwarded for review, by email, on February 20, 2018.</p>
<p>3. Please illustrate the proposed Regional floodline on the figures (plan view) illustrating the various channel realignment alternatives.</p>	<p>The proposed Regional floodline has been added to the realignment alternative figures.</p>

City Comment	TMIG Response
<i>Appendix E: SWM Strategy for VMC Southeast Quadrant</i>	
<p>1. The alternative SWM strategy wrt quantity control does not meet the Master Plan SWM strategy (Humber unit flow equations), which has been approved. The alternative SWM strategy provides only about 50% peak flow reduction (refer to Table 3 above) while the Master Plan SWM strategy meets the Humber River unit flow criterion.</p> <p>It is recommended that some form of documentation be provided to confirm that TRCA accepts the less stringent quantity control criterion presented in the Alternative SWM Strategy.</p>	<p>TMIG had prepared meeting minutes for a discussion with the TRCA regarding the Alternative SWM Strategy. Through this discussion, the TRCA acknowledges the challenges with implementing the Master Plan SWM strategy for the VMC southeast quadrant and is accepting of the Alternative SWM Strategy with respect to quantity control. To note, the TRCA has not expressed an objection to the less stringent quantity control criterion through their review of the draft ESR.</p>
<p>2. If the proposed 15mm onsite retention within the road right of ways for the proposed roads and impervious areas from the developable lands will be accepted, City of Vaughan via Public Works or Parks Development will need to confirm that they will accept the proposed LIDs with the municipal right of ways and/or proposed City park.</p>	<p>Agreed, the ultimate selection and implementation of LID measures should be coordinated with the City's Public Works and Parks Development departments. Appendix E has been updated to include a note regarding this requirement.</p>

We trust that the above responses and revisions to the Environmental Study Report adequately address your comments. Please contact the undersigned if you have any remaining questions or concerns.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.



Steve Hollingworth, P.Eng.
Project Manager
shollingworth@tmig.ca

Encl. 'PECG Response to City of Vaughan Ecology Review Comments for Black Creek Renewal EA', prepared by Palmer Environmental Consulting Group Ltd., May 8, 2018



PALMER
ENVIRONMENTAL
CONSULTING
GROUP INC.

74 Berkeley Street, Toronto, ON M5A 2W7

Memorandum

Date: May 8, 2018

Project: 131122 PECG

To: Steve Hollingworth, TMIG

From: Dirk Janas, Palmer Environmental

Subject: **PECG Response to City of Vaughan Ecology Review Comments for Black Creek
Renewal EA**

The following memo provides our responses to comments from the City of Vaughan provided on December 21, 2017 from their review of the Draft Environmental Study Report. Specifically, this memo provides responses to ecology comments #4 and #5. It is our understanding that TMIG has included responses to the remaining comments as part of their response letter.

City Comment #4

Pages 16 and 17; Section 4.2.5 Wildlife and Terrestrial Habitat – wording “Road noise and garbage dumping severe throughout the study area”.

PECG Response

As part of the project works and restoration of terrestrial and aquatic communities, there is an important opportunity to remove the existing garbage and debris as part of the enhancement of environmental conditions. This will be completed as part of the reconstruction and channel re-alignment.

Given the very urbanized nature of the study area, wildlife habitat opportunities and species expected along the watercourse corridor consist of common, generalist and urban-adapted species (e.g. urban species of birds, Raccoon [*Procyon lotor*] and Grey Squirrel [*Sciurus carolinensis*]). Due to their adaptability to urban settings, which includes road noise, any value of related mitigation would in our view not be of substantial benefit to wildlife that currently use the area. Furthermore, due to the isolation of the study area from other natural areas due to the fragmentation caused by Highway 7 to the north and Highway 407 to the south, migration into the study area of other species that may be more sensitive to road noise is less likely.

City Comment #5

Page 4; Potential Construction Impacts and Mitigation – Species at Risk Bat surveys should also be conducted.

PECG Response

Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Eastern Small-footed Myotis (*Myotis leibii*) and Tri-Colored Bat (*Perimyotis subflavus*) are all listed as Endangered under Ontario's *Endangered Species Act* (ESA) and are known to roost in treed habitats. There are three woodland blocks located along the east end of the study area. Based on the MNRF habitat suitability assessment protocol outlined in the *Survey Protocol for Species at Risk Bats* (MNRF 2017), maternity roosts in treed areas include deciduous, coniferous mixed forest communities. The ELC vegetation communities identified for the subject property include FOD7 and FOD7-3, with the presence of larger trees at least 10 cm dbh. Therefore, these woodland areas provide potential habitat opportunities for bat maternity roosts and should be further assessed to determine potential impacts to Species at Risk bats and ensure conformity to the ESA. Following completion of the Phase I (Bat Habitat Suitability Assessment), and Phase II (Identification of Suitable Maternity Roost Trees) surveys, the MNRF should be consulted regarding any further requirements under the ESA.

APPENDIX A9

Notice of Completion



NOTICE OF STUDY COMPLETION

VAUGHAN METROPOLITAN CENTRE – BLACK CREEK RENEWAL MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

The City of Vaughan has completed the Municipal Class Environmental Assessment (EA) Study for the **Vaughan Metropolitan Centre (VMC) Black Creek Renewal** to establish the alignment and form of Black Creek through the southeast quadrant of the VMC Secondary Plan Area. The study area is shown in the key map below.



The study evaluated a range of alternative alignments and physical forms for Black Creek within the study area and established a plan for the renewal of Black Creek that will be compatible with the proposed land uses within the study area. The study was conducted in accordance with Schedule 'C' of the Municipal Class Environmental Assessment process.

The preferred alignment for the Black Creek Renewal involves a new channel corridor that runs adjacent to and east of Jane Street from Highway 7 until south of future Interchange Way. From there, it meanders to the east before reaching Peelar Road near the creek's existing location and continues to the existing Highway 407 crossing.

An Environmental Study Report (ESR) for the Black Creek Renewal has been prepared to describe the evaluation of alternative alignments and the preliminary design of the preferred alignment. An alternative storm water management (SWM) strategy was finalized as part of this ESR which supersedes the SWM strategy for the south-east quadrant identified in the VMC Municipal Servicing Master Plan, dated March 2013. The ESR is available for public review at the following locations during regular business hours and on the project website at: <http://www.vaughan.ca/blackcreek>

Vaughan City Hall Clerk's Department 2141 Major MacKenzie Drive Vaughan, ON L6A 1T1	Civic Centre Library Resource Centre 2191 Major MacKenzie Drive Vaughan, ON L6A 4W2	Ansley Grove Library 350 Ansley Grove Road Woodbridge, ON L4L 5C9
--	--	--

Interested persons with outstanding concerns may provide written comments to the City and/or City's consultant within the review period, **August 9th, 2018 to September 7th, 2018.**

Jennifer Cappola-Logullo, P.Eng.
Manager, Development Engineering VMC
The City of Vaughan
2141 Major Mackenzie Dr. Vaughan, ON L6A 1T1
Tel: 905-832-8285 ext. 8433
Jennifer.Logullo@vaughan.ca

Steve Hollingworth, P.Eng.
Consultant Project Manager
The Municipal Infrastructure Group Ltd.
8800 Dufferin St., Suite 200
Vaughan, ON L4K 0C5
Tel: 905.738.5700 ext. 359
shollingworth@tmig.ca

If the concern raised cannot be resolved with the City during the review period, the interested person or party may request the Minister of Environment and Climate Change to order the City to comply with Part II of the *Environmental Assessment Act* (Part II Order), which refers to individual environmental assessments. Requests for a Part II Order must be submitted to the Minister of Environment and Climate Change and a copy of the request must be received by the City and sent to the addresses below:

**Minister of the Environment,
Conservation and Parks
77 Wellesley St. West, 11th Floor
Toronto, ON M7A 2T5**

**Minister of the Environment,
Conservation and Parks
Environmental Approvals Branch
135 St. Clair Ave. West, 1st Floor
Toronto, ON M4V 1P5**

If no Part II order requests are received by **September 10th, 2018** the City will proceed to detail design and construction.

Please note that ALL personal information included in a Part II Order submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment and Climate Change for the purpose of transparency and consultation. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry's Freedom of Information and Privacy Coordinator at 416-314-4075.

ANDREW PEARCE, Director, Development Engineering
This notice first issued **August 9th, 2018.**



Vaughan City Hall
2141 Major Mackenzie Dr. 905.832.2281
Vaughan, ON L6A 1T1 www.vaughan.ca



8800 Dufferin Street, Suite 200 905.738.5700
Vaughan, Ontario L4K 0C5 www.tmig.ca

August 6, 2018

PROJECT NUMBER 12122

Dear Sir or Madam:

**Re: VMC Black Creek Renewal Study, City of Vaughan
Municipal Class Environmental Assessment
Notice of Completion**

This letter is to provide the Notice of Study Completion for the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Municipal Class Environmental Assessment (EA).

The study evaluated a range of alternative alignments and physical forms for Black Creek through the southeast quadrant of the VMC Secondary Plan Area and established a plan for the renewal of Black Creek that will be compatible with the proposed land uses within the study area. The study was conducted in accordance with Schedule 'C' of the Municipal Class Environmental Assessment process.

The preferred alignment for the Black Creek Renewal involves a new channel corridor that runs adjacent to and east of Jane Street from Highway 7 until south of future Interchange Way. From there, it meanders to the east before reaching Peelar Road near the creek's existing location and continues to the existing Highway 407 crossing.

An Environmental Study Report (ESR) for the Black Creek Renewal has been prepared to describe the evaluation of alternative alignments and the preliminary design of the preferred alignment. The ESR is available for public review at select locations in the City of Vaughan and on the project website at: <http://www.vaughan.ca/blackcreek>.

We have enclosed a copy of the original Notice of Study Completion dated August 9, 2018. The Notice includes information on how to view a copy of the report, who to contact with any questions or comments on the report, and additional action that can be taken if your concerns cannot be adequately resolved through discussions with the City of Vaughan.

Thank you for your ongoing interest in this project.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

Steve Hollingworth, P.Eng.
Consultant Project Manager
shollingworth@tmig.ca

cc: Jennifer Cappola-Logullo, City Project Manager, City of Vaughan
Encl.: Notice of Completion

APPENDIX B

Natural Environment Inventory



PALMER
ENVIRONMENTAL
CONSULTING
GROUP INC.

Black Creek Renewal Municipal Class EA - Natural Environment Conditions

Prepared for

The Municipal Infrastructure Group

July 6, 2017



PALMER
ENVIRONMENTAL
CONSULTING
GROUP INC.

374 Wellington St West, Unit 3, Toronto, ON, M5E 1E3 t 604-629-9075

July 6, 2017

Steve Hollingworth
Project Manager
The Municipal Infrastructure Group Inc.
8800 Dufferin Street, Suite 200
Vaughan, ON
L4K 0C5

Dear Mr. Hollingworth,

**Re: Black Creek Renewal Municipal Class EA - Natural Environment
Conditions**

The following report details our methodology and summarizes existing natural environment conditions within the study area for the Black Creek Renewal Environmental Assessment. If you have any questions about the report, please do not hesitate to call me at 519-993-6870.

Thank you for the opportunity to support you on this project.

Yours truly,

Palmer Environmental Consulting Group Inc.

Nicole Charlton, B.A.
Terrestrial Ecologist

Dirk Janas, B.Sc.
Principal, Senior Ecologist



Table of Contents

Letter

1	Background and Methods	1
1.1	Introduction and Background.....	1
1.2	Approach	1
1.2.1	Background Review.....	1
1.2.2	Field Methods	1
2	Existing Conditions	2
2.1.1	Fisheries and Aquatic Habitat.....	2
2.1.2	Vegetation and Flora	8
2.1.3	Wildlife and Wildlife Habitat	10
2.1.4	Species at Risk.....	11
2.1.5	Significant Natural and Environmentally Sensitive Areas.....	11
2.1.6	Summary of Existing Conditions.....	11
3	Assessment of Alternatives	11
4	Mitigation Measures and Recommendations	12
5	Summary	13
6	References	13

List of Appendices

- Appendix A. Figures
- Appendix B. Vascular Plant List
- Appendix C. Agency Correspondence

1 Background and Methods

1.1 Introduction and Background

The City of Vaughan has retained The Municipal Infrastructure Group (TMIG) to complete the Black Creek Renewal Schedule B Municipal Class Environmental Assessment (EA). The EA aims to support restoration of the stream corridor and improvements to flood protection for the surrounding area. Palmer Environmental is undertaking the natural environment component of the study. The Black Creek study area was along the stretch of Highway 7 and the 407, east of Jane Street (**Figure 1**). The following outlines the study approach and identifies the existing aquatic and terrestrial conditions within the study area. The report figures are provided in **Appendix A**.

1.2 Approach

1.2.1 Background Review

A detailed review of background information related to the natural heritage features of the study area was completed. The Toronto and Region Conservation Authority (TRCA) and Ministry of Natural Resources and Forestry (MNR) were contacted by the project team for relevant natural heritage information or records for the study area¹. The background review included a search of available documents and online databases (e.g., the MNR's Natural Heritage Information Centre) for existing information on flora, fauna, wetlands, fish and wildlife habitat in the area. The following reports containing specific information for the study area were reviewed for context and to identify information gaps: Black Creek Stormwater Optimization Study – Municipal Class Environmental Assessment Master Plan Report (Phases 1 & 2).

1.2.2 Field Methods

Palmer Environmental ecologists undertook field investigations to inventory the flora and fauna of the site, assess habitat characteristics, and to provide an assessment of the ecological features and functions within the study area. The field surveys were carried out on October 18 and 31, 2016. Detailed methods are described below.

Fish Habitat Surveys

Upon completing the secondary information review, a qualified fish ecologist conducted field investigations on October 18th, 2016, along the stretch of Highway 7 and the 407, east of Jane Street. The following key aquatic habitat features and conditions were documented: in-stream cover, aquatic vegetation, fish passage barriers; and, any specialized habitat features such as areas for spawning or rearing. Considering the availability of fish community data from secondary sources, particularly the existing EA, fish community surveys were not conducted for this assessment.

¹ As of December 5, 2016, PECG has not received a response from the TRCA in regards to the data request.

Terrestrial Surveys

Vegetation Communities and Flora

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario (Lee *et al.* 1998). Information collected included dominant species cover, community structure, presence of indicator species, and other notable features. Botanical surveys were completed in conjunction with ELC by walking the creek alignment and general study area and recording species observed. Provincial plant status was based on the Provincially Rare Flora of Ontario (Oldham and Brinker, 2009) and the Natural Heritage Information Centre (NHIC, 2016). The TRCA Flora Species Rank (2016) was referenced for local/watershed status (TRCA 2016). Searches for Butternut (*Juglans cinerea*), an Endangered tree, were completed during the ELC and botanical surveys.

Wildlife

Given the urban and disturbed nature of the site, wildlife surveys focused on identifying any sensitive habitat features (e.g., amphibian breeding habitat) and noting the general character of the habitat along the creek alignment. The surveys were conducted in conjunction with ELC surveys. All culverts were examined for Barn Swallow nests and any other wildlife observations were recorded.

2 Existing Conditions

2.1.1 Fisheries and Aquatic Habitat

The Black Creek subwatershed comprises part of the Humber River system, and is classified as a small to intermediate riverine warmwater habitat comprised of a series of first, second and third order streams. The Black Creek subwatershed is adversely affected by urbanization, and more degraded than other subwatersheds within the Humber River watershed (MNR and TRCA, 2005). From an assessment completed in 1996, up to 16 instream barriers in the subwatershed were noted, and studies concluded that the subwatershed is unable to support coldwater fish species, but rather only a warm water fish community (MNR and TRCA, 2005). Fish sampling conducted between 1984 and 2004 found blacknose dace (*Rhinichthys atratulus*), creek chub (*Semotilus atroomaculatus*) and white sucker (*Catostomus commersonii*) (AECOM, 2012). These species are commonly found in Ontario, secure in status, and moderately to highly tolerant of environmental perturbations.

An assessment of the existing fish habitat was conducted in October 2016. Downstream of Peelar Road to the Highway 407, recent bank stabilization works are evident at the culvert with gabion baskets that are failing. The water depth was approximately 20cm at the time of the assessment, with clarity to the bottom. Substrate consisted of cobble and boulders. Channel wetted width ranged from 2 to 3 m although bankfull width was between 5 and 6m. Bankside erosion was evident with some tree roots exposed along the bank. No aquatic vegetation was observed in the channel, but riparian vegetation provided more than 90% cover in places.



Photo 1. Aquatic habitat downstream of Peelar Road.

Upstream of Peelar Road, channel habitat features were similar to downstream and substrate consisted of rubble and boulders. Riparian deciduous tree and shrub cover provided 100% overhanging shade in some places, also providing organic inputs into the creek itself.



Photo 2. Aquatic habitat upstream of Peelar Road.

Further upstream there is more evidence of failed channel restoration works, with heavily armoured banks and gabion baskets around a culvert. Channel characteristics remain similar to downstream reaches (approximately 20cm depth, with rubble and cobble substrate; 70% cover by riparian trees), however the channel form and function is dominated by the restoration works. The total wetted width is approximately 5m but with the presence of the retaining wall in the channel, this becomes 2m width. There is a resultant log jam and garbage build up at this location, further degrading the suitability of this habitat for fish.



Photo 3. Failing channel stabilization works and degraded channel habitat upstream of Peelar Road.

Upstream of the culvert and gabion walls the channel can still be somewhat defined, but the blockage across the channel has resulted in a back-flooded pool. There was no to little flow observed in this reach and the substrate consisted of rubble and cobble. No aquatic vegetation was present, although trees were in the flooded pool (approximately 15m by 15m in area). This reach likely presents a barrier to fish habitat, and a definite barrier in the connectivity of aquatic habitats.



Photo 4. Back-flooded pool upstream of the failing channel stabilization works.

At the culvert at the Vaughan IcePlex entrance, the channel is defined and wetted width approximately 8m. Flow was slow moving with turbid water although substrate appeared to still be rubble and cobble at the water's edge. Deciduous tree cover provided 60% overhanging shade. There is evidence of the urban setting, with garbage and debris in the channel. These habitat features continue up to the Doughton Road, although wetted width gets smaller to approximately 3m and shrubs feature more heavily as riparian cover.

Upstream of Doughton Road, the channel flows through a CSP culvert and the substrate is dominated by sand and sediment. The channel at the reach has been straightened as it runs alongside Jane Street. There is no instream cover and grass and shrubs provide approximately 5% to 20% overhanging vegetation. Wetted width is approximately 2.5m. The same channel features continue up to the concrete box culvert at Highway 7, representing the extent of the study area.



Photo 5. Aquatic habitat upstream of Doughton Road and downstream of Highway 7.

2.1.2 Vegetation and Flora

The Black Creek channel is a modified urban channel constrained by surrounding industrial and commercial uses, with a relatively thin band of riparian habitat along its length. The majority of the creek riparian area is represented by ditch habitat dominated by common and/or weedy herbaceous vegetation (cultural meadow). Varying proportions of shrubs and trees are present along the creek banks. Narrow forested slope and floodplain habitat is present to the south along the channel, between the Vaughan Iceplex and Highway 407. In-stream wetland vegetation was limited, and when present, confined to sparse, isolated occurrences along the channel banks.

One area within the FOD7 community just south of the Vaughan Iceplex appears to be a former swamp, due to the presence of numerous dead snag trees within an open pond area (see **Photo 6**). The area appears to be subject to repeated and frequent flooding and sedimentation. The south edge of the ponding area is an old retaining wall / berm with an outlet provided by a narrow culvert in its center. The ground surface is covered by a thick layer of sediment with no live vegetation. Current vegetation conditions do not support classification of this community as swamp or wetland due to the lack of live wetland vegetation. The most suitable ELC community classification would be open aquatic, however, water depth was much less than 1 m during field surveys.

Away from the channel, remaining vegetation consists of disturbed cultural meadow and roadside ditch, surrounded by commercial and industrial properties.

2.1.2.1 Vegetation Communities

In total, five vegetation community types were observed within the study area for the Black Creek EA. Vegetation community descriptions are provided below and are mapped on **Figure 2**.

Cultural Meadow (CUM1-1)

This community type is the one of the most widespread throughout the study area, occupying the channel banks from Highway 7 south to Doughton Rd, and adjacent to Jane St between the 407 and Peelar Rd / Interchange Way. These communities are characterized by open herbaceous layers of common and non-native herbaceous species, with the most abundant species being Awnless Brome (*Bromus inermis* ssp. *inermis*) and Tall Goldenrod (*Solidago canadensis* var. *scabra*). Other species present include, but are not limited to, Reed-canary Grass (*Phalaris arundinacea*), Riverbank Grape (*Vitis riparia*), Wild Carrot (*Daucus carota*), Teasel (*Dipsacus fullonum*), New-England Aster (*Symphyotrichum novae-angliae*), Common Dandelion (*Taraxacum officinale*), Orchard Grass (*Dactylis glomerata*), and White Sweet Clover (*Melilotus alba*). Scattered, shrubs and woody species principally include Manitoba Maple (*Acer negundo*), Red-osier Dogwood (*Cornus sericea* ssp. *sericea*), Common Buckthorn (*Rhamnus cathartica*), Russian Olive (*Eleagnus angustifolia*), and willow species (*Salix* sp).



Photo 6. Open pond area with abundant snag trees

Cultural Thicket (CUT1)

This community type occurs in two locations just south of Doughton Road. Shrub and young tree cover occurs in a dense layer, and is chiefly represented by Manitoba Maple, Red-osier Dogwood (*Cornus stolonifera*), Hawthorn (*Crataegus* sp), apple (*Malus* sp), and Russian Olive. In areas where there are gaps in woody vegetation, cultural meadow species as described above, predominate.

Mineral Cattail Shallow Marsh (MAS2-1)

This community occurs in one location within a front lawn of a commercial property on Jane St. The community is fenced and an outlet pipe was observed along the north edge. Given its location and character, it is assumed to be of anthropogenic origin and likely collects stormwater runoff and drainage from adjacent areas. The community is dominated by a dense herbaceous layer of Narrow-leaved Cattail (*Typha angustifolia*), with Manitoba Maple and Common Buckthorn around its edges. Property access was not possible in this area and observations were made from the edge only.

Fresh-Moist Lowland Deciduous Forest (FOD7)

This community type occupies the banks of the channel from Peelar Rd to approximately 100 m south of Doughton Road. The canopy consists of a mix of Manitoba Maple and Crack Willow (*Salix fragilis*), with a

sparse to moderately dense understory of canopy species along with ash (*Fraxinus* sp.), Tartarian Honeysuckle (*Lonicera tatarica*), and Common Buckthorn. Ground vegetation is also sparse but consists of grasses, Tall Goldenrod, Garlic Mustard (*Alliaria petiolata*), Dame's Rocket (*Hesperis matronalis*), and Lesser Burdock (*Arctium minus*). Riverbank Grape and Thicket Creeper (*Parthenocissus vitacea*) occur sporadically in all layers.

Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3)

This community type occupies the banks of the channel and floodplain from Peelar Rd south to Highway 407. Composition and structure is similar to the FOD7, but the canopy consists mostly of Crack Willow, with less frequent occurrences of Manitoba Maple, ash, and Black Walnut (*Juglans nigra*), and Black Locust (*Robinia pseudoacacia*). The sparse understory consists of ash, Tartarian Honeysuckle, Common Buckthorn, currant (*Ribes* sp), and European Guelder Rose (*Viburnum opulus*). Ground vegetation is also sparse but includes grasses, Tall Goldenrod, Garlic Mustard, Dame's Rocket, Reed Canary Grass, Tufted Loosestrife (*Lysimachia ciliata*), and Lesser. Riverbank Grape and Thicket Creeper also occur sporadically throughout.

2.1.2.2 Vascular Flora

A total of 66 species were observed in the study area during the fall season field surveys. Of these, 11 could not be identified beyond genus due to insufficient characters for ID. Of the identified species, 31 (56%) are non-native. All of the native species, with one exception, have S-Ranks² of S5 or S4, indicating they are common and secure, or apparently secure, in the province. One species, Honey Locust (*Gleditsia triacanthos*), has an S-Rank of S2, however, the observed specimens were thornless, indicating they are of horticultural origin. Additionally, all of the native species have CC³ values of 0 - 5, indicating a high to moderate tolerance to disturbance (Oldham *et al.* 1995). These results are as expected given the urban and disturbed character of the site. Three species (White Cedar [*Thuja occidentalis*], Soft-stem Bulrush [*Schoenoplectus tabernaemontanii*], and Freeman's Maple [*Acer x freemani*]) are ranked as L4 in the TRCA watershed, indicating they are secure across the region / watershed, but are subject to long-term declines in the urban matrix (TRCA 2016). A vascular plant list is provided in **Appendix B**.

2.1.3 Wildlife and Wildlife Habitat

No wildlife, with the exception of Grey Squirrel (*Sciurus carolinensis*), was observed within the study area during the field surveys and no nests were located in any culverts during field surveys. Wildlife habitat opportunities within the study area are restricted to urban-adapted species of open or edge habitats. Some areas of the channel and the very small MAS2-1 detention pond may support limited frog breeding habitat, but no frogs were observed during field surveys. The high sediment load and low water quality from urban runoff may limit habitat opportunities. More suitable breeding opportunities may be provided by larger habitat areas north and south of the study area, particularly as these areas are better buffered from adjacent

² Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario

³ CC = Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.

land uses. The channel likely provides only very limited movement or foraging opportunities for turtles although due to the highly urbanized setting occurrences are considered to be rare. The riparian corridor is interrupted in a few locations by road or driveway crossings but it may provide some linkage or corridor functions for urban wildlife along its route. Road noise and garbage dumping are severe throughout the study area.

2.1.4 Species at Risk

For the purposes of this report, species at risk (SAR) are those species listed as Endangered or Threatened under the Ontario *Endangered Species Act* (ESA, 2007). Such species and their habitats are afforded protection from harm or destruction under the *Act*. Correspondence with MNR and the background review identified the potential for occurrences for Barn Swallow (*Hirundo rustica*, listed as Threatened) and Butternut (*Juglans cinerea*, listed as Endangered) within the study area. Searches for these species or suitable habitat were conducted during field surveys. No Butternut trees or Barn Swallow were observed (including nests or foraging / flight activity) within the study area. No other flora or fauna SAR were observed during field surveys. Correspondence with MNR is included in **Appendix C**.

2.1.5 Significant Natural and Environmentally Sensitive Areas

The Black Creek corridor and open space areas westward to Jane St are designated as part of the Core Features of the City of Vaughan Natural Heritage Network, but no Provincially Significant Wetlands, Areas of Natural and Scientific Interest, Environmentally Significant / Sensitive Areas, or other provincially designated environmental features are present within the study area.

2.1.6 Summary of Existing Conditions

Our field results indicate the existing aquatic and riparian areas provide low-quality, size-limited, and fragmented natural habitat opportunities, with no significant ecological features or functions present (e.g., no significant wetlands or sensitive wildlife habitats). Aquatic habitat is degraded both from the urban setting and a flooding regime, but also from failing attempts to restore bank stability and flood control. There exists opportunities for localised habitat improvements throughout the study area, in particular to restore aquatic habitat connectivity.

3 Assessment of Alternatives

The following section outlines the alternatives and discusses potential impacts and benefits to the natural environment. Alternative 1 is “do nothing”, Alternative 2 is to construct a new, wider valley over the existing alignment of the creek, Alternative 3 is to re-align the creek to run adjacent to Jane Street for most of its length and create a sharp eastwards meander south of Peelar Rd, and Alternative 4 would align the creek adjacent to Jane St to just south of the future Interchange Way and incorporate a gentle bend to align it with the existing crossing under Highway 7. The general alignment of Alternatives 2-4 are shown on Figures 3-5, with additional specific details provided in the ESR (TMIG 2017). Alternative 4 has

been selected as the preferred Alternative on the basis of evaluation criteria for all disciplines (refer to ESR for more details). Each alternative incorporates:

- A general concept for naturalized embankments and buffers on the west side of the channel and on both sides south of Interchange Way;
- Installation of culverts of 3m height x 12m width at the future crossings of Interchange Way, Doughton Road and Peelar Road;

Potential impacts to the natural environment are very similar for all alternatives as they all involve complete reconstruction of the channel, installation of new crossing structures, and various degrees of re-alignment. Alternative 3 would require reinforced channel and bank structures such as armourstone at the sharp meander to reduce erosion at that location, thus reducing some potential for naturalized vegetation in this location. Sections of Alternatives 3 and 4 could be constructed in the dry, reducing requirements for flow diversions, while Alternative 2 cannot be constructed in the dry. Thus, Alternative 2 may have higher potential for impacts to fish habitat and existing aquatic connectivity during the construction phase.

Channel reconstruction and vegetation removals will be required, and there is potential for risk to the natural environment during the construction process. However, these potential impacts are considered relatively minor due to the urban nature of the site and poor existing conditions, and no sensitive features (i.e., significant wetlands, species at risk) are known to exist. Vegetation consists mainly of common and weedy species, and barriers to flow and fish passage were observed. Potential impacts can be mitigated with the measures outlined in Section 4, and net impacts are expected to be positive. Fish habitat connectivity will be improved through improved flow passage and removal of aquatic barriers. Terrestrial habitat can be improved through creation of the naturalized embankment and buffers and restoration with native species and incorporation of appropriate wildlife habitat elements. Specific details should be explored at the detailed design phase.

4 Mitigation Measures and Recommendations

Mitigation measures recommended for the protection of the natural environment include the following:

- To prevent accidental introduction of debris and deleterious substances into the water or harm to natural areas and vegetation, specific construction access routes and defined work areas should be established, and mitigation techniques that contain sediment and debris within the work site should be implemented;
- Best Management Practices (BMPs) for the protection of aquatic habitat, including the use of standard erosion and sediment control devices to limit erosion and prevent sediment release, should be refined at the detailed design stage. Conservation Authority guidelines should be consulted in developing the Erosion and Sediment Control Plan;
- Work areas and vegetation clearing zones should be clearly delineated and isolated and vegetation protection zones identified to prevent inadvertent harm to natural vegetation or wildlife;
- Wildlife encounter protocols should be developed and implemented to avoid harm to wildlife that may be encountered during construction, particularly in the open pond area within FOD7;

- Vegetation clearing should occur outside of the breeding bird season (April 15 to July 30) to prevent nest destruction, or steps should be taken to ensure no nests will be harmed if works cannot be conducted outside of the breeding window in order to comply with the *Migratory Birds Convention Act*; and,
- All excess and unsuitable materials generated during construction will be managed appropriately, stored away from natural areas and the watercourse, and in accordance with MOECC guidelines and requirements.

In addition, at detailed design, a tree inventory and preservation plan should be prepared for the areas of potential impacts. In order to ensure the new stream corridor provides improved terrestrial habitat, a comprehensive restoration plan utilizing appropriate native species should be developed and should examine opportunities to incorporate structural diversity and wildlife habitat enhancements, such as downed woody debris features or retention of snag trees, as appropriate. The restoration plan should be completed in consultation with the TRCA.

5 Summary

Field results indicate no significant features are present within the study area, and no known species at risk occur. Existing features are generally of low quality with limited function and subject to urban stressors such as noise, degraded constructed channel conditions and large amounts of garbage. Vegetation communities are restricted in size and overall flora composition is dominated by common, weedy species, including in the forested portions of the valley (e.g., Manitoba Maple and Black Locust). Existing aquatic and riparian areas provide low-quality, fragmented habitat opportunities. Aquatic habitat is degraded both from the urban setting and a flooding regime, but also from failing attempts to restore bank stability and flood control. Although the alternatives (and the preferred Alternative #4) necessitate complete reconstruction and at least partial re-alignment of the existing channel and valley, impacts can be mitigated through implementation of recommendations included here-in. In addition, the channel reconstruction will improve aquatic and fish habitat connectivity and terrestrial habitat improvements can be achieved through retention of existing vegetation where possible and implementation of an ecologically sensitive restoration plan.

6 References

- Lee, H.T, W.D. Bakowsky, J.L. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray, 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Region, Science Development and Transfer Branch. Technical Manual ELC-005.
- Ministry of Natural Resources and Forestry (MNRF). 2016. Make a Map: Natural Heritage Areas. http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html?utm_source=MNRCentral&utm_medium=Twitter&utm_term=natural%2Bheritage&utm_content=natural%2Bheritage%2Bbiodiversity&utm_campaign=Biodiversity

Black Creek Renewal Municipal Class EA - Natural Environment Conditions

MNR and TRCA, 2005. Humber River Fisheries Management Plan.

Natural Heritage Information Centre. 2016. Natural Heritage Information Centre Species Lists. Ministry of Natural Resources. <https://www.ontario.ca/page/get-natural-heritage-information>

Oldham, M.J., and S.R. Brinker. 2009. Rare Vascular Plants of Ontario, Fourth Edition. Natural Heritage Information Centre, Ontario Ministry of Natural Resources. Peterborough, Ontario.

Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.

TMIG. March 2017. Vaughan Metropolitan Centre Black Creek Renewal Class EA Draft Environmental Study Report.

Toronto and Region Conservation Authority (TRCA). 2016. Annual local occurrence and local rank update: terrestrial species and vegetation communities.

