

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MAY 23, 2018**

Item 6, Report No. 5, of the Finance, Administration and Audit Committee, which was adopted without amendment by the Council of the City of Vaughan on May 23, 2018.

#### **6      SLOPE STABILIZATION CHERRY HILLS ROAD OPEN SPACE**

**The Finance, Administration and Audit Committee recommends approval of the recommendation contained in the following report of the Deputy City Manager, Planning & Growth Management, dated May 7, 2018:**

##### **Recommendations**

1. That a new capital project be established in the amount of \$75,000 inclusive of administration recovery and applicable taxes to be funded from the Gas Tax Reserve.
2. That staff be authorized to enter into an agreement with the Toronto and Region Conservation Authority to implement the required engineering review, design and consultation in accordance with their March 8, 2018 proposal (Attachment 2) at a cost not to exceed \$75,000 including tax and contingency allowance;
3. That inclusion of this matter on a Public Committee or Council agenda with respect to amending the 2018 capital budget be endorsed as meeting the requirements for sufficient notice pursuant to Section 2(1) (c) of By-Law 394-2002 as amended.

(A copy of the attachments referred to in the following report have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

Item:



## Finance, Administration and Audit Committee Report

---

**DATE:** Monday, May 07, 2018

**WARD(S):** 5

**TITLE:** Slope Stabilization Cherry Hills Road Open Space

**FROM:**

Jason Schmidt-Shoukri, Deputy City Manager, Planning & Growth Management

**ACTION:** DECISION

---

### **Purpose**

To obtain Council approval to establish a new capital project for engineering review and preliminary design for slope stabilization in the open space behind private residential properties at 2 and 6 Cherry Hills Road.

### **Report Highlights**

- Slope stabilization is required at City-owned open space near Cherry Hills Road to protect adjacent private property from damage
- The first step in this project is to conduct an engineering review and preliminary design
- Staff seeks approval of a new capital project to fund this work and approval to enter agreement with TRCA to undertake this project on behalf of the City
- A capital budget request for the detailed design and construction phase of this project will be included in a future budget submission for consideration

### **Recommendations**

1. That a new capital project be established in the amount of \$75,000 inclusive of administration recovery and applicable taxes to be funded from the Gas Tax Reserve.

2. That staff be authorized to enter into an agreement with the Toronto and Region Conservation Authority to implement the required engineering review, design and consultation in accordance with their March 8, 2018 proposal (Attachment 2) at a cost not to exceed \$75,000 including tax and contingency allowance;
3. That inclusion of this matter on a Public Committee or Council agenda with respect to amending the 2018 capital budget be endorsed as meeting the requirements for sufficient notice pursuant to Section 2(1) (c) of By-Law 394-2002 as amended.

## **Background**

Slope instability within City-owned open space is affecting the rear yards of private residential properties on Cherry Hills Road. A location map of the area is appended as Attachment 1. Slope conditions continue to deteriorate and remediation of this area is required immediately to prevent damage and loss to private property. The location of the required works falls within the Toronto and Region Conservation Authority (TRCA) regulated area of the Don River watershed.

The open space area near Cherry Hills Road is a challenging construction environment because of significant existing vegetation, steep slopes and restricted site access.

## **Previous Reports/Authority**

Not Applicable.

## **Analysis and Options**

Parks Development staff reviewed the area of slope instability with TRCA staff to obtain advice and to determine the extent of work required to stabilize the slope. Based on the TRCA's experience with similar situations, several options for undertaking this work were identified and recommendations provided for the next steps required to stabilize the erosion in this area. A proposal from the TRCA to undertake the required work was returned on March 8, 2018 and is appended as Attachment 2.

The recommendations are summarized as follows;

1. A site-specific report shall be prepared to determine the cause of the slope erosion near Cherry Hills Rd.
2. The site-specific report will investigate possible options for the remedial work near Cherry Hills Rd. and make recommendation of a preferred option. Each option will include a site specific conceptual sketch and provide evaluation of the practicality, cost and long-term performance. The most appropriate option as deemed by the City will be selected.

3. The selected option will be developed to include site specific drawings that identify the proposed remedial work, the extent of the work, and the necessary details. This information must be sufficient enough for the City or City's agent to prepare detailed construction documentation.

