

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF OCTOBER 19, 2016

Item 13, Report No. 34, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on October 19, 2016.

13

**MARITA PAYNE PARK
SLOPE STABILIZATION WORKS
WARD 5**

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Deputy City Manager, Planning and Growth Management and the Director of Parks Development, dated October 5, 2016:

Recommendation

The Deputy City Manager, Planning and Growth Management and the Director of Parks Development in consultation with the Director of Transportation Services, Parks & Forestry Operations, the Director of Procurement Services and the Director of Financial Planning and Development Finance & Deputy City Treasurer recommend:

1. That staff be authorized to enter into an agreement with the Toronto and Region Conservation Authority (TRCA) for the completion of slope stabilization works at Marita Payne Park as outlined in this report with an upset limit of \$186,710 plus applicable taxes;
2. That the amounts in the above recommendation, plus applicable taxes and administration recovery be funded from Capital Project PK-6539-16 Marita Payne Park - Slope Erosion; and
3. That the Mayor and Clerk be authorized to enter into any agreements with TRCA required to undertake this project at the recommendation of Deputy City Manager, Planning and Growth Management and Deputy City Manager, Legal and Human Resources.

Contribution to Sustainability

This report is consistent with the priorities previously set by Council in the Green Directions Vaughan, Community Sustainability Environmental Master Plan, Goal 2, Objective 2.2:

- To develop Vaughan as a City with maximum green space and an urban form that supports our expected population growth.

Economic Impact

The Engineering Projects group of the TRCA is available to provide slope stabilization services to the City on a cost-recovery basis. The terms of an agreement with the TRCA would be structured to have the City reimburse the TRCA based on actual project costs, with an upset limit of \$186,710 plus applicable taxes allocated for this project. Funding to complete the required slope stabilization works is available within approved Capital Project PK-6539-16 Marita Payne Park – Slope Erosion.

Communications Plan

Parks Development staff in collaboration with TRCA will continue to communicate with directly affected neighbours on the timing and proposed scope of work associated with this project. TRCA will also provide notification as per Conservation Authorities Class EA requirements or any other regulatory requirements. Staff will inform the Ward Councillor's office and also post notice of this project at various locations within the park and on the Disruptions and Closures Page of the City's website to alert park users.

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Purpose

The purpose of this report is to seek Council approval to enter into an agreement with the TRCA to undertake slope stabilization works at Marita Payne Park.

Background - Analysis and Options

Slope instability is currently affecting private residential properties along the rear yard of Jason Street homes backing onto Marita Payne Park. Continued deterioration of the slope requires remediation in order to prevent damage and loss of private property. The location of the required works falls within the TRCA regulated area of the Don River watershed.

In June 2016 Parks Development staff reviewed the area of slope instability with TRCA staff to obtain advice and determine the extent of required repairs. Based on their experience with similar situations, the TRCA identified several options for undertaking this work, with the most cost-effective method being slope filling with installation of an armour stone wall at the toe of the slope. An example of the slope filling method and advisory letter from the TRCA is appended as Attachment 1.

Slope filling is a slope stabilization technique that provides a naturalized slope without significant use of retaining walls and structures. Benefits of this application to the City including completing this project in partnership with the TRCA include:

- Reduced project cost and staff administration
- Ability to plant the slope to match existing conditions
- Streamlined design and permit process
- Reduced impact to adjacent residents
- Best practices approach with TRCA stewardship of the Don River watershed area
- TRCA will monitor and provide warranty for the works

Construction of the slope filling technique is anticipated to take approximately 6 weeks of on-site works to complete, weather permitting. The TRCA has indicated availability to undertake this work in winter 2016 with planting to occur spring 2017.

Erosion repair works at this location will restore this area of the park to an acceptable level of service for the health and well-being of residents and users of Marita Payne Park with the intent to prevent further impact to adjacent private property.

Relationship to Term of Council Service Excellence Strategy Map (2014-2018)

This report is consistent with the priorities established in the updated Term of Council Service Excellence Strategy Map, specifically:

- Invest, renew and manage infrastructure and assets

Regional Implications

The Region has an underground trunk sewer in proximity to the work area that will not be impacted by proposed slope stabilization works.

Conclusion

Slope stabilization works are required to mitigate areas of erosion within Marita Payne Park. The Engineering Projects group of the TRCA has the experience and capability of undertaking this

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project in partnership with the City. There are many benefits to completing the works in partnership with the TRCA and staff are requesting authorization to enter into an agreement with them for this project.