Appendix A

Figures

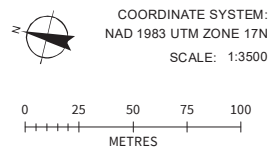


Client: TMIG
Project: Black Creek
 Renewal EA

LEGEND
 STUDY AREA

PREPARED BY:
 PALMER
 ENVIRONMENTAL
 CONSULTING
 GROUP INC.
 DRAWN: B. Elder
 CHECKED: N. Charlton
 PROJECT: 131122
 UPDATED: May 2, 2017

NOTES
 1. Base data provided under the Open Government Licence - Ontario.
 2. Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
 Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Site Location
FIGURE 1



Client: TMIG
Project: Black Creek
 Renewal EA



PREPARED BY:
 DRAWN: B. Elder
 CHECKED: N. Charlton
 PROJECT: 131122
 UPDATED: May 2, 2017

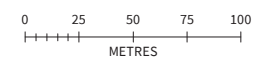
LEGEND
 --- WATERCOURSE (APPROXIMATE ALIGNMENT)
 □ VEGETATION COMMUNITY

NOTES
 1. Base data provided under the Open Government Licence - Ontario.
 2. Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

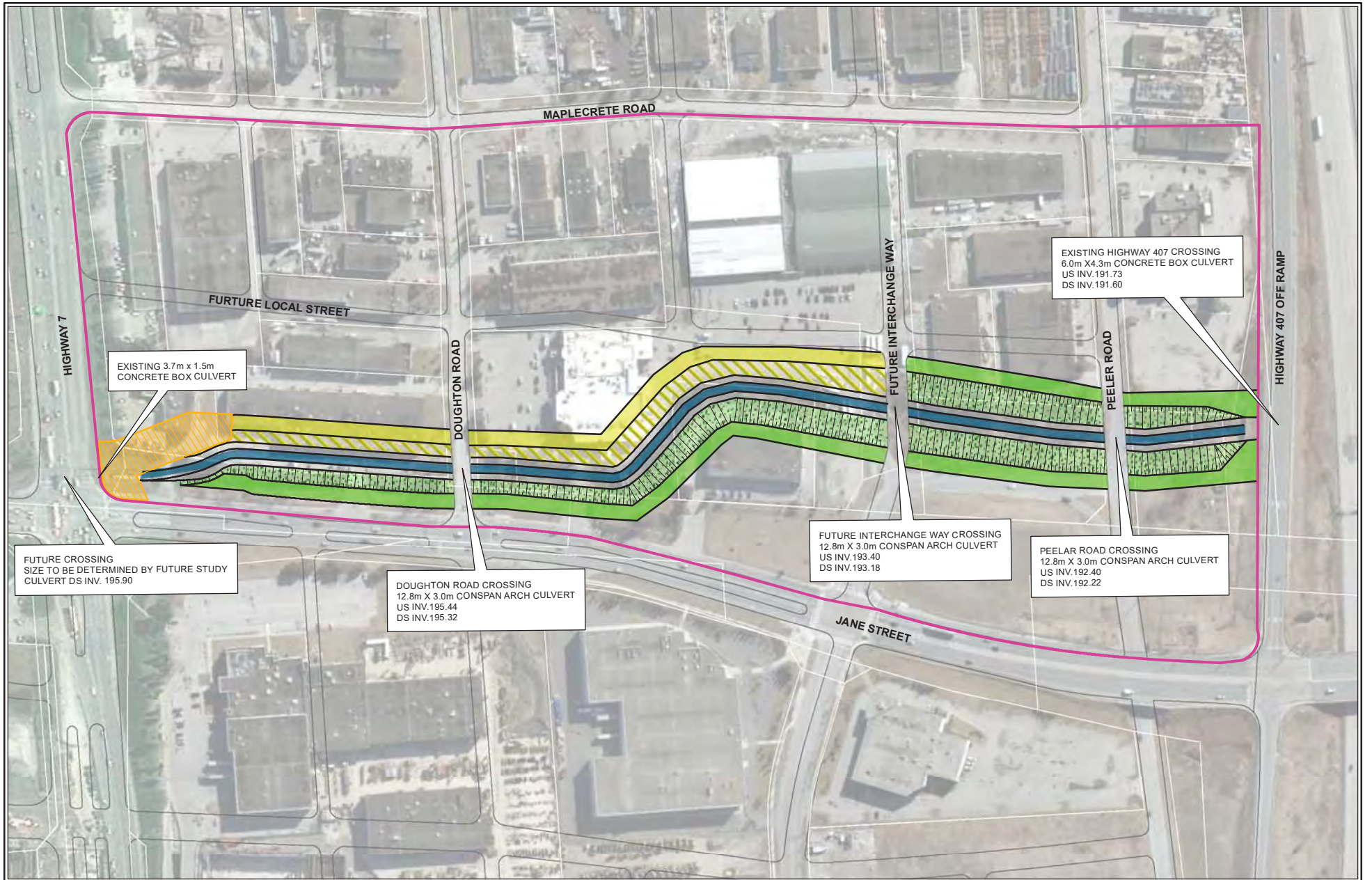
Vegetation Communities
CUM1-1 Dry-Moist Old Field Meadow Type (Cultural Meadow)
CUT1 Mineral Cultural Thicket Ecosite
FOD7 Fresh-Moist Lowland Deciduous Forest Ecosite
FOD7-3 Fresh-Moist Willow Lowland Deciduous Forest Type
MAS2-1 Cattail Mineral Shallow Marsh Type



COORDINATE SYSTEM:
 NAD 1983 UTM ZONE 17N
 SCALE: 1:3500



Existing Conditions
FIGURE 2



Client: TMIG
Project: Black Creek Renewal EA



PREPARED BY:
 DRAWN: B. Elder
 CHECKED: N. Charlton
 PROJECT: 131122
 UPDATED: May 1, 2017

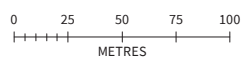
- LEGEND**
- EA STUDY AREA BOUNDARY
 - LOW FLOW CHANNEL
 - URBAN PLAZA
 - URBAN BUFFER (10 m)
 - NATURALIZED BUFFER (10 m)

- NATURALIZED EMBANKMENT (3:1 SLOPE)
- TERRACED EMBANKMENT (2:1 SLOPE)

NOTES
 1. Alignment plan based off drawings provided by TMIG.
 2. Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,

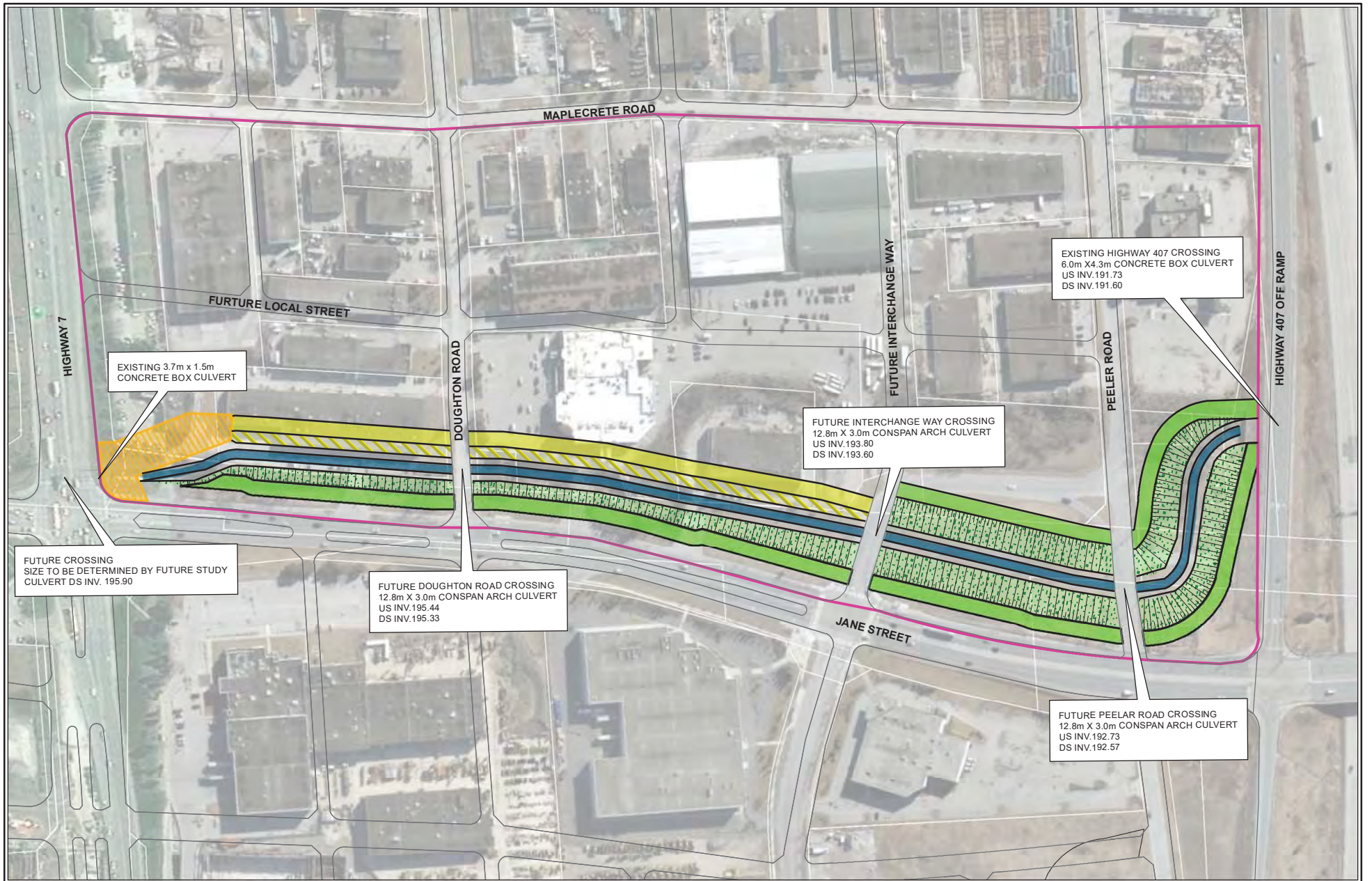


COORDINATE SYSTEM:
 NAD 1983 UTM ZONE 17N
 SCALE: 1:3500



Alignment
 Alternative #2

FIGURE 3



EXISTING 3.7m x 1.5m
CONCRETE BOX CULVERT

FUTURE CROSSING
SIZE TO BE DETERMINED BY FUTURE STUDY
CULVERT DS INV. 195.90

FUTURE DOUGHTON ROAD CROSSING
12.8m X 3.0m CONSPAN ARCH CULVERT
US INV.195.44
DS INV.195.33

FUTURE INTERCHANGE WAY CROSSING
12.8m X 3.0m CONSPAN ARCH CULVERT
US INV.193.80
DS INV.193.60

EXISTING HIGHWAY 407 CROSSING
6.0m X4.3m CONCRETE BOX CULVERT
US INV.191.73
DS INV.191.60

FUTURE PEELAR ROAD CROSSING
12.8m X 3.0m CONSPAN ARCH CULVERT
US INV.192.73
DS INV.192.57



Client: TMIG
Project: Black Creek
Renewal EA



PREPARED BY:
DRAWN: B. Elder
CHECKED: N. Charlton
PROJECT: 131122
UPDATED: May 1, 2017

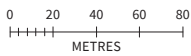
- LEGEND**
- EA STUDY AREA BOUNDARY
 - LOW FLOW CHANNEL
 - URBAN PLAZA
 - URBAN BUFFER (10 m)
 - NATURALIZED BUFFER (10 m)

- NATURALIZED EMBANKMENT (3:1 SLOPE)
- TERRACED EMBANKMENT (2:1 SLOPE)

NOTES
1. Alignment plan based off drawings provided by TMIG.
2. Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,

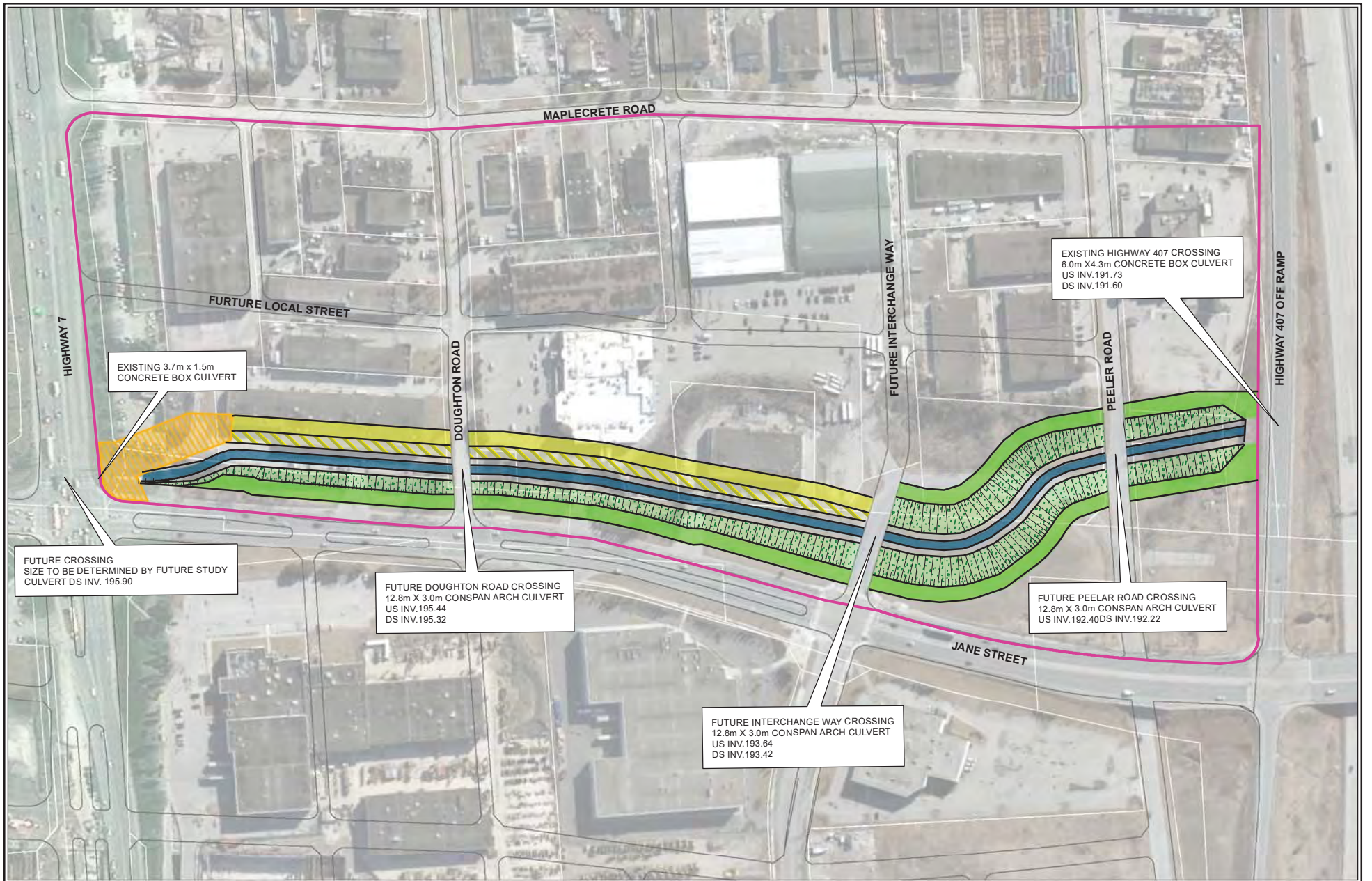


COORDINATE SYSTEM:
NAD 1983 UTM ZONE 17N
SCALE: 1:3500



Alignment
Alternative #3

FIGURE 4



Client: TMIG
Project: Black Creek Renewal EA



PREPARED BY:
 DRAWN: B. Elder
 CHECKED: N. Charlton
 PROJECT: 131122
 UPDATED: May 1, 2017

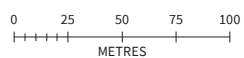
- LEGEND**
- EA STUDY AREA BOUNDARY
 - LOW FLOW CHANNEL
 - URBAN PLAZA
 - URBAN BUFFER (10 m)
 - NATURALIZED BUFFER (10 m)

- NATURALIZED EMBANKMENT (3:1 SLOPE)
- TERRACED EMBANKMENT (2:1 SLOPE)

NOTES
 1. Alignment plan based off drawings provided by TMIG.
 2. Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,



COORDINATE SYSTEM:
 NAD 1983 UTM ZONE 17N
 SCALE: 1:3500



Alignment
 Alternative #4
FIGURE 5

Appendix B

Vascular Plant List

Black Creek Renewal EA - Vascular Plant List

Scientific Name	Common Name	COSEWIC ¹	MNRF ²	SRANK ³	TRCA ⁴	cc ⁵
<i>Acer ginnala</i>	Amur Maple			SE1	L+	
<i>Acer negundo</i>	Manitoba Maple			S5	L+?	0
<i>Acer X freemanii</i>	Freeman's Maple			S5	L4	
<i>Alliaria petiolata</i>	Garlic Mustard			SE5	L+	
<i>Ambrosia artemisiifolia</i>	Annual Ragweed			S5	L5	0
<i>Anemone canadensis</i>	Canada Anemone			S5	L5	3
<i>Arctium minus</i>	Lesser Burdock			SE5	L+	
<i>Atriplex patula</i>	Halberd-leaf Saltbush			S5	L+?	0
<i>Bidens cernua</i>	Nodding Beggar's Ticks			S5	L5	2
<i>Bidens</i> sp	Beggar's Ticks Species					
<i>Bromus inermis</i> ssp. <i>inermis</i>	Smooth Brome			SE5	L+	
<i>Centaurea</i> sp	Knapweed Species					
<i>Cichorium intybus</i>	Chicory			SE5	L+	
<i>Cirsium arvense</i>	Creeping Thistle			SE5	L+	
<i>Cornus sericea</i> ssp. <i>sericea</i>	Red-osier Dogwood			S5	L5	2
<i>Coronilla varia</i>	Crown-vetch			SE5	L+	
<i>Crataegus</i> sp	Hawthorn Species					
<i>Dactylis glomerata</i>	Orchard Grass			SE5	L+	
<i>Daucus carota</i>	Queen Anne's Lace			SE5	L+	
<i>Dipsacus fullonum</i> ssp. <i>sylvestris</i>	Common Teasel			SE5	L+	
<i>Echium vulgare</i>	Common Viper's-bugloss			SE5	L+	
<i>Elaeagnus angustifolia</i>	Russian Olive			SE3	L+	
<i>Elymus repens</i>	Quack Grass			SE5	L+	
<i>Fraxinus</i> sp	Ash Species					
<i>Gleditsia triacanthos</i>	Honey Locust			S2	L+	3
<i>Helianthus</i> sp	Sunflower Species					0
<i>Hesperis matronalis</i>	Dame's Rocket			SE5	L+	
<i>Hypericum perforatum</i>	St. John's-wort			SE5	L+	
<i>Impatiens capensis</i>	Spotted Jewel-weed			S5	L5	4

Scientific Name	Common Name	COSEWIC ¹	MNRF ²	SRANK ³	TRCA ⁴	cc ⁵
<i>Juglans nigra</i>	Black Walnut			S4	L5	5
<i>Leucanthemum vulgare</i>	Oxeye Daisy			SE5	L+	
<i>Lonicera tatarica</i>	Tartarian Honeysuckle			SE5	L+	
<i>Lysimachia ciliata</i>	Fringed Loosestrife			S5	L5	4
<i>Lythrum salicaria</i>	Slender-spike Loosestrife			SE5	L+	
<i>Malus</i> sp	Apple Species					0
<i>Medicago sativa</i> ssp. <i>sativa</i>	Alfalfa			SE5	L+	
<i>Melilotus alba</i>	White Sweet Clover			SE5	L+	
<i>Melilotus officinalis</i>	Yellow Sweet Clover			SE5	L+	
<i>Mentha X piperita</i>	Peppermint			SE4	L+	
<i>Myosotis</i> sp	Forget-me-not Species					
<i>Parthenocissus vitacea</i>	Thicket Creeper			S5	L5	3
<i>Phalaris arundinacea</i>	Reed Canary Grass			S5	L+?	0
<i>Phragmites australis</i>	Common Reed			S5	L+?	0
<i>Picea pungens</i>	Colorado Spruce			SE1	L+	
<i>Plantago lanceolata</i>	English Plantain			SE5	L+	
<i>Poa</i> sp	Bluegrass Species					
<i>Polygonum</i> sp	Smartweed Species					
<i>Prunus virginiana</i> var. <i>virginiana</i>	Choke Cherry			S5	L5	2
<i>Rhamnus cathartica</i>	Buckthorn			SE5	L+	
<i>Ribes</i> sp	Currant Species					
<i>Robinia pseudo-acacia</i>	Black Locust			SE5	L+	
<i>Rubus allegheniensis</i>	Allegheny Blackberry			S5	L5	2
<i>Rubus occidentalis</i>	Black Raspberry			S5	L5	2
<i>Salix fragilis</i>	Crack Willow			SE5	L+	
<i>Salix</i> sp	Willow Species					
<i>Schoenoplectus tabernaemontani</i>	Soft-stemmed Bulrush			S5	L4	5
<i>Solidago canadensis</i> var. <i>scabra</i>	Tall Goldenrod			S5	L5	1
<i>Symphotrichum lanceolatum</i> var. <i>hesperium</i>	Panicled Aster			S5		
<i>Symphotrichum novae-angliae</i>	New England Aster			S5	L5	2
<i>Syringa vulgaris</i>	Common Lilac			SE5	L+	

Scientific Name	Common Name	COSEWIC ¹	MNRF ²	SRANK ³	TRCA ⁴	cc ⁵
Taraxacum officinale	Common Dandelion			SE5	L+	
Thuja occidentalis	Northern White Cedar			S5	L4	4
Typha angustifolia	Narrow-leaved Cattail			S5	L+	3
Viburnum opulus	Guelder-rose Viburnum			SE4	L+	
Vicia cracca	Tufted Vetch			SE5	L+	
Vitis riparia	Riverbank Grape			S5	L5	0

LEGEND

¹COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

EXT - Extinct - A species that no longer exists.

EXP - Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.

END - Endangered - A species facing imminent extirpation or extinction.

THR - Threatened - A species likely to become endangered if limiting factors are not reversed.

SC - Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

NAR - Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.

DD - Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

²MNRF (Ministry of Natural Resources and Forestry)

The provincial review process is implemented by the MNRF's Committee on the Status of Species at Risk in Ontario (COSSARO).

EXT – Extinct - A species that no longer exists anywhere.

EXP – Extirpated - A species that no longer exists in the wild in Ontario but still occurs elsewhere.

END - Endangered - A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).

THR – Threatened - A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC - Special Concern (formerly Vulnerable) - A species with characteristics that make it sensitive to human activities or natural events.

NAR - Not at Risk - A species that has been evaluated and found to be not at risk.

DD - Data Deficient (formerly Indeterminate) - A species for which there is insufficient information for a provincial status recommendation.

³S-Ranks (Provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario. (*Provincial Status from NHIC*)

S1 - Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 – Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 – Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 - Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 – Secure - Common, widespread, and abundant in the nation or state/province.

S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SX - Presumed Extirpated - Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SH - Possibly Extirpated (Historical) - Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SE – Species is considered exotic in Ontario

SNR - Unranked – Nation of state/province conservation status not yet assessed.

SU - Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

SNA - Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

⁴TRCA Local Ranks (TRCA 2016)

L5 - Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix. May be of very localized concern in highly degraded areas.

L4 - Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.

L3 - Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.

L2 - Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.

L1 - Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the

TRCA jurisdiction; of concern regionally.

⁵**Coefficient of Conservatism** (Oldham et. al. 1995)

CC = Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.

Appendix C

Agency Correspondence

November 15, 2016

Nicole Charlton
Terrestrial Ecologist
Palmer Environmental Consulting Group Inc.
374 Wellington Street West, Suite 3
Toronto, ON M5V 1E3
647-795-8153 ext. 119
Nicole@pecg.ca

Re: VMC Black Creek Renewal, Vaughan

Dear Nicole Charlton,

In your email dated October 19, 2016 you requested information regarding the above location.

Species at risk recorded in the vicinity include Butternut (endangered) and Barn Swallow (threatened).

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. Appropriate inventory work is needed depending on the undertakings proposed. Approval from MNRF may be required if work you are proposing could cause harm to any species that receive protection under the *Endangered Species Act 2007*.

Species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific sensitive information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca or Bohdan.Kowalyk@Ontario.ca.

Sincerely,



Bohdan Kowalyk, R.P.F.
A/ Management Biologist
Aurora District, Ontario Ministry of Natural Resources and Forestry

APPENDIX C

Archaeological Assessment Report

ARCHEOWORKS INC.

**Stage 1 Archaeological Assessment for the
Vaughan Metropolitan Centre Black Creek Renewal Class EA
Within Part of Lots 4-5, Concessions 4 and 5 and the
Road Allowance Between Concessions 4 and 5
In the Geographic Township of Vaughan
Historical County of York
City of Vaughan
Regional Municipality of York
Ontario**

**Project #: 080-VA1699-16
Licensee (#): Nimal Nithiyantham (P390)
PIF#: P390-0225-2016**

Original Report

October 27, 2016

Presented to:

The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200

Vaughan, Ontario

L4K 0C5

T: 905.738.5700

F: 905.738.0065

Prepared by:

Archeoworks Inc.

16715-12 Yonge Street, Suite 1029

Newmarket, Ontario

L3X 1X4

T: 416.676.5597

F: 647.436.1938

EXECUTIVE SUMMARY

Archeoworks Inc. was retained by *The Municipal Infrastructure Group Ltd.* to conduct a Stage 1 Archaeological Assessment (AA) in support of the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Class Environmental Assessment (EA) study. The study area is primarily located east of Jane Street, from south of Highway 7 to just north of Highway 407, which is situated within part of Lots 4-5, Concession 4; Lots 4-5, Concession 5, and the road allowance between Concession 4 and 5, in the Geographic Township of Vaughan, historical County of York, City of Vaughan, Regional Municipality of York, Ontario.

Background research identified elevated potential for the recovery of archaeologically significant materials within the study area based on the York Region archaeological management plan and close proximity (within 300 metres) of: historic structures, historic transportation routes, a commemorative plaque, previously registered archaeological sites, and a primary water source.

An on-site property inspection was conducted, where disturbances were documented within the study area, including paved roadways/parking areas, roadside ditches/embankments, utilities, culverts, extensive landscaping, gravel fill, and grading. Additionally, physiographic features with no or low archaeological potential were identified, consisting of areas of steep slope and permanently wet areas associated with Black Creek. The remaining balance of the study area was identified as retaining archaeological potential, and thus, require a Stage 2 AA. Areas requiring a Stage 2 AA include (but are not limited to) manicured and overgrown grassed areas.

Based on a collective review of all the background data and property inspection, the following recommendations are presented:

1. As per *Section 1.3.2* and *1.4.2* of the *2011 S&G*, portions of the study area exhibit disturbed conditions where archaeological potential has been removed. These disturbed areas are recommended to be exempt from further Stage 2 AA.
2. As per *Section 2.1, Standard 2.a* of the *2011 S&G*, lands evaluated as having no or low potential are recommended to be exempt from further Stage 2 AA
3. All identified areas which retain archaeological potential, must be subjected to a Stage 2 AA. Given the urban location of the study area, the manicured and overgrown grassed areas must be subjected to a shovel test pit archaeological survey in accordance with *Section 2.1.2* of the *2011 S&G*.

No construction activities shall take place within the study area prior to the *Ministry of Tourism, Culture and Sport* (Archaeology Program Unit) confirming in writing that all archaeological licensing and technical review requirements have been satisfied.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
TABLE OF CONTENTS	II
PROJECT PERSONNEL	III
PROJECT CONTEXT	1
1.1 OBJECTIVE	1
1.2 DEVELOPMENT CONTEXT	1
1.3 HISTORICAL CONTEXT	2
1.4 ARCHAEOLOGICAL CONTEXT	12
1.5 CONFIRMATION OF ARCHAEOLOGICAL POTENTIAL	17
2.0 PROPERTY INSPECTION	18
2.1 CONFIRMATION OF PREVIOUSLY IDENTIFIED FEATURES OF ARCHAEOLOGICAL POTENTIAL	18
2.2 IDENTIFICATION AND DOCUMENTATION OF ADDITIONAL FEATURES OF ARCHAEOLOGICAL POTENTIAL.....	18
2.3 IDENTIFICATION AND DOCUMENTATION OF FEATURES THAT WILL AFFECT ASSESSMENT STRATEGIES	18
2.4 IDENTIFICATION AND DOCUMENTATION OF STRUCTURES AND BUILT FEATURES THAT WILL AFFECT ASSESSMENT STRATEGIES	18
3.0 ANALYSIS AND CONCLUSIONS	19
3.1 HISTORICAL IMAGERY.....	19
3.2 IDENTIFIED DEEP AND EXTENSIVE DISTURBANCES	19
3.3 PHYSIOGRAPHIC FEATURES OF NO OR LOW ARCHAEOLOGICAL POTENTIAL.....	20
3.4 IDENTIFIED AREAS OF ARCHAEOLOGICAL POTENTIAL	20
4.0 RECOMMENDATIONS	20
5.0 ADVICE ON COMPLIANCE WITH LEGISLATION	22
6.0 BIBLIOGRAPHY AND SOURCES	23
APPENDICES	30
APPENDIX A: MAPS	31
APPENDIX B: SUMMARY OF BACKGROUND RESEARCH	46
APPENDIX C: IMAGES	47
APPENDIX D: INVENTORY OF DOCUMENTARY AND MATERIAL RECORD.....	52
LIST OF TABLES	
TABLE 1: HISTORICAL STRUCTURES WITHIN THE STUDY AREA	12
TABLE 2: REGISTERED ARCHAEOLOGICAL SITES WITHIN ONE KILOMETRE OF THE STUDY AREA.....	14
TABLE 3: HISTORY OF OCCUPATION IN SOUTHERN ONTARIO	15
TABLE 4: PREVIOUS ARCHAEOLOGICAL FIELDWORK	16

PROJECT PERSONNEL

Project and Field Director Nimal Nithiyantham – MTCS licence P390

Report Preparation Alvina Tam – MTCS licence P1016

Report Review..... Nimal Nithiyantham – MTCS licence P390

Historical Research..... Lee Templeton – MTCS licence R454

Graphics Michael Lawson
Alvina Tam – MTCS licence P1016
Lee Templeton – MTCS licence R454

PROJECT CONTEXT

1.1 Objective

The objectives of a Stage 1 Archaeological Assessment (AA), as outlined by the 2011 *Standards and Guidelines for Consultant Archaeologists* ('2011 S&G') published by the *Ministry of Tourism, Culture, and Sport (MTCS)* (2011), are as follows:

- To provide information about the property's geography, history, previous archaeological fieldwork and current land condition;
- To evaluate in detail the property's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for Stage 2 survey.

1.2 Development Context

The City of Vaughan had previously completed the Black Creek Stork Water Optimization Study Master Plan Class Environmental Assessment (EA), which identified a range of alternative solutions to reduce flooding and flood damages, improve water quality, and limit stream bank erosion in Black Creek. Unfortunately, the subsequent EA in 2012 to establish the preferred alignment and configuration of Black Creek could not proceed. Therefore, the City of Vaughan is re-initiating the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Class EA to consider different potential alignments and physical forms for Black Creek, and establish a renewal plan of Black Creek which will be compatible with the proposed land uses within the study area. The study area is primarily located east of Jane Street, from south of Highway 7 to just north of Highway 407.

Archeoworks Inc. was retained by *The Municipal Infrastructure Group Ltd.* to conduct a Stage 1 AA, of the study area, which is situated within part of Lots 4-5, Concession 4; Lots 4-5, Concession 5, and the road allowance between Concession 4 and 5, in the Geographic Township of Vaughan, historical County of York, City of Vaughan, Regional Municipality of York, Ontario (**see Appendix A – Map 1**).

The Regional Municipality of York (or York Region) has an archaeological management plan (AMP), founded on the principles of archaeological potential modeling, and developed using a Geographic Information System (GIS) (York Maps, 2015). Archaeological site potential modeling incorporates a variety of sources, such as history, human geography, settlement archaeology, ecological archaeology, and paleoecology, in an attempt to reconstruct past land use patterns. Some major limiting factors of the predictive model, especially with regard to predicting pre-contact site locations, include: the scantiness of systematic archaeological survey within a few areas of the city; limited knowledge of the pre-contact natural environment; and a substantively different world view from pre-contact Aboriginal people, who may have situated within places

for intangible reasons (i.e., ideological or aesthetic) that would be impossible to understand or predict within the economically based parameters of this spatial analysis (ASI, 2014). According to the York Region AMP, the northwest portion and parts of the southern half of the study area contains archaeological potential (The Regional Municipality of York, 2016) (*see Map 2*).

This study was triggered by the Municipal Class EA process under 'Schedule B'. This Stage 1 AA was conducted under the project direction of Mr. Nimal Nithiyantham, under the archaeological consultant licence number P390, in accordance with the *Ontario Heritage Act* (2009). Permission to investigate the study area was granted by *The Municipal Infrastructure Group Ltd.* on July 5th, 2016.

1.3 Historical Context

To establish the archaeological and historical significance of the study area, *Archeoworks Inc.* conducted a comprehensive review of the York Region AMP, Aboriginal and Euro-Canadian settlement history, local history, designated and listed heritage properties, commemorative markers, as well as consulted with available historical mapping. Furthermore, an examination of registered archaeological sites and previous AAs within close proximity to its limits, and review of the physiography of the overall area and its correlation to locating archaeological remains, was performed.

The results of this background research are documented below and summarized in **Appendix B – Summary of Background Research**

1.3.1 Pre-Contact Period

1.3.1.1 The Paleoindian Period (ca. 11,000 to 7,500 B.C.)

The region in which the study area is situated was first inhabited after the final retreat of the North American Laurentide ice sheet 15,000 years ago (or 13,000 B.C.) (Stewart, 2013, p.24). Initial vegetation of the majority of Southern Ontario was tundra-like. As the average climatic temperature began to warm, small groups of Paleoindians entered Ontario (Karrow and Warner, 1990, p.22; Stewart, 2013, p.28). Generally, Paleoindians are thought to have been small groups of nomadic hunter-gatherers who depended on naturally available foodstuffs such as game or wild plants (Ellis and Deller, 1990, p.38). For much of the year, Paleoindians “hunted in small family groups; these would periodically gather into a larger grouping or bands during a favourable period in their hunting cycle, such as the annual caribou migration” (Wright, 1994, p.25).

Paleoindian sites are extraordinarily rare and consist of “stone tools clustered in an area of less than 200-300 metres” (Ellis, 2013, p.35). These sites appear to have been campsites used during travel episodes and can be found on well-drained soils in elevated situations, which would have provided a more comfortable location in which to camp and view the surrounding territory (Ellis and Deller, 1990, p.50). Traditionally, Paleoindian sites have been located primarily along abandoned glacial lake strandlines or beaches. However, this view is biased as these are only

areas in which archaeologists have searched for sites, due to the current understanding of the region's geological history (Ellis and Deller, 1990, p.50; Ellis, 2013, p.37). In areas where attention has been paid to non-strandline areas and to older strandlines, sites are much less concentrated and more ephemeral (Ellis and Deller, 1990, p.51).

Artifact assemblages from this period are characterized by fluted and lanceolate stone points, scrapers, and small projectile points produced from specific chert types (Ellis and Deller, 1990). Distinctive dart heads were used to kill game, and knives were used for butchering and other tasks (Wright, 1994, p.24). These items were created and transported over great distances while following migratory animals within a massive territory.

1.3.1.2 The Archaic Period (ca. 7,800 to 500 B.C.)

As the climate continued to warm and the post-glacial environment began to normalize, deciduous trees slowly began to permeate throughout Southern Ontario, creating mixed deciduous and coniferous forests (Karrow and Warner, 1990, p.30). The "Archaic peoples are the direct descendants of Paleoindian ancestors" having adapted to meet new environmental and social conditions (Ellis, 2013, p.41; Wright, 1994, p.25). The Archaic period is divided chronologically and cultural groups are divided geographically and sequentially. Archaic Aboriginals lived in "hunter-gatherer bands whose social and economic organization was probably characterized by openness and flexibility" (Ellis et al., 1990, p.123). This fluidity creates 'traditions' and 'phases' which encompasses large groups of Archaic Aboriginals (Ellis et al., 1990, p.123).

Few Archaic sites have faunal and floral preservation; hence lithic scatters are often the most commonly encountered Archaic Aboriginal site type (Ellis et al., 1990, p.123). House structures have "left no trace" due to the high acidic content of Ontario soils (Wright, 1994, p.27). Burial/grave goods and ritual items appear, although very rarely. By the Late Archaic, multiple individuals were interred together suggesting semi-permanent communities were in existence (Ellis, 2013, p.46). Ceremonial and decorative items also appear on Archaic Aboriginal sites through widespread trade networks, such as conch shells from the Atlantic coast and galena from New York (Ellis, 2013, p.41). Through trade with the northern Archaic Aboriginals situated around Lake Superior, native copper was initially utilized to make hooks and knives but gradually became used for decorative and ritual items (Ellis, 2013, p.42).

During the Archaic period, stone points were reformed from fluted and lanceolate points to stone points with notched bases to be attached to a wooden shaft (Ellis, 2013, p.41). The artifact assemblages from this period are characterized by a reliance on a wide range of raw lithic materials in order to make stone artifacts, the presence of stone tools shaped by grinding and polishing, and an increase in the use of polished stone axes and adzes as wood-working tools (Ellis et al., 1990, p.65; Wright, 1994, p.26). Ground-stone tools were also produced from hard stones and reformed into tools and throwing weapons (Ellis, 2013, p.41). The bow and arrow was first used during the Archaic period (Ellis, 2013, p.42).

1.3.1.3 The Early Woodland Period (ca. 800 to 0 B.C.)

Early Woodland cultures evolved out of the Late Archaic period (Ferris and Spence, 1995, p.89; Spence et al., 1990, p.168). The Early Woodland period is divided into two complexes: the Meadowood complex and the Middlesex complex. The Middlesex complex appears to be restricted to Eastern Ontario, particularly along the St. Lawrence River while Meadowood materials depict a broad extent of occupation in southwestern Ontario (Spence et al., 1990, p.134, 141). The distinguishing characteristic of the Early Woodland period is the introduction of pottery (ceramics). The earliest forms were coil-formed, “thick, friable and often under fired, and must have been only limited to utility usage” (Ferris and Spence, 1995, p.89; Williamson, 2013, p.48).

Cache Blades, a formal chipped stone technology, and side-notched Meadowood points, were commonly employed tools that were often recycled into a number of other tool forms such as end scrapers (Spence et al., 1990, p.128; Ferris and Spence, 1995, p.93). These tools were primarily formed from Onondaga chert (Spence et al., 1990, p.128). Meadowood sites have produced a distinctive material culture that functioned in both domestic and ritual spheres (Ferris and Spence, 1995, p.90; Spence et al., 1990, p.128). This allows correlations to be made between habitations and mortuary sites, creating a well-rounded view of Meadowood culture (Ferris and Spence, 1995, p.90; Spence et al., 1990, p.128). However, their settlement-subsistence system is poorly understood as only a “few settlement types have been adequately investigated, and not all of these are from the same physiographic regions” (Ferris and Spence, 1995, p.93; Spence et al., 1990, p.136). Generally, Meadowood sites are in association with the Point Peninsula and Saugeen complexes which “then eventually changed or were absorbed into the Point Peninsula complex” (Wright, 1994, pp.29-30).

1.3.1.4 The Middle Woodland Period (ca. 200 B.C. to A.D. 900)

During the Middle Woodland period, three primary cultural complexes developed in Southern Ontario. The Couture complex was located in the southwestern-most part of Ontario (Spence et al., 1990, p.143). The Point Peninsula complex was “distributed throughout south-central and eastern Southern Ontario, the southern margins of the Canadian Shield, the St. Lawrence River down river to Quebec City, most of southeastern Quebec, along the Richelieu River into Lake Champlain” (Spence et al., 1990, p.157; Wright, 1999, p.633). The Saugeen complex occupied “southwestern Southern Ontario from the Bruce Peninsula on Georgian Bay to the north shore of Lake Erie to the west of Toronto” (Wright, 1999, p.629; Wright, 1994, p.30).

The Saugeen and Point Peninsula cultures appear to have shared Southern Ontario but the borders between these three cultural complexes are not well defined, and many academics believe that the Niagara Escarpment formed a frontier between the Saugeen complex and the Point Peninsula complex (Spence et al., 1990, p.143; Wright, 1999, p.629; Ferris and Spence, 1995, p.98). Consequently, the dynamics of hunter-gatherer societies shifted territorial boundaries resulting in regional clusters throughout southwestern Southern Ontario that have been variously assigned to Saugeen, Point Peninsula, or independent complexes (Spence et al., 1990, p.148; Wright, 1999, p.649).

Middle Woodland pottery share a preference for stamped, scallop-edged or tooth-like decoration, but each cultural complex had distinct pottery forms (such as globular pots), finishes, and zones of decoration (Williamson, 2014, p.49; Ferris and Spence, 1995, p.97; Spence et al., 1990, p.143). Major changes in settlement-subsistence systems occurred during the Middle Woodland period, particularly the introduction of large 'house' structures and substantial middens associated with these structures (Spence et al., 1990, p.167; Ferris and Spence, 1995, p.99). The larger sites likely indicate a prolonged period of macroband settlement and a more consistent return to the same site, rather than an increase in band size (Spence et al., 1990, p.168). Environmental constraints in different parts of Southern Ontario all produced a common implication of increased sedentism caused by the intensified exploitation of local resources (Ferris and Spence, 1995, p.100). Burial offerings became more ornate and encompassed many material mediums, including antler, whetstones, copper, and pan pipes (Ferris and Spence, 1995, p.99). Burial sites during this time were set away from occupation sites and remains were interred at time of death; secondary burials were not common (Ferris and Spence, 1995, p.101). Small numbers of burial mounds are present and both exotic and utilitarian items were left as grave goods (Williamson, 2013, p.51; Ferris and Spence, 1995, p.102).

1.3.1.5 The Late Woodland Period (ca. A.D. 900 to 1600)

At the onset of the Late Woodland Period, the transitional Princess Point complex arrived in Ontario. Sites attributed to the Princess Point complex exhibit few continuities from earlier developments. These sites appear to have arisen suddenly and suggest a well-developed state with no apparent predecessors. It is hypothesized that this complex migrated into Ontario, possibly from the southwest. The material culture includes 'Princess Point Ware' vessels that are collarless, with everted rims and semi-conical bases. Decorations include horizontal lines with an encircling row of circular exterior punctates. Smoking pipes and ground stone tools are rare. Triangular arrow points predominate the lithic assemblage, where some exhibit weakly notched bases. Subsistence patterns include the hunting of deer, bear, squirrels and fish, with the gathering of berries. Corn horticulture has been attributed to the Princess Point complex. Little is known about the settlement patterns, but it has been suggested that they followed a pattern of warm season macroband and cold season microband dispersal (Fox, 1990, pp.174-179).