It is proposed that this project be implemented in two phases;

*Phase 1: Site Specific Engineering Review, Design & Consultation* – detailed engineering to complete borehole samples, acquire and review survey information, preliminary screening for anticipated permits and approvals, develop options, risk analysis, cost estimates, recommendations, lead negotiations and agreements with adjacent residents for the slope stabilization near Cherry Hills Rd.

*Phase 2: Site Specific Detailed Design & Construction* – detailed design and construction of erosion stabilization works required to mitigate further erosion and stabilize the slope near Cherry Hills Rd.

Following completion of Phase 1, staff will review and provide recommendations for consideration of Phase 2 as part of the 2019 Capital Budget process.

The benefits of the recommendations contained within this report, including the recommendation to partner with the TRCA include:

1. Reduced project cost and staff administration
2. Streamlined design, permit and agreement process
3. Reduced impact to adjacent residents
4. Vested interest in quality and value through TRCA's stewardship of the Don River watershed area
5. TRCA experience and expertise with projects of similar scope and complexity
6. Improved efficiency of future construction due to TRCA involvement at design phase

### **Financial Impact**

The Gas Tax Reserve has sufficient funds to accommodate *Phase 1: Site Specific Engineering Review, Design & Consultation* costs of \$75,000. Upon completion of Phase 1 works, staff will provide recommendations for consideration of Phase 2: *Site Specific Detailed Design & Construction* as part of the 2019 Capital Budget Request process.

### **Broader Regional Impacts/Considerations**

There are no Regional implications.

## **Conclusion**

Slope stabilization works are required within City-owned open space near Cherry Hills Road to mitigate damage to private property. The area is a challenging construction environment because of significant existing vegetation, steep slopes, restricted site access and TRCA regulation of the watershed.

Staff is seeking Council approval to enter into an agreement with the TRCA to undertake the required engineering review, design and consultation phase of this project in 2018 to be followed by a future capital budget submission for the construction phase. The TRCA has the experience, specialized expertise and capability to undertake this project in partnership with the City.

This report was prepared in consultation with the Chief Financial Officer & City Treasurer, the Interim Director of Financial Planning & Development Finance, the Director of Procurement Services, the Director of Transportation Services, Parks and Forestry Operations and the Director of Environmental Services.

**For more information**, please contact: Richard Fournier, Project Manager, Parks Development, ext.8102

## **Attachments**

1. Location Map
2. TRCA Advisory Letter, Dated March 8, 2018

## **Prepared by**

Richard Fournier, Project Manager, Parks Development, ext.8102

Item:



## Finance, Administration and Audit Committee Report

---

**DATE:** Monday, May 07, 2018

**WARD(S):** 5

**TITLE:** Slope Stabilization Cherry Hills Road Open Space

**FROM:**

Jason Schmidt-Shoukri, Deputy City Manager, Planning & Growth Management

**ACTION:** DECISION

---

### **Purpose**

To obtain Council approval to establish a new capital project for engineering review and preliminary design for slope stabilization in the open space behind private residential properties at 2 and 6 Cherry Hills Road.

### **Report Highlights**

- Slope stabilization is required at City-owned open space near Cherry Hills Road to protect adjacent private property from damage
- The first step in this project is to conduct an engineering review and preliminary design
- Staff seeks approval of a new capital project to fund this work and approval to enter agreement with TRCA to undertake this project on behalf of the City
- A capital budget request for the detailed design and construction phase of this project will be included in a future budget submission for consideration

### **Recommendations**

1. That a new capital project be established in the amount of \$75,000 inclusive of administration recovery and applicable taxes to be funded from the Gas Tax Reserve.

2. That staff be authorized to enter into an agreement with the Toronto and Region Conservation Authority to implement the required engineering review, design and consultation in accordance with their March 8, 2018 proposal (Attachment 2) at a cost not to exceed \$75,000 including tax and contingency allowance;
3. That inclusion of this matter on a Public Committee or Council agenda with respect to amending the 2018 capital budget be endorsed as meeting the requirements for sufficient notice pursuant to Section 2(1) (c) of By-Law 394-2002 as amended.