Attachments

1. TRCA Advisory Letter Dated September 7, 2016
2. Location Map

Report prepared by:

Melanie Morris, Manager of Parks Development & Construction, Ext. 8058
Jamie Bronsema, Director of Parks Development, Ext. 8858

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

**MARITA PAYNE PARK
SLOPE STABILIZATION WORKS
WARD 5****Recommendation**

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Report prepared by:

Melanie Morris, Manager of Parks Development & Construction, Ext. 8058
Jamie Bronsema, Director of Parks Development, Ext. 8858

Respectfully submitted,

John MacKenzie,
Deputy City Manager
Planning and Growth Management

Jamie Bronsema,
Director of Parks Development

September 7, 2016

VIA EMAIL

Melanie Morris, OALA, CSLA
Manager of Parks, Development and Construction
Parks Development Department
City of Vaughan
2141 Major Mackenzie Drive
Vaughan, ON L6A 1T1

Re: Advisory Letter – Marita Payne Erosion Control

The City of Vaughan (the City) identified an area of slope instability within Marita Payne Park in 2015 and contacted Toronto and Region Conservation Authority (TRCA) staff from the Engineering Projects group to discuss this site (Figure 1). The ownership of the failed slope is shared between the City at the toe of slope and primarily the private landowner at 28 Jason Street near the slope crest. The existing concrete block retaining wall has failed and the fence near the slope crest is showing signs of movement. Slope stabilization is required to prevent further loss of private property at the rear of 24 and 28 Jason Street.



Figure 1. Slope movement and failed concrete retaining wall near 28 Jason Street. *Source: City of Vaughan, unknown date.*

TRCA understands that the City is in the early stages of determining an appropriate permanent solution and would like TRCA to comment on the preliminary scope of work given our experience completing similar slope stabilization projects on and near private property. The following letter provides preliminary background information for the preferred construction method to stabilize the slope based on discussions with the City and TRCA's experience with previous projects. The proposed design has yet to be reviewed by TRCA's geotechnical engineer and will require detailed design development prior to implementation.

The costing provided in the following letter is based on previous projects and is intended to provide a rough order of magnitude estimate. TRCA anticipates the proposed design will cost approximately \$162,355 to permanently address all concerns on-site. These costs have been derived from a relatively small sample size and the actual costs incurred for Marita Payne Erosion Control at 24 and 28 Jason Street may vary based on the detailed design, to an upset limit of \$186,708.25.

OBJECTIVE

The objective of this advisory letter is to provide a slope stabilization design for the long term protection of the private properties affected by this slope failure.

Proposed Design: Slope filling with armour stone toe retaining wall

Slope filling with an armour stone retaining wall along the toe of the slope is a cost-effective stabilization technique that provides a softer and more naturalized alternative compared to harder design solutions. Figures 2 through 5 illustrate a TRCA slope stabilization project for a slope failure behind a residential property in the City of Toronto using this technique. Based on projects of a similar scale, the design and build of slope filling with armour stone toe behind 28 Jason Street is anticipated to cost approximately \$162,355 to an upset limit of \$186,708.25.

In general, this design option involves:

1. Mobilization and site preparation including the removal and clearance of all debris and existing structures (fence and wall) along the failed slope face (Figure 2);
2. Placement of armour stone toe and infilling the eroded slope depression using clean fill material and grading to a stable slope angle (preferably 3H:1V)(Figure 3 and Figure 4);
3. Install new fence, topsoil, erosion matting (Figure 4) and restoration vegetation (Figure 5); and
4. Site restoration and demobilization.

The preliminary conceptual design for slope filling and a two-tier (1-2 tonne) armour stone retaining wall design behind 28 Jason Street anticipates a minimum removal of three trees (Norway maple, black walnut and eastern cottonwood) near the slope toe. The detailed design will determine the final number of tree injuries and removals required based on the necessary grade to maintain a stable slope (preferably 3H:1V) and the resulting footprint of the proposed structure.



Figure 2. A TRCA project site experiencing erosion and slope instability. *Source: TRCA, 2014.*



Figure 3. Clean fill being used to in-fill the erosion scar. *Source: TRCA, 2014.*



Figure 4. Stabilizing the slope with erosion matting prior to planting. *Source: TRCA, 2015.*



Figure 5. The revegetated and stabilized infilled slope post-restoration. *Source: TRCA, 2016.*

Table 1. Key advantages and disadvantages of slope filling with armour stone toe stabilization technique.