During the Late Woodland Period (A.D. 900-1600), multiple sub-stages, and complexes have been assigned, which are divided spatially and chronologically (Fox, 1990; Williamson, 1990; Dodd et al., 1990; Warrick, 2000). Although several migration theories have been suggested explaining the Ontario Iroquoian origins, an "available date from Southern Ontario strongly suggests continuity (*in situ*) from the Middle-Late Woodland Transitional Princess Point complex and Late Woodland cultural groups" (Ferris and Spence, 1995, p.105; Smith, 1990, p.283).

1.3.1.6 The Early Ontario Iroquois Stage (ca. A.D. 900 to 1300)

Two primary cultural groups have been assigned to the Early Ontario Iroquois Period and were located in Southern Ontario. The Glen Meyer cultural group was located primarily in southwestern Ontario, whose territory "encompassed a portion of southwestern Ontario extending from Long Point on the north shore of Lake Erie to the southeastern shore of Lake Huron" (Williamson, 1990, p.304). The Pickering cultural group is "thought to be much larger

encompassing all of the region north of Lake Ontario to Georgian Bay and Lake Nipissing” (Williamson, 1990, p.304). Regional clusters of these groups appear within riverine or lacustrine environments with a preference for sandy soils.

The material culture of Early Iroquois consisted of well-made and thin-walled clay vessels that were more globular in shape with rounded bottoms. These vessels were produced by modelling rather than coil-formed. Decorative stamping, incising, and punctuation along the exterior and interior rim region of the vessels were favoured. Material cultural remains also included crudely made smoking pipes, gaming discs, triangular-shaped, concave projectile chert points, and worked bone and antlers. House structures gradually became larger, longer, and wider but variations depended on settlement type and season of occupation. Subsistence patterns indicate a quick adoption of a greater variety of harvest products. Burial practices during this period saw an evolution to ossuary burials; however burial patterns are still not well understood (Williamson, 1990, pp.304-311).

1.3.1.7 The Middle Ontario Iroquois Stage (ca. A.D. 1300 to 1400)

The Middle Ontario Iroquois began “with the fusion of [Glen Meyer and Pickering] caused by the conquest and absorption of Glen Meyer by Pickering” (Dodd et al., 1990, p.321). This fusion resulted in two cultural horizons located throughout most of Southern Ontario and lasting approximately 100 years. Within these 100 years, two cultural groups were present and divided chronologically into two 50-year timespans: the Uren sub-stage (A.D. 1300-1350) and the Middleport sub-stage (A.D. 1350-1400). The chronology of this stage has been contested and reflects a probable overlap with earlier stages. It is theorized that the Uren sub-stage represents a fusion of Glen Meyer and Pickering branches of the Early Ontario Iroquois while the Middleport sub-stage gave rise to the Huron, Petun, Neutral groups of the Late Ontario Iroquois stage (Dodd et al., 1990, pp.321, 356).

Uren sites are distributed throughout much of southwestern and southcentral Ontario, and generally coincide with Early Ontario Iroquoian Stage sites. Middleport sites generally correlate with Uren sites, representing a continuation of local cultural sequences. The material culture of the Uren sub-stage includes rolled rim clay vessels with horizontal indentation on the exterior of the vessel; pipes that gradually improve in structure; gaming discs; and projectile points that favour triangular points. The material culture of Middleport sub-stage includes collared vessels decorated with oblique and horizontal indentation; a well-developed clay pipe complex that includes effigy pipes; and a marked increase in notched projectile points (Dodd et al., 1990, pp. 330-342).

Settlement patterns of the Uren sub-stage reflect a preference for sand plains and do not appear to have had defensive palisades surrounding clusters of small longhouses. Subsistence patterns indicate an increasing reliance on corn cultivation, suggesting villages were occupied in the winter and campsites were occupied during the spring to fall. Settlement patterns of the Middleport sub-stage reflect a preference for drumlinized till plains. Small villages are present where palisades first appear, and longhouses are larger than those found in the Uren sub-stage. Subsistence patterns reflect an increasing reliance on corn and beans with intensive exploitation

of locally available land and water species. Burial patterns graduate to ossuaries by the Middleport sub-stage (Dodd et al., 1990, pp.342-356).

1.3.1.8 The Late Ontario Iroquois Stage (ca. A.D. 1400 to 1600)

During the Late Ontario Iroquoian Stage, the Iroquoian-speaking linguistic and cultural groups developed. Prior to European Contact, neighbouring Iroquois-speaking communities united to form several confederacies known as the Huron (Huron-Wendat), Neutral (called Attiewandaron by the Wendat), Petun (Tionnontaté or Khionontateronon) in Ontario, and the Five Nations (later Six Nations) of the Iroquois (Haudenosaunee) of upper New York State (Birch, 2010, p.31; Warrick, 2013, p.71). These groups are located primarily in south and central Ontario. Each group was distinct but shared a similar pattern of life already established by the 16th century (Trigger, 1994, p.42).

Prior to European contact, the geographic distribution of pre-contact Ontario Iroquoian sites describes two major groups east and west of the Niagara Escarpment: the ancestral Attiewandaron to the west, and the ancestral Huron-Wendat to the east (Warrick, 2000, p.446). Ancestral Huron-Wendat villages have been located as far east as the Trent River watershed, where “concentrations of sites occur in the areas of the Humber River valley, the Rouge and Duffin Creek valleys, the lower Trent valley, Lake Scugog, the upper Trent River and Simcoe County” (Ramsden, 1990, p.363). These concentrations are distributed in a triangular area along the north shore of Lake Ontario and northward bounded by the Trent River system and the Niagara Escarpment (Ramsden, 1990, p.363).

To traverse their territory, multiple trails, portage and watercourse routes throughout their territory were used to travel from the north shores of Lake Ontario inland to the upper Great Lakes. These trail systems included the Toronto Carrying Place Trail. It was an ancient highway in use for hundreds of years by many groups and was a crucial trade and travel route. The Toronto Carrying Place trail had two branches: the Rouge River branch, and the Humber River Branch. Both branches trailed from Lake Ontario over the Oak Ridges Moraine and up the Holland River into Lake Simcoe (Robinson, 1965, pp.6-8; TRCA, 2007, p.9).

Settlement types included longhouse, whose sizes depended on the size of the extended family that inhabited it; however, archaeological evidence suggests that the average longhouse was 25 feet by 100 feet, with heights about the same as widths (Heidenreich, 1978, p.366). Village size gradually enlarged as horticulture began to take on a more central importance in subsistence patterns, particularly the farming of maize, squash, and beans, supplemented by fishing, hunting, and gathering. Sites were chosen for their proximity to sources of “water, arable soils, available firewood, [and] a young secondary forest, [as well as] a defensible position” (Heidenreich, 1978, p.375). Later villages consisted of up to 100 longhouses clustered closely together, and only the largest villages on the frontier were fortified (Heidenreich, 1978, p.377).

Subsistence patterns reflect a horticultural diet that was supplemented with fish rather than meat (Heidenreich, 1978, p.377). ‘Slash-and-burn’ farming was used to quickly and efficiently clear trees and brushwood for flour and flint corn fields (Heidenreich, 1978, p.380). These were

consistently cultivated until no longer productive, at which point the village was abandoned, an event that took place about every eight to 12 years (Heidenreich, 1978, p.381). Consequently, as horticulture became the primary mode of subsistence, pre-contact native groups gradually relocated from the northern shores of Lake Ontario to further inland, likely as a result of depleting resources and growing aggression between native communities.

1.3.2 Contact Period (ca. A.D. 1600 to 1650)

At the time of European Contact, the area “south of Lake Simcoe and along the north shore of Lake Ontario remained a no-man’s land during this period, with no permanent settlements and traversed only by raiding parties from the north or from the south” (Robinson, 1965, p.11). The Huron-Wendat villages were located north of Lake Simcoe, but their territorial hunting grounds stretched roughly between the Canadian Shield, Lake Ontario and the Niagara Escarpment (Warrick, 2008, p.12). The Haudenosaunee were primarily located south of Lake Ontario but hunted in the lands north of Lake Ontario.

Records left by explorers, Jesuit missionaries, and fur traders provide a history of Euro-Canadian involvement in territory identified as Huron-Wendat. By 1609, Samuel de Champlain had encountered the Huron-Wendat north of Lake Simcoe, and desiring greater quantities of furs, the French initiated a trading relationship with the Huron-Wendat (Trigger, 1994, p.68; Heidenreich, 1978, p.386). By mid-1620, the Huron-Wendat had exhausted all available pelts in their own hunting territories and opted to trade European goods for tobacco and furs from their neighbours (Trigger, 1994, pp.49-50). During the 1630s, Jesuit missionaries attempted to convert the entire Huron-Wendat Confederacy to Christianity as the initial phase of a missionary endeavour to convert all native people in Southern Ontario (Trigger, 1994, p.51). However, the Jesuits’ presence in the region became precarious after a series of major epidemics of European diseases killed nearly two-thirds of the Huron-Wendat population (Warrick 2008, p.245; Heidenreich, 1978, p.369).

By 1645, having grown dependent on European goods and with their territory no longer yielding enough animal pelts, the Haudenosaunee became increasingly aggressive towards the Huron-Wendat Confederacy (Trigger, 1994, p.53). Armed with Dutch guns and ammunition, the Haudenosaunee engaged in warfare with the Huron-Wendat Confederacy and brutally attacked and destroyed several Huron-Wendat villages throughout Southern Ontario (Trigger, 1994, p.53). After the massacres of 1649-50, the small groups that remained of the Huron-Wendat Confederacy became widely dispersed throughout the Great Lakes region, ultimately resettling in Quebec (Schmalz, 1991, p.17), where “for the next forty years, the Haudenosaunee used present-day Ontario to secure furs with the Dutch, then with the English” (Smith, 2013, p.19; Schmalz, 1991, p.17; Coyne, 1895, p.20).

1.3.3 Post Contact Period (ca. A.D. 1650 – 1800)

Although their homeland was located south of the lower Great Lakes, the Haudenosaunee controlled most of Southern Ontario after the 1660s, occupying at “least half a dozen villages along the north shore of Lake Ontario and into the interior” (Schmalz, 1991, p.17; Williamson, 2013, p.60). The Haudenosaunee established “settlements at strategic locations along the trade

routes inland from the north shore of Lake Ontario. Their settlements were on canoe-and-portage routes that linked Lake Ontario to Georgian Bay and the upper Great Lakes” (Williamson, 2013, p.60). The Haudenosaunee had established a village named Ganatsekwyagon at the mouth of the Rouge River, and Teiaiagon at a bend near the mouth of the Humber River to exploit both branches of the Toronto Carrying Place Trail (Robinson, 1965, pp.15-16; Schmalz, 1991, p.29).

At this time, several Algonquin-speaking linguistic and cultural groups within the Anishinaabeg (or Anishinaabe) began to challenge the Haudenosaunee dominance in the region (Johnston, 2004, pp.9-10; Gibson, 2006, p.36). The Anishinaabeg were originally located primarily in Northern Ontario. Before contact with the Europeans, the Ojibwa territorial homeland was situated inland from the north shore of Lake Huron (MNCFN, ND, p.3). The English referred to those Algonquin-speaking linguistic and cultural groups that settled in the area bounded by Lakes Ontario, Erie, and Huron as Chippewas or Ojibwas (Smith, 2002, p.107). In 1640, the Jesuit fathers had recorded the name “*oumisagai*, or Mississaugas, as the name of an Algonquin group near the Mississagi River on the northwestern shore of Lake Huron. The French, and later English, applied this same designation to all Algonquian [-speaking groups] settling on the north shore of Lake Ontario” (Smith, 2002, p. 107; Smith, 2013, pp.19-20). “The term ‘Mississauga’ perplexed the Algonquins, or Ojibwas, on the north shore of Lake Ontario, who knew themselves as the Anishinaabeg” (Smith, 2013, p.20).

Following a major smallpox epidemic combined with the capture of New Netherland by the English, access to guns and powder became increasingly restricted for the Haudenosaunee. After a series of successful attacks against the Haudenosaunee by groups within the Anishinaabeg, the Haudenosaunee dominance in the region began to fail (Warrick, 2008, p.242; Schmalz, 1991, p.20). Prior to 1680, groups within the Anishinaabeg had begun to settle just north of the evacuated Huron-Wendat territory and with the English entering the fur-trading market, began to expand further into Southern Ontario (Gibson, 2006, p.36; Schmalz, 1991, p.18). By the 1690s, Haudenosaunee settlements along the northern shores of Lake Ontario were abandoned (Williamson, 2013, p.60), and in 1701, the Haudenosaunee were defeated and expelled from Ontario (Gibson, 2006, p.37; Schmalz, 1991, p.27; Coyne, 1895, p.28). After these battles, the Anishinaabeg replaced the Haudenosaunee in Southern Ontario (Schmalz, 1991, p.29).

In 1701, representatives of several groups within the Anishinaabeg and the Haudenosaunee, collectively known as the First Nations, assembled in Montreal to participate in Great Peace negotiations, sponsored by the French (Johnston, 2004, p.10; Trigger, 2004, p.58). The Mississaugas were granted sole possession of the territory along and extending northward of Lake Ontario and Lake Erie (Hathaway, 1930, p.433). Until the fall of New France, the fur trade continued in Ontario with both the Ojibwa, Mississauga, and various other groups within the Anishinaabeg trading with both the English and the French. The Mississaugas established one of their settlements near the site of Teiaiagon on the Humber River, at the base of the ancient Toronto Carrying Place Trail and a later settlement near the mouth of the Credit River (Benn, 2008, p.54; Smith, 2013, p.22). Mississauga subsistence patterns include a primary focus on hunting, fishing and gathering with little emphasis on agriculture (McMillian and Yellowhorn, 2004, p. 110). Temporary and moveable house structures were utilized which were easy to

construct and disassemble, allowing swift travel throughout their territory (McMillian and Yellowhorn, 2004, p.111). Consequently, little archaeological material was left behind.

The Seven Years War brought warfare between the French and British in North America. In 1763, the Royal Proclamation declared the Seven Years War over, giving the British control of New France. The British did not earn the respect of the Anishinaabeg, as the British did not honour fair trade nor the Anishinaabeg occupancy of the land as the French had. Consequently, the Pontiac Uprising, also known as the Beaver Wars, began that same year (Schmalz, 1991, p.70; Johnston, 2004, pp.13-14). This uprising involved both groups within the Haudenosaunee and groups within the Anishinaabeg. After numerous attacks on the British, the Pontiac Uprising was over by 1766 when a peace agreement was concluded with Sir William Johnson, the Superintendent of Indian Affairs (Schmalz, 1991, p.81). The fur-trade continued throughout Southern Ontario until the beginning of British colonization.

1.3.4 Euro-Canadian Settlement Period (A.D. 1800 to present)

By the end of the 1700s, the Mississaugas claimed portions of the County of York, along with the majority of Ontario (Surtees, 1994, p.94). After the American War of Independence in the late 1700s, a large number of United Empire Loyalists and American immigrants began to move into Southern Ontario. This put greater demand on the amount of available lands for Euro-Canadian and American immigrant settlement within Upper Canada.

A large tract of land stretching between Etobicoke Creek, Trent River and fronting Lake Ontario to Lake Simcoe was surrendered without formal provisions. In 1787, senior officials from the Indian Department met with the Native bands of the Carrying Place on the Bay of Quinte and Toronto to acquire land along the northern shores of Lake Ontario extending northward to Lake Simcoe. As a result of these negotiations, Sir John Johnson of the Indian Department and Lord Dorchester believed they had successfully purchased a large portion of land on the north shore of Lake Ontario. However, the documentation which formalized the 1787 transaction did not include a description of the area surrendered and these irregularities resulted in Lieutenant-Governor John Graves Simcoe to invalidate the surrender, despite assurances by the Ojibwa of Lake Simcoe that the land had been surrendered to the British. In 1805, William Claus, the Deputy Superintendent of Indian Affairs, entered into negotiations with the Mississaugas to purchase a greater tract of land consisting of 100,000 hectares in and around the Town of York. This purchase included the Township of Vaughan (Surtees, 1994, p.107; N.D., 1891, pp. lvii-lviii).

The 1787 surrender was contested into the 20th century. The William's Treaty was signed by several First Nation groups and provided for the last surrender of the last substantial portion of the territory that had not been given to government (Surtees, 1986, p.19).

The Township of Vaughan was first surveyed by Surveyor Tredell in 1795, and was named after Benjamin Vaughan who negotiated the Peace Treaty with the United States on Britain's behalf in 1783 (Mulvany and Adams, 1885, p.124; Reaman, 1971, p.20). The survey of Vaughan Township was not completed until 1851 (Reaman, 1971, p.45).

The earliest settlers to Vaughan Township were United Empire Loyalists and Hessian soldiers who served in the American War, Quakers and Pennsylvania Dutch, and later, Scottish, Irish, and English settlers, all attracted by the 200-acre land grants from the Crown. These settlers focused on agriculture as their primary means of subsistence, as 35,000 acres of the total 67,510 acres of the township were regarded to be first-class agricultural land and was devoted to staple agricultural products. The Humber River proved to be an equally fundamental source of wealth for settlers in Vaughan with the construction of multiple saw mills, grist mills and paper mills along the entire length of the river, the first being constructed in 1801 on Lot 32, Concession 1 (Reaman, 1971, p.20; Mulvany and Adams, 1885, p.126).

Accessible transportation routes were limited in Vaughan Township, as it is entirely land-locked. In 1846, the Albion Road Company constructed a planked road, a wooden road that was unobstructed, which ran from Albion Road to Claireville and continued north along Highway 50 (Reaman, 1971, p.79; City of Vaughan, 2013). In 1853, the Ontario, Simcoe and Huron Railway, later known as the Northern Railway Company, was built through Vaughan, providing commuter and freight lines from Toronto through Maple to north of Lake Simcoe (City of Vaughan, 2013). By 1860, the Vaughan Plank Road Company, founded in 1860, completed the plank road as far north as the King Township boundary (Reaman, 1971, p.79). To afford the continual repair for this plank road, toll booths were constructed along the routes of major thoroughfares to collect toll charges. By 1880, these tolled roads were in great disrepair and 10 years later, a violent revolt broke out over the continuation of tolled roads. Tolls were subsequently removed in favour of municipally managed roadways (Reaman, 1971, p.80; City of Vaughan, 2013).

The hamlet of Edgeley, located at the intersection of Highway 7 and Jane Street at the northwest portion of the study area, was first settled by individuals who arrived from Somerset County, Pennsylvania in ca.1800. The hamlet of Edgeley once contained a general store, hotel, a popular cider mill, a shingle and chopping mill, a casket maker, a church, a hall, a blacksmith shop, a slaughter house, a shoemaker shop and dressmaking establishment, and a woodworking shop. The Edgeley Post Office, located within the general store at the southeast corner of Jane Street and Highway 7, was opened in 1872 and served the community until 1960. When Highway 7 was widened, the Post Office building was demolished. The hamlet continued to service the community with social activities and provided local businesses until the mid-20th century (Reaman, 1871, pp.103-105; Historical Plaques of York County, 2016).

1.3.5 Past Land Use

To further assess the study area's potential for the recovery of historic pre-1900 remains, several documents were reviewed in order to gain an understanding of the land use history.

A review of the 1860 *Tremaine's Map of the County of York* and the 1878 *Illustrated Historical Atlas of the County of York* (*see Maps 3-4*) reveals that the study area fell within the property limits of several property owners and along original road allowances established during the survey of Vaughan Township (*see Table 1*).

Table 1: Historical Structures within the Study Area

Con.	Lot	Occupant/Owner	Structure(s)
1860 Tremaine's Map of the County of Peel			
4	4, west half	Snider	No structure(s)
4	5, west half	Snider	No structure(s)
5	4, all	Michael Whitmore	No structure(s)
5	5, all	Widdow Smith	No structure(s)
1878 Illustrated Historical Atlas of the County of York			
4	4, all	Jno. Faulkner	One homestead
4	5, west half	Samuel Snider	One homestead; Edgeley Post Office
5	4, south part	Ephraim Whitmore	One homestead
5	4, centre part	Lafayette Whitmore	No structure(s)
5	4, north part	Aaron Whitmore	No structure(s)
5	5, south part	Jesse Smith	No structure(s)

No historic homesteads were depicted within the study area, while one historic homestead was depicted within 300 metres of the study area in the 1860 Tremaine's Map. The 1878 Illustrated Atlas reveals three historic homesteads and the Edgeley Post Office were situated within the study area, as well as nine additional historic homesteads and a Dutch Church within 300 metres of the study area. The Black Creek was depicted traveling through the study area.

Additionally, the study area is located along present day Jane Street and Highway 7, which were originally laid out during the survey of Township of Vaughan. In Southern Ontario, the 2011 S&G considers areas of early Euro-Canadian settlements (e.g., pioneer homesteads, isolated cabins, farmstead complexes, early wharf or dock complexes, pioneer churches, and early cemeteries), early historic transportation routes (e.g., trails, passes, roads, railways, portage routes), and properties that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations, to be of elevated archaeological potential (per Section 1.3.1 of the 2011 S&G). Therefore, based on the close proximity of both historic Euro-Canadian settlements and historic transportation routes, there is elevated potential for the location of historic Euro-Canadian archaeological resources (pre-1900) within portions of the study area which lie within 300 metres and 100 metres, respectively, of these features.

1.3.6 Present Land Use

The present land use of the study area can be classified as the Vaughan Metropolitan Centre (City of Vaughan, 2015).

1.4 Archaeological Context

1.4.1 Designated and Listed Cultural Heritage Resources

According to Section 1.3.1 of the 2011 S&G, property listed on a municipal register or designated under the *Ontario Heritage Act* or that is a federal, provincial, or municipal historic landmark or site, are considered to have elevated potential.

Consultation with the online document entitled 'City of Vaughan Designated Property under the Ontario Heritage Act Part IV, Section 29' (City of Vaughan, 2016a), which identifies cultural heritage properties that have been formally designated, confirmed the absence of designated heritage properties within or in close proximity to (within 300 metres of) the study area.

Additional consultation of the online document entitled 'Register of Property of Cultural Heritage Value, as per Part IV, Subsection 27'' (City of Vaughan, 2005), which identifies cultural heritage properties that are not formally designated, but are listed to have architectural and historical value to the City of Vaughan, confirmed the absence of listed heritage property within or in close proximity to the study area.

Therefore, based on absence of both designated or listed heritage resources within or in close proximity to the study area, this feature does not further elevate archaeological potential within the study area.

1.4.2 Heritage Conservation Districts

A Heritage Conservation District (HCD) includes areas that have been protected under Part V of the *Ontario Heritage Act*. An HCD can be found in both urban and rural environments and may include residential, commercial, and industrial areas, rural landscapes or entire villages or hamlets with features or land patterns that contribute to a cohesive sense of time or place and contribute to an understanding and appreciation of the cultural identity of a local community, region, province, or nation. An HCD may comprise an area with a group or complex of buildings, or large area with many buildings and properties and often extends beyond its built heritage, structures, streets, landscape and other physical and spatial elements, to include important vistas and views between and towards buildings and spaces within the district (MTCS, 2006, p.5). An HCD area contains valuable cultural heritage and must be taken into consideration during municipal planning to ensure that they are conserved.

According to *Section 1.3.1* of the *2011 S&G*, heritage resources listed on a municipal register or designated under the *Ontario Heritage Act*, or a federal, provincial, or municipal historic landmark or site, are considered to have elevated archaeological potential. To determine if the study area is located within or in close proximity to (within 300 metres of) an HCD, the City of Vaughan's online inventory of HCDs was reviewed (City of Vaughan, 2016b). This resource confirmed the study area does not fall within or in close proximity to an HCD. Therefore, this feature does not further elevate archaeological potential within the study area.

1.4.3 Commemorative Plaques or Monuments

According to *Section 1.3.1* of the *2011 S&G*, commemorative markers of Aboriginal and Euro-Canadian settlements, which may include their history, local, provincial, or federal monuments, cairns or plaques, or heritage parks, are considered to have elevated archaeological potential. To determine if any historical plaques are present, the Ontario Historical Plaques inventory, which contains a catalogue of federal Historic Sites and Monuments Board of Canada plaques, the provincial Ontario Heritage Trust plaques, plaques identified by various historical societies, and other published plaques located in Ontario was reviewed (Ontario Historical Plaques, 2016). This

review confirmed the absence of commemorative plaques within or in close proximity to (within 300 metres) the study area. Additional review of the Historical Plaques of York County (2016) revealed the presence of one commemorative plaque located on Jane Street, just north of Highway 7. This commemorative plaque discusses the founding of the hamlet of Edgeley. Therefore, based on the presence of a commemorative marker in close proximity to the study area, there is elevated archaeological potential within portions of the study area which lie within 300 metres of this feature.

1.4.4 Registered Archaeological Sites

In order provide a summary of registered or known archaeological sites within a minimum one-kilometre distance from the study area limits, as per *Section 1.1, Standard 1* and *Section 7.5.8, Standard 1* of the 2011 S&G, the *Ontario Archaeological Sites Database (OASD)* maintained by the *MTCS* was consulted (MTCS, 2016). Every archaeological site is registered according to the Borden System, which is a numbering system used throughout Canada to track archaeological sites and their artifacts.

According to the MTCS (2016), nine archaeological sites have been registered within one-kilometre of the study area. Five sites: AkGv-104, AkGv-105, AkGv-106, AkGv-107, and AkGv-108, are located within 300 metres of the study area (*see Table 2*).

Table 2: Registered Archaeological Sites within One Kilometre of the Study Area

Borden #	Name	Cultural Affiliation	Type
Registered archaeological sites within 300 metres of the study area			
AkGv-104	Burkholder House	Pre-contact; Post-contact	House
AkGv-105	-	Pre-contact	Findspot
AkGv-106	Goose	Pre-contact	-
AkGv-107	Bingo	Pre-contact	-
AkGv-108	-	Early Archaic	-
Registered archaeological sites within one-kilometre of the study area			
AkGv-109	Left Shoe	Pre-contact	-
AkGv-110	Right Shoe	Pre-contact	-
AkGv-111	Boot	Pre-contact	-
AkGv-303	Richard Brown	Post-contact	Homestead

"-" denotes data was not available

The 2011 S&G considers previously registered archaeological sites to be of elevated archaeological potential. Therefore, given that five registered archaeological sites are located within 300 metres of the study area, there is elevated archaeological potential within portions of the study area which fall within 300 metres of these sites.

Having noted the presence of these sites in relation to the study area, it is useful to place them in the proper context by reviewing the cultural history of occupation in Southern Ontario provided in **Table 3**. This data provides an understanding of the potential cultural activity that may have occurred within the study area (Ferris, 2013, p.13).

Table 3: History of Occupation in Southern Ontario

Period	Archaeological Culture	Date Range	Attributes
PALEO-INDIAN			
Early	Gainey, Barnes, Crowfield	>11000-8500 BC	Big game hunters. Fluted projectile points
Late	Holcombe, Hi-Lo, Lanceolate	8500-7500 BC	Small nomadic hunter-gatherer bands. Lanceolate projectile points
ARCHAIC			
Early	Side-notched, corner notched, bifurcate-base	7800-6000 BC	Small nomadic hunter-gatherer bands; first notched and stemmed points, and ground stone celts.
Middle	Otter Creek, Brewerton	6000-2000 BC	Transition to territorial settlements
Late	Narrow, Broad and Small Points Normanskill, Lamoka, Genesee, Adder Orchard etc.	2500-500 BC	More numerous territorial hunter-gatherer bands; increasing use of exotic materials and artistic items for grave offerings; regional trade networks
WOODLAND			
Early	Meadowood, Middlesex	800BC-0BC	Introduction of pottery, burial ceremonialism; panregional trade networks
Middle	Point Peninsula, Saugeen, Jack's Reef Corner Notched	200 BC-AD 900	Cultural and ideological influences from Ohio Valley complex societies; incipient horticulture
Late	Algonquian, Iroquoian, Western Basin	AD 900-1250	Transition to village life and agriculture
	Algonquian, Iroquoian, Western Basin	AD 1250-1400	Establishment of large palisaded villages
	Algonquian, Iroquoian	AD 1400-1600	Tribal differentiation and warfare
HISTORIC			
Early	Huron, Neutral, Petun, Odawa, Ojibwa, Five Nations Iroquois	AD 1600 – 1650	Tribal displacements
Late	Six Nations Iroquois, Ojibwa, Mississauga	AD 1650 – 1800s	Migrations and resettlement
	Euro-Canadian	AD 1780 - present	European immigrant settlements

1.4.5 Previous Archaeological Assessments

In order to further establish the archaeological context of the study area, a review of previous archaeological fieldwork carried out within the limits of, or immediately adjacent (i.e., within 50 metres) to the study area, as documented by all available reports was undertaken. Six reports were identified (*see Table 4*):

Table 4: Previous Archaeological Fieldwork

Company	Stage of Work	Relation to Current Study Area	Description and Recommendations
Archaeological Service Inc., 2008	Stage 1 AA	Within the study area	Stage 2 AA was recommended on undisturbed lands.
Archaeological Service Inc., 2005	Stage 1 AA	Within the study area	Stage 2 AA was recommended on undisturbed lands.
Ministry of Transportation, N.D.	Uncertain	Within 50 metres	Documents the discovery of AkGv-104 to AkGv-111. A copy of this report has been requested from the consultant firm (Templeton, 2016b; Templeton, 2016c). A copy has yet to be received by report completion.
AMICK Consultants Ltd., 2007	Stage 1-2 AA	Possibly within 50 metres	A copy of this report has been requested from the MTCS (Templeton, 2016e; Templeton, 2016f). A copy has yet to be received by report completion.
M.M. Dillon Ltd., 1994	Stage 2 AA	Possibly within 50 metres	A copy of this report has been requested from the MTCS (Templeton, 2016e; Templeton, 2016f). A copy has yet to be received by report completion.
M.M. Dillon Ltd., 1995/1996	Stage 2 AA	Possibly within 50 metres	A copy of this report has been requested from the MTCS (Templeton, 2016e; Templeton, 2016f). A copy has yet to be received by report completion.

1.4.6 Physical Features

An investigation of the study area's physical features was conducted to aid in the development of an argument for archaeological potential based on the environmental conditions of the study area. Environmental factors such as close proximity to water, soil type, and nature of the terrain, for example, can be used as predictors to determine where human occupation may have occurred in the past.

The study area is located within the Peel Plain physiographic region of Southern Ontario. The Peel Plain is described as a level-to-undulating region of clay soils, with a gradual and fairly uniform slope toward Lake Ontario, with till containing large amounts of shale and limestone underlying clay that is generally heavy in texture, this clay having been presumably brought by meltwater from the predominantly limestone regions to the north and east. Some well-drained soils are found within the Peel Plain, but the most dominant soil is Peel clay, an imperfectly drained, dark brown, stone-free clay often underlain by dull brownish grey, calcareous clay till or stone-free clay. With the underlying shale not being able to retain water well, compounded by the almost complete deforestation of the region that results in a high degree of evaporation, the Peel Plain has somewhat of a water supply problem. Practically all utilized for agriculture until 1940, the land within much of the region has been urbanized, now occupying two-thirds of the Peel Plain and taking more than 50,000 hectares of good farmland out of production (Chapman & Putnam, 1984, pp. 174-176).

The native soil type within the study area is Chinguacousey clay loam, which is a Grey-Brown Podzolic soil characterized as dark yellowish brown, shaly calcareous clay till. It has imperfect drainage and the topography is described as smooth moderately sloping with few stones (Ontario Agricultural College, 1954).

In terms of archaeological potential, potable water is a highly important resource necessary for any extended human occupation or settlement. As water sources have remained relatively stable in Southern Ontario since post-glacial times, proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location. A watershed is an area drained by a river and its tributaries. As surface water collects and joins a collective water body, it picks up nutrients, sediment and pollutants, which may altogether, affect ecological processes along the way. Hydrological features such as primary water sources (i.e. lakes, rivers, creeks, streams) and secondary water sources (i.e. intermittent streams and creeks, springs, marshes, swamps) would have helped supply plant and food resources to the surrounding area and are indicators of archaeological potential (per *Section 1.3.1* of the *2011 S&G*).

Black Creek traverses north to south along the western limit of the study area. Therefore, based on the presence of a watercourse within the study area, there is elevated potential for the location of archaeological resources within portions of the study area which lie within 300 metres of this feature.

1.4.7 Current Land Conditions

The study area is situated within an urban landscape within the City of Vaughan. The study area encompasses several commercial businesses, and the Black Creek. The topography within the study area slightly declines moving north to south, with the elevation averaging from approximately 205 to 200 metres above sea level.

1.4.8 Date of Field Review

A property inspection of the study area was undertaken on July 29th, 2016, to systematically review the archaeological potential of the entire study area.

1.5 Confirmation of Archaeological Potential

Based on the information gathered from the background research documented in the preceding sections, elevated archaeological potential has been established within the study area boundary. Features contributing to archaeological potential are summarized in **Appendix B**.

2.0 PROPERTY INSPECTION

This property inspection was conducted in compliance with the standards set forth in *Section 1.2* of the *2011 S&G*. The weather and ground conditions were conducive to identifying features and assessing the land's archaeological potential.

The inspection was carried out systematically every 50 metres, reviewing the entire extent of the study area to identify the presence or absence of archaeological potential. Photographic images of the study area are presented within **Appendix C**. Location and orientation information associated with all photographs taken in the field is provided within **Map 14**.

2.1 Confirmation of Previously Identified Features of Archaeological Potential

Background research identified historical roadways and a primary hydrological resource as having archaeological potential. Present-day Jane Street and Highway 7 were found to be intact and situated as depicted on historic and current mapping. Additionally, Black Creek was also identified within the study area.

2.2 Identification and Documentation of Additional Features of Archaeological Potential

During the property survey, no additional features of archaeological potential were identified.

2.3 Identification and Documentation of Features that will affect Assessment Strategies

During the property survey, no features were identified that would affect assessment strategies if a Stage 2 AA were required.

2.4 Identification and Documentation of Structures and Built Features that will affect Assessment Strategies

During the property survey, numerous built features were identified which would affect assessment strategies if a Stage 2 AA were required.

The detailed results of this property inspection are described in **Section 3.0**. An inventory of the documented record generated in the field can be found within **Appendix D**.

3.0 ANALYSIS AND CONCLUSIONS

In combination with data gathered from background research (*see Sections 1.3 and 1.4*) and an inspection of satellite imagery and aerial photography, an evaluation of archaeological potential was performed.

3.1 Historical Imagery

Data gathered from background research (*see Sections 1.3 and 1.4*) was used to perform an assessment of archaeological potential. Additionally, a detailed review of aerial photographs taken from 1954 to 1995 (*see Maps 5-9*), and satellite imagery taken in 1999 to 2016 (*see Maps 10-13*), reveals that the study area has undergone significant changes since 1954.

The 1954 aerial photograph shows that the study area largely consisted of ploughed agricultural fields with some residential homesteads off of the east side of Jane Street (*see Map 5*). A portion of Jane Street originally bisected the southern half of the study area. In 1970, several roadways were established, such as Maplecrete Road to the east of the study area, and Doughton Road and Peelar Road within the study area (*see Map 6*). Several portions of the study area south of Doughton Road, were subjected to various developments/grading activities. In 1978, vegetation north of Doughton Road was cleared and a couple of additional buildings were established within the study area (*see Map 7*).

By 1988, the majority of the study area was developed, with the exception being the southwest portion of the study area. Due to these new developments, the northern path of Black Creek appears to have diverted (*see Map 8*). The 1995 aerial photograph reveals that the study area remained largely unchanged, where the only major changes include: the realignment of Jane Street to its present day configuration, which now lies just west of the study area; and establishment of the eastern limit of Interchange Way within the study area (*see Map 9*).

In 1999, some grading activities appear to have occurred within the small field bounded by Jane Street, Interchange Way and Peelar Road (*see Map 10*). Since this time, the study area has remained relatively unchanged (*see Maps 11-13*).

3.2 Identified Deep and Extensive Disturbances

The study area was evaluated for extensive disturbances that have removed archaeological potential. Disturbances may include but are not limited to: grading below topsoil, quarrying, building footprints, or sewage and infrastructure development. *Section 1.3.2* of the *2011 S&G* considers infrastructure development among those “features indicating that archaeological potential has been removed.”

Disturbances were noted consisting of extant commercial structures, paved roadways and parking lots, past grading, and utilities, and correspond to the development/construction

activities seen in historical aerial imaging (*see Maps 14-15; Appendix C - Images 1-12, 16*). The construction of these features would have resulted in severe damage to the integrity of any archaeological resources which may have been present within their footprints. As per *Section 1.4.2* of the *2011 S&G*, an on-site visual inspection was conducted which confirmed the removal of archaeological potential by extensive and deep disturbances within these areas that have been identified as having/not having archaeological potential within an AMP.

3.3 Physiographic Features of No or Low Archaeological Potential

The study area was also evaluated for physical features of no or low archaeological potential. These usually include but are not limited to: permanently wet areas, exposed bedrock, and steep slopes (greater than 20°) except in locations likely to contain pictographs or petroglyphs, as per *Section 2.1, Standard 2.a.* of the *2011 S&G*. Areas of steep slope and permanently wet areas associated with the watercourse bisecting the study area, were identified as physical features of no or low archaeological potential (*see Maps 14-15; Images 5, 13-16*). Stage 2 AA is not required due to their no or low archaeological potential classification, as per *Section 2.1, Standard 2.a.*

3.4 Identified Areas of Archaeological Potential

Portions of the study area that exhibit neither extensively disturbed conditions, nor contain physical features of no or low archaeological potential are considered to have archaeological potential. The manicured grass and treed/overgrown areas near the watercourse are considered to retain archaeological potential (*see Maps 14-15; Images 17-18*).

4.0 RECOMMENDATIONS

In light of the findings detailed in preceding sections, the following recommendations are presented:

1. As per *Section 1.3.2* and *1.4.2* of the *2011 S&G*, portions of the study area exhibit disturbed conditions where archaeological potential has been removed. These disturbed areas are recommended to be exempt from further Stage 2 AA.
2. As per *Section 2.1, Standard 2.a* of the *2011 S&G*, lands evaluated as having no or low potential are recommended to be exempt from further Stage 2 AA.
3. All identified areas which contain archaeological potential, must be subjected to a Stage 2 AA. Given the urban location of the study, the manicured and overgrown areas must be subjected to a shovel test pit archaeological survey in accordance with *Section 2.1.2* of the *2011 S&G*.