## **Background**

Slope instability within City-owned open space is affecting the rear yards of private residential properties on Cherry Hills Road. A location map of the area is appended as Attachment 1. Slope conditions continue to deteriorate and remediation of this area is required immediately to prevent damage and loss to private property. The location of the required works falls within the Toronto and Region Conservation Authority (TRCA) regulated area of the Don River watershed.

The open space area near Cherry Hills Road is a challenging construction environment because of significant existing vegetation, steep slopes and restricted site access.

## **Previous Reports/Authority**

Not Applicable.

## **Analysis and Options**

Parks Development staff reviewed the area of slope instability with TRCA staff to obtain advice and to determine the extent of work required to stabilize the slope. Based on the TRCA's experience with similar situations, several options for undertaking this work were identified and recommendations provided for the next steps required to stabilize the erosion in this area. A proposal from the TRCA to undertake the required work was returned on March 8, 2018 and is appended as Attachment 2.

The recommendations are summarized as follows;

1. A site-specific report shall be prepared to determine the cause of the slope erosion near Cherry Hills Rd.
2. The site-specific report will investigate possible options for the remedial work near Cherry Hills Rd. and make recommendation of a preferred option. Each option will include a site specific conceptual sketch and provide evaluation of the practicality, cost and long-term performance. The most appropriate option as deemed by the City will be selected.

3. The selected option will be developed to include site specific drawings that identify the proposed remedial work, the extent of the work, and the necessary details. This information must be sufficient enough for the City or City's agent to prepare detailed construction documentation.

It is proposed that this project be implemented in two phases;

*Phase 1: Site Specific Engineering Review, Design & Consultation* – detailed engineering to complete borehole samples, acquire and review survey information, preliminary screening for anticipated permits and approvals, develop options, risk analysis, cost estimates, recommendations, lead negotiations and agreements with adjacent residents for the slope stabilization near Cherry Hills Rd.

*Phase 2: Site Specific Detailed Design & Construction* – detailed design and construction of erosion stabilization works required to mitigate further erosion and stabilize the slope near Cherry Hills Rd.

Following completion of Phase 1, staff will review and provide recommendations for consideration of Phase 2 as part of the 2019 Capital Budget process.

The benefits of the recommendations contained within this report, including the recommendation to partner with the TRCA include:

1. Reduced project cost and staff administration
2. Streamlined design, permit and agreement process
3. Reduced impact to adjacent residents
4. Vested interest in quality and value through TRCA's stewardship of the Don River watershed area
5. TRCA experience and expertise with projects of similar scope and complexity
6. Improved efficiency of future construction due to TRCA involvement at design phase

### **Financial Impact**

The Gas Tax Reserve has sufficient funds to accommodate *Phase 1: Site Specific Engineering Review, Design & Consultation* costs of \$75,000. Upon completion of Phase 1 works, staff will provide recommendations for consideration of Phase 2: *Site Specific Detailed Design & Construction* as part of the 2019 Capital Budget Request process.

### **Broader Regional Impacts/Considerations**

There are no Regional implications.



## **Conclusion**

Slope stabilization works are required within City-owned open space near Cherry Hills Road to mitigate damage to private property. The area is a challenging construction environment because of significant existing vegetation, steep slopes, restricted site access and TRCA regulation of the watershed.

Staff is seeking Council approval to enter into an agreement with the TRCA to undertake the required engineering review, design and consultation phase of this project in 2018 to be followed by a future capital budget submission for the construction phase. The TRCA has the experience, specialized expertise and capability to undertake this project in partnership with the City.

This report was prepared in consultation with the Chief Financial Officer & City Treasurer, the Interim Director of Financial Planning & Development Finance, the Director of Procurement Services, the Director of Transportation Services, Parks and Forestry Operations and the Director of Environmental Services.