No construction activities shall take place within the study area prior to the *MTCS* (Archaeology Program Unit) confirming in writing that all archaeological licensing and technical review requirements have been satisfied.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

1. This report is submitted to the *MTCS* as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the *MTCS*, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
2. It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
3. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.
4. The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the *Ministry of Consumer Services*.

6.0 BIBLIOGRAPHY AND SOURCES

Archaeological Services Inc. (2005). *Stage 1 Archaeological Assessment: Highway 7 and Vaughan North-South Link Transitway, City of Vaughan, Town of Richmond Hill and Town of Markham, Regional Municipality of York, Ontario*. (CIF# P057-140).

Archaeological Services Inc. (2008). *Stage 1 Archaeological Assessment: 407 Transitway, From Highway 400 to Kennedy Road, Regional Municipality of York, Ontario – GWP 252-96-00*. PIF# P057-348-2007 and P057-502-2008

Benn, C. (2008). Colonial Transformations. In Williamson, R.F. (Ed.). *Toronto: a short illustrated history of its first 12,000 years*. Toronto: James Lorimer & Company Ltd., Publishers, pp.53-72.

Birch, J. (2010). *Coalescence and Conflict in Iroquoian Ontario*. [Online]. Available at: http://uga.academia.edu/JenniferBirch/Papers/183903/Coalescence_and_Conflict_in_Iroquoian_Ontario. [Accessed 29 June 2016].

Chapman, L. J. and Putnam, D. F. (1984). *Physiography of Southern Ontario. 3rd ed. Ontario Geological Survey, Special Volume 2*. Toronto: Ministry of Natural Resources.

City of Vaughan. (N.D.). *A Brief History of Woodbridge*. [Online]. Available at: https://www.vaughan.ca/services/vaughan_archives/historyofvaughan/VaughanDocuments/A%20Brief%20History%20of%20Woodbridge.pdf. [Accessed 29 July 2016].

City of Vaughan. (2005). *Register of Property of Cultural Heritage Value, as per Part IV, Subsection 27, OHA*. [Online]. Available at: https://www.vaughan.ca/services/cultural/heritage_preservation/General%20Documents/Regi%20ster%20of%20Property%20of%20Cultural%20Heritage%20Value.pdf. [Accessed 28 July 2016].

City of Vaughan. (2013). *Roads, Tolls and Automobiles*. [Online]. Available at: https://www.vaughan.ca/services/vaughan_archives/historyofvaughan/VaughanDocuments/Roads%20Tolls%20and%20Automobiles.pdf. [Accessed 29 July 2016].

City of Vaughan. (2015). *Official Plan - Schedules* [Online]. Available at: [https://www.vaughan.ca/projects/policy_planning_projects/General%20Documents/Official%20Plan%20Vol%201/VOP%202010%20OMB%20approved/VOP%202010%20-%20July%202015%20Consolidation%20-%20Schedules%20\(Reduced\).pdf](https://www.vaughan.ca/projects/policy_planning_projects/General%20Documents/Official%20Plan%20Vol%201/VOP%202010%20OMB%20approved/VOP%202010%20-%20July%202015%20Consolidation%20-%20Schedules%20(Reduced).pdf). [Accessed 02 August 2016].

City of Vaughan. (2016a). *City of Vaughan – Designated Property Under the Ontario Heritage Act Part IV, Section 29*. [Online]. Available at:
https://www.vaughan.ca/services/cultural/heritage_preservation/General%20Documents/Individually%20Designated%20under%20Part%20IV%20of%20the%20Ontario%20Heritage%20Act.pdf. [Accessed 28 July 2016].

City of Vaughan. (2016b). *Heritage Conservation Districts*. [Online]. Available at:
https://www.vaughan.ca/services/cultural/heritage_preservation/heritage_conservation_districts/Pages/default.aspx. [Accessed 28 July 2016].

Coyne, J.H. (1895). *The Country of the Neutrals (as far as comprised in the County of Elgin) From Champlain to Talbot*. [Online]. Available at:
https://archive.org/stream/cihm_03619#page/n7/mode/2up. [Accessed 29 July 2016].

Dodd, C.F., Poulton, D. R., Lennox, P.A., Smith, D.G., and Warrick, G.A. (1990). The Middle Ontario Iroquoian Stage. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 321-359.

Ellis, C.J. and Deller, D.B. (1990). Paleo-Indians. In C.J. Ellis, and N. Ferris, (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 37-64.

Ellis, C.J., Kenyon, I.T., and Spence, M.W. (1990). The Archaic. In C.J. Ellis, and N. Ferris, (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 65-124.

Ellis, C.J. (2013). Before Pottery: Paleoindian and Archaic Hunter-Gathers. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press.

Ferris, N. (2013). Seeing Ontario's Past Archaeologically. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press, p.3-20.

Ferris, N. and Spence, M.W. (1995). The Woodland Traditions in Southern Ontario. *Revista de Arqueologia Americana* (9), 83-138.

Fox, W.A. (1990). The Middle Woodland to Late Woodland Transition. In C.J. Ellis, and N. Ferris, (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 171-188.

Gibson, M.M. (2006). *In the Footsteps of the Mississaugas*. Mississauga, Ontario: Mississauga Heritage Foundation.

Google Earth. (2016a). 2002 Google Earth Satellite Image. [Online]. Available at: <http://www.google.com/earth/>. [Accessed 28 July 2016].

Google Earth. (2016b). 2009 Google Earth Satellite Image. [Online]. Available at: <http://www.google.com/earth/>. [Accessed 28 July 2016].

Google Earth. (2016c). 2016 Google Earth Satellite Image. [Online]. Available at: <http://www.google.com/earth/>. [Accessed 28 July 2016].

Government of Canada. (2016). *Topographic Map 1:30 000, NTS Bolton 030M13*. [Online]. Available at: <http://atlas.gc.ca/toporama/en/index.html>. [Accessed 28 July 2016].

Government of Canada. (2016). *Topographic Map 1:30 000, NTS Markham 030M14*. [Online]. Available at: <http://atlas.gc.ca/toporama/en/index.html>. [Accessed 28 July 2016].

Hathaway, E, the Late (1930). The River Credit and the Mississaugas. In *Ontario Historical Society Papers and Records Vol. xxvi*. Toronto: Ontario Historical Society.

Heidenreich, C.E. (1978). Huron. In B.G. Trigger (Ed.). *Volume 15: Northeast*. Washington: Smithsonian Institution, pp.368-388.

Historical Plaques of York County. (2016). *Plaque #2 – Edgeley*. [Online]. Available at: <http://www.waynecook.com/ayork.html>. [Accessed 29 July 2016].

Hunting Survey Corporation Limited (1954). *Digital Aerial Photographs, Southern Ontario*. [Online]. Available at http://maps.library.utoronto.ca/data/on/AP_1954/index.html [Accessed 28 July 2016].

Johnston, D. (2004). *Connecting People to Place: Great Lakes Aboriginal History in Cultural Context*. [Online]. Available at: http://www.attorneygeneral.jus.gov.on.ca/inquiries/ipperwash/transcripts/pdf/P1_Tab_1.pdf. [Accessed 29 July 2016].

Karrow, P.F. and Warner, B.G. (1990). The Geological and Biological Environment for Human Occupation in Southern Ontario. In C.J. Ellis, and N. Ferris (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 5-35.

McMillan, A. D. and Yellowhorn, E. (2004). *First People in Canada*. Vancouver, B.C.: Douglas & McIntyre.

Miles & Co., (1878). *Illustrated Historical Atlas of the County of York and the Township of West Gwillimbury & Town of Bradford in the County of Simcoe, Ontario*. Toronto.

Mississauga of the New Credit First Nation (MNCFN). (N.D.). *The History of the Mississauga of the New Credit First Nation*. Ottawa, Ontario: Praxis Research Associates.

Mulvany, C.P. and Adam, G. M. (1885). *History of Toronto and County of York, Ontario: containing an outline of the history of the Dominion of Canada, a history of the city of Toronto and the county of York, with the townships, towns, villages, churches, schools; general and local statistics; biographical sketches, etc., etc. Volume 1*. [Online]. Available at: <http://www.ourroots.ca/toc.aspx?id=3668&qryID=9420b906-028b-49f4-85ad-c5f70662bcf2>. [Accessed 28 July 2016].

No Author. (1891). *Indian Treaties and Surrenders from 1680 to 1890*. Ottawa: Browns Chamberlin Printers.

Ontario Agricultural College (1954). *Soil Map of York County, Soil Survey Report No. 19*. Guelph: Soil Research Institute.

Ontario Historical Plaques. (2016). *Plaque Map*. [Online]. Available at: http://www.ontarioplaques.com/Menu_Map.html [Accessed 28 July 2016].

Ontario Ministry of Tourism, Culture and Sport. (2006). *Heritage Conservation Districts: A Guide to District Designation under the Ontario Heritage Act*. [Online]. Available at: http://www.mtc.gov.on.ca/en/publications/Heritage_Tool_Kit_HCD_English.pdf [Accessed 28 July 2016].

Ontario Ministry of Tourism, Culture and Sport. (2011). *Standards and Guidelines for Consultant Archaeologists*. Toronto: Ministry of Tourism, Culture and Sport.

Ontario Ministry of Tourism, Culture and Sport (2016). *Sites within a One Kilometre Radius of the Project Area*, provided from the Ontario Archaeological Sites Database, 07 July 2016.

Ramsden, P.G. (1990). The Hurons: Archaeology and Culture History. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 361-384.

Reaman, G.E. (1971). *A History of Vaughan Township*. [Online]. Available at: <http://www.ourroots.ca/e/toc.aspx?id=8222> [Accessed 28 July 2016].

The Regional Municipality of York. (2016a). *1970 Aerials*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016].

The Regional Municipality of York. (2016b). *1978 Aerials*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016].

The Regional Municipality of York. (2016c). *1988 Aerials*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016].

The Regional Municipality of York. (2016d). *1995 Aerials*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016].

The Regional Municipality of York. (2016e). *1995 Aerials*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016].

The Regional Municipality of York. (2016f). *Archaeological Potential Layer*. [Online]. Available at: <http://ww4.yorkmaps.ca/YorkMaps/CommunityServices/index.html>. [Accessed 28 July 2016]

Robinson, P.J. (1965). *Toronto during the French Regime: 1615-1793*. Toronto: University of Toronto Press.

Schmalz, P.S. (1991). *The Ojibwa of Southern Ontario*. Toronto, Canada: University of Toronto Press.

Smith, D.A. (1990). Iroquois Societies in Southern Ontario: Introduction and Historical Overview. In C.J. Ellis, and N. Ferris, (Eds.). *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 279-290.

Smith, D.B. (2013). *Sacred Feathers: The Reverend Peter Jones (Kahkewaquonaby) and the Mississauga Indians*. Toronto: University of Toronto Press.

Smith, D.G. (2002). Their Century and a Half on the Credit: The Mississaugas in Mississauga. In *Mississauga: The First 10,000 Years*. Toronto, Ontario: The Mississauga Heritage Foundation Inc., 123-138.

Spence, M.W., Pihl, R.H., and Murphy, C.R. (1990). Cultural Complexes of the Early and Middle Woodland Periods. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 125-169.

Stewart, A.M. (2013). Water and Land. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press

Surtees, R. J. (1986). *Treaty Research Report: The Williams Treaties*. [Online]. Available at http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/traw_1100100029001_eng.pdf. [Accessed 29 July 2016].

- Surtees, R.J. (1994). Land Cessions, 1763-1830. In E.S. Rogers, (Ed.). *Aboriginal Ontario: Historical Perspectives on the First Nations*. Toronto, Ontario: Dundurn Press Limited, pp. 92-121.
- Templeton, L. (2016a). Email to D. Rende, re: Listed Heritage Properties in the City of Vaughan. 28 July 2016.
- Templeton, L. (2016b). Email to R. Pearce, re: Report Request: Vaughan. 12 July 2016.
- Templeton, L. (2016c). Email to R. Pearce, re: Report Request: Vaughan. 28 July 2016
- Templeton, L. (2016d). Email to G. Kearsley, re: Report Request: Vaughan. 29 July 2016
- Templeton, L. (2016e). Email to archaeology@ontario.ca, re: Report Request: P390-0225-2016. 12 July 2016
- Templeton, L. (2016f). Email to archaeology@ontario.ca, re: Report Request: P390-0225-2016. 28 July 2016
- Toronto and Region Conservation Authority (TRCA). (2007). *Rouge River State of the Watershed Report*. [Online]. Available at: <http://www.trca.on.ca/dotAsset/37769.pdf>. [Accessed 29 July 2016].
- Tremaine, G. (1860). *Tremaine's Map of the County of York, Canada West*. Toronto.
- Trigger, B.G. (1994). The Original Iroquoians: Huron, Petun and Neutral. In Edward S. Rogers (Eds.). *Aboriginal Ontario: Historical Perspectives on the First Nations*. Toronto, Ontario: Dundurn Press Limited, pp 41-63.
- Warrick, G.A. (2000). The Precontact Iroquoian Occupation of Southern Ontario. In *Journal of World Prehistory*, Vol.14, No.4, pp. 415-466.
- Warrick, G. (2008). *A Population History of the Huron-Petun, A.D. 500-1650*. New York: Cambridge University Press.
- Warrick, G. (2013). The Aboriginal Population of Ontario in Late Prehistory. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press.
- Williamson, R.F. (1990). The Early Iroquoian Period of Southern Ontario. In Ellis, C.J. and N. Ferris (Eds.) *The Archaeology of Southern Ontario to A.D. 1650*. London, Ontario: Occasional Publication of the London Chapter, OAS, pp. 291-320.

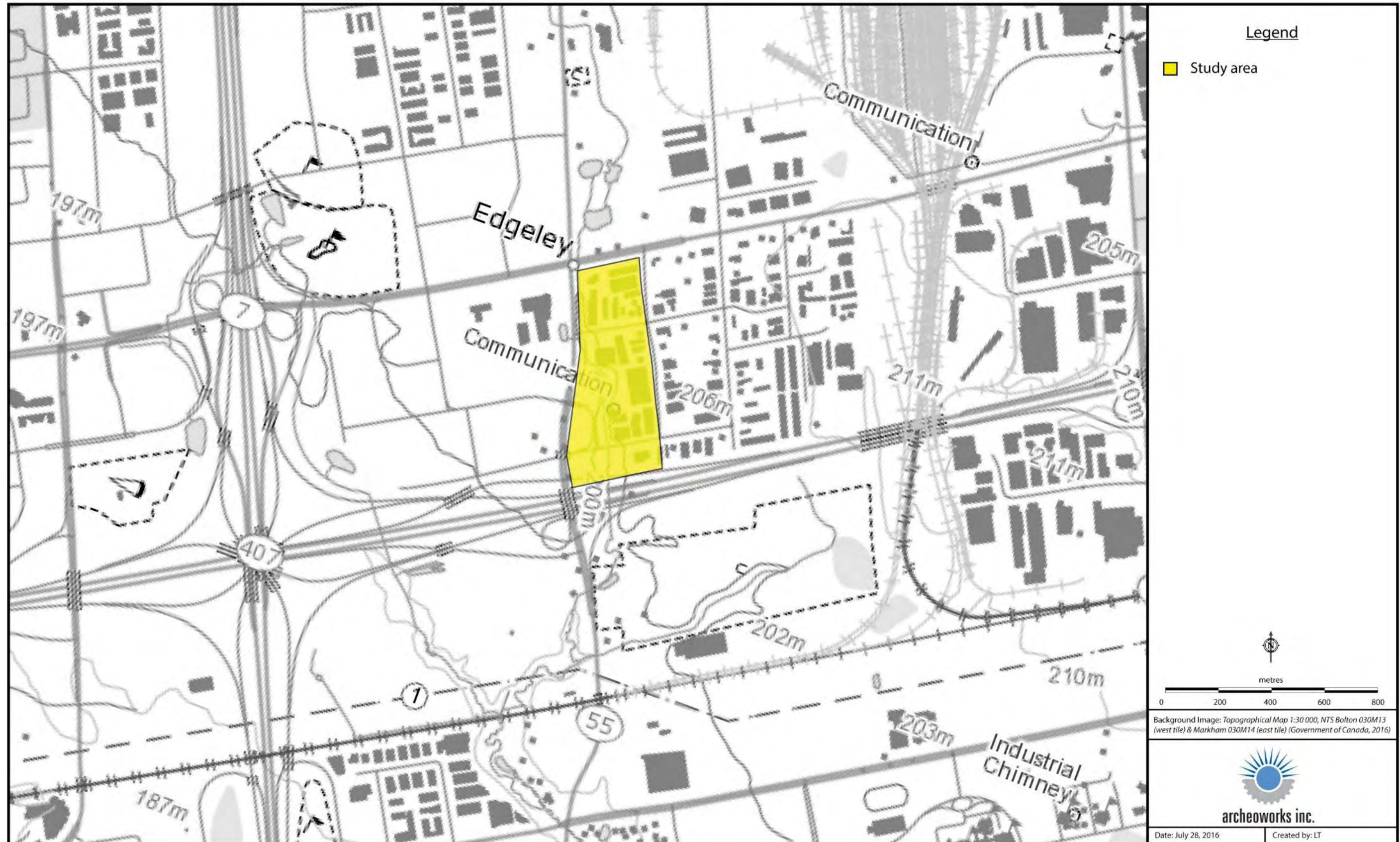
Williamson, R.F. (2013). The Woodland Period, 900 BCE to 1700 CE. In Munson, M.K. and Jamieson, S.M (Eds.) *Before Ontario: The Archaeology of a Province*. Montreal & Kingston, Ontario: McGill Queen's University Press

Wright, J.V. (1994). Before European Contact. In Edward S. Rogers (Eds.). *Aboriginal Ontario: Historical Perspectives on the First Nations*. Toronto, Ontario: Dundurn Press Limited, pp 21-40

Wright, J.V. (1999). *A History of the Native People of Canada: Volume II (1,000B.C. – A.D. 500)*. Hull, Quebec: Museum of Civilization.

APPENDICES

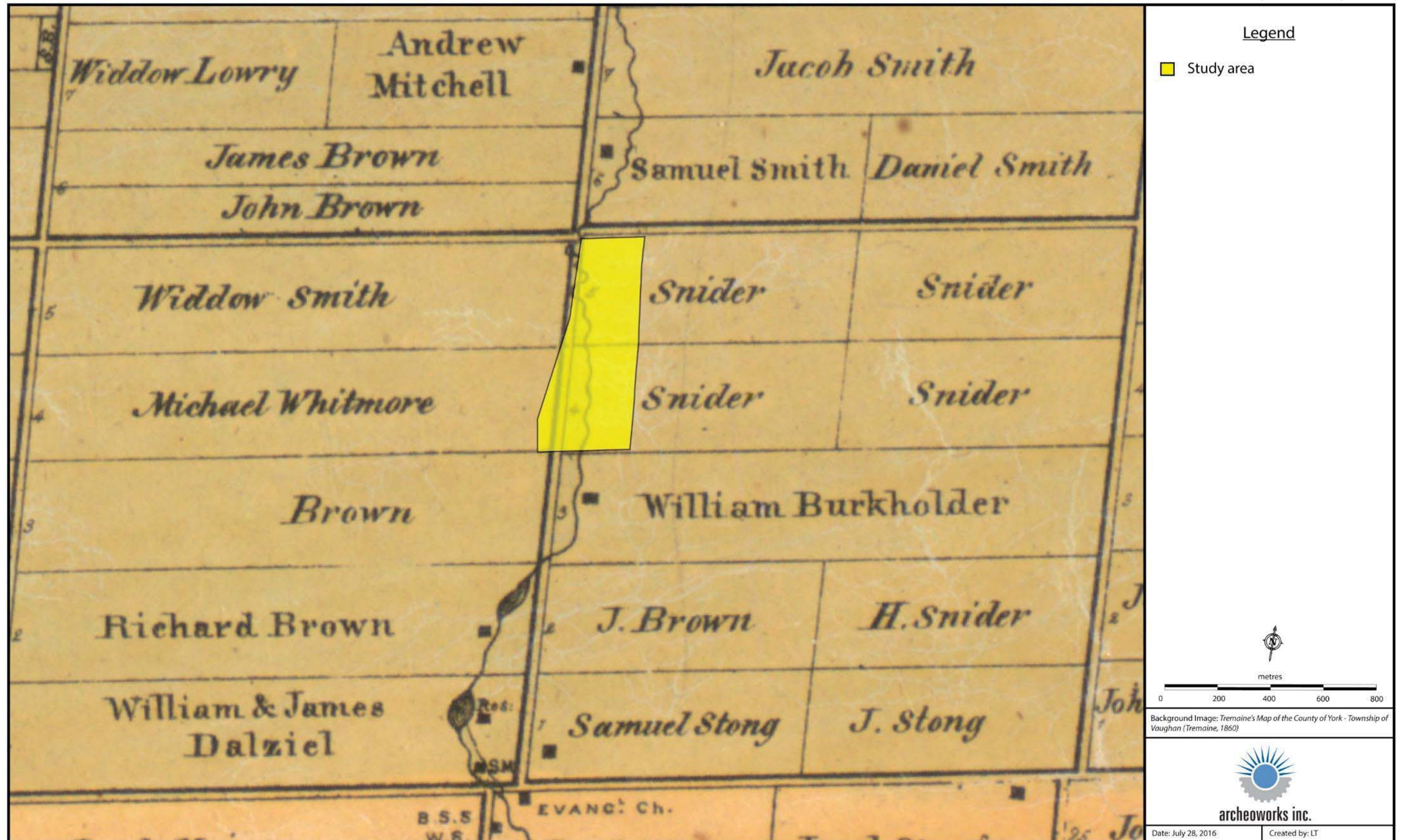
APPENDIX A: MAPS



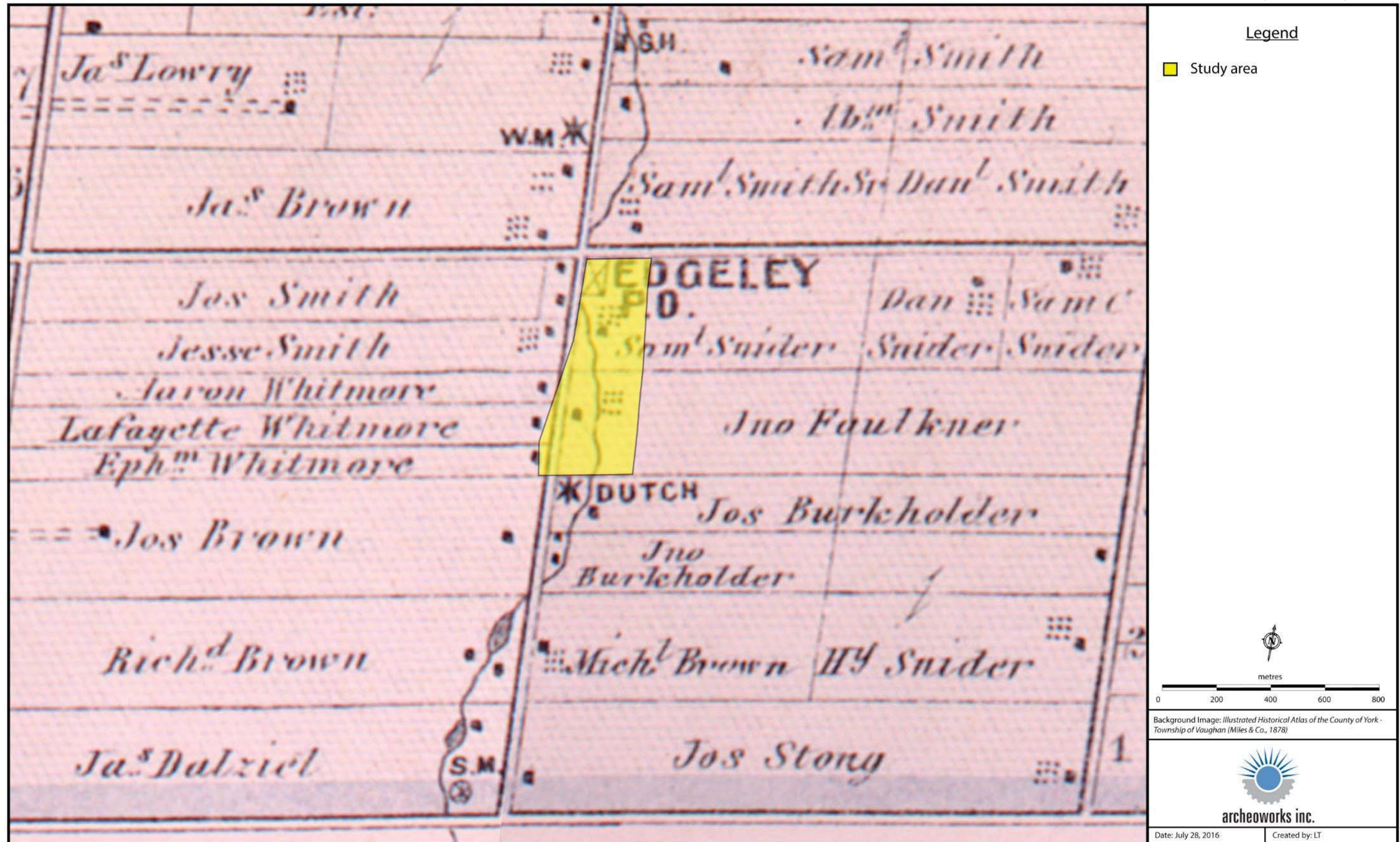
Map 1: Topographical map 1:30,000, NTS Bolton 030M13 (west tile) and Markham 030M14 (east tile) (Government of Canada, 2016) identifying the Stage 1 AA study area.



Map 2 Identifying areas of archaeological potential within the Stage 1 AA study area according to the York Region AMP (The Regional Municipality of York, 2016f).



Map 3: Stage 1 AA study area within the Tremaine's Map of the County of York (Tremaine, 1860).



Map 4: Stage 1 AA study area within the Illustrated Historical Atlas of the County of York (Miles & Co., 1878).



Map 5: Stage 1 AA study area within a 1954 aerial photograph (Hunting Survey Corporation Ltd., 1954).





Map 7: Stage 1 AA study area within a 1978 aerial photograph (The Regional Municipality of York, 2016b).





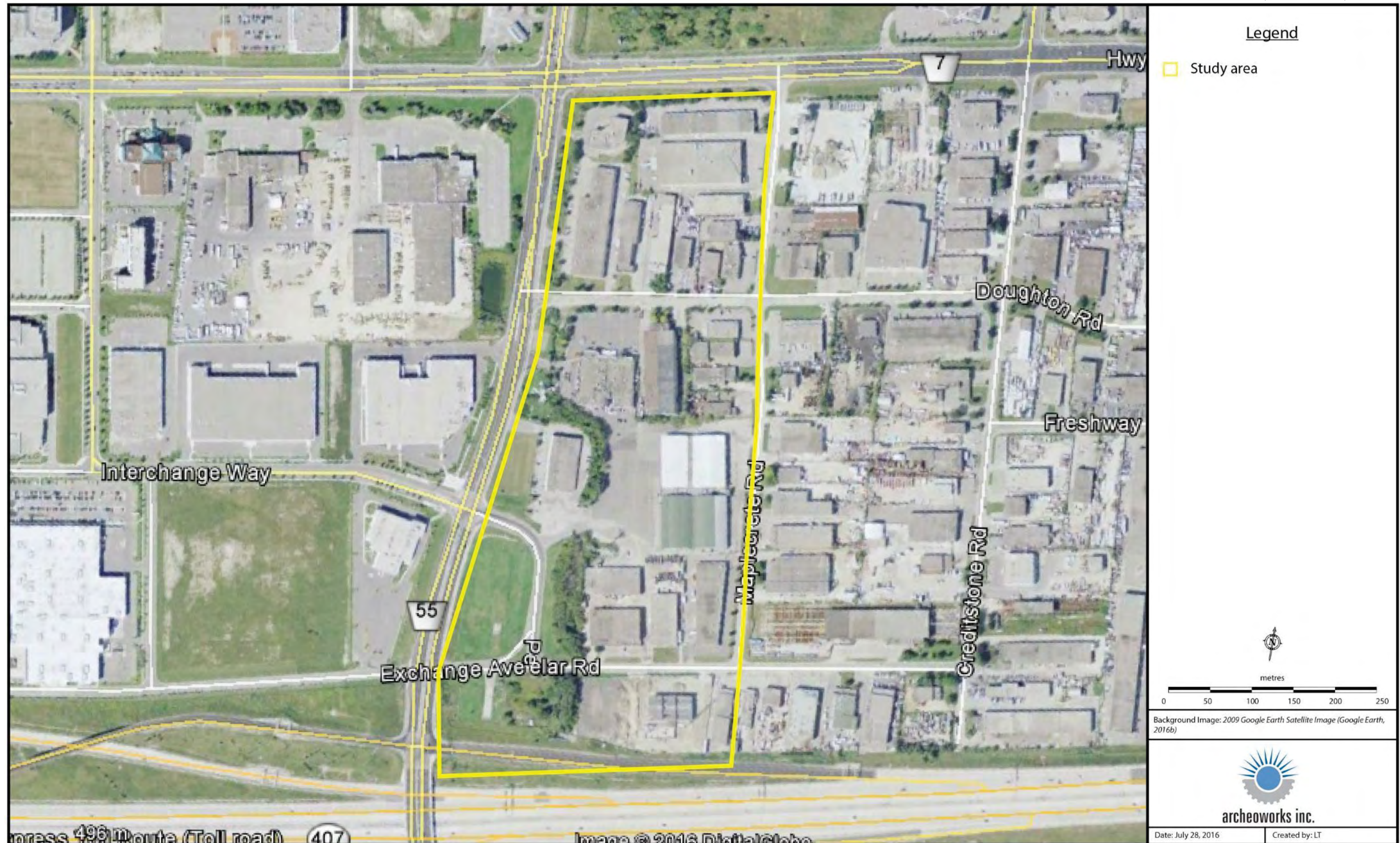
Map 9: Stage 1 AA study area within a 1995 aerial photograph (The Regional Municipality of York, 2016d).



Map 10: Stage 1 AA study area within a 1999 aerial photograph (The Regional Municipality of York, 2016e).



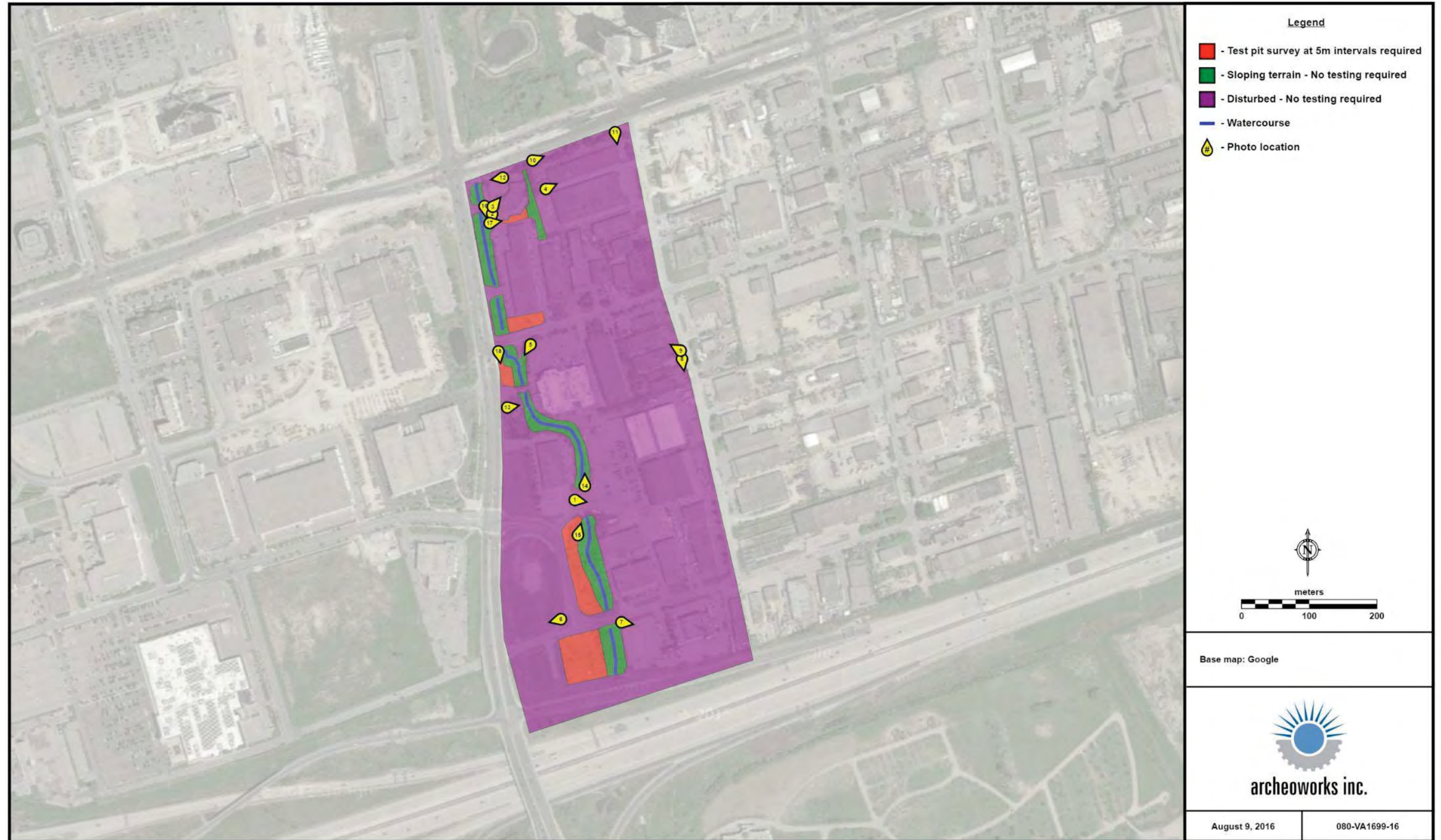
Map 11: Stage 1 AA study area within a 2002 satellite image (Google Earth, 2016a).



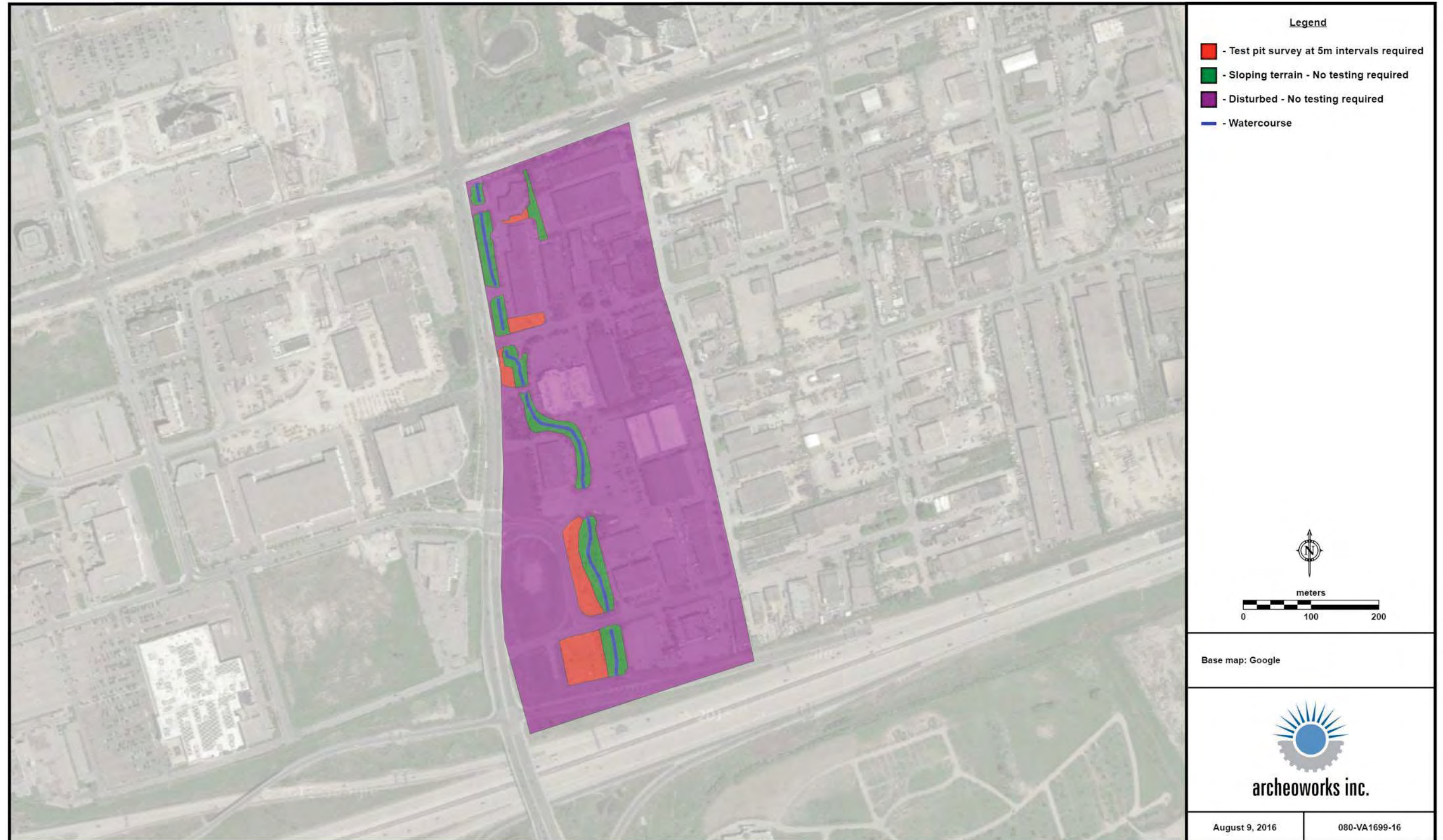
Map 12: Stage 1 AA study area within a 2009 satellite image (Google Earth, 2016b).



Map 13: Stage 1 AA study area within a 2016 satellite image (Google Earth, 2016c).



Map 14: Stage 1 AA results of the study area with photo locations indicated.



Map 15: Stage 1 AA results of the study area.