**For more information**, please contact: Richard Fournier, Project Manager, Parks Development, ext.8102

## **Attachments**

1. Location Map
2. TRCA Advisory Letter, Dated March 8, 2018

## **Prepared by**

Richard Fournier, Project Manager, Parks Development, ext.8102



# **AREA OF SLOPE INSTABILITY CHERRY HILLS ROAD OPEN SPACE**



**DRAWN: M.Mc. APPROVED: R.F.**  
**SCALE: N.A. DATE: FEB.12, 2018**

**Location Map**

**PARKS  
DEVELOPMENT  
DEPARTMENT**



March 8, 2018

CFN: 57452

**VIA EMAIL**

Richard Fournier, OALA, CSLA, PMP  
 Project Manager  
 905-303-2069, ext. 8102 | Richard.fournier@vaughan.ca  
 City of Vaughan | Parks Development Department  
 2141 Major Mackenzie Dr., Vaughan, ON L6A 1T1

Dear Mr. Fournier,

**Re: Advisory Letter - 2 to 6 Cherry Hills Road Erosion Control Project – Phase 1**

The City of Vaughan (the City) approached Toronto and Region Conservation Authority (TRCA) in September 2017 to comment on the preliminary scope of work to remediate a slope failure along the valley walls of Marita Payne Park behind 2 and 6 Cherry Hills Road. The City contacted TRCA given our experience completing similar slope stabilization projects on and near private property, and following recent erosion control works within the park near 28 Jason Road. TRCA understands that the City is interested in partnering with TRCA to assess and remediate upper slope instability regarding the Open Space Slope Stabilization – Cherry Road hereafter referred to as the Project.

Overall, this Project aims to assess and remediate the unstable top of bank associated with a failing concrete retaining wall along the rear of the property at the subject site. It is understood that this is intended to be a multi-phased project as funding and agreements are approved, beginning with Phase 1. A map has been prepared using LiDAR data to show the approximate limits of the project and it has been appended as Schedule A.

The following advisory letter provides a recommended scope and preliminary budget for TRCA to complete Phase 1 services for remedial slope stabilization works that includes a slope stability analysis, development of detailed designs, and permits and approvals. Preliminary background information for rough order of magnitude implementation costs (Phase 2 services) have been appended in Schedule B.

**BACKGROUND**

The City of Vaughan identified an area of slope instability within Marita Payne Park and contacted TRCA staff from the Engineering Projects group in September 2017 to discuss remedial options. The main concern is a failing concrete retaining wall and adjacent slope instability that is located behind 2 and 6 Cherry Hill Road. The existing concrete block retaining



wall has started to significantly slump along the top of the slope impacting the tableland and backyards of the houses (**Figure 1**).



**Figure 1.** Retaining wall and fence movement. *Source: TRCA, 2017.*

The tableland in the general area of the study site is privately owned, and the adjacent park land is owned by the City. The slope is covered with some high quality mature trees, and a key objective of the overall design will be to minimize tree removals and excessive grading.

The following information was made available to TRCA from the City to support development of this advisory letter:

- A geotechnical investigation was completed by GeoPro in November of 2016 and provides suitable information for deep soil stratigraphy;
- An arborist report was completed by MHBC Planning, Urban Design, and Landscape Architecture in November of 2017;
- A detailed topographic survey was completed by the Delph & Jenkins North Ltd. in November of 2017;

To date, the City of Vaughan has proposed to partner with TRCA to coordinate a slope stability analysis, detailed designs development, assist the City with consultation with affected residents, and obtain all permits and approvals to proceed with construction to stabilize the area in early 2019.

TRCA's Engineering Projects group has a long standing history and demonstrated expertise in addressing erosion and slope stability concerns impacting public and private lands. Projects are undertaken either from capital funding received through partnerships with Public Agencies and on a cost recoverable basis from external clients including: public agencies, corporations, and private landowners.

## OBJECTIVE

The objective of the Project is to provide long-term protection to the residential properties affected by the failing concrete retaining wall and upper slope instability near 2 to 6 Cherry Hills Road. As part of this primary objective, it is important to keep the entire erosion control structure on private property and to minimize tree removals on the slope.

Based on the constraints above, TRCA recommends that the City proceed with installing either a block retaining wall or a shoring wall to stabilize the slope. A brief summary of the options has been presented below and specific material types for either option will depend on a variety of factors that will have to be evaluated further during the detailed design development phase.