APPENDIX B: SUMMARY OF BACKGROUND RESEARCH

Feature of Archaeological Potential		Yes	No	Unknown	Comment
1	Known archaeological sites within 300 m?	X			If Yes, potential confirmed
Physical Features		Yes	No	Unknown	Comment
2	Is there water on or near the property?	X			If Yes, potential confirmed
2a	Presence of primary water source within 300 metres of the study area (lakes, rivers, streams, creeks)		X		If Yes, potential confirmed
2b	Presence of secondary water source within 300 metres of the study area (intermittent creeks and streams, springs, marshes, swamps)		X		If Yes, potential confirmed
2c	Features indicating past presence of water source within 300 metres (former shorelines, relic water channels, beach ridges)		X		If Yes, potential confirmed
2d	Accessible or inaccessible shoreline (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh)		X		If Yes, potential confirmed
3	Elevated topography (knolls, drumlins, eskers, plateaus, etc.)	X			If Yes to two or more of 3-5 or 7-10, potential confirmed
4	Pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground		X		If Yes to two or more of 3-5 or 7-10, potential confirmed
5	Distinctive land formations (mounds, caverns, waterfalls, peninsulas, etc.)		X		If Yes to two or more of 3-5 or 7-10, potential confirmed
Cultural Features		Yes	No	Unknown	Comment
6	Is there a known burial site or cemetery that is registered with the Cemeteries Regulation Unit on or directly adjacent to the property?		X		If Yes, potential confirmed
7	Associated with food or scarce resource harvest areas (traditional fishing locations, food extraction areas, raw material outcrops, etc.)		X		If Yes to two or more of 3-5 or 7-10, potential confirmed
8	Indications of early Euro-Canadian settlement (monuments, cemeteries, structures, etc.) within 300 metres	X			If Yes to two or more of 3-5 or 7-10, potential confirmed
9	Associated with historic transportation route (historic road, trail, portage, rail corridor, etc.) within 100 metres of the property	X			If Yes to two or more of 3-5 or 7-10, potential confirmed
Property-specific Information		Yes	No	Unknown	Comment
10	Contains property designated under the Ontario Heritage Act		X		If Yes to two or more of 3-5 or 7-10, potential confirmed
11	Local knowledge (aboriginal communities, heritage organizations, municipal heritage committees, etc.)		X		If Yes, potential confirmed
12	Recent ground disturbance, not including agricultural cultivation (post-1960, extensive and deep land alterations)	X – Parts of study area			If Yes, low archaeological potential is determined

APPENDIX C: IMAGES



Image 1: View of disturbances associated with a paved parking area and extant structures.



Image 2: View of disturbances associated with a paved parking area and extant structures.



Image 3: View of disturbances associated grading/gravel fill, extant structure, and utilities.



Image 4: View of disturbances associated with a paved parking area and extant structures.



Image 5: View of disturbances associated with a culvert. Also a view of permanently wet area.



Image 6: View of disturbances associated with paved roadway, embankments, and utilities.



Image 7: View of disturbances associated with paved area, utilities, and extant structure.



Image 8: View of disturbances associated with paved roadway/parking area, utilities, and extant structures.



Image 9: View of disturbances associated with paved parking area, extant structure, and utilities.



Image 10: View of disturbances associated with paved parking lot, extant structures, utilities, and gravel. Note new sod layer overlying gravel/previous grading.



Image 11: View of disturbances associated with paved parking lot, extant structure, underground parking garage entrance, and embankment.



Image 12: View of disturbances associated with culvert and utilities.



Image 13: View of permanently wet area.



Image 14: View of steep slope within the study area and permanently wet area.



Image 15: View of steep slope within the study area.



Image 16: View of steep slope within the study area. Also a view of disturbances associated with utilities.



Image 17: View of overgrown grass retaining archaeological potential.



Image 18: View of manicured grass retaining archaeological potential.

APPENDIX D: INVENTORY OF DOCUMENTARY AND MATERIAL RECORD

Project Information:				
Project Number:		080-VA1699-16		
Licensee:		Nimal Nithiyantham (P390)		
MTCS PIF:		P390-0225-2016		
Document/ Material			Location	Comments
1.	Research/ Analysis/ Reporting Material	Digital files stored in: /2016/080-VA1699-16 - Vaughan Metropolitan Centre - Black Creek Renewal Class EA- Vaughan/Stage 1	Archeoworks Inc., 16715-12 Yonge Street, Suite 1029, Newmarket, ON, Canada, L3X 1X4	Stored on Archeoworks network servers
2.	Digital Photographs	Digital Images: 50 digital photos	Archeoworks Inc., 16715-12 Yonge Street, Suite 1029, Newmarket, ON, Canada, L3X 1X4	Stored on Archeoworks network servers

Under Section 6 of Regulation 881 of the *Ontario Heritage Act*, *Archeoworks Inc.* will, “keep in safekeeping all objects of archaeological significance that are found under the authority of the licence and all field records that are made in the course of the work authorized by the licence, except where the objects and records are donated to Her Majesty the Queen in right of Ontario or are directed to be deposited in a public institution under subsection 66 (1) of the Act.”

APPENDIX D

Cultural Assessment Checklist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
 - is a recognized heritage property
 - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Vaughan Metropolitan Centre Black Creek Renewal Class Environmental Assessment

Project or Property Location (upper and lower or single tier municipality)

City of Vaughan, York Region

Proponent Name

City of Vaughan

Proponent Contact Information

Jennifer Cappola-Logullo, Project Manager; Tel. 905-738-5700 Ext. 8433; Email: Jennifer.Logullo@vaughan.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the <i>Ontario Heritage Act</i> as being of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. a National Historic Site (or part of)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. designated under the <i>Heritage Railway Stations Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. designated under the <i>Heritage Lighthouse Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note:** To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- [Ontario Heritage Trust](#)
- local land registry office (for a title search)

ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- [Ontario Heritage Trust](#)

v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the [Heritage Lighthouses of Canada](#) website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's [Heritage directory](#) – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a [list of plaques](#) commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a [list of plaques](#) commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).

APPENDIX E

SWM Strategy for VMC Southeast Quadrant

MEMORANDUM

DATE	May 7, 2018
TO	Jennifer Cappola-Logullo, P.Eng., Project Manager – Vaughan Metropolitan Centre, Development Engineering & Infrastructure Planning, City of Vaughan
CC	Michael Frieri, City of Vaughan Saad Yousaf, City of Vaughan Dana Khademi, City of Vaughan
SUBJECT	SWM Strategy for VMC Southeast Quadrant
FROM	Tony Dang, P.Eng. and Steve Hollingworth, P.Eng.
PROJECT NUMBER	12122

1 Introduction and Background

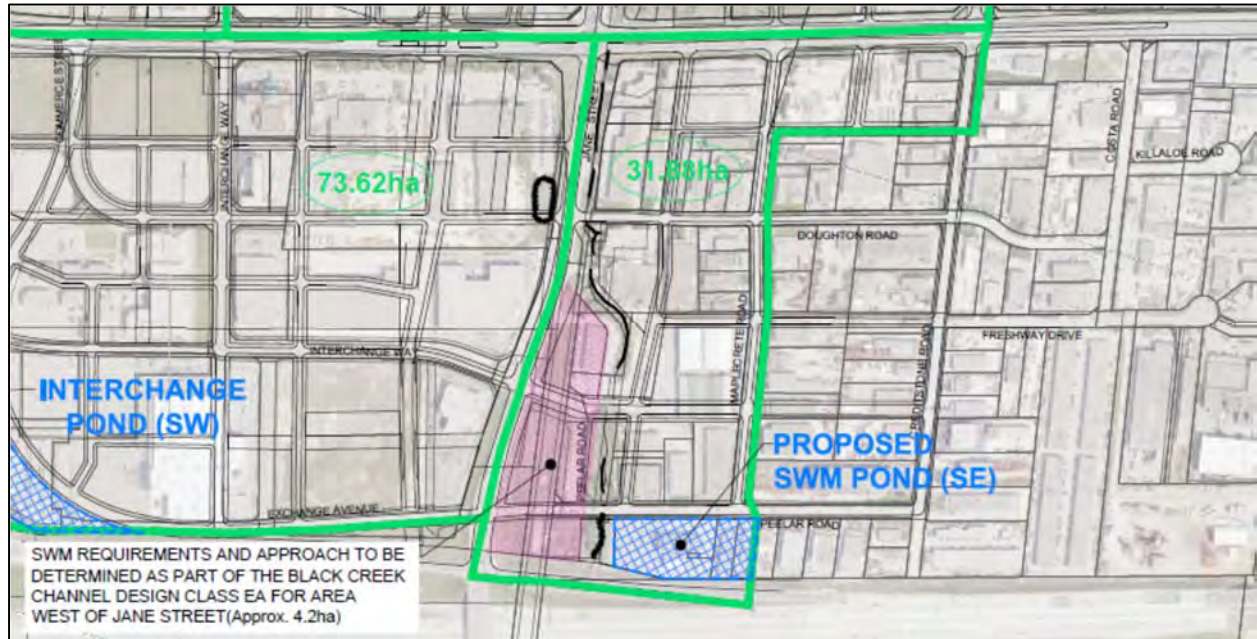
The Municipal Infrastructure Group Ltd. (TMIG) was retained by the City of Vaughan (the City) to review the stormwater management (SWM) strategy for the southeast quadrant of the Vaughan Metropolitan Centre (VMC), established by the VMC Municipal Servicing Master Plan (Master Plan) that was completed in 2012. The Master Plan was initiated to identify and evaluate alternatives for the provision of water, wastewater and stormwater servicing to support development objectives established by the VMC Secondary Plan. The Master Plan SWM strategy was reviewed because of land use planning challenges for the VMC southeast quadrant since 2012 that limit the implementation the SWM strategy.

In particular, the provision for an end-of-pipe facility is severely constrained by land requirements to implement the facility as well as the conveyance systems needed to deliver storm runoff to such a facility. As a result, an 'Alternative SWM Strategy' was developed with the aim to improve the existing stormwater conditions to the extent possible in the VMC southeast quadrant. The Alternate SWM Strategy consists of various controls on the development and re-development of sites and rights-of-way (ROWs) for the VMC southeast quadrant.

The VMC southeast quadrant covers a total area of approximately 31 ha (**Figure 1-1**). The existing developed parcels are serviced via a dual drainage system designed based on the City's prevailing design criteria. Storm sewers were designed to capture and convey runoff from a 5-year return period event while overland flow routes (primarily roads) provide overland flow conveyance for excess runoff generated by larger return period events. There are no apparent SWM controls for the existing development in the VMC southeast quadrant (TMIG, 2012).

This technical memorandum provides an overview of the criteria and implementation requirements for the Master Plan SWM Strategy and the proposed Alternative SWM Strategy for the VMC southeast quadrant. An evaluation of the Alternative SWM Strategy through hydrological modelling is also described.

Figure 1-1 VMC Southeast Quadrant Drainage Area



Adapted from VMC Municipal Servicing Master Plan, Figure 11-1 (TMIG, 2012)

2 Overview of SWM Strategies in the VMC Southeast Quadrant

2.1 SWM Criteria and Targets

2.1.1 Master Plan SWM Strategy

The Master Plan's recommended SWM strategy for the VMC southeast quadrant is outlined as follows:

- On-site control for each development and redevelopment block where the peak release rate is controlled to the 2-year post development flow rate, based on an 80% level of imperviousness, with the 100-year less the 2-year excess runoff stored on-site.
- On-site retention of 15 mm over the building footprint, and an additional 15 mm on-site retention over landscaped areas. The capture of rainfall events is to be achieved through the implementation of Low Impact Development practices (LIDs).
- Remaining runoff from development blocks, ROWs, and other uncontrolled areas are to be directed via a dual-drainage storm network to end-of-pipe stormwater management facilities, which discharge to Black Creek. In the case of the VMC southeast quadrant, a new end-of-pipe facility was proposed, to be located east of Jane Street and the Black Creek main branch, north of Highway 407 and south of Peelar Road.

The end-of-pipe facility water quality storage requirement was based on Ministry of the Environment and Climate Change (MOECC) criteria for Enhanced protection (80% long-term TSS removal) (MOE, 2003). Erosion control storage requirements were based on providing a minimum of 48-hour detention of runoff generated by a 25 mm storm event.

Quantity control targets were based on the Toronto and Region Conservation Authority's (TRCA) Humber River Stormwater Management Quantity Control Rates. The unit flow equations are typically applied to greenfield development sites (while the VMC southeast quadrant is currently developed) and thus the targeted flow rates are much lower than the traditional target of matching post-development flows to pre-development flows.

2.1.2 Alternative SWM Strategy

An alternative SWM strategy was considered in lieu of the Master Plan SWM Strategy due to the considerable challenges, time and expense to expropriate properties for construction of an end-of-pipe facility and associated conveyance system (further described in **Section 2.2.1**). It is expected that the majority of the VMC southeast quadrant would be developed with varying forms of interim controls before the end-of-pipe facility and conveyance systems could be implemented. Rather than managing storm runoff by means of a number of long-term but interim measures, the Alternative SWM Strategy was developed to manage stormwater without the need to acquire private lands for a centralized end-of-pipe facility and associated conveyance system. Without an end-of-pipe facility, SWM controls are focused on individual developments and ROWs, which can be implemented sooner on a site by site basis as the VMC southeast quadrant is redeveloped and remain in place as the ultimate stormwater management solution. Earlier installation of SWM controls will provide more immediate improvements to stormwater quantity and quality in the area. The Alternative SWM Strategy is described below and is compared to the Master Plan SWM strategy in **Table 2-1**.

- On-site control for each development and redevelopment block where the peak release rate is controlled to the 2-year post development flow rate, based on an 80% level of imperviousness, with the 100-year less the 2-year excess runoff stored on-site. This is consistent with the Master Plan SWM Strategy. An additional provision to provide water quality treatment to Enhanced protection (80% long-term TSS removal) is proposed, to be achieved through oil/grit separators, filtration systems, grassed swales, and/or combinations of multiple types of SWM controls.
- The Master Plan's end-of-pipe facility in the southeast quadrant of the VMC is not included in the Alternative SWM Strategy. The removal of the end-of-pipe facility is partially compensated by an increase in the recommended ROW retention controls, recognizing that these controls will not meet peak flow rate reduction targets for greenfield development sites (Humber River unit flow rates), but a reduction in peak flow rates compared to existing conditions is expected. The recommended on-site retention in the Alternative SWM Strategy is as follows:
 - On-site retention of 15 mm over entire development blocks, including building footprint, landscaped areas and driveways. This is an increase in the requirement for on-site retention over the Master Plan by including all areas of development blocks, instead of only the building footprint and landscaped areas. The capture and retention of runoff from rainfall events is to be achieved through the implementation of LID measures.
 - 15 mm retention over ROWs through the implementation of LID measures. Runoff retention in ROWs was not a recommendation in the Master Plan.

2.1.3 Comparison of SWM Strategy Criteria

Table 2-1 Comparison of SWM Strategies

	VMC Master Plan	Alternative SWM Strategy
<u>Water Quality</u>		
On-site	None	Enhanced (80% long-term TSS removal)
ROWs	None	Treated via retention
End-of-pipe facility	Enhanced (80% long-term TSS removal)	n.a.
<u>Runoff Volume / Water Balance</u>		
On-site	15 mm for roof and landscaped areas only	15 mm for the entire site
Road ROWs and Parks	None	15 mm
End-of-pipe facility	None	n.a.
<u>Peak Flow</u>		
On-site	Controlled to 2-year post development (100-year less 2-year runoff stored on-site)	Controlled to 2-year post development (100-year less 2-year runoff stored on-site)
ROWs	None	15 mm retention
End-of-pipe facility	Humber River Stormwater Management Quantity Control Rates	n.a.

2.2 Implementation

2.2.1 Master Plan SWM Strategy

As mentioned above, the implementation of the Master Plan SWM Strategy is severely constrained due to land use challenges that are specific to the VMC southeast quadrant. In particular, a new storm sewer network will need to be constructed across the entire VMC southeast quadrant within new ROWs to convey runoff to the proposed end-of-pipe facility. The key consideration is that the existing ROWs (and associated storm sewers) are oriented east-west, while the proposed end-of-pipe facility is located at the southernmost block of the VMC southeast quadrant and requires a trunk sewer that is orientated north-south.

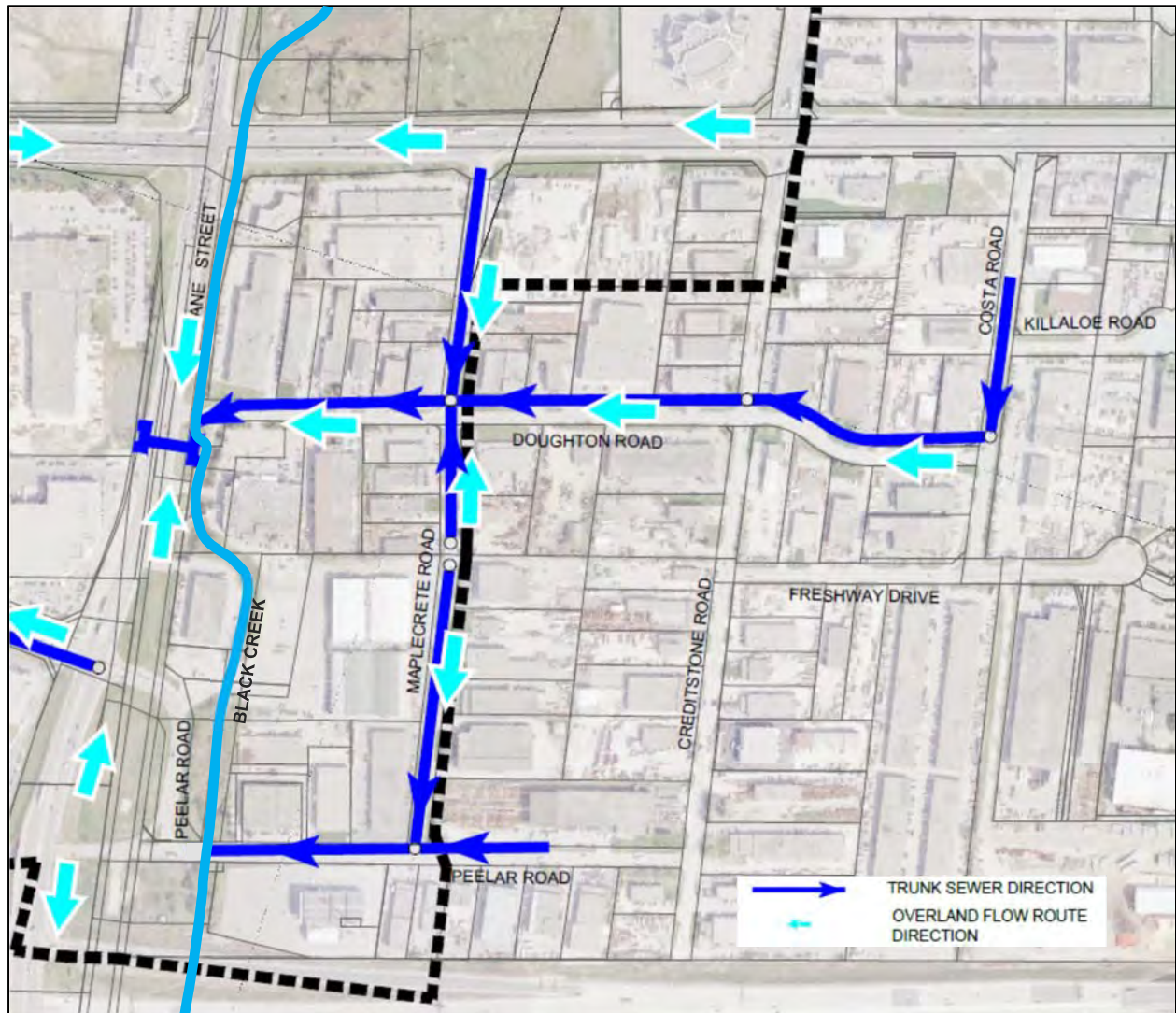
To illustrate, **Figure 2-1** shows the existing storm sewer network with two main trunk sewers carrying flow into Black Creek via outlets on Doughton Road and Peelar Road. Under the Master Plan SWM Strategy, implementation of the new end-of-pipe facility requires a new storm sewer network to be constructed in conjunction with a new road network. According to the VMC Secondary Plan, there will be a new ROW through the centre of the VMC southeast quadrant (**Figure 2-2**) that would be the location for a new trunk sewer to collect and convey runoff from the entire southeast quadrant area to the end of pipe facility. The existing trunk sewer network will remain in place to convey runoff from areas to the east of the VMC southeast quadrant to Black Creek.

However, because the new ROW is located over existing development, the land for the ROW and associated storm sewer will need to be acquired or expropriated, essentially affecting the majority of the VMC southeast quadrant at one time. Even if the lands for the end-of-pipe facility were acquired, without the trunk sewer connection, any new development will need to tie into the existing storm sewer network and discharge untreated to Black Creek. The length

of time required for the full re-development of the VMC southeast quadrant may be decades, which will effectively postpone the implementation of the Master Plan SWM Strategy until near full build-out conditions.

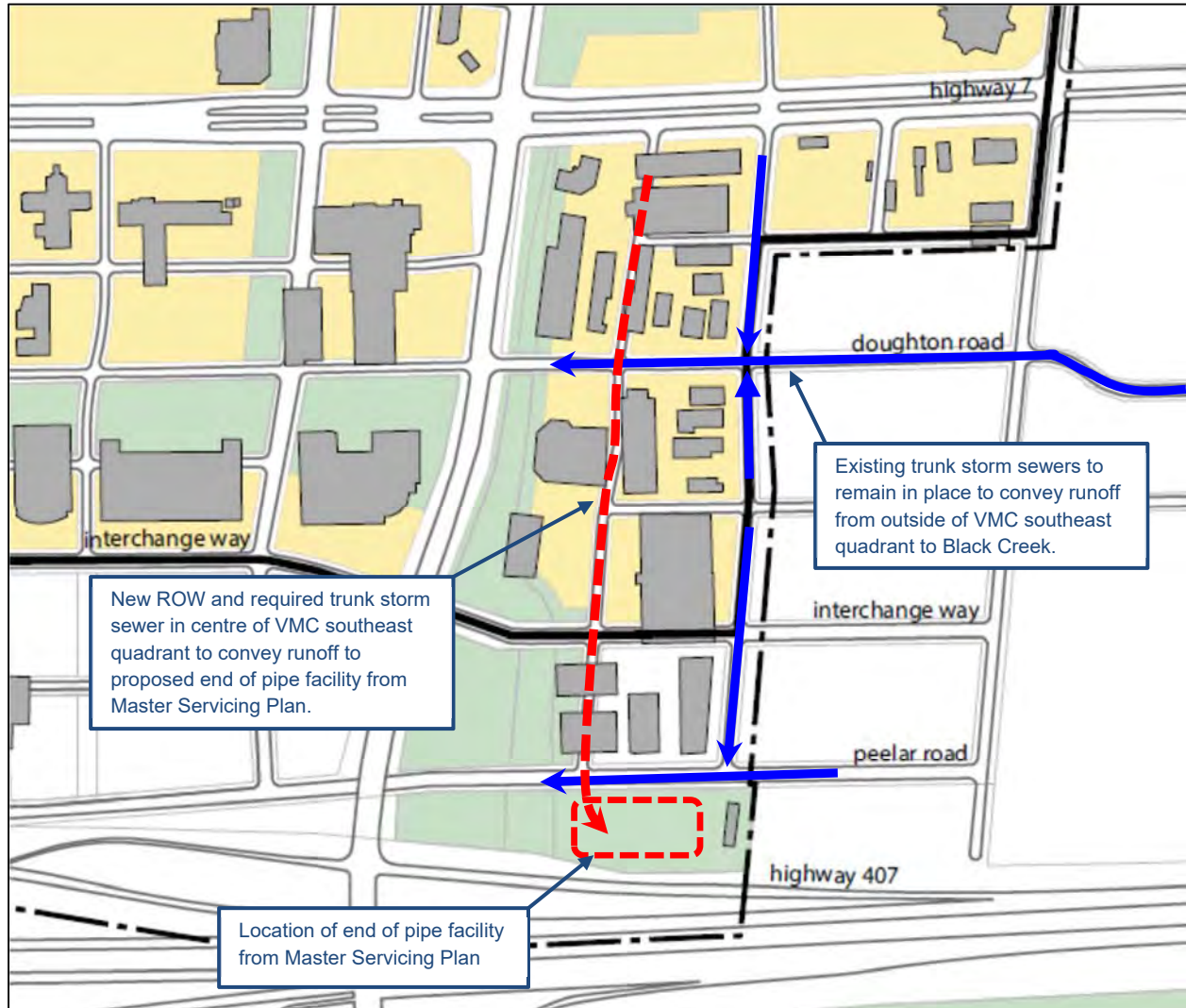
For this reason, an Alternative SWM Strategy was explored to determine if SWM controls can be locally implemented to redevelopment areas. The following section discusses the Alternative SWM Strategy and implementation considerations.

Figure 2-1 VMC Southeast Quadrant Hydrological Model Land Use Area Delineation



Adapted from VMC Municipal Servicing Master Plan, Figure 3-4 (TMIG, 2012)

Figure 2-2 VMC Southeast Quadrant Road Network in VMC Secondary Plan



Adapted from VMC Secondary Plan, Schedule A (June 2017 Consolidation)

2.2.2 Alternative SWM Strategy

The implementation of the Alternative SWM Strategy can be completed through a variety of LID measures and the options contained herein are not intended to prescribe the exact LID practices that shall be used. For on-site retention, developers will be responsible for determining how best to achieve the retention targets on their site. It can consist of green roofs, rainwater harvesting, infiltration-based LIDs, storage tanks, or a combination of these and other emerging LID practices, all of which are relatively feasible during the redevelopment of the existing area.

As mentioned in **Section 2.1.1**, the key advantage of the Alternative SWM Strategy is the ability to implement the permanent controls as each portion of the VMC southeast quadrant is redeveloped, regardless of where the developments are located. Specific considerations for construction and maintenance are as follows:

Private Development Sites: Measures to achieve the applicable Alternative SWM Strategy criteria will be integrated with and constructed at the same time as the new or re-development project. All on-site measures will be operated and maintained by the owner (condominium corporation or other entity as appropriate).

New Municipal Roadways: Measures to achieve the applicable Alternative SWM Strategy criteria will be constructed by the developer of the lands containing the new roadways. These measures will be maintained by the developer until

such time as the road ROWs and associated operation and maintenance responsibilities are conveyed to the City. In some instances, there may be strata agreements with the City and developer to allow parking structures or other private facilities to be constructed under new municipal roadways, and the presence of these structures may constrain the ability to achieve the 15 mm runoff retention criterion for the road ROW. These circumstances will be evaluated on a case-by-case basis to determine if runoff from roadways within strata agreements will be treated by independent SWM and LID measures within the ROW or will be treated by the private SWM and LID facilities for the associated development site.

Parks: Measures to achieve the applicable Alternative SWM Strategy criteria will be integrated with and constructed by the City at the same time as park itself, and these measures will be operated and maintained by the City. Where appropriate and accepted by the City's Parks department, it may be possible to construct LIDs within parks to treat runoff from the park as well as a portion of new or reconstructed municipal roadways. In such cases, the LIDs must be implemented in conjunction with construction or reconstruction of the roadway.

Existing Municipal Roadways: Existing municipal roadways in the study area include Doughton Road, Peelar Road, Maplecrete Road and a portion of Creditstone Road. Measures to achieve the applicable Alternative SWM Strategy criteria will be installed when these existing roadways are rehabilitated or reconstructed as part of the City's overall roadway capital program. It is not necessary to install such measures in concert with adjacent development if the roadway otherwise does not require rehabilitation. Once installed, SWM and LID measures in the reconstructed roadways will be operated and maintained by the City.

Urban Channel Buffers: Consideration was given to underground storage tanks located within the urban buffer areas on the east side of the realigned Black Creek channel. However, the primary objective of the Alternative SWM Strategy is to minimize runoff volumes, and storage tanks in the buffer areas are not expected to significantly reduce runoff volumes. Infiltration through the base of a tank may not be desirable, as the base of the tanks may be above the base of the channel and infiltration may saturate and destabilize the soils near the toe of the channel banks.

Storage tanks in the urban buffer areas were also considered as an alternate peak flow reduction strategy. However, the storage tanks could not provide the same storage volume as the end-of-pipe facility from the Master Plan SWM Strategy. A storage volume of more than 4,000 m³ would be needed to control peak flows from just the road right-of-way areas to the Humber River Stormwater Management Quantity Control Rates. To control peak flow rates, the storage tanks would need to outlet above the 100-year water level in the channel, and still be deep enough for the storm sewers to connect to the tanks. Given these restrictions on the height of a tank, the storage that could be provided within tanks in the urban buffer areas would be significantly less than required. Note also that even if feasible, this approach would require a separate storm sewer system to capture runoff from just the VMC southeast quadrant road right-of-ways and direct it to the tanks for storage and attenuation, as the existing storm sewers also convey runoff from areas external to the VMC southeast quadrant.

Additional study will be needed to more accurately determine the feasibility of storage tanks in the urban buffer to achieve the desired level of runoff reduction and/or peak flow control. The remainder of this section focuses on potential implementation methods for public lands, excluding urban buffers, to demonstrate the practicality of the Alternative SWM Strategy.

The majority of 15 mm retention on public lands is associated with runoff from ROWs. Two examples of LIDs were explored: (1) infiltration trenches with perforated pipes and (2) Silva cell tree planters. Again, the options to achieve 15 mm retention are not limited to these methods and a treatment train approach can also be applied. As noted earlier in this section, it may also be possible to direct runoff from municipal roadways to SWM and LID measures in parks for treatment.

The viability of infiltration trenches in ROWs (also known as exfiltration systems or third pipe systems) and Silva Cells were explored by examining the implementation requirements per metre of ROW length, using the widest proposed ROW in the VMC southeast quadrant as the example. Calculations and sketches are also appended to this memo to demonstrate that a roughly 1 m wide x 1 m deep infiltration trench could capture all road runoff from a 15 mm storm event, and can be reasonably accommodated within the planned road ROWs for the VMC (**Attachment 1**). Calculations are also included to estimate the volume required within Silva Cells or similar enhanced tree pits/trenches to achieve

the 15 mm criterion. A sketch is appended to illustrate how road runoff could be delivered to such a system, which are typically discontinuous but evenly distributed along roadways (**Attachment 2**).

Table 2 below summarizes the estimated sizes and costs per metre of ROW length associated with these two potential options for implementing 15 mm retention on public lands. To note, the estimates are based on available literature and manufacturer specifications, where indicated, and represent high level values for discussion purposes. Detailed configurations, specifications and costs estimates will be required during functional servicing and detailed design stages of redevelopment applications.

In preliminary and detailed design, consideration must also be given to planning policies and urban design guidelines for the VMC, including the VMC Secondary Plan and VMC Streetscape and Open Space Plan. The ultimate selection and implementation of LID measures must also be coordinated with the City's Public Works and Parks Development departments.

Table 2-2 Implementation Options for LIDs in ROWs

	Specification / Estimate
General	
ROW Width (assuming widest proposed ROW – Interchange Way)	28 m
Retention required (assuming no initial abstraction)	15 mm
Retention required per metre ROW (assuming RC = 0.9)	0.38 m ³ /m
Infiltration Trenches	
Void ratio per cross-sectional within 1 m H x 1 m W infiltration trench (including two 200 mm perforated pipes)	0.44 m ³ /m 1 m H x 1 m W infiltration trench will provide more than the required retention volume on a per metre ROW basis
Capital cost, including pretreatment, per metre ROW	\$640 ⁽¹⁾
Annual maintenance cost over 50 year life span, per metre ROW	\$18 ⁽¹⁾
Silva Cells	
Free draining voids ratio for Silva Cell media (loamy sands)	0.25 ⁽²⁾
Volume per Silva Cell module (1x modules)	0.37 m ³ ⁽²⁾
Required number of Silva Cell modules, per metre ROW	4.1 Footprint of each Silva Cell module is 1.2 m long by 0.6 m wide. The number of Silva Cells can be reduced by using taller modules. See Attachment 2 for additional details.
Capital Cost, per metre ROW	\$730 ⁽³⁾
Annual maintenance cost over 50 year life span, per metre ROW	\$14 ⁽⁴⁾

Notes:

- (1) Extrapolated from the cost to treat 2,000 m² of paved and roof area using infiltration trenches, as defined in the TRCA's Assessment of Life Cycle Costs for Low Impact Development Stormwater Management Practices (TRCA, 2013).
- (2) Specifications in the Silva Cell Fact Sheet (Geosyntec, 2017).
- (3) Extrapolated from the installation cost in case study in Minneapolis, MN (in USD), as described in the Minnesota Stormwater Manual – Case studies for tree trenches and tree boxes (Minnesota Pollution Control Agency, 2017).
- (4) Extrapolated from the annual maintenance cost to treat 2,000 m² of paved and roof area using bioretention (in absence of specific information for Silva Cells), as defined in the TRCA's Assessment of Life Cycle Costs for Low Impact Development Stormwater Management Practices (TRCA, 2013).

3 SWM Analysis in the VMC Southeast Quadrant

3.1 SWM Analysis Methods

Hydrological analysis of the Alternative SWM Strategy was completed to determine the effects on runoff quantity compared to existing conditions, the Master Plan SWM Strategy, and to infer water quality benefits compared to existing conditions. Existing and proposed peak flow rates were modelled using the TRCA's current Humber River hydrology model (updated in 2015 using Visual OTTHYMO, version 4.0). The scenarios that were modelled for the SWM analysis included the following:

- **Existing Conditions:** The existing conditions scenario is from the Humber River hydrology model for the 2-year to 100-year storm events without modifications. A model schematic of this reach of Black Creek is provided on **Figure 3-1**. The existing conditions scenario was used to determine the existing conditions peak flow rates. The current conditions of the VMC southeast quadrant is understood to discharge to Black Creek without SWM controls, which was consistent with the model. The existing conditions (uncontrolled) peak flows specific to the VMC southeast quadrant were determined as follows:
 - The TRCA existing conditions subcatchment area covering the VMC southeast quadrant is NHYD 678, and includes the area bounded by Highway 7 to the north, Jane Street to the west, Highway 407 to the south, and the eastern watershed boundary of Black Creek near the Canadian National Railway to the east. The subcatchment area totals approximately 93.6 ha and covers an area beyond the VMC southeast quadrant. The uncontrolled peak flows for the VMC southeast quadrant were calculated by prorating the peak flows from NHYD 678 (with area of 93.6 ha) by the drainage area of the VMC southeast quadrant (30.8 ha).
- **Master Plan SWM Strategy:** This scenario used the existing conditions scenario from the Humber River hydrology model, but NHYD 678 was modified to represent the proposed development and associated SWM controls for the VMC southeast quadrant. A model schematic is provided on **Figure 3-2**. More specifically, the modelling methodology to determine the performance of SWM controls is as follows:
 - Subcatchment NHYD 678 was modified to calculate peak flow rates from the VMC southeast quadrant with the SWM strategy controls. Because each land use type in the VMC southeast quadrant typically contained different SWM controls, NHYD 678 from the Humber River hydrology model was separated into several smaller subcatchments representing different land uses: (1) development blocks, (2) ROWs, (3) open space, and (4) the area outside of the VMC that remained uncontrolled. The catchment parameters for the uncontrolled portion of NHYD 678 (outside of the VMC) remained the same as existing conditions, with the exception of area. Subcatchment areas were delineated based on the VMC Secondary Plan street grid and the preferred design for Black Creek under the VMC Black Creek Renewal Class Environmental Assessment. The land use delineations for the model are presented on **FIGURE 3-3**. A summary of the modelling parameters is provided in **TABLE 3-1**.
 - To model the control of peak release rates for development blocks, a Route Reservoir was added to the model that simulated control of peak flows from the subcatchment representing the development blocks. The development blocks are controlled to the 2-year post development flow rate, based on an 80% level of imperviousness, for up to the 100-year storm.
 - On-site retention controls were modelled by adjusting the impervious area initial abstraction (to 15 mm) for each subcatchment with on-site retention (i.e., development sites).
 - The Toromont Pond (and associated drainage area) located east of the intersection between Jane Street and Doughton Road, which currently contributes to the VMC southeast quadrant, is expected to be redirected to the VMC southwest quadrant in future development according to the Master Plan. However, in this analysis, the Toromont Pond drainage area remained.
 - The Humber River Stormwater Management Quantity Control Rates were applied to the entire VMC southeast quadrant by adding a Route Reservoir to simulate control of peak flows.
- **Alternative SWM Strategy:** This scenario was similar to the model used for the Master Plan SWM Strategy. A model schematic is provided on **Figure 3-4**. The differences with the Master Plan SWM Strategy model are as follows:

- On-site retention controls were modelled for both development sites and ROWs by adjusting the impervious area initial abstraction (to 15 mm).
- Humber River Stormwater Management Quantity Control Rates were not applied to any part of the model.

Table 3-1 VMC Southeast Quadrant Hydrological Model Parameters

Model Subcatchment	Area (ha)	Imperviousness (%)	Impervious Area Initial Abstraction (mm)	Peak Flow Control
<u>Existing Conditions</u>				
All of VMC southeast quadrant and adjacent area (NHYD 678)	93.6	79	2	None
<u>Master Plan SWM Strategy</u>				
Development Blocks in VMC southeast quadrant (NHYD 7602)	14.4	80	15 ⁽¹⁾	On-site control to 2-year post development flow rate ⁽²⁾ (Route Reservoir – NHYD 7615)
ROWs in VMC southeast quadrant (NHYD 7613)	9.2	75	2	None ⁽³⁾
Parkland and open space in VMC southeast quadrant (NHYD 7614)	7.2	33	5	None ⁽³⁾
Area adjacent to VMC southeast quadrant (NHYD 678)	62.8	79	2	None ⁽³⁾
Total	93.6	n.a.	n.a.	Note 3
<u>Alternative SWM Strategy</u>				
Development Blocks in VMC southeast quadrant (NHYD 7602)	14.4	80	15	On-site control to 2-year post development flow rate ⁽³⁾ (Route Reservoir – NHYD 7615)
ROWs in VMC southeast quadrant (NHYD 7613)	9.2	75	15	None
Parkland and open space in VMC southeast quadrant (NHYD 7614)	7.2	33	5	None
Area adjacent to VMC southeast quadrant (NHYD 678)	62.8	79	2	None
Total	93.6	n.a.	n.a.	n.a.