### Alternative #A – Retaining wall



**Figure 2.** A gravity retaining wall to protect houses in Vaughan managed by TRCA. Source: TRCA, 2017.

TRCA recommends using a Redi-Rock Retaining Wall System (or approved equivalent) for this project based on the site conditions, design constraints, and constructability. A precast modular concrete block system is cost-effective, aesthetically pleasing, and is easy to install and would be appropriate for stabilization at this site. Redi-Rock offers a variety of retaining wall systems and TRCA recommends either the Redi-Rock gravity block retaining wall system or the Redi-Rock Mechanically Stabilized Earth (MSE) Retaining Wall System. The specific retaining wall system will be determined based on the slope stability analysis and geotechnical requirements identified in detailed design development.



**Table 1.** Advantages and disadvantages of Option A - Retaining Wall

	<b>Retaining Wall</b>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Lower cost than geo-structural/shoring solutions</li> <li>• Maintenance requirements lower in the long-term and easier to undertake minor maintenance</li> <li>• Longer life span than shoring wall options</li> <li>• TRCA forces are proficient in the construction of retaining wall using a variety of material types</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Larger construction footprint than shoring options and will require greater excavation to fit entirely on private property</li> <li>• Additional tree removals along the slope will be required to facilitate construction – Larger restoration planting costs may offset some of the economic benefits of a gravity wall if caliper trees are required for compensation</li> <li>• Longer construction duration due to temporary excavation requirements but can be reduced if an engineered prefabricated product is used</li> </ul>

### Alternative Design #B - Shoring Wall

A shoring wall system provides an alternative to a block retaining wall treatment and can be installed with a much narrower disturbance footprint. This provides the benefit of minimizing vegetation removals. Advantages and disadvantages of this system are discussed in **Table 2**.



**Figure 3.** Soldier pile with timber lagging wall to protect houses in Toronto managed by TRCA. *Source: TRCA, 2017.*

**Table 2.** Advantages and disadvantages of Option B - Shoring Wall System

	<b>Shoring wall</b>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Can be installed with limited access equipment</li> <li>• Structure can be designed to be located entirely on private property with less excavation required</li> <li>• Existing trees on the slope can be maintained</li> <li>• Short construction duration</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• More expensive than a retaining wall</li> <li>• Shorter lifespan and long-term maintenance can be challenging and expensive to complete depending on the structure (replacing timber lagging boards)</li> <li>• Specialized works and will have to be subcontracted</li> </ul>

## PROJECT SCOPE

The scope of work for this advisory letter has been developed after multiple site visits by TRCA Engineering Projects staff to the project area and through meetings with City staff. TRCA previously provided a draft letter to the City on January 16, 2018 to help refine the anticipated scope of work for the Project.

Phase 1 of the Project will consist of concept evaluation, development of detailed designs, negotiations with the affected landowners, obtaining all permits and approvals, and a detailed cost estimate for construction. A concrete block retaining wall is assumed to be the preferred approach; however, TRCA will provide the City with an evaluation matrix to compare the advantages and disadvantages of both concrete block and shoring wall retaining wall options for the City to determine the preferred alternative for detailed design development. The preferred approach is to be confirmed by the design engineer upon completion of a Slope Stability and Erosion Risk Assessment during Phase 1.

A Phase 2 agreement will then be developed to see the Project through construction. A rough order of magnitude cost estimate for Phase 2 has been provided in Schedule B to support the City with anticipated capital budgeting for the entire project.

## Included in the Phase 1 Scope of Work

The following services and deliverables are proposed to be included in the scope of work under Phase 1:

- Collect all background information and baseline data required for the slope stability analysis
- Develop and issue a Request for Proposal (RFP) for a Slope Stability and Erosion Risk Assessment (SSERA) and detailed design development under the requirements of TRCA's Purchasing Policy. The consultant's deliverables shall include (at minimum):
  - A slope stability analysis and erosion risk assessment
  - A memo presenting two site specific solutions with plan and profile sketches, as well as an evaluation table (practicality, cost, long term performance) to assist the City in determining the preferred solution
  - A detailed design package for the preferred solution, including a Design Brief, Access Plan, Erosion and Sediment Control Plan, Site Plan, Cross Sections, Construction Details, Site Restoration Plan, and Tender Specifications (signed and sealed by a Professional Engineer licensed in Ontario)
- Obtain permits and approvals required to implement works, including:
  - Endangered Species Act Screening