Notes:

(1) The entire area was assumed to have 15 mm retention in the model, where the Master Plan SWM Strategy specifies only roof and landscaped areas.

(2) Modelled 2-year post development flow rate for 14.4 ha is 0.96 m³/s.

(3) All stormwater in the VMC southeast quadrant (30.8 ha) is directed to an end-of-pipe facility control to Humber River Stormwater Management Quantity Control Rates (NHYD 7620), as follows; 2-year: 0.16 m³/s; 5-year: 0.23 m³/s; 10-year: 0.29 m³/s; 25-year: 0.36 m³/s; 50-year: 0.41 m³/s; and 100-year: 0.47 m³/s.

Figure 3-1 VMC Southeast Quadrant Hydrological Model Schematic for Existing Conditions

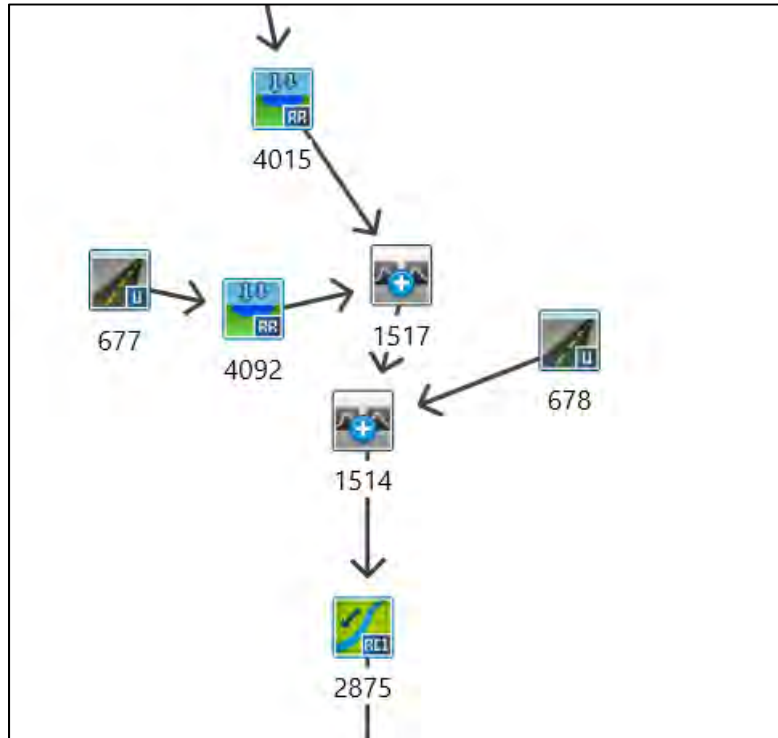


Figure 3-2 VMC Southeast Quadrant Hydrological Model Schematic for Master Plan SWM Strategy

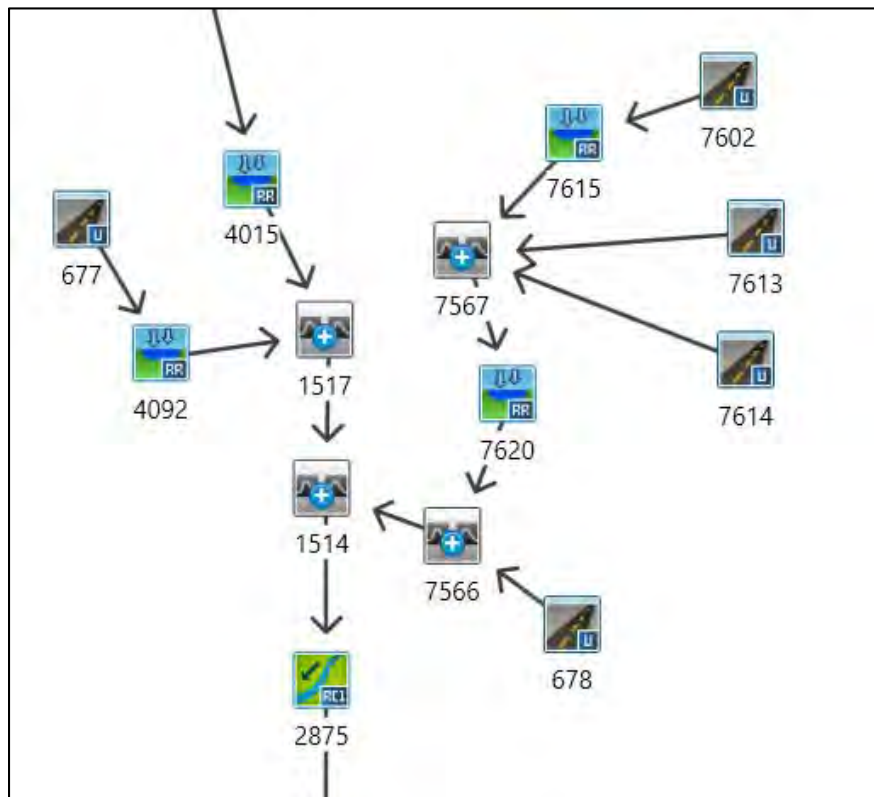


Figure 3-3 VMC Southeast Quadrant Hydrological Model Land Use Area Delineation

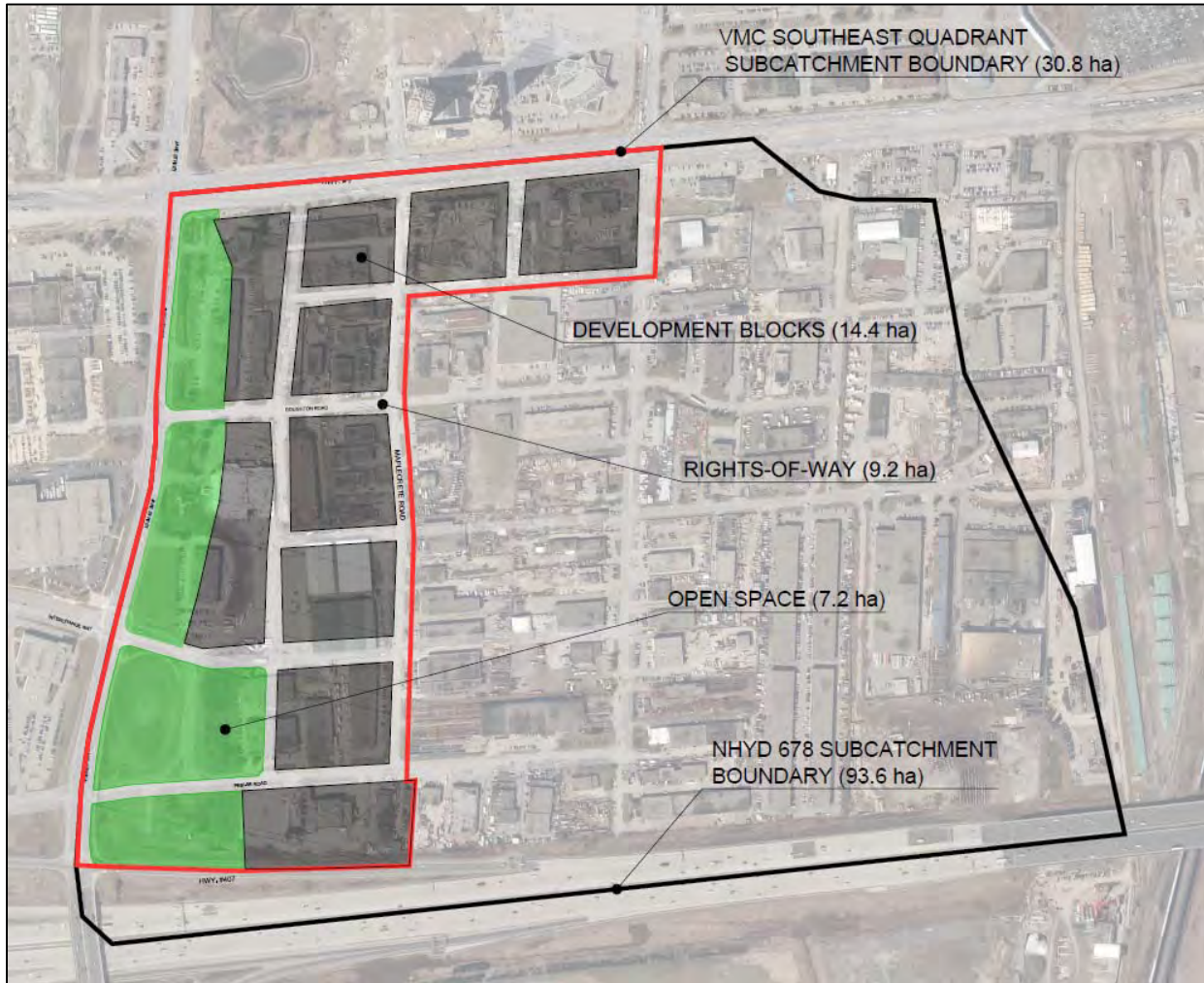
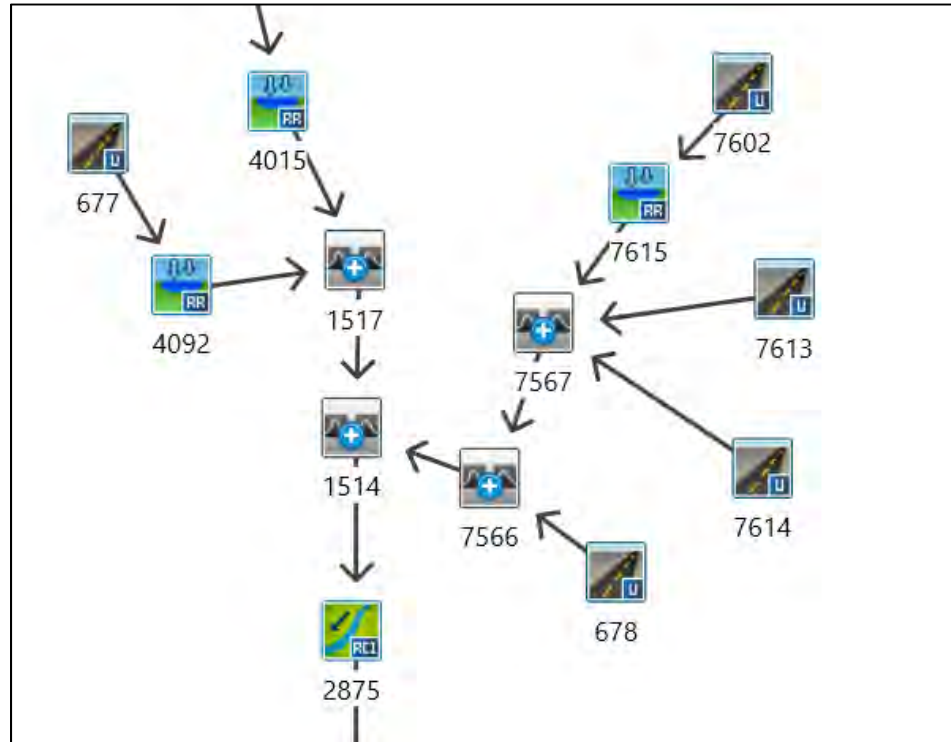


Figure 3-4 VMC Southeast Quadrant Hydrological Model Schematic for Alternative SWM Strategy



3.2 Evaluation of Alternative SWM Strategy

The hydrologically modelled peak flow rates from the VMC southeast quadrant were used to evaluate the Alternative SWM Strategy, while high-level qualitative evaluations were completed for water quality and technical feasibility.

The results of the hydrological analysis of the VMC southeast quadrant are summarized in **TABLE 3-2**. A comparison was made between the modelled existing conditions peak flows, the Master Plan SWM Strategy peak flows, and the modelled peak flows with the Alternative SWM Strategy at three locations: (1) the VMC southeast quadrant, (2) the subcatchment area in the existing conditions model that included the VMC southeast quadrant (NHYD 678), and (3) Black Creek at Highway 407.

Compared to existing conditions, the Alternative SWM Strategy provides a reduction in peak flow rates from the VMC southeast quadrant (by up to 50%) and from NHYD 678 to Black Creek (by up to 15%). On the other hand, the Master Plan SWM Strategy reduces peak flow rates by a greater amount from the VMC southeast quadrant (up to 95%) and from NHYD 678 to Black Creek (by up to 90%) due to the use of Humber River Stormwater Management Quantity Control Rates. However, peak flow rates in Black Creek at Highway 407 are similar using both SWM strategies and compared to existing conditions. While the Master Plan SWM Strategy provides the greatest peak flow reductions, a beneficial reduction in peak flow rates from the VMC southeast quadrant versus the existing condition is also expected by implementing the Alternative SWM Strategy.

Water quality improvements from the Alternative SWM Strategy, compared to existing conditions, were qualitatively inferred based on the reduction in peak flows in proposed conditions and the requirement of providing Enhanced Protection (80% long-term TSS removal) of on-site stormwater discharges. Since there are currently no known SWM controls within the VMC southeast quadrant, water quality is expected to improve. The development areas (14.4 ha) will have 15 mm on-site retention and be treated to Enhanced Protection. The ROWs (9.2 ha) will have 15 mm runoff retention through LIDs, which will provide filtration of suspended solids.

Table 3-2 Comparison of VMC Southeast Quadrant Hydrological Model Results

Discharge Point	Area (ha)	Peak Flow Rate (m ³ /s)					
		2-year	5-year	10-year	25-year	50-year	100-year
<u>Existing Conditions</u>							
VMC southeast quadrant (NHVD 678, pro-rated)	30.8	2.2	3.0	3.6	4.4	5.0	5.5
Subcatchment containing VMC southeast quadrant (NHVD 678)	93.6	6.6	9.1	10.8	13.5	15.2	16.9
Black Creek immediately downstream of VMC southeast quadrant (NHVD 1514)	889.4	8.7	13.5	17.1	24.7	30.1	35.7
<u>Master Plan SWM Strategy</u>							
VMC southeast quadrant (NHVD 7620)	30.8	0.1	0.2	0.3	0.4	0.4	0.5
Subcatchment containing VMC southeast quadrant and remainder of NHVD 678 (NHVD 7566)	93.6	4.6	6.3	7.5	9.3	10.5	11.7
Black Creek immediately downstream of VMC southeast quadrant (NHVD 1514)	889.4	8.6	13.4	16.9	24.4	29.5	35.2
<u>Alternative SWM Strategy</u>							
VMC southeast quadrant (NHVD 7567)	30.8	1.1	1.8	2.3	2.9	3.3	3.8
Subcatchment containing VMC southeast quadrant and remainder of NHVD 678 (NHVD 7566)	93.6	5.6	8.0	9.7	12.1	13.7	15.2
Black Creek immediately downstream of VMC southeast quadrant (NHVD 1514)	889.4	8.7	13.6	17.2	24.8	30.1	35.9

The runoff retention in the Alternative SWM strategy is also expected to lower contributing peak flows to Black Creek, thus reducing erosion risks. The 15 mm capture by LIDs is also expected to reduce poor quality stormwater from frequent storm events by retaining first flush runoff. The capture of 15 mm of runoff approximately equates to capturing of 83% of total annual average rainfall for the City of Toronto, while 85% of all rainfall events are under 15 mm in depth, according to data associated with developing the Toronto Wet Weather Flow Management Guidelines (2006). The combination of on-site water quality treatment and runoff retention can potentially provide an equivalent level of water quality treatment as the Master Plan SWM Strategy's Enhanced Protection via the end-of-pipe facility.

As described in **Section 2.2.2**, the technical feasibility of implementing the Alternative SWM Strategy was assessed through a high-level consideration of LIDs to fulfill the strategy. On-site controls for developments will be determined by the individual developers and can consist of green roofs, rainwater harvesting, infiltration-based LIDs, storage tanks, or a combination of the practices, all of which are relatively feasible during the redevelopment of the existing area. For ROWs, the Alternative SWM Strategy can use infiltration / retention based LIDs to achieve 15 mm retention (i.e., infiltration trenches, Silva Cells, etc.). These can be implemented in roadways and boulevards within the ROWs when redevelopment occurs to receive runoff at source, or alternatively, runoff from ROWs can be directed to LIDs located in other publicly owned lands (i.e., proposed park adjacent to Black Creek). All LID options will need to consider

infiltration and storage capacity, VMC planning policies and urban design, operational and maintenance access and costs, and emergency overflow into the existing storm sewer / drainage system.

Overall, the Alternative SWM Strategy provides a sizeable reduction in peak flow rates from the VMC southeast quadrant compared to existing conditions, while providing water quality treatment and is the most technically feasible strategy to implement considering the constraints of future development in the area. It is the recommended SWM strategy to replace the Master Plan SWM strategy for the VMC southeast quadrant.

4 Summary

An Alternative SWM Strategy was developed for the VMC southeast quadrant to address concerns of the feasibility of a centralized end-of-pipe facility that was recommended in the VMC Servicing Master Plan completed in 2012. A summary of the rationale and analysis for the SWM strategy alternatives is as follows:

- The Alternative SWM Strategy consists of a number of SWM controls, including peak release rate control to the 2-year post development flow rate (for up the 100-year storm) for development blocks and 15 mm on-site retention for development blocks and ROWs.
- Without the need for an end-of-pipe facility and the associated conveyance system, SWM controls can be implemented earlier in the VMC southeast quadrant as development proceeds on a site by site basis.
- The results of the runoff quantity analysis indicate that the VMC southeast quadrant under the Alternative SWM Strategy is expected to have lower peak flow rates compared to existing conditions.
- Water quality in Black Creek is expected to improve from the decrease in peak flows, Enhanced Protection at development blocks, and the capture of first flush runoff from frequent storm events with 15 mm on-site runoff retention at developments blocks and ROWs.
- The Alternative SWM Strategy is technically feasible to implement using current LID practices.
- With consideration for water quantity control, water quality and technical feasibility, the Alternative SWM Strategy is recommended as the SWM strategy to replace the VMC southeast quadrant SWM strategy from the Master Plan.

Attachments

Attachment 1 – Infiltration Trench Calculations and Schematic

Attachment 2 – Silva Cell Calculations and Schematic

References

City of Toronto (2006). '*Wet Weather Flow Management Guidelines*'.

Geosyntec Consultants (2017). '*Silva Cell Fact Sheet – A detailed guide and sizing manual for the application of Silva Cells to meet the requirements of bioretention under paving*'. Prepared for DeepRoot Green Infrastructure, LLC. September 1, 2017.

Minnesota Pollution Control Agency (2017). '*Minnesota Stormwater Manual – Case studies for tree trenches and tree boxes*'. Website: https://stormwater.pca.state.mn.us/index.php?title=Case_studies_for_tree_trenches_and_tree_boxes. Last modified: February 16, 2017.

Ontario Ministry of the Environment (2003). '*Stormwater Management Planning and Design Manual*.' Queen's Printer for Ontario.

The Municipal Infrastructure Group Ltd. (TMIG) (2012). '*Vaughan Metropolitan Centre Municipal Servicing Class Environmental Assessment Master Plan*'. Prepared on behalf of the City of Vaughan, November 2012.

Toronto and Region Conservation Authority (TRCA) (2013). '*Assessment of Life Cycle Costs for Low Impact Development Stormwater Management Practices*'. Prepared under the Sustainable Technologies Evaluation Program. April 2013.

Toronto and Region Conservation Authority (TRCA) (2012). '*Stormwater Management Criteria*.' August 2012 Version 1.0.

Urban Strategies Inc. (2017). '*Vaughan Metropolitan Centre Secondary Plan*'. As Partially Approved by the Ontario Municipal Board. June 2017 Consolidation. Prepared for City of Vaughan.

Attachment 1 - Infiltration Trench

Calculation of Volume within LID system

Proposed LID system has a cross sectional area of 1.0m Wide by 1.0m High filled with 19mm Clear Stone and two perforated pipes with 200mm diameter.

Voids/Area and Retention Volume Calculation within LID Cross Section:

Data:

LID width (m)	1.00
LID High (m)	1.00
Perforated Pipe Diameter (mm)	200
Number of Perforated Pipes	2
Porosity/Voids Ratio	0.4

Calculations:

Cross-sectional Area (m ²)	1.00
Voids/Area within perforated pipes (2) (m ²)	0.063
Absolute Voids/Area within LID trench (not filled with stone) (m ²)	1
Voids/Area within LID trench (filled with stone and 2x200mm perforated pipes)	0.44
Retention volume per metre LID (m ³ /m)	0.44

Required Retention Volume Calculation

Data:

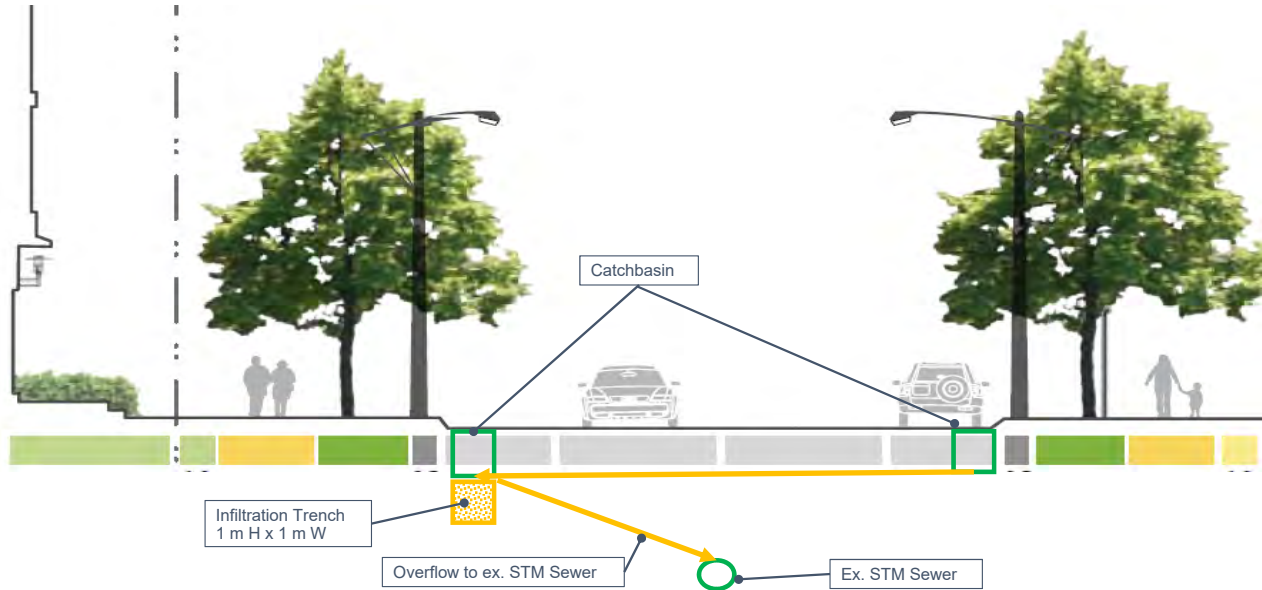
ROW width (m)	28.0
Retention Target (mm)	15
Runoff coefficient	0.9

Calculations:

Retention per metre ROW (assume no initial abstraction) (m³/m) **0.38**

0.44 Proposed LID cross-section has greater retention volume than required

Schematic



Attachment 2 - Silva Cells

Calculation of Volume within LID system

Silva Cell Retention Volume

Data:

Silva Cell Module Volume (1x) (m ³)	0.37
Silva Cell Module Volume (2x) (m ³)	0.70
Silva Cell Module Volume (3x) (m ³)	0.97
Porosity/Voids Ratio	0.25

Calculations:

Retention per Silva Cell Module (1x) (m ³)	0.09
Retention per Silva Cell Module (2x) (m ³)	0.18
Retention per Silva Cell Module (3x) (m ³)	0.24
Number of Silva Cell Modules for Required Retention Volume (1x)	4.1
Number of Silva Cell Modules for Required Retention Volume (2x)	2.2
Number of Silva Cell Modules for Required Retention Volume (2x)	1.6

Required Retention Volume Calculation

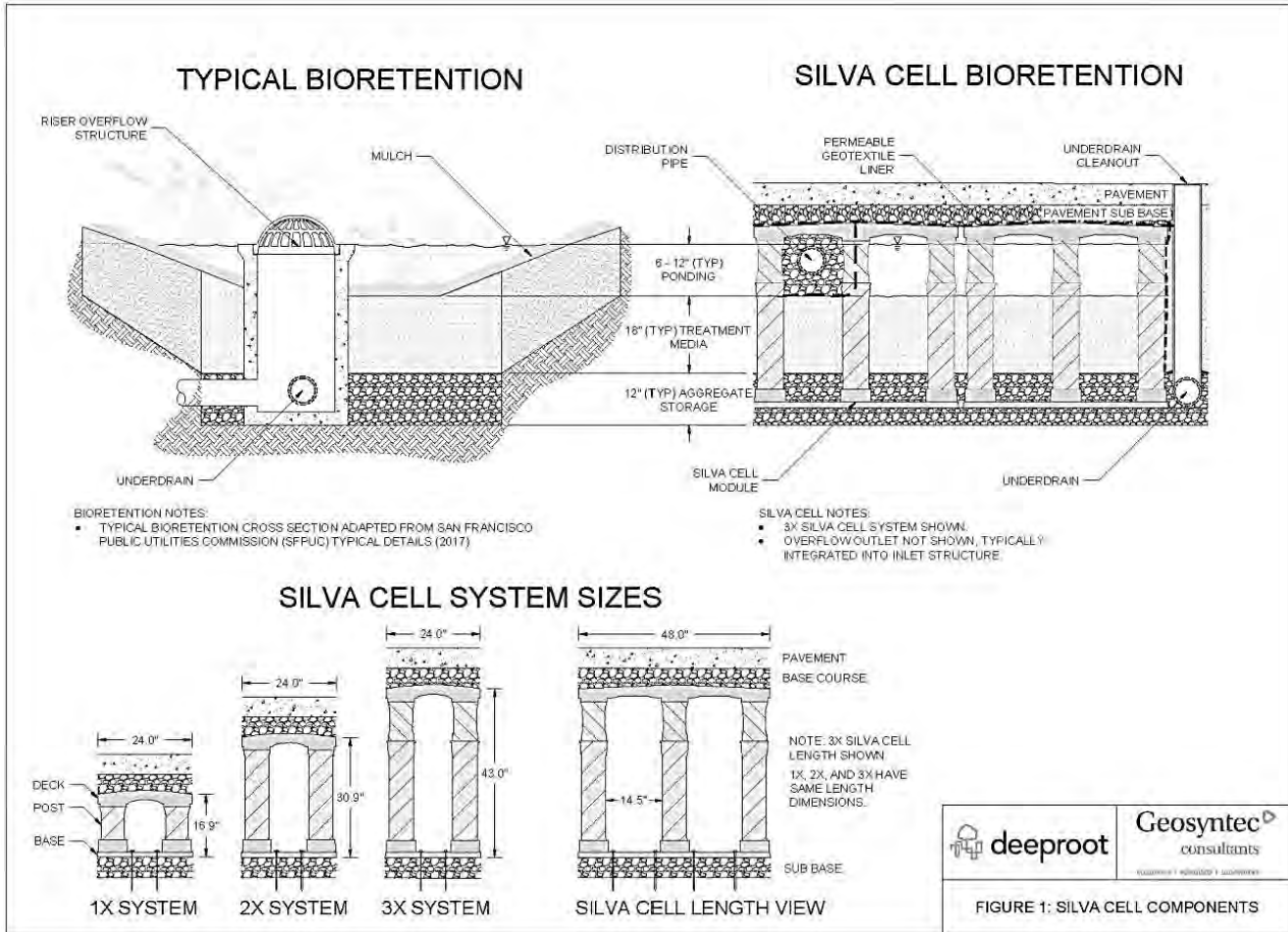
Data:

ROW width (m)	28.0
Retention Target (mm)	15
Runoff coefficient	0.9

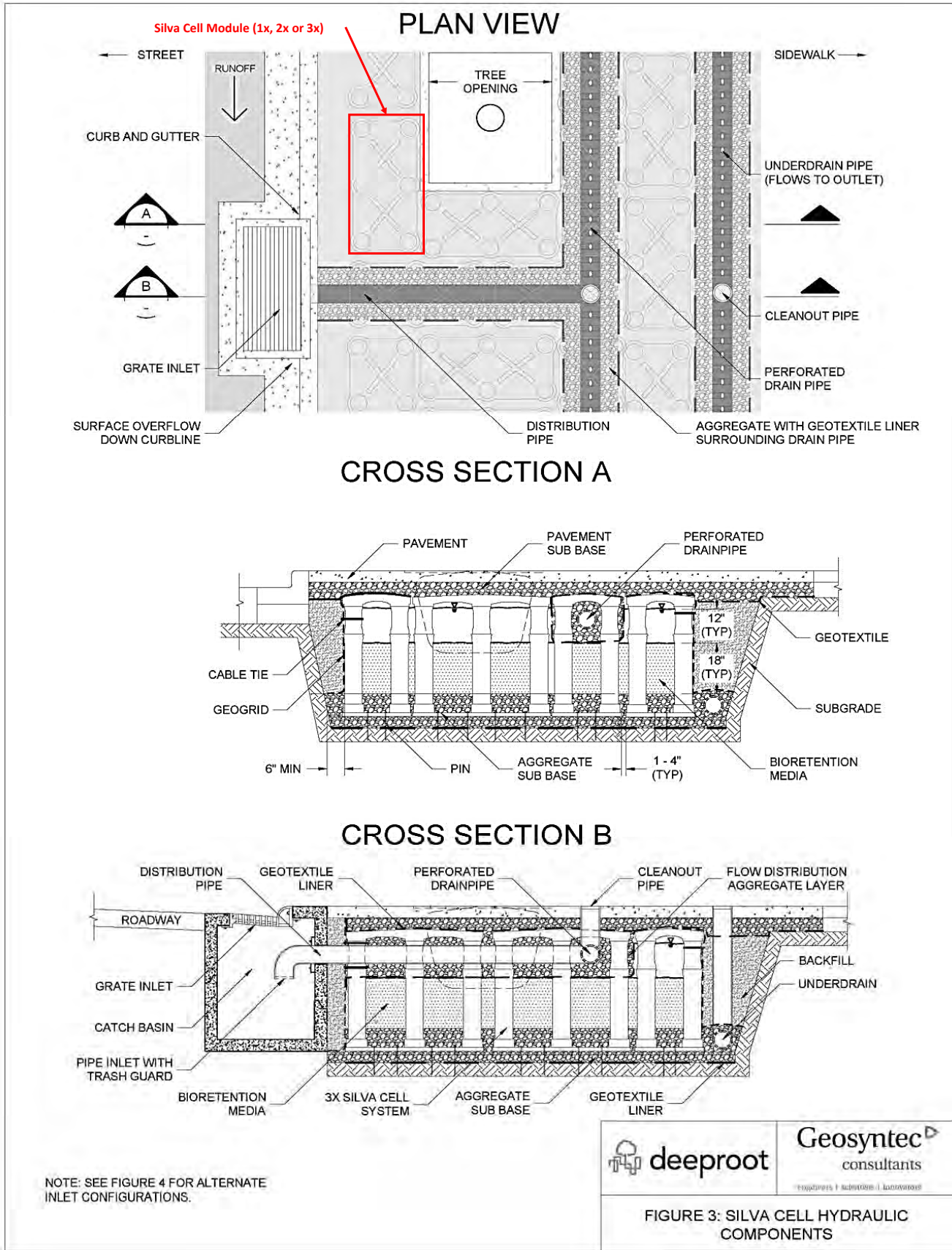
Calculations:

Retention per metre ROW (assume no initial abstraction) (m³/m) **0.38**

Schematic (Deeproot)






Schematic (Deeproot)






APPENDIX F

Existing Culvert Photographs

Culvert and Description	Photograph
<p><u>Highway 7</u> 3.7 m wide x 1.5 m high concrete box</p>	
<p><u>Private Driveway (7717 Jane Street)</u> 3.8 m wide x 1.5 m high concrete box</p>	
<p><u>Private Driveway (7695 Jane Street)</u> 3.2 m wide x 2.1 m high CSP arch</p>	

Culvert and Description	Photograph
<p><u>Doughton Road</u> 3.5 m wide x 2.3 m high CSP arch</p>	
<p><u>Private Driveway (7601 Jane Street)</u> 3.2 m wide x 2.1 m high CSP arch</p>	
<p><u>Private Driveway (7551 Jane Street)</u> 3.2 m wide x 2.1 m high CSP arch</p>	

Culvert and Description	Photograph
<p><u>Abandoned Crossing</u> Located upstream of Peelar Road</p>	
<p><u>Peelar Road</u> 3.6 m wide x 2.4 m high concrete box</p>	
<p><u>Highway 407</u> 6.0 m wide x 4.3 m high concrete box</p>	

APPENDIX G

Utilities Coordination

UTILITY CONTACT DATABASE

Contact	Request Sent	Information Received	Action Required	Existing/ Proposed Plant
<p>Bell Canada Municipal Operations Centre C/O NETRICOM INC. 200 Town Centre Blvd, Suite 300, Markham, Ontario L3R 8G5</p> <p>Kasmin Devashrayee kasmin.devashrayee@netricom.com 200 Town Centre Blvd., Markham, Ontario L3R 8G5 Phone: 905 470 2112 Ext: 40261</p>	<p>General request sent June 9, 2016</p> <p>Contacted a Bell.moc@telecon.ca Phone: 905 470 2112 Ex 40309</p>	<p>Responded on July 6, 2016 with document and marked up drawings</p>	<p>Hand dig when crossing Bell, request locates prior to construction. Maintain 0.6 m clearance</p>	<p>Yes</p>
<p>Cogeco Data Services Inc. 413 Horner Ave Toronto, ON M8W 4W3</p> <p>Julie Pryce Utility Mark-Up and Permit Specialist julie.pryce@cojecodata.com</p>	<p>General request sent June 9, 2016 james.la@cojecodata.com and julie.pryce@cojecodata.com</p> <p>requested to send email to utility.circulations@cojecopeer1.com</p>	<p>January 23, 2017 (in response to Project Status Update)</p> <p>Hello,</p> <p>INFORMATION ONLY. Cogeco Peer 1 does not have any structure in the outlined area.</p> <p>For future projects please circulate through email.</p> <p>Thank you,</p> <p>Hendrik Nommik Phone: (416) 847-0848 Email: Hendrik.Nommik@cojecopeer1.com</p>	<p>No</p>	<p>No</p>
<p>Enbridge Gas Distribution Inc 500 Consumers Road 4th Floor - Post A2 - VPC North York, ON M2J 1P8</p> <p>Diana Beaulne Tel: 416-495-5160</p>	<p>General request sent June 9, 2016 To: egdpermits30@enbridge.com</p>	<p>June 21, 2016 Received three (3) PDFs</p> <p>Study area figure Letter with map Guide for excavation in vicinity of utility of lines</p>	<p>Detailed plans must be submitted for our review before an approval will be granted</p>	<p>No</p>
<p>Hydro One</p>	<p>General request sent June 9, 2016 To: tpumarkup@hydroone.com</p>	<p>June 14, 2016 Thank you for informing us of your upcoming project. Hydro One does not own or operate any high voltage underground facilities in the areas identified in your attachments sent 09 June, 2016.</p>	<p>No</p>	<p>No</p>
<p>MTS Allstream Inc. 50 Worcester Rd Etobicoke, ON, Canada M9W 5X2</p> <p>Diana Vass Utility.Circulations@mtsallstream.com</p> <p>(Allstream is now Zayo – January 15, 2016)</p>	<p>General request sent June 9, 2016 Utility.Circulations@mtsallstream.com</p>	<p>June 10, 2016 Good Afternoon,</p> <p>Allstream does have existing plant in the area indicated in your submission. Please maintain standard clearances and we have no objection. Thank you.</p> <p>Ian Fleming Utility Circulations</p> <p>January 27, 2017 Good Morning,</p> <p>Zayo has existing plant within the study area. Please see attached form. Thank you.</p> <p>Ian Fleming Utility Circulations</p>	<p>Please maintain standard clearances</p>	<p>Yes</p>
<p>Power Stream Inc. 161 CityView Blvd Vaughan, Ontario, L4H 0A9</p> <p>Attention Kamran Khazraie Kamran.khazraie@powerstream.ca</p>	<p>General request sent June 9, 2016 Rob.halko@powerstream.ca Then told to direct emails to redlines@powerstream.ca</p>	<p>June 24, 2016</p> <p>Received PDF of markup and comments</p> <p>Josie Ilari Records Clerk, GIS Dept. PowerStream Inc. 161 Cityview Blvd. Vaughan ON L4H 0A9 josie.ilari@powerstream.ca 1-877-963-6900, Ext. 25021</p>	<p>Before digging call Ontario One Call</p>	<p>Yes</p>
<p>Rogers Communications Outside Plant Engineering 244 Newkirk Road, Richmond Hill, ON L4C 3S5</p> <p>Amanda Kailan Amanda.Kailan@rci.rogers.com Tel: (905) 780-7071</p>	<p>General request sent June 9, 2016 Contacted yorkcirculations@rci.rogers.com</p>	<p>June 23, 2016 received letter and marked up FIGURE :</p> <p>Rogers Communications currently has existing plant as marked on your drawing. Our standard offset in this municipality is: 1.75m P/L on regional rds & 2.3m P/L on town rds. Please ensure you maintain clearances of 0.3 m vertically and 1 m horizontally.</p>	<p>Please ensure you maintain clearances of 0.3 m vertically and 1 m horizontally.</p>	<p>Yes</p>
<p>Telus C/O NETRICOM INC. 200 Town Centre Blvd, Suite 300, Markham, Ontario L3R 8G5</p> <p>Indira Sharma Indira.sharma@netricom.com</p>	<p>General request sent June 9, 2016 Telus.moc@telecon.ca</p>	<p>None</p>		
<p>TransCanada Corporation 450 - 1 Street SW Calgary, Alberta, Canada T2P 5H1</p> <p>Pipeline Technician Dave Veitch 416-452-7338</p>	<p>General Request sent June 9, 2016 To: david_veitch@transcanada.com</p> <p>Email returned then sent to...</p>	<p>June 10, 2016</p> <p>We also don't appear to have any facilities in this section as per our Geofind database, but please place a call to Ontario One Call to confirm (1-800-400-2255). Thank-you!</p>	<p>Place a call to Ontario One Call to confirm (1-800-400-2255).</p>	<p>No</p>

Tony Dang

From: Chandrababu Akash <akash.chandrababu@Telecon.ca>
Sent: Wednesday, July 06, 2016 8:33 AM
To: Sumera Yacoob
Subject: RE: MU#56157 / Utility Locates
Attachments: MU 56157.dgn; MU 56157.dwg; MU 56157.pdf

Hi Sumera,

Please see the attached markup drawing and document for the requested location.