- TRCA O, Reg. 166/06 Permit
- Heritage Act (Archaeological) Approval
- Negotiations with the affected landowners, including implementing an Erosion Control Agreement Strategy with impacted properties
- Detailed cost estimate for the implementation of works
  - If a concrete block retaining wall is selected as the preferred approach, a detailed cost estimate will be provided using TRCA's rate as contractor
  - If a shoring wall is selected as the preferred approach, TRCA will develop and issue a Request for Tender (RFT) for implementation of the detailed design to obtain pricing for Phase 2. The Tender will not be awarded until execution of a Phase 2 OOS with the City

### **Excluded from the Phase 1 Scope of Work**

The following list is not a comprehensive but highlights some priority items that are excluded from the scope of work:

- Technical, public or other meetings beyond those described above in the scope of work
- Major design revisions necessitating a major change to the scope of work

### **ASSUMPTIONS**

- Preliminary species at risk screenings and other ecological fieldwork will confirm that the proposed works will not impact any species protected under the Endangered Species Act or Species at Risk Act
- The highest ranked technical proposal will be sent to the City's contact for confirmation prior to award
- If additional boreholes need to be advanced, it is assumed that the drill cuttings will meet parkland disposal parameters
- TRCA will lead Permission to Enter Agreements and Erosion Control Agreement Strategies for private lands in consultation with the City as necessary to complete works
- No underground utilities are in the work area
- The site is free of hazardous materials

### **RISKS**

#### **Schedule Risks**

- The City's contact must complete their review of the technical proposal within 1 week and review the draft detailed design package within four weeks to not delay project milestones

#### **Cost Risks**

- Pricing for sub-contracted services has been estimated based on TRCA's experience with similar projects. The actual contract values will be determined based on a competitive RFP process



**COST – PHASE 1 ONLY****Design Alternative #A – Block Retaining Wall**

ITEM	ESTIMATED COST
<b>1. Project Management</b>	
1a. Procurement, RFP development, and design review	\$9,000.00
1c. Erosion Control Agreement Strategy	\$2,500.00
<b>2. Permits and Approvals</b>	
ESA Screening, TRCA Permit, Heritage Act	\$7,150.00
<b>3. Consulting Services</b>	
SSERA and Detailed Design Development	\$30,000.00*
Subtotal	\$48,650.00
Project Contingency (15%)	\$7,297.50
<b>Total</b>	<b>\$55,947.50</b>
HST (13%)	\$7,273.18
Less municipal HST rebate (11.24%)	(\$6,288.50)
<b>Proposed Budget</b>	<b>\$56,932.18</b>

\*Consulting contract value will be updated upon receipt of proposals

\*\*Contingency will only be expended with written authorization from the Contact

**Alternative Design #B - Shoring Wall**

ITEM	ESTIMATED COST
<b>1. Project Management</b>	
1a. Procurement, RFP and RFT development, and design review	\$10,000.00
1c. Erosion Control Agreement Strategy	\$2,500.00
<b>2. Permits and Approvals</b>	
ESA Screening, TRCA Permit, Heritage Act	\$9,000.00
<b>3. Consulting Services</b>	
SSERA and Detailed Design Development	\$30,000.00*
Subtotal	\$51,500.00
Project Contingency (15%)	\$7,725.00
<b>Total</b>	<b>\$59,225.00</b>
HST (13%)	\$7,699.25
Less municipal HST rebate (11.24%)	(\$6,656.89)
<b>Proposed Budget</b>	<b>\$60,267.36</b>

\*Consulting contract value will be updated upon receipt of proposals

\*\*Contingency will only be expended with written authorization from the Contact

**PROPOSED SCHEDULE**

Issue Phase 1 Letter to City of Vaughan	March 2, 2018
Authorization of Phase 1 OOS by City of Vaughan	March, 2018
Issue and Award RFP for SSERA and Detailed Design	May, 2018
SSERA and Conceptual Solutions Memo Due	Week of June 4, 2018
City of Vaughan Confirmation of Detailed Design Approach	Week of June 18, 2018
Draft Detailed Design Package Due	Week of August 13, 2018
TRCA and City of Vaughan Review Due to Consultant	Week of September 10, 2018
Permits and Approvals	August - September, 2018
Final Detailed Design Package	Week of October 1, 2018
Issue RFT to determine Phase 2 Cost Estimate (RFT not to be awarded until execution of Phase 2 OOS)	Week of October 15, 2018
Issue Phase 2 OOS to City of Vaughan	Week of November 12, 2018
Authorization of Phase 2 OOS by City of Vaughan	January, 2019
<i>Phase 2: Implementation*</i>	Late Winter/Spring 2019 (8 weeks)