Thank You

AKASH CHANDRA BABU

Technicien CAO, Ingénierie - Centre du Canada
CAD Technician, Engineering – Central Canada

T 905 470-2112 Ext: 40350 F: 905-470-8956
200 Town Centre Boulevard, Suite 300, Markham (Ontario) L3R 8G5



telecon.ca

From: Sumera Yacoob [mailto:syacoob@tmig.ca]
Sent: Thursday, June 09, 2016 2:46 PM
To: MOC (Bell)
Subject: Utility Locates

Hello,

We will shortly be commencing the Black Creek Renewal Class EA, the study area (in green on the attached map) is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407. Can you please confirm if there are any existing works above or below ground, within or very close the proposed study area? Please provide figures if there is anything of interest.

Also, if this request should be directed to someone else can you please provide me with the contact.

Thank you,

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

TMIG | The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5

p: 905.738.5700 x--- | f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.



Bell Canada Municipal Operations Centre - C/O TELECON DESIGN INC.
200 Town Centre Blvd., Suite #300
Markham, Ontario L3R 8G5
Ph: (905) 470-2112 Fax: (905) 460-8956

APPLICATION FOR PLANT LOCATION AND CONSENT

Applicant: The Municipal Infrastructure Group

Mark Up #:56157

Applicant Ref #: N/A

Location: Jane St from just S of Hwy 7 to just N of Hwy 407

SwitchingCenter/NNX: TORONTO-ALNESS/665

Date Received From Applicant: 2016-06-09

Marked By: Akash Chandra Babu

APPLICATION FOR PLANT LOCATION AND REQUEST

- Existing and/or proposed Bell Canada underground plant are indicated on the attached plan
- Our records show no existing and / or proposed underground plant within 2m of your proposed installation
- Conflict indicated
- Meets with our approval
- Not for PUCC approval - Mark up only
- If within 1 metre of Bell plant, hand dig

REMARKS: Call for locates 1.800.400.2255. Tie-in measurements are a guideline only and physical verification may be required by applicant to determine the true separation between plant. Maintain clearance of 0.6m. Hand dig when crossing Bell.

PROCEDURES TO FOLLOW:

- 1. Request locates prior to construction 1-800-400-2255**
- 2. If exact location and depth are critical - test pits are recommended**
- 3. Bell Canada plant location information is approximate**
- 4. If the location of your proposed design changes, it will be necessary to re-apply**
- 5. Permits expire six(6) months from approval date**

Signature:
Akash Chandra Babu

Date:
July 6, 2016

Tony Dang

From: Steve Hollingworth
Sent: Monday, January 23, 2017 2:03 PM
To: Sumera Yacoob; Tony Dang
Subject: FW: Black Creek Renewal
Attachments: [Untitled].pdf

-----Original Message-----

From: Utility Circulations [mailto:utility.circulations@cogecodata.com]
Sent: Monday, January 23, 2017 1:49 PM
To: Steve Hollingworth <shollingworth@tmig.ca>
Subject: Black Creek Renewal

Hello,

INFORMATION ONLY.

Cogeco Peer 1 does not have any structure in the outlined area.

For future projects please circulate through email.

Thank you,

Hendrik Nommik
Phone: (416) 847-0848
Email: Hendrik.Nommik@cogecopeer1.com

Cogeco Peer 1
Unstoppable Enterprises Live Here

413 Horner Avenue
Toronto On, M8W 4W3
www.cogecodata.com
www.peer1hosting.com

-----Original Message-----

From: HPLJCM6040 [mailto:scantoemail@peer1.com]
Sent: January-23-17 1:45 PM
To: Utility Circulations
Subject: Scanned Document from CM6040 MFP in Photocopy Room

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

REPLY FORM

To: Steve Hollingworth, TMIG

Date: Jun 23, 2017.

Fax: (905) 738-0065

E-mail: shollingworth@tmig.ca

RE: **Black Creek Renewal, Municipal Class Environmental Assessment**

NAME:

HENRIK NOMMIK

TITLE:

UTILITY MARK-UP AND PERMIT SPECIALIST

ORGANIZATION/AGENCY:

COBECO PEER 1

ADDRESS:

413 HENRIK AVE

TORONTO, ON

POSTAL CODE:

M8W 4W3

PHONE:

416 847-0848

FAX:

E-MAIL:

UTILITY.CIRCULATIONS @ COBECOPEER1.COM

Please indicate the appropriate response:

My group/agency **is interested** in providing input regarding this Study.
Please include me on the Study Mailing List.

My group/agency **is not interested** in providing input regarding this Study, but
would like to be kept informed. Please include me on the Study Mailing List.

Please **remove** my group/agency from Study Mailing List.

Area of interest or concern/preliminary comments:

COBECO PEER 1 DOES NOT HAVE ANY STRUCTURE
IN THE OUTLINED AREA. A. Hennig

Tony Dang

From: Cappola-Logullo, Jennifer <Jennifer.Logullo@vaughan.ca>
Sent: Tuesday, January 31, 2017 9:18 AM
To: Lee, Andy; Steve Hollingworth; Tony Dang
Subject: FW: Vaughan EA Black Creek Renewal - Study Commencement
Attachments: Vaughan EA Black Creek Renewal Study Commencement.pdf

Steve.
FYI and coordination.

Jennifer

From: Yousaf, Saad
Sent: Tuesday, January 31, 2017 9:14 AM
To: Cappola-Logullo, Jennifer; Frieri, Michael
Subject: Fw: Vaughan EA Black Creek Renewal - Study Commencement

FYI
Saad

From: Jamie Rochford <Jamie.Rochford@enbridge.com>
Sent: January 31, 2017 9:05:51 AM
To: Yousaf, Saad
Cc: akhademi@tmig.ca
Subject: FW: Vaughan EA Black Creek Renewal - Study Commencement

Good day Saad.

I have received your attached document, thank you for reaching out to us.

My only feedback would be the opportunity to advise you to reach out to our Mark-Ups group (mark-ups@enbridge.com) to obtain our general gas main locations. I can advise that we do have facilities in the local vicinity. Please note that any general locations provided will stale date after a 6 month period.

If there are conflicts between your plans and our gas facilities it would be my group within Planning that would manage the relocations. Please note the approximate times for a relocation is 8-12 months.

If you have any questions please feel free to let me know.

Truly,

Jamie Rochford

Planning & Design Lead
Central Region East
Distribution Planning & Records

ENBRIDGE GAS DISTRIBUTION INC.
TEL: 905-927-3150 | CELL: 416-578-9852
101 Honda Blvd, Markham, ON L6C 0M6
enbridgegas.com
Integrity. Safety. Respect.

From: Alice Coleman
Sent: Wednesday, January 25, 2017 8:28 AM
To: Jamie Rochford; Richard Rees; Brandon Cox
Subject: Vaughan EA Black Creek Renewal - Study Commencement

Fyi.

Alice Coleman

Municipal Planning Coordinator

ENBRIDGE GAS DISTRIBUTION

TEL: 416-495-5386
500 Consumers Road, North York, Ontario M2J 1P8

Enbridgegas.com

Integrity. Safety. Respect.

This e-mail, including any attachment(s), may be confidential and is intended solely for the attention and information of the named addressee(s). If you are not the intended recipient or have received this message in error, please notify me immediately by return e-mail and permanently delete the original transmission from your computer, including any attachment(s). Any unauthorized distribution, disclosure or copying of this message and attachment(s) by anyone other than the recipient is strictly prohibited.

Tony Dang

From: Steve Hollingworth
Sent: Monday, February 13, 2017 3:26 PM
To: Tony Dang; Sumera Yacoob
Subject: FW: HARDCOPY EGD 18854013 - VMC BLACK CREEK RENEWAL, CITY OF VAUGHAN _ GENERAL LOCATE
Attachments: 18854013 .zip; Booklets.zip

From: Lauren Li [mailto:Lauren.Li@enbridge.com]
Sent: Monday, February 13, 2017 3:24 PM
To: Steve Hollingworth <shollingworth@tmig.ca>
Subject: RE: HARDCOPY EGD 18854013 - VMC BLACK CREEK RENEWAL, CITY OF VAUGHAN _ GENERAL LOCATE

Please do not open any attachments from organizations or people that you are not familiar with. Also, since it is possible for viruses to SPOOF or fake the sender's address, do not open emails with attachments from people you know, or from whom you were not expecting an attachment, or if the attachment is a file type or file name that you customarily do not receive from this person.

Attached is the information you had requested.
The information provided is for General Location Only. You must re-submit your detailed design for our review.
Should you require anything further please let us know.

Kind Regards,

Lauren Li

Drafting CADD Tech III
GDP, Long Range Dist Planning

ENBRIDGE GAS DISTRIBUTION

TEL: 416-758-4469, 866-326-2924 | FAX: 416-753-6941
500 Consumers Road North York, Ontario M2J 1P8

enbridgegas.com

Integrity. Safety. Respect.

Enbridge Gas Distribution cannot provide information regarding the depth of cover over our gas infrastructure. We suggest that a field locate be performed through Ontario One Call (1800-400-2255). If further details are still required, it is suggested that test holes be performed by an outside party in order to determine the actual Enbridge Infrastructure depth.

NOTICE OF CONFIDENTIALITY: This information transmitted is intended for the person or entity to which it is addressed and may contain confidential and / or privileged material. Any review, re-transmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender immediately by return electronic transmission and then immediately delete this transmission, including any attachments, without copying, distributing or disclosing same.

From: Mark-Ups
Sent: Tuesday, January 24, 2017 10:00 AM
To: shollingworth@tmig.ca
Cc: Mark-Ups
Subject: HARDCOPY EGD 18854013 - VMC BLACK CREEK RENEWAL, CITY OF VAUGHAN

Thank you for submitting your mark-up request. It has been assigned the following EGD Number: 18854013

Please reference this number on all status inquiries.

We are currently experiencing a very high number of submissions and may not be able to meet our normal 15 business day turnaround time for electronic submissions and 20 business day turnaround time for hard-copy submissions, especially for large or complex projects.

All emails should be forwarded to Mark-Ups@enbridge.com.

Tony Dang

From: Cappola-Logullo, Jennifer <Jennifer.Logullo@vaughan.ca>
Sent: Wednesday, May 10, 2017 2:33 PM
To: Steve Hollingworth; Tony Dang
Cc: Lee, Andy
Subject: FW: Vaughan Notice of Public Info Centre - May 10 - Municipal Class EA - VMC Black Creek Renewal Study
Attachments: [Untitled].pdf; EGD - Third Party Requirements in the Vicinity of Natural Gas Facilities....pdf; TSSA 3rd Party Requirements.pdf; Gas Main Relocation Overview 2017_arnel.pptx

FYI.

From: Jamie Rochford [mailto:Jamie.Rochford@enbridge.com]
Sent: Wednesday, May 10, 2017 2:29 PM
To: Cappola-Logullo, Jennifer
Subject: FW: Vaughan Notice of Public Info Centre - May 10 - Municipal Class EA - VMC Black Creek Renewal Study

Good day Jennifer. Thank you for the opportunity to provide feedback or comment.

Please be advised that we do have gas facilities within the general area and this should be taken into account with any project planning.

For general gas main locations please contact our Mark-Ups group at (mark-ups@enbridge.com). I have attached a few documents for your reference. Please feel free to contact me if you require any additional information. Thank you.

Truly,

Jamie Rochford

Sr. Planning Specialist
Central Region East
Distribution Planning & Records

—
ENBRIDGE GAS DISTRIBUTION INC.
TEL: 905-927-3150 | CELL: 416-578-9852
101 Honda Blvd, Markham, ON L6C 0M6
enbridgegas.com
Integrity. Safety. Respect.

From: Municipal Planning
Sent: Thursday, May 04, 2017 8:30 AM
To: Jamie Rochford; Richard Rees; Brandon Cox
Subject: Vaughan Notice of Public Info Centre - May 10 - Municipal Class EA - VMC Black Creek Renewal Study

Fyi.

Alice Coleman

Municipal Planning Coordinator
Long Range Distribution Planning

ENBRIDGE GAS DISTRIBUTION
500 Consumers Road, North York, Ontario M2J 1P8

Enbridgegas.com

Integrity. Safety. Respect.

This e-mail, including any attachment(s), may be confidential and is intended solely for the attention and information of the named addressee(s). If you are not the intended recipient or have received this message in error, please notify me immediately by return e-mail and permanently delete the original transmission from your computer, including any attachment(s). Any unauthorized distribution, disclosure or copying of this message and attachment(s) by anyone other than the recipient is strictly prohibited.



Vaughan City Hall
2141 Major Mackenzie Dr.
Vaughan, ON L6A 1T1

905.832.2281
www.vaughan.ca

MARK-UP
JAN 23 2017
DISTRIBUTION PLANNING



8800 Dufferin Street, Suite 200
Vaughan, Ontario L4K 0C5

905 738 5700
www.tmig.ca

January 16, 2017

Mr. Samir Patel
500 Consumers Road
4th Floor - Post A2 - VPC
North York M2J 1P8

Dear Mr. Patel,

**Re: VMC Black Creek Renewal, City of Vaughan
Project Status Update of Municipal Class Environmental Assessment Study**

This letter is intended to provide a Project Status Update for the Vaughan Metropolitan Centre (VMC) Black Creek Renewal Study given a considerable length of time has passed since the Notice of Commencement for the EA Study was first issued on July 5, 2012.

The VMC Black Creek Renewal Municipal Class Environmental Assessment (EA) Study, which is intended to establish the alignment and form of Black Creek through the south-east quadrant of the VMC Secondary Plan Area, initially started in 2012. Early in the process, it became apparent there were a number of conflicting interests in the size, alignment and configuration of a reconstructed and renewed Black Creek valley corridor between the landowners and review agencies. An extensive consultation and facilitation process took place over 2013 and 2014 with directly affected landowners and agencies to better understand key issues, opportunities and constraints.

Subsequent to the consultation and facilitation process described above, the Black Creek Financial Strategy and Development Charge Background Study was carried out to establish the framework for funding a number of projects within the VMC Secondary Plan, including potential realignment and renewal of Black Creek. The financial strategy was approved by Vaughan Council in June 2016.

It remains a requirement to refine and evaluate alternative alignments and configurations for the renewal of Black Creek and complete the EA Study that was initiated in 2012. Given the length of time that has passed since the Notice of Commencement was issued, we would like to confirm that our contact information is up to date and provide you with another opportunity to provide input to the development and evaluation of alternative solutions.

We have enclosed a copy of the original Notice of Commencement dated July 5th, 2012 along with a reply form. We would appreciate if you could complete and return the form to either of the undersigned. Note that the project contacts listed on the Notice of Commencement have been superseded by the undersigned, and there has been a slight modification to the original EA Study area boundaries. The revised EA Study area boundary is shown in the Map below.



The alternatives and the recommended solution will be presented at a Public Information Forum (PIF), tentatively scheduled for March 2017, with the final Environmental Study Report and Notice of Completion anticipated for May and June, 2017, respectively. We welcome your input and support throughout the remainder of the VMC Black Creek EA Study and look forward to seeing you at the PIF in the new year. Please contact Jennifer Cappola-Logullo or Steve Hollingworth (contact information below) with any questions or comments.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

Steve Hollingworth, P. Eng.
 Project Manager
shollingworth@tmig.ca
 905-738-5700 x359

CITY OF VAUGHAN

Jennifer Cappola-Logullo, P. Eng.
 Project Manager
Jennifer.Logullo@vaughan.ca
 905-832-8585 x8433

cc:

EGD File Number: 18854013

Re: VMC BLACK CREEK RENEWAL, CITY OF VAUGHAN

- By law utility locates must be obtained prior to starting any excavation or ground disturbance activity, such as pile driving, boring, auguring or digging.
- Contact Ontario One Call at 1-800-400-2255 or www.on1call.com at least 5 business days before beginning work to obtain utility locates.
- Please refer to the "Third Party Requirements In the Vicinity of Natural Gas Facilities" for requirements and precautions for working safely in the vicinity of natural gas pipelines. The most recent version of this document is available at: <https://www.enbridgegas.com/gas-safety/pipeline-safety.aspx>
- Enbridge's responses are based on the information available and are valid for a period of 6 months from issue.

VITAL MAIN

- You are working within 3m of a Vital Main Pipeline. In order to accommodate Enbridge vital main standby requirements, our Damage Prevention department must be contacted a minimum of three business days prior to commencing any excavation at 1-866-922-3622 to schedule a site meeting.

NEB PERMIT REQUIRED

- When crossing or working within 30m of the right-of-way of an NEB regulated natural gas pipeline, a permit must be obtained from the pipeline company (attached).
- Completed permit applications may be submitted to the Enbridge Gas Distribution Inc. Engineering Dept. at alexander.hadjis@enbridge.com.

CONFLICT

- We have an **OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing or proposed gas plant.
- You must submit a revised design for our approval that meets the requirements detailed in the Third Party Requirement book before proceeding.
- If relocation of our plant is required, please contact:

<input type="checkbox"/>	Toronto Region	Jaclyn Mui	416-495-7222	jaclyn.mui@enbridge.com
<input type="checkbox"/>	Central Region West	Marcel Mallia	416-758-4793	marcel.mallia@enbridge.com
<input type="checkbox"/>	Central Region East	Neerajah Raviraj	905-927-3156	neerajah.raviraj@enbridge.com
<input type="checkbox"/>	Niagara Region	Rhonda Nicholson	416-495-6051	rhonda.nicholson@enbridge.com
<input type="checkbox"/>	Eastern Region Ottawa	Sonia Padamadan	613-748-6861	sonia.padamadan@enbridge.com
<input type="checkbox"/>	Proposed work is crossing an Enbridge easement. Please contact Anissa Trenholm in our Land Department at 416-753-6937			

NO-CONFLICT

- We have **NO OBJECTION** to your proposed plant as indicated. Please refer to the attached drawings for information on our existing and/or proposed gas plant. GAS MAINS MUST BE FIELD LOCATED. Before digging, please call ONTARIO ONE CALL at 1-800-400-2255 for free gas locates.

GENERAL LOCATION

- Refer to the attached drawings for information on our existing and/or proposed gas plant within the road allowance.
- The information provided is for **GENERAL LOCATION ONLY** and is not an approval. Detailed plans must be submitted for our review before an approval will be granted.

Kind Regards,

lauren.li@enbridge.com

Digitally signed by lauren.li@enbridge.com

DN: cn=lauren.li@enbridge.com

Date: 2017.02.13 13:38:24 -05'00'



Atlas Plate Record

Plotted By:	disgust1	Date of Last Revision:	2011 May 03
Reviewed By:	strezost	Plate Number:	MY96
Scale:	1:2400	Region:	Area 30

Network Numbers and Pressure Types:
180 - HP, 3770 - IP



Plate: MY110

Plate: MY02

Plate: MY05

Plate: MY07

Tony Dang

From: Jordan.Whitton@HydroOne.com on behalf of tpumarkup@HydroOne.com
Sent: Tuesday, June 14, 2016 9:09 AM
To: Sumera Yacoob
Cc: tpumarkup@HydroOne.com
Subject: RE: Utility Locates

Good Day;

Thank you for informing us of your upcoming project. Hydro One **does not** own or operate any **high voltage underground** facilities in the areas identified in your attachments sent 09 June, 2016.

Best Regards,
Jordan Whitton
Grid Operations Technologist
Hydro One Networks Inc.
230 Bayview Drive, Barrie ON
Tel: 705.797.4154
Email: tpumarkup@hydroone.com

From: Sumera Yacoob [mailto:syacoob@tmig.ca]
Sent: Thursday, June 09, 2016 2:47 PM
To: TPUCC DRAWINGS
Subject: Utility Locates

Hello,

We will shortly be commencing the Black Creek Renewal Class EA, the study area (in green on the attached map) is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407. Can you please confirm if there are any existing works above or below ground, within or very close the proposed study area? Please provide figures if there is anything of interest.

Also, if this request should be directed to someone else can you please provide me with the contact.

Thank you,

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

TMIG | The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x---|f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

This email and any attached files are privileged and may contain confidential information intended only for the person or persons named above. Any other distribution, reproduction, copying, disclosure, or other dissemination is strictly prohibited. If you have received this email in error, please notify the sender immediately by reply email and delete the transmission received by you. This statement applies to the initial email as well as any and all copies (replies and/or forwards) of the initial email.

Tony Dang

From: Utility Circulations <Utility.Circulations@mtsallstream.com>
Sent: Friday, June 10, 2016 2:56 PM
To: Sumera Yacoob
Subject: RE: Utility Locates
Attachments: Black Creek - Markup.JPG

Good Afternoon,

Allstream does have existing plant in the area indicated in your submission. Please maintain standard clearances and we have no objection. Thank you.

Ian Fleming
Utility Circulations

From: Sumera Yacoob [mailto:syacoob@tmig.ca]
Sent: Thursday, June 09, 2016 2:47 PM
To: Utility Circulations <Utility.Circulations@mtsallstream.com>
Subject: Utility Locates

Hello,

We will shortly be commencing the Black Creek Renewal Class EA, the study area (in green on the attached map) is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407. Can you please confirm if there are any existing works above or below ground, within or very close the proposed study area? Please provide figures if there is anything of interest.

Also, if this request should be directed to someone else can you please provide me with the contact.

Thank you,

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

TMIG | The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x---|f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

Tony Dang

From: Josie Ilari <josie.ilari@powerstream.ca>
Sent: Friday, June 24, 2016 4:24 PM
To: Sumera Yacoob
Subject: RE: Utility Locates
Attachments: EM_Black Creek Study Area.pdf

Good morning,

Please see attached PDF for PowerStream markup and comments.

Should you have any questions or concerns, please email redlines@powerstream.ca.

Have a great day,

Josie Ilari
Records Clerk, GIS Dept.
PowerStream Inc.
161 Cityview Blvd. Vaughan ON L4H 0A9
josie.ilari@powerstream.ca
1-877-963-6900, Ext. 25021



LET'S CONNECT!



Sent: June-09-16 2:49 PM
To: Redlines
Subject: Utility Locates

Hello,

We will shortly be commencing the Black Creek Renewal Class EA, the study area (in green on the attached map) is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407. Can you please confirm if there are any existing works above or below ground, within or very close the proposed study area? Please provide figures if there is anything of interest.

Also, if this request should be directed to someone else can you please provide me with the contact.

Thank you,

From: Sumera Yacoob
[mailto:syacoob@tmig.ca]

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

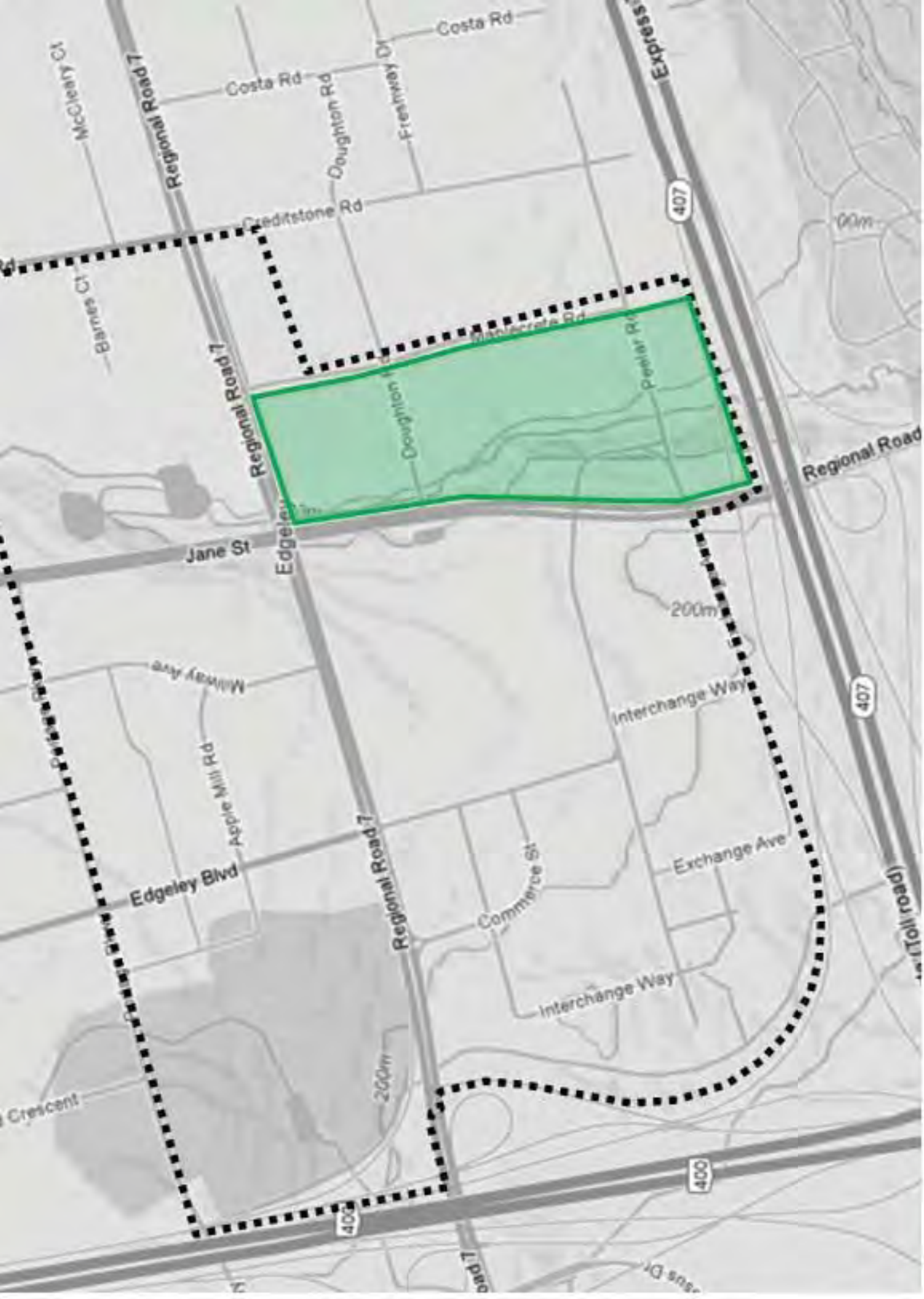
TMIG | The Municipal Infrastructure Group Ltd.

8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x--- | f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

Confidentiality Warning: This message and any attachments are intended only for the use of the intended recipient(s), and may be confidential and/or privileged. If you are not the intended recipient, you are hereby notified that any review, retransmission, conversion to hard copy, copying, circulation or other use of this message and any attachments is strictly prohibited. If you are not the intended recipient, please notify the sender immediately by return e-mail, and delete this message and any attachments from your system. Thank you.



- ■ ■ ■ ■ VAUGHAN METROPOLITAN CENTRE (VMC) SECONDARY PLAN AREA
- ■ ■ ■ ■ APPROXIMATE VMC BLACK CREEK RENEWAL STUDY AREA BOUNDARY



Rogers Communications
Outside Plant Engineering
244 Newkirk Road
Richmond Hill, ON L4C 3S5

Markup Response Form

Date Received: June 9, 2016 **Applicant:** TMIG - The Municipal Infrastructure Group Ltd.
Date Returned: June 23, 2016
Rogers Ref. No.: R161909 **Applicant Job No.:** N/A
Location: Jane Street, Hwy7 of North Hwy 407, Vaughan

Rogers Communications has reviewed your drawing(s) as requested and returns one marked-up copy. Our comments follow below with an "X" indicating Rogers' stance on your proposed plan.

Comments:

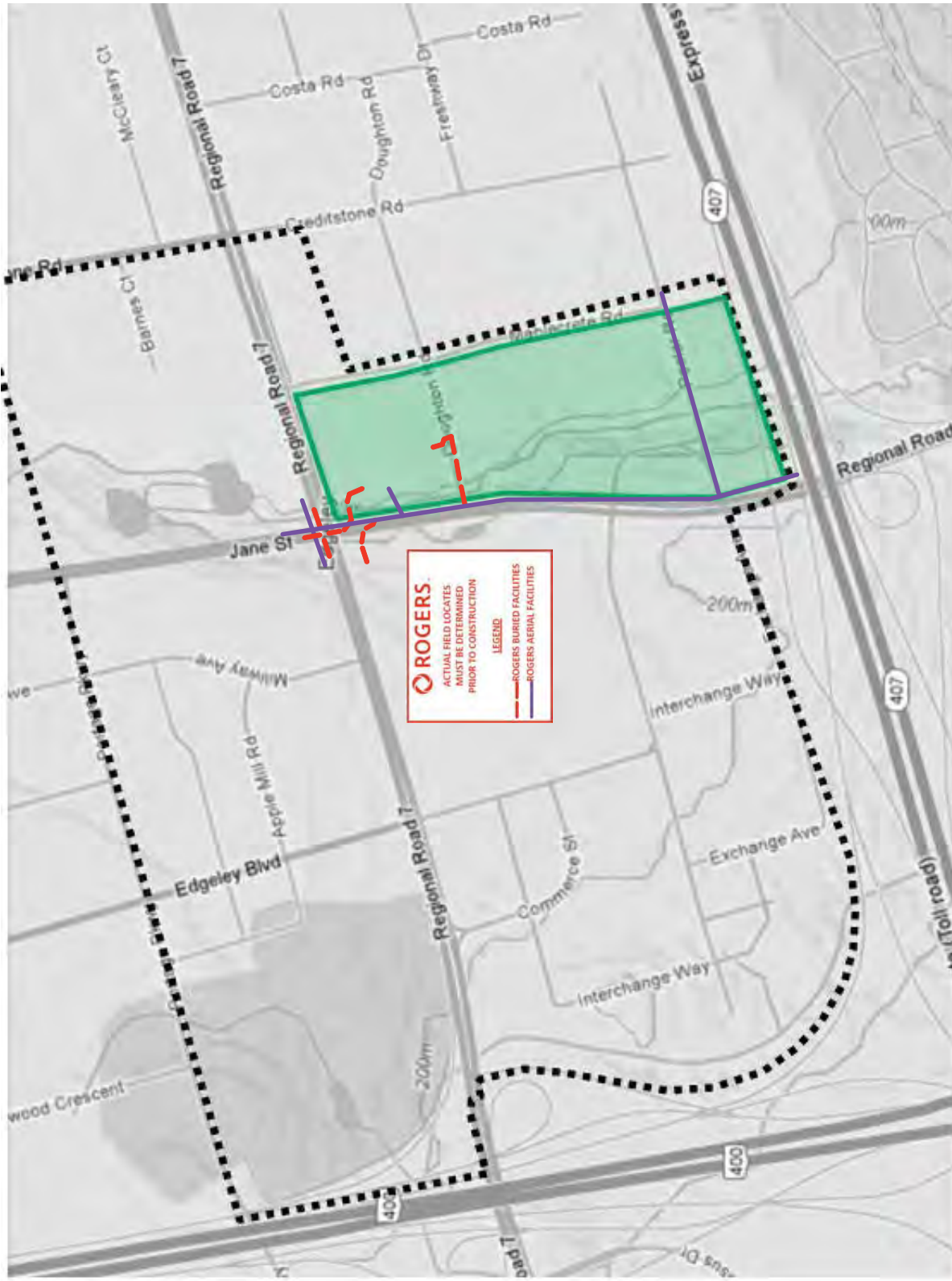
- No Conflict** Rogers Communications currently does not possess existing plant in the area indicated on your attached plans.
- For Your Reference** Rogers Communications currently has existing plant as marked on your drawing. Our standard offset in this municipality is: **1.75m P/L on regional rds & 2.3m P/L on town rds.**
Please ensure you maintain clearances of 0.3 m vertically and 1 m horizontally.
- CONFLICT** Your proposed construction appears to encroach within existing Rogers Communications plant.
Please relocate your proposed construction to allow adequate clearance of 0.3 m vertically and 1 m horizontally.
- CAUTION** Fiber Optic Cable is present in the area of your proposed construction.
- Note** Please inform Rogers Communications well in advance of the proposed construction schedule in order to coordinate our plant relocation.
- Note** Locates are still required. Call for locates at 1-800-738-7893
- Note** Hand dig when crossing, or within 1.0m of existing Rogers plant.

Helen Macapagal

Helen Macapagal - (905) 780-7022 as per
Melanie Labaj - Planning Team Manager (905) 436 - 4137

June 23, 2016

DATE



- ■ ■ ■ ■ VAUGHAN METROPOLITAN CENTRE (VMC) SECONDARY PLAN AREA
- ■ ■ ■ ■ APPROXIMATE VMC BLACK CREEK RENEWAL STUDY AREA BOUNDARY



Tony Dang

From: Jennifer Cook <jennifer_cook@transcanada.com> on behalf of TransCanada Crossings <crossings@transcanada.com>
Sent: Friday, June 10, 2016 4:48 PM
To: Sumera Yacoob
Subject: RE: Utility Locates

Hi Sumera,

We also don't appear to have any facilities in this section as per our Geofind database, but please place a call to Ontario One Call to confirm (1-800-400-2255). Thank-you!





Sincerely,

Jennifer Cook
Land Analyst

TransCanada | Community and Sustainability - Land Management and Community Relations

Location: TCT 1050C | Ph: 403-920-7375 | Fax: 403-920-2334

jennifer_cook@transcanada.com | www.transcanada.com

From: Sumera Yacoob [mailto:syacoob@tmig.ca]

Sent: Friday, June 10, 2016 9:53 AM

To: TransCanada Crossings; Jennifer Cook
Subject: FW: Utility Locates

Our second study

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

TMIG | The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x--- | f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

From: Sumera Yacoob
Sent: Thursday, June 09, 2016 3:30 PM
To: 'crossings@transcanada.com'
Subject: Utility Locates

Hello,

We will shortly be commencing the Black Creek Renewal Class EA, the study area (in green on the attached map) is primarily located east of Jane Street, from just south of Highway 7 to just north of Highway 407. Can you please confirm if there are any existing works above or below ground, within or very close the proposed study area? Please provide figures if there is anything of interest.

Also, if this request should be directed to someone else can you please provide me with the contact.

Thank you,

Sumera Yacoob M.A.Sc.
Engineer In Training – Water Resources

TMIG | The Municipal Infrastructure Group Ltd.
8800 Dufferin Street, Suite 200 | Vaughan, Ontario L4K 0C5
p: 905.738.5700 x--- | f: 905.738.0065 | tmig.ca



Any data provided is for information purposes only, and is under no circumstances a substitute for a Legal Survey. The information should not be relied upon without proper field verification. IMPORTANT: Carefully read the following disclaimer before using these data. By using these data, you indicate your acceptance and understanding of this disclaimer. DISCLAIMER: The Municipal Infrastructure Group Ltd. (TMIG) provides these digital data sets "as is". TMIG makes no guarantee concerning the accuracy of information contained in the geographic data. TMIG further makes no guarantee as to the condition of the product, or its fitness for any particular purpose. Determining fitness for use lies entirely with the user. If the user has modified the data in any way, they are obligated to describe the types of modifications to the end-user of the data. The user specifically agrees not to misrepresent these data sets, nor to imply that user modifications were approved by TMIG.

We respect your right to choose which electronic messages you receive. To stop receiving this message and similar communications from TransCanada PipeLines Limited please reply to this message with the subject "UNSUBSCRIBE". This electronic message and any attached documents are intended only for the named addressee(s). This communication from TransCanada may contain information that is privileged, confidential or otherwise protected from disclosure and it must not be disclosed, copied, forwarded or distributed without authorization. If you have received this message in error, please notify the sender immediately and delete the original message. Thank you. Nous respectons votre droit de choisir quels messages électroniques vous désirez recevoir. Pour ne plus recevoir ce message et les communications similaires, de la part de TransCanada PipeLines Limited, veuillez répondre à ce message en inscrivant dans l'objet « SE DÉSINSCRIRE ». Ce message électronique et tous les documents joints sont destinés exclusivement au(x) destinataire(s) mentionné(s). Cette communication de TransCanada peut contenir des renseignements privilégiés, confidentiels ou par ailleurs protégés contre la divulgation; ils ne doivent pas être divulgués, copiés, communiqués ou distribués sans autorisation. Si vous avez reçu ce message par erreur, veuillez en avertir immédiatement l'expéditeur et détruire le message original. Merci

APPENDIX H

Hydraulic Modelling Summary



THE MUNICIPAL INFRASTRUCTURE GROUP LTD.

8800 Dufferin Street, Suite 200
Vaughan, Ontario L4K 0C5

T 905.738.5700
F 905.738.0065

www.tmig.ca

Hydraulic Modelling Summary

Project Name / Number VMC Black Creek Renewal EA / 12122		Date October 2017
Modeller(s) T. Dang	Reviewed S. Hollingworth	Software HEC-RAS (v. 5.0.1)
Purpose To assess flood protection performance in each alternative design of the new channel corridor for the VMC Black Creek Renewal Class EA.		
Input Information / Parameters <p>The following data was used to develop the hydraulic model:</p> <ul style="list-style-type: none">■ The existing conditions hydraulic model for Black Creek provided by the Toronto Region Conservation Authority (TRCA) in 2010;■ Topography and future VMC road network provided by the City of Vaughan; and■ Peak flow rates for the 2-year to 100-year storm event and Regional storm event from the VO4 hydrological model (future conditions scenarios) completed as part of the TRCA's 2015 Humber River Hydrology Update (Civica, 2015). <p>Channel geometry for the proposed conditions model was based on each alternative's alignment and the proposed configuration of typical cross-sections. For each alternative, the low flow channel profile followed the existing invert elevations at culverts crossing Highway 7 (196.00 masl) and Highway 407 (191.73 masl). The existing Doughton Road culvert invert (195.45 masl) was also used to define the channel profile. Plan and profile views of the alternative channel designs are found on Figures 5-1 to 5-3 of the main report. The general configuration of channel cross-sections is outlined below, while additional details are provided in the main report. Information regarding channel crossings are found in Table 1 below.</p> <ul style="list-style-type: none">■ Low flow channel – The proposed low flow channel has a top width of 6 m and depth of 0.6 m to roughly accommodate the current 2-year storm peak flow rate.■ Valley Floor Width – The proposed valley floor width is at least 15 m, established during the Black Creek Stormwater Optimization Study (BCSWOS) for the conveyance of the Regional Storm Event.■ Valley Embankment – A naturalized valley embankment (at a maximum 3:1 side slope) was used for the west embankment from Highway 7 to Peelar Road, and on both valley embankments from Peelar Road to Highway 407. The east embankment from Highway 7 to Peelar Road was assumed to be an urban park feature (terraced slope with a maximum 2:1 side slope).■ Buffer – At the top of each valley embankment is a 10 m buffer at 2% horizontal slope towards the valley.■ Channel crossings – As described in Table 1, the proposed channel crossings at Doughton Road, future Interchange Way, and Peelar Road are 12.8 m W by 3.0 m H Conspan arch culverts, with lengths assumed to be equal to the proposed right-of-ways and top of road elevations approximated by the existing topographic elevation.		

Table 1 Proposed Crossings in Valley Corridor for Alternatives Designs

Crossing Location	Culvert Properties	Culvert Length	Invert Elevation	Design Flow or Existing Capacity Before Overtopping
Doughton Road	12.8 m wide x 3.0 m high conspan arch	26 m ⁽²⁾	195.45 masl (upstream) 195.27 masl (downstream)	100-year storm
Future Interchange Way	12.8 m wide x 3.0 m high conspan arch	33 m ⁽²⁾	193.62 masl (upstream) 193.44 masl (downstream)	Regional storm
Peelar Road	12.8 m wide x 3.0 m high conspan arch	26 m ⁽²⁾	192.46 masl (upstream) 192.20 masl (downstream)	100-year storm
Highway 407 ⁽²⁾	6.0 m wide x 4.3 m high concrete box	215 m	191.73 masl (upstream) 191.60 masl (downstream)	Regional storm (existing capacity)

1. The culvert length assumed to be equal to the width of the future road right of way.
2. The Highway 407 crossing in proposed conditions is unchanged from existing conditions.

Peak flow rates for the hydraulic model were from the 2015 Humber River Hydrology Update (future conditions scenarios). The peak flow rate used was from a flow node (NHYP 1514) for Black Creek located at Highway 407 and conservatively applied for the entire reach of Black Creek in this study (from Highway 7 to Highway 407). The peak flow rate information was applied at a single flow change location, at River Station 46.191, which is the cross-section immediately downstream of the Highway 7 culvert. Table 1 below summarizes the peak flows for the hydraulic model.

Table 2 Peak Flow Rates in Black Creek

Location	Peak Flow (m ³ /s)						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	Regional
Black Creek at Highway 7 (downstream of Edgeley Pond)	7.9	11.2	15.9	22.5	27.5	32.5	94.8

Methodology

Hydraulic models were created for each of the alternative alignments using the cross-section geometry, profile, and crossing information outlined in the previous section. HEC-RAS model plan view schematics of each alternative are shown on Figures 1 to 3 below. The storm events were modelled for each of the alignments alternatives to assess conveyance capacity, using the following criteria:

- Low flow channel can approximately convey the 2-year peak flow rate;
- The crossings at Doughton Road and Peelar Road can convey the 100-year peak flow rate without overtopping;
- The crossings at future Interchange Way and Highway 407 can convey the Regional storm peak flow rate without overtopping; and
- A minimum freeboard of 0.3 m from the top of the valley for the Regional storm event flow was considered for assessing the conveyance capacity of the alternative alignments.

The models of each alternative included the following assumptions:

- The peak flow used for the study reach was from the 2015 Humber River Watershed Model, future conditions. The flow rate selected was conservatively chosen from an ADDHYD located at the downstream end of the study reach (NHYD 1514). The peak flow rate was applied to a River Station 46.191, which is the cross-section immediately downstream of the Highway 7 culvert at the upstream end of the study reach. Discharges for storm sewer outlets at Doughton Road and Peelar Road were not explicitly modelled, but were assumed to be accounted for in the total peak flow for this section.
- Manning's roughness coefficients were 0.035 and 0.080 for the low flow channel and overbanks, respectively.

Following the preferred alternative selection, the model was refined to determine storm event water elevations for preliminary design. The following refinements were completed:

- The culvert sizes were modified to better suit the existing ground surface profile at the proposed culvert locations. The conspan arch dimensions for the preliminary design are as follows: Doughton Road 12.81 m x 2.44 m; Interchange Way 12.81 m x 3.66 m; and Peelar Road 12.81 m x 3.05 m.
- The invert elevations of the culverts were modified based on a refined alignment and grading for the low flow channel.

Figure 1 HEC-RAS Plan View Schematic of Alternative #2

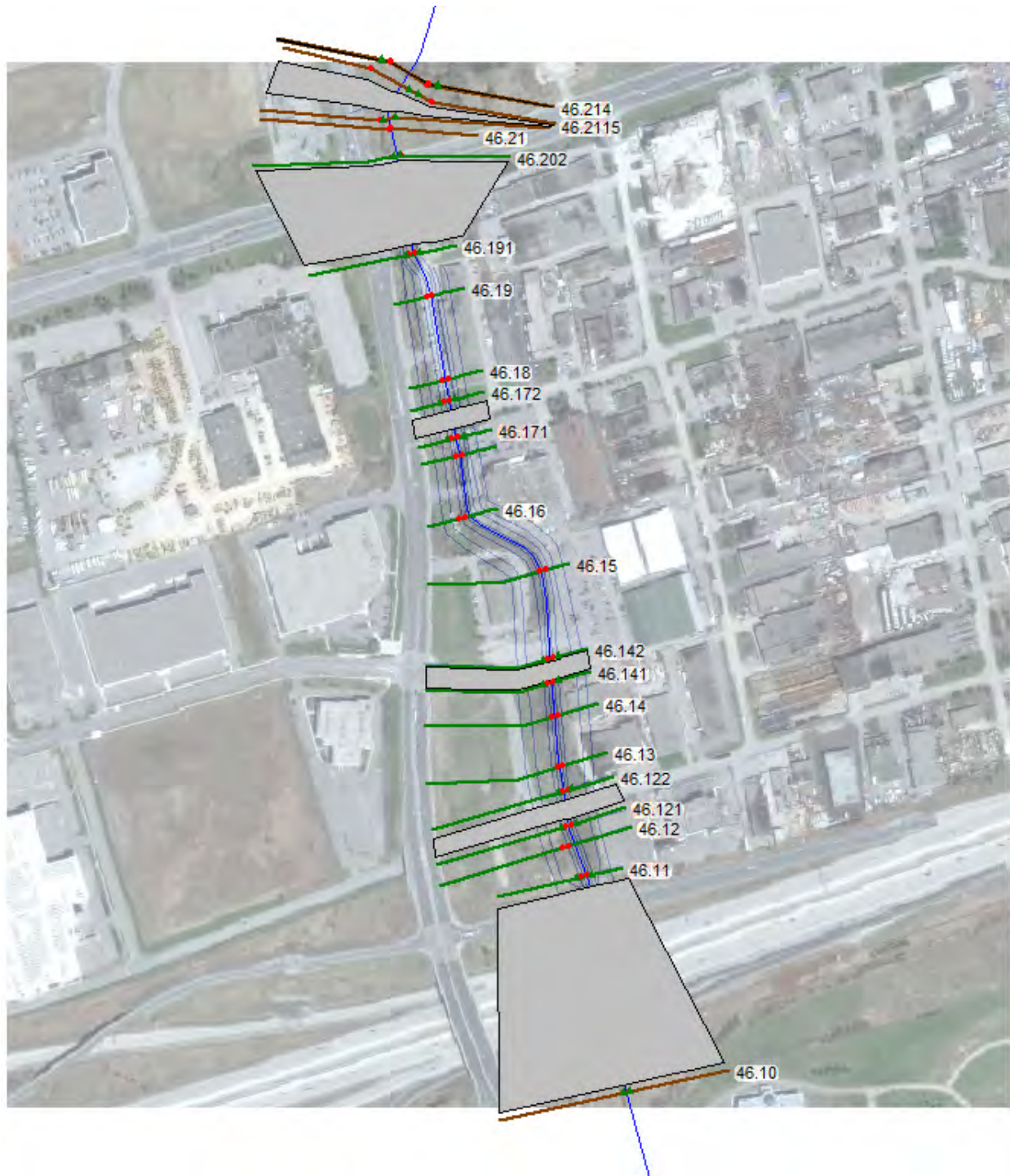


Figure 2 HEC-RAS Plan View Schematic of Alternative #3

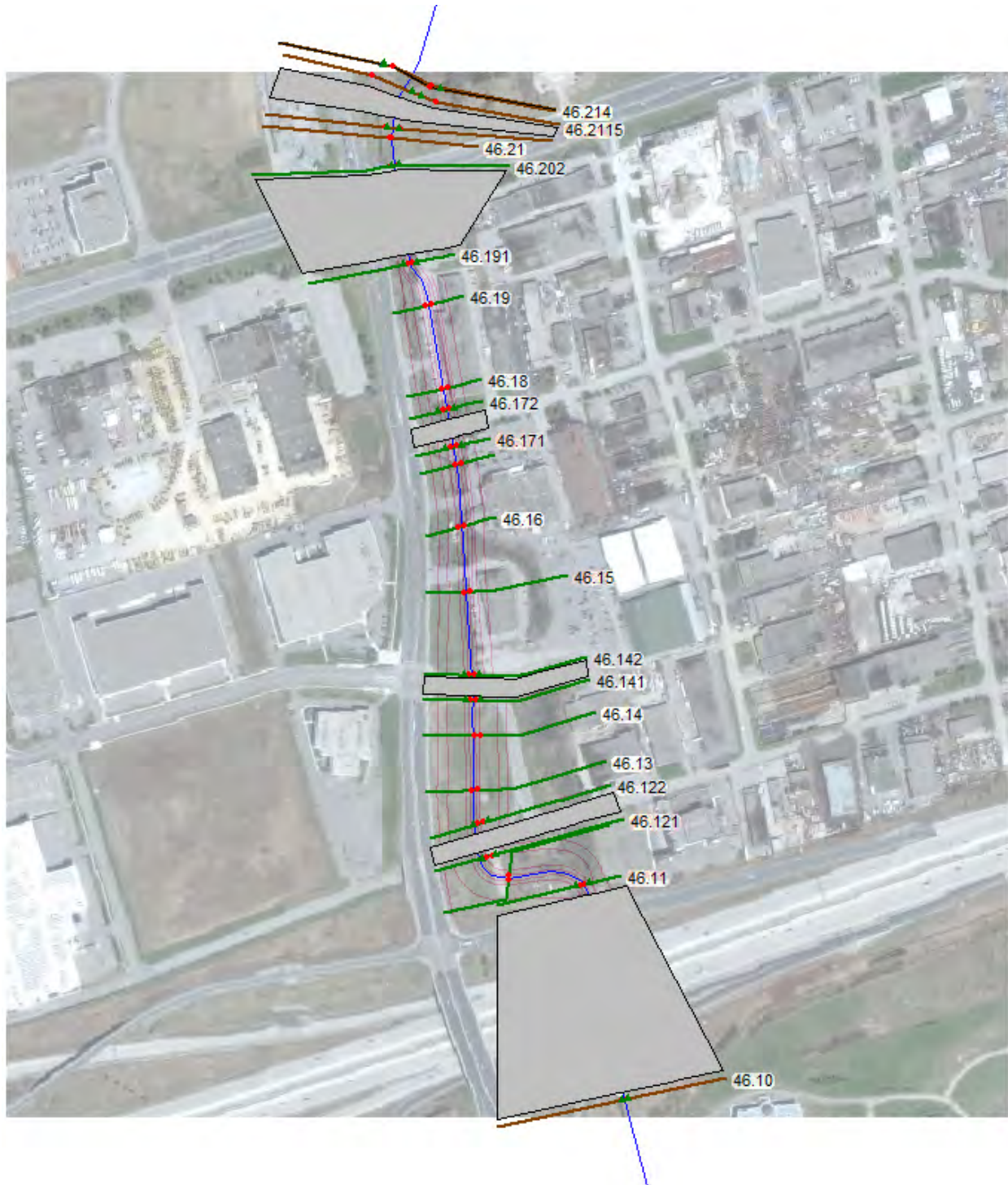
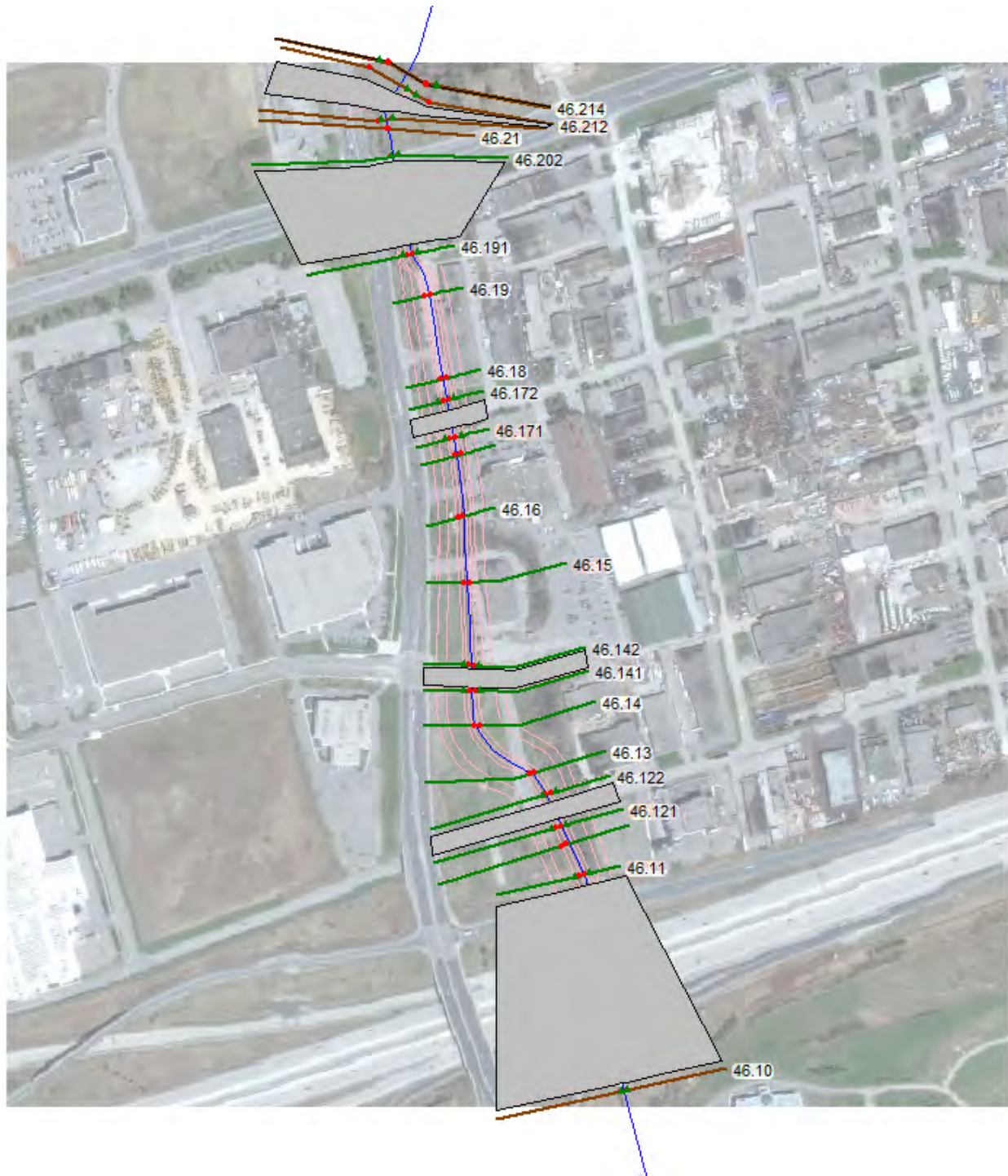


Figure 3 HEC-RAS Plan View Schematic of Alternative #4



Results

The water surface elevations for each alternative under the 2-year, 100-year, and Regional storm events are found in Table 3. Water surface profiles for the Regional Storm Event, compared to existing conditions, are found on Figures 4 to 6.

Table 3 Water Surface Elevations for Alternatives #2 to #4

Location	River Station	Water Surface Elevation (masl)			Minimum Top of Channel Elevation (masl) ⁽²⁾	Freeboard for Regional Storm (m)
		2-Year Storm	100-Year Storm	Regional Storm		
Immediately downstream of Highway 7	46.191	196.80 – 196.84	197.67 – 197.73	199.18 – 199.22	199.52	0.30 – 0.34
Upstream of Doughton Rd.	46.172	196.12	196.77	198.73 – 198.83	199.22	0.39 – 0.49
Upstream of Interchange Way	46.142	194.08 – 194.45	194.73 – 195.10	198.08 – 198.14	200.00	1.86 – 1.92
Upstream of Peelar Rd.	46.122	193.12 – 193.46	194.26 – 194.38	197.41 – 197.45	198.00 – 198.20	0.55 – 0.76
Upstream of Highway 407	46.11	192.56 – 192.65	194.18 – 194.21	196.82 – 196.83	197.90	1.07 – 1.08

1. Where applicable, a range of values between the alternatives is shown.
2. Minimum top of channel elevation based on approximate existing ground elevation at the edge of channel. Future top of channel elevation to be refined in detailed grading design. Minimum required freeboard is 0.3 m.

The preferred alternative model was modified for the preliminary design, which included a refinement of culvert dimensions and inverts. Water surface elevations for the preliminary design model are found in Table 4. The Regional Storm Event water surface elevation was used to define the top of channel grading in the preliminary design. The water surface profiles for the 2-year, 100-year and Regional storm events are found on Figure 7.

Table 4 Water Surface Elevations for Preliminary Design

Location	River Station	Water Surface Elevation (masl)		
		2-Year Storm	100-Year Storm	Regional Storm
Immediately downstream of Highway 7	46.191	196.84	197.73	199.16
Upstream of Doughton Rd.	46.172	196.12	196.77	198.79
Upstream of Interchange Way	46.142	194.29	194.94	197.66
Upstream of Peelar Rd.	46.122	193.13	194.26	197.42
Upstream of Highway 407	46.11	192.56	194.18	196.82

Figure 4 Water surface profile for Alternative #2 (Regional Storm Event)

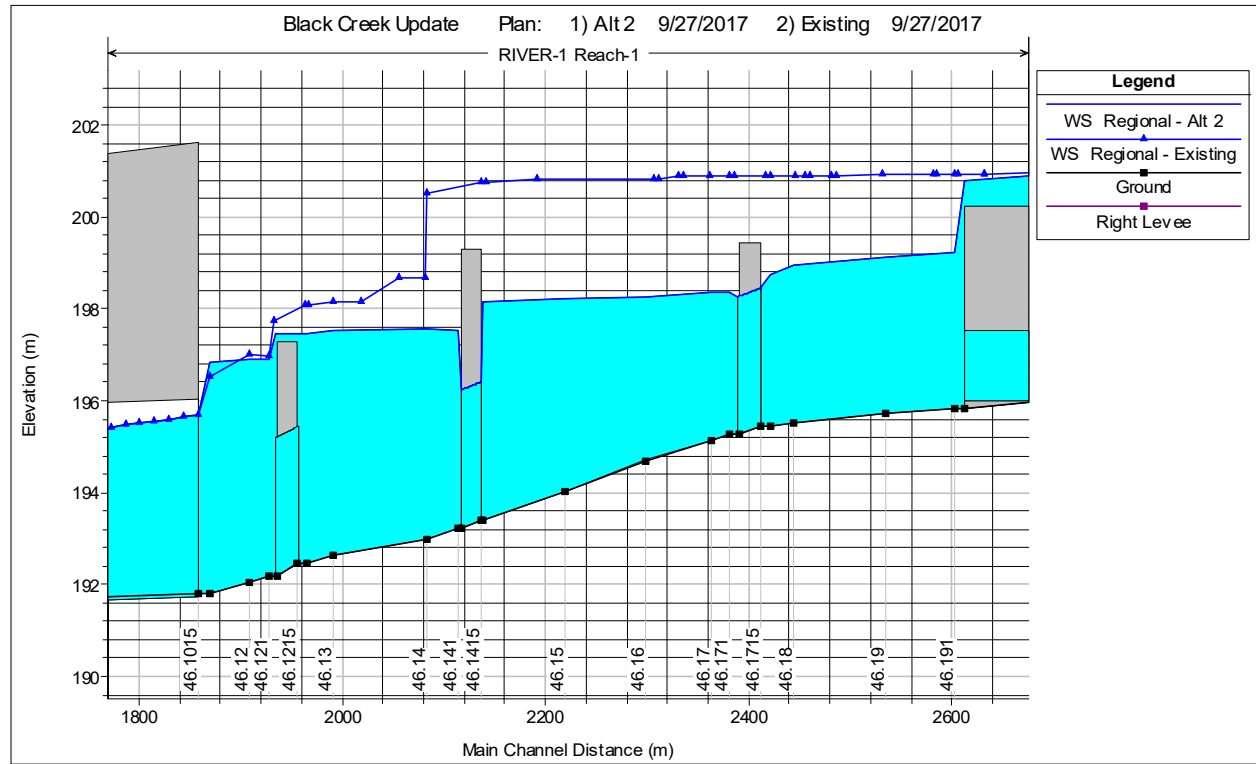


Figure 5 Water surface profile for Alternative #3 (Regional Storm Event)

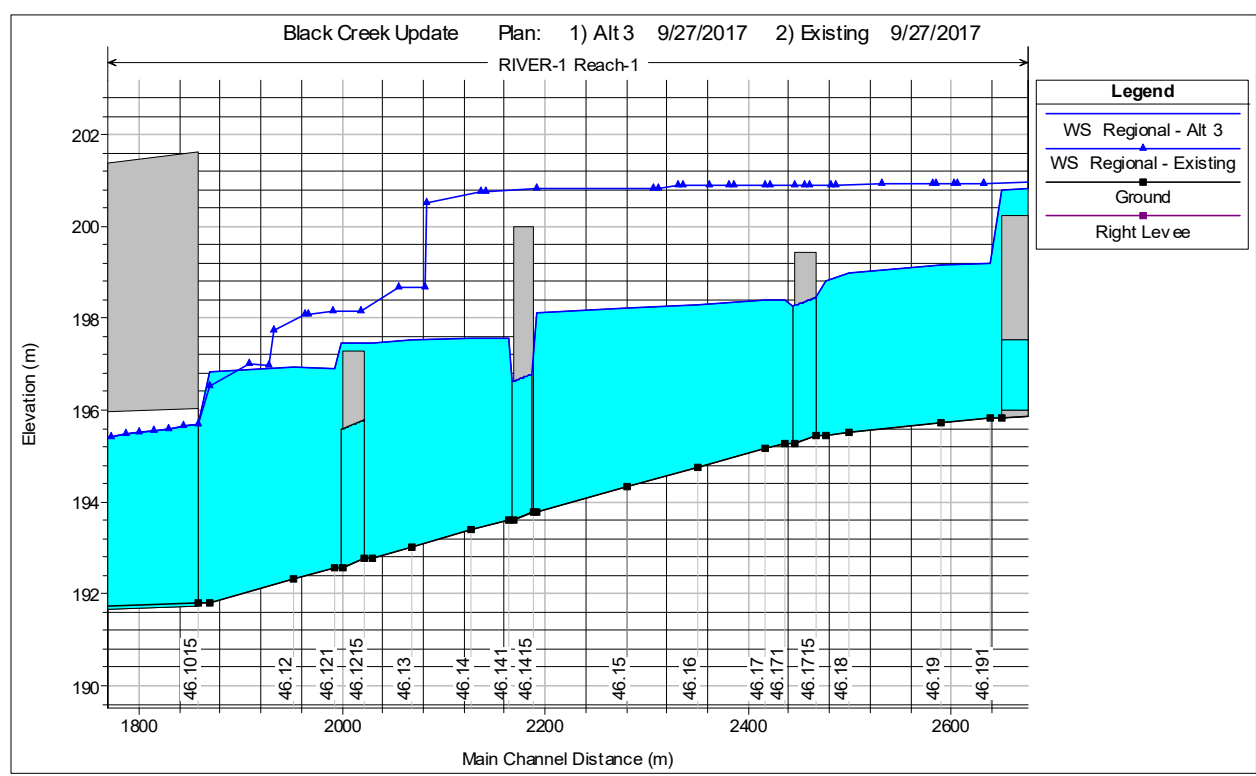


Figure 6 Water surface profile for Alternative #4 (Regional Storm Event)

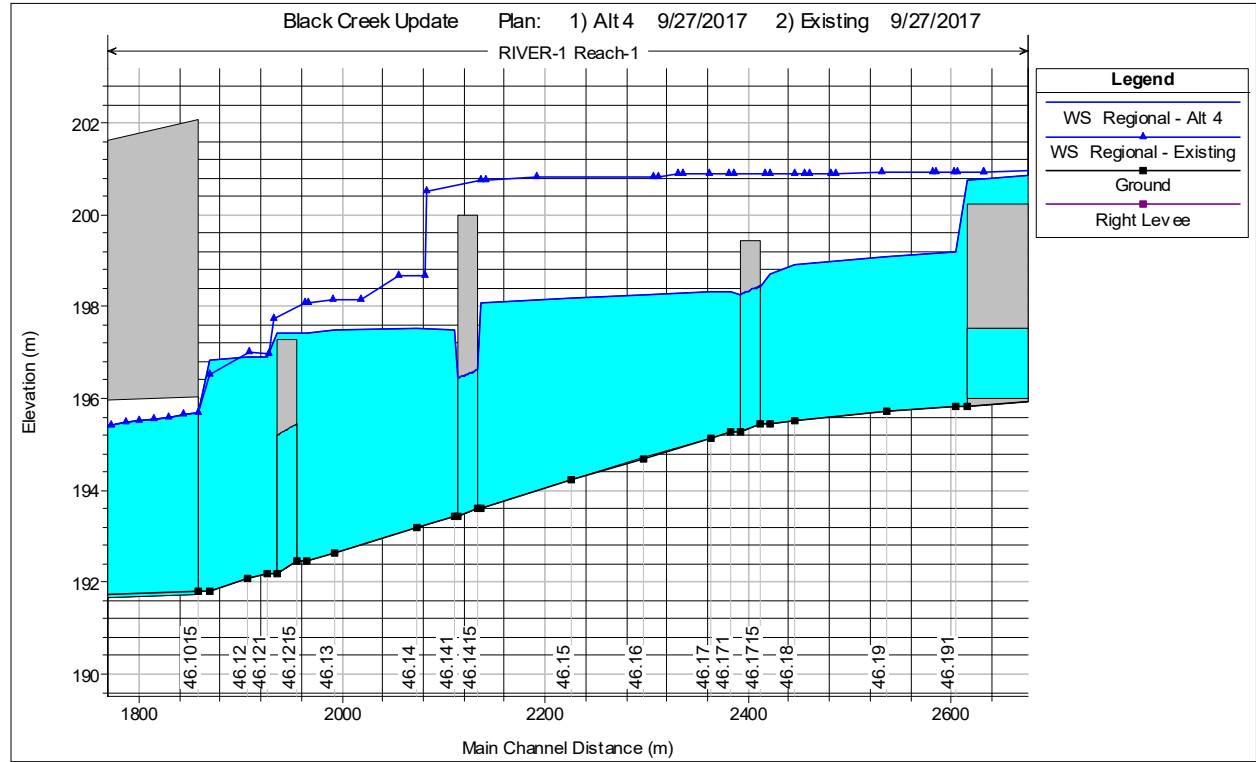
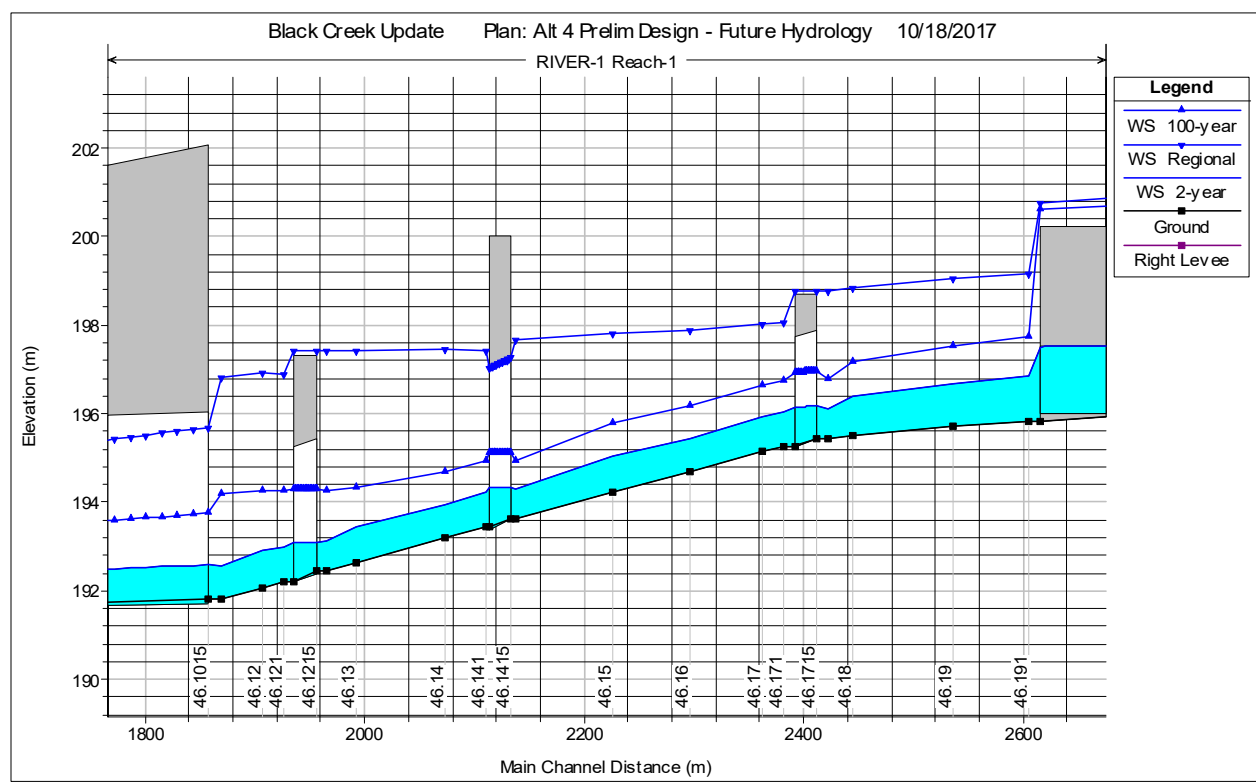


Figure 7 Water surface profile for Preliminary Design (2-year, 100-year and Regional storms)



APPENDIX I

Capital Cost Summary

Alternative #2 (New Valley over Existing Alignment)
CAPITAL COSTS

	Est. Quantity	Unit	Unit Price	Subtotal	Total
A LAND VALUE					
Private land acquisition or conveyance ⁽¹⁾	3.0	hectare	\$2,700,000	\$8,100,000	
Public land ⁽¹⁾	1.8	hectare	\$2,700,000	\$4,860,000	
Contingency	30%			\$3,888,000	
SUB-TOTAL (LAND)					\$16,848,000
B CONSTRUCTION					
Channel Works and Buffers					
Realignment, earthworks, restoration ⁽²⁾	790	linear metre	\$5,000	\$3,950,000	
Retaining wall at urban plaza (assumes 2 m height)	140	linear metre	\$1,500	\$210,000	
Naturalized buffer (plantings, trails, lighting) ⁽³⁾	850	linear metre	\$750	\$638,000	
Urban buffer (amenitized, including promenade paving, furniture, lighting) ⁽³⁾	430	linear metre	\$5,000	\$2,150,000	
Terraced steps	430	linear metre	\$5,000	\$2,150,000	
Contingency (soil quality, dewatering, utility relocation, stabilization, materials, etc.)	30%			\$2,730,000	\$11,828,000
Structures					
Doughton Road and Peelar Road crossings (12.8 m Conspan Arch, assumes 23 m right-of-way)	2	unit	\$1,040,000	\$2,080,000	
Interchange Way crossing (12.8 m Conspan Arch, assumes 28 m right-of-way)	1	unit	\$1,260,000	\$1,260,000	
Contingency (foundations, restoration, grading requirements, etc.)	30%			\$1,000,000	\$4,340,000
Construction Contingency (sequencing, environmental controls, flow management, etc.)⁽⁴⁾	30%				\$4,850,400
HST	13%				\$2,730,000
SUB-TOTAL (CONSTRUCTION)					\$23,748,400
TOTAL					\$40,600,000

Notes:

- ⁽¹⁾ The price per hectare is based on the blended rate estimated in the Black Creek Financial Strategy, May 2016
- ⁽²⁾ Based on conventional greenfield channel realignment works, length extended to account for realigned section
- ⁽³⁾ Unit price per side of channel; quantity assumes that buffers are not applicable to rights-of-way.
- ⁽⁴⁾ Confirmation of temporary re-routing requirements, coordination with development, etc. required during design

**Alternative #3 (Jane Street Alignment)
CAPITAL COSTS**

	Est. Quantity	Unit	Unit Price	Subtotal	Total
A LAND VALUE					
Private land acquisition or conveyance ⁽¹⁾	1.7	hectare	\$2,700,000	\$4,698,000	
Public land ⁽¹⁾	3.4	hectare	\$2,700,000	\$9,180,000	
Contingency	30%			\$4,163,400	
SUB-TOTAL (LAND)					\$18,041,400
B CONSTRUCTION					
Channel Works and Buffers					
Realignment, earthworks, restoration ⁽²⁾	840	linear metre	\$5,000	\$4,200,000	
Retaining wall at urban plaza (assumes 2 m height)	140	linear metre	\$1,500	\$210,000	
Naturalized buffer (plantings, trails, lighting) ⁽³⁾	970	linear metre	\$750	\$728,000	
Urban buffer (amenitized, including promenade paving, furniture, lighting) ⁽³⁾	400	linear metre	\$5,000	\$2,000,000	
Terraced steps	400	linear metre	\$5,000	\$2,000,000	
Contingency (soil quality, dewatering, utility relocation, stabilization, materials, etc.)	30%			\$2,740,000	\$11,878,000
Structures					
Doughton Road and Peelar Road crossings (12.8 m Conspan Arch, assumes 23 m right-of-way)	2	unit	\$1,040,000	\$2,080,000	
Interchange Way crossing (12.8 m Conspan Arch, assumes 28 m right-of-way)	1	unit	\$1,260,000	\$1,260,000	
Contingency (foundations, restoration, grading requirements, etc.)	30%			\$1,000,000	\$4,340,000
Construction Contingency (sequencing, environmental controls, flow management, etc.)⁽⁴⁾	30%				\$4,865,400
HST	13%				\$2,740,000
SUB-TOTAL (CONSTRUCTION)					\$23,823,400
TOTAL					\$41,900,000

Notes:

- ⁽¹⁾ The price per hectare is based on the blended rate estimated in the Black Creek Financial Strategy, May 2016
- ⁽²⁾ Based on conventional greenfield channel realignment works, length extended to account for realigned section
- ⁽³⁾ Unit price per side of channel; quantity assumes that buffers are not applicable to rights-of-way.
- ⁽⁴⁾ Confirmation of temporary re-routing requirements, coordination with development, etc. required during design

Alternative #4 (Meander North of Peelar Road Alignment)
CAPITAL COSTS

	Est. Quantity	Unit	Unit Price	Subtotal	Total
A LAND VALUE					
Private land acquisition or conveyance ⁽¹⁾	1.7	hectare	\$2,700,000	\$4,644,000	
Public land ⁽¹⁾	3.0	hectare	\$2,700,000	\$8,100,000	
Contingency	30%			\$3,820,000	
SUB-TOTAL (LAND)					\$16,564,000
B CONSTRUCTION					
Channel Works and Buffers					
Realignment, earthworks, restoration ⁽²⁾	790	linear metre	\$5,000	\$3,950,000	
Retaining wall at urban plaza (assumes 2 m height)	140	linear metre	\$1,500	\$210,000	
Naturalized buffer (plantings, trails, lighting) ⁽³⁾	870	linear metre	\$750	\$653,000	
Urban buffer (amenitized, including promenade paving, furniture, lighting) ⁽³⁾	400	linear metre	\$5,000	\$2,000,000	
Terraced steps	400	linear metre	\$5,000	\$2,000,000	
Contingency (soil quality, dewatering, utility relocation, stabilization, materials, etc.)	30%			\$2,600,000	\$11,413,000
Structures					
Doughton Road and Peelar Road crossings (12.8 m Conspan Arch, assumes 23 m right-of-way)	2	unit	\$1,040,000	\$2,080,000	
Interchange Way crossing (12.8 m Conspan Arch, assumes 28 m right-of-way)	1	unit	\$1,260,000	\$1,260,000	
Contingency (foundations, restoration, grading requirements, etc.)	30%			\$1,000,000	\$4,340,000
Construction Contingency (sequencing, environmental controls, flow management, etc.)⁽⁴⁾	30%				\$4,730,000
HST	13%				\$2,660,000
SUB-TOTAL (CONSTRUCTION)					\$23,143,000
TOTAL					\$39,700,000

Notes:

- ⁽¹⁾ The price per hectare is based on the blended rate estimated in the Black Creek Financial Strategy, May 2016
- ⁽²⁾ Based on conventional greenfield channel realignment works, length extended to account for realigned section
- ⁽³⁾ Unit price per side of channel; quantity assumes that buffers are not applicable to rights-of-way.
- ⁽⁴⁾ Confirmation of temporary re-routing requirements, coordination with development, etc. required during design

APPENDIX J

**Black Creek Stormwater Optimization
Study – Municipal Class Environmental
Assessment Master Plan Report
(PDF Only)**

Please refer to attached CD for Appendix J report.