\*Timing to be confirmed within the Phase 2 OOS

A formal Offer of Service (OOS) based on the information contained herein will be submitted to the City and will be followed by the execution of an agreement if the City is interested in proceeding with the works.

Regards,



Matt Johnston, B.Sc., C.E.T.  
 Manager, Erosion Risk Management, Engineering Projects  
 Restoration and Infrastructure Division  
 Toronto and Region Conservation Authority  
 Cell: (647) 808-6743  
 Email: [mjohnston@trca.on.ca](mailto:mjohnston@trca.on.ca)

cc: Moranne McDonnell, TRCA  
 Phil Wolfrain, TRCA  
 Michael McNamara, City of Vaughan



**SCHEDULE 'B'**  
**PHASE 2 ROUGH ORDER OF MAGNITUDE COST ESTIMATE**

**Rough Order Magnitude Cost Estimate for PHASE 2 – IMPLEMENTATION**

**Design Alternative #A – Block Retaining Wall ROM Cost Estimate for Phase 2 - Implementation**

<b>ITEM</b>	<b>ESTIMATED COST</b>
<b>1. Project Management</b>	
1a. Procurement, Contract Administration, Public Outreach (Signs & Letters), Correspondence with Property Owners	\$20,000.00
1b. As-Built Survey	\$5,000.00
1c. Long-Term Monitoring of Wall	\$15,000.00
<b>2. Mobilization and Demobilization</b>	
Supply delivery, and installation of site facilities, ESC, and safety fencing. Site preparation including removal of existing wall and site grading	\$51,750.00
<b>3. Block Retaining Wall Construction</b>	
40m long x 3m high*	\$115,000.00**
<b>4. Site Restoration</b>	
Sod, ESC blankets, compensation trees and shrubs	\$40,000.00
Subtotal	\$246,750.00
Project Contingency (15%)	\$37,012.50***
<b>Total</b>	\$283,762.50
HST (13%)	(\$36,889.13)
Less municipal HST rebate (11.24%)	\$31,894.91
<b>Proposed Budget</b>	\$288,756.72

\* Final wall height and length to be confirmed by design engineer upon Phase 1 detailed design development

\*\*Contract value will be updated upon receipt of proposals

\*\*\*Contingency will only be expended with written authorization from the Contact

**Alternative Design #B - Shoring Wall ROM Cost Estimate for Phase 2 - Implementation**

ITEM	ESTIMATED COST
<b>1. Project Management</b>	
1a. Procurement, Contract Administration, Public Outreach (Signs & Letters), Correspondence with Property Owners	\$20,000.00
1b. As-Built Survey	\$5,000.00
1c. Long-Term Monitoring of Wall	\$15,000.00
<b>2. Mobilization and Demobilization</b>	
Supply delivery, and installation of site facilities, ESC, and safety fencing. Site preparation including removal of existing wall and site grading	\$51,750.00
<b>3. Shoring Wall Construction</b>	
40m long x 3m high*	\$252,000.00**
<b>4. Site Restoration</b>	
Sod, ESC blankets, compensation trees and shrubs	\$20,000.00
Subtotal	\$363,750.00
Project Contingency (15%)	\$54,562.50***
<b>Total</b>	<b>\$418,312.50</b>
HST (13%)	\$54,380.63
Less municipal HST rebate (11.24%)	(\$47,018.33)
<b>Proposed Budget</b>	<b>\$425,674.80</b>

\*Dimensions of wall have been adjusted following subsequent discussions after the Advisory Letter.  
Final wall height and length to be confirmed by design engineer upon Phase 1 detailed design development

\*\*Contract value will be updated upon receipt of proposals

\*\*\*Contingency will only be expended with written authorization from the Contact