	Slope Filling with Armour Stone Toe
Advantages	<ul style="list-style-type: none">• More naturalized look compared to other engineered structures retaining walls (sheetpile shoring, mechanically stabilized earth, concrete block)• Inexpensive to design and install• Can be installed quickly and by TRCA staff• Requires minimal long term maintenance and provides ample opportunity for vegetation establishment.
Disadvantages	<ul style="list-style-type: none">• May require additional tree removals along the slope face as the ability of trees to survive grade changes is uncertain• Requires a relatively large footprint compared to some other engineered walls

Unit Rate Cost Estimate

TRCA is not generally used to preparing cost estimates in a unit rate format given the fact that we are a not for profit public agency and this type of pricing is better suited for private contractors. In addition, TRCA only charges the actual costs incurred, and we generally try to show an upset limit in our estimate to minimize agreement revisions.

Table 2. Approximate unit rates for slope filling with armour stone toe design and implementation. 2016.

Item	Description	Est. Quantity	Unit Rate	Unit Price	Total
1 Project Management	Planning, Design, Permits/Approvals and Procurement	1	L.S.	\$28,500	\$28,500
2 Mobilization and Demobilization	Supply, delivery and installation of steel plates for access route, facilities, and ESC and safety fencing, as well as tree removals, site preparation, and floating excavator and front end loader	1	L.S.	\$47,400	\$47,400
3 Armour Stone Wall Construction	23 m long with a 12 m section double stacked = 35 linear meters. Stone to be 0.8 m high and 0.8 m wide	35	Linear m	\$1,011.40	\$35,400
4 Filling Behind Wall	27 m length x 4.5 m high x 0.7 m thick	89	m ³	\$285	\$25,365
5 Site Restoration	Plant 1 shrub/m ² x 50 m ² , Plant 5 70mm caliper trees, Terraseeding access route and ESC blanket	1	L.S.	\$22,300	\$22,300
6 Remove and Replace Chainlink Fence	16 m of fence	1	L.S.	\$3,390	\$3,390
Subtotal					\$162,355.00
Contingency (15%)					\$24,353.25
Total					\$186,708.25

Site Restoration

In addition to implementing slope filling, post-construction site restoration will be required to complete slope stabilization works behind 28 Jason Street. Following the construction of the preferred design solution, the access route and any disturbed areas must be restored and stabilized with seed and erosion control measures. TRCA prefers to use Terraseeding due to its success and easy of application, but erosion control blankets and seed could also be placed. As previously discussed in the proposed design, the removal of several mature trees located in the immediate work area behind 28 Jason Street may be necessary to install slope stabilization works. It is anticipated tree compensation will be conducted as per City of Vaughan Urban Forestry specifications and the installation of five caliper trees have been included under Site Restoration in the estimate.

Permits and Approvals

There are several anticipated permits and approvals required for the project as follows:

1. *Species At Risk (SAR) Screening*: This screening is required to identify any known Species At Risk in the project area under the Endangered Species Act (ESA). The results of this screening will determine whether further permitting is required under the ESA (2007).
2. *Heritage Approvals*: An archaeological screening will be conducted by TRCA and will determine whether further permitting will be required from the City of Vaughan under the Ontario Heritage Act (1990).
3. *Internal Approval/ Formal Permit*: In accordance with O. Reg 166/06, work on private or municipal property requires a Formal Permit to be issued by TRCA. Project details and designs are subject to an internal review by planning, ecology, geotechnical and water resources engineering, and archaeology departments prior to issuance of a Permit.
4. *Parks/Municipal Access Agreement*: Based on the location of construction work, staging and access within Marita Payne Park, a Park Access Agreement or similar may be required from the City of Vaughan.
5. *Roadway Permits – Municipal Consent Applications and Road Cut (Road Occupancy) Permit*: As per City of Vaughan Roadway Permits, approval may be required to coordinate, review, approve and inspect work within Vaughan's roadways, boulevards, and some open spaces and easements. The existing access route and park curb cut immediately north of 4 Jason Street is sufficient for all required equipment and machinery to access the work area behind 28 Jason Street.
6. *Tree Removals*: Anticipated tree removals on private and public property are to be approved under City of Vaughan tree By Laws 95-2005 and 185-2007.
7. *Permission to Enter/Access Agreement*: An Agreement will be necessary to gain permission to access the private property at 28 Jason Street as well as to the adjacent properties.

This information is intended to help scope out the project and develop the Memorandum of Understanding between the City and TRCA. Efficiencies can be discussed to decide which party should be responsible to complete what aspects of the project to ensure tight timelines are met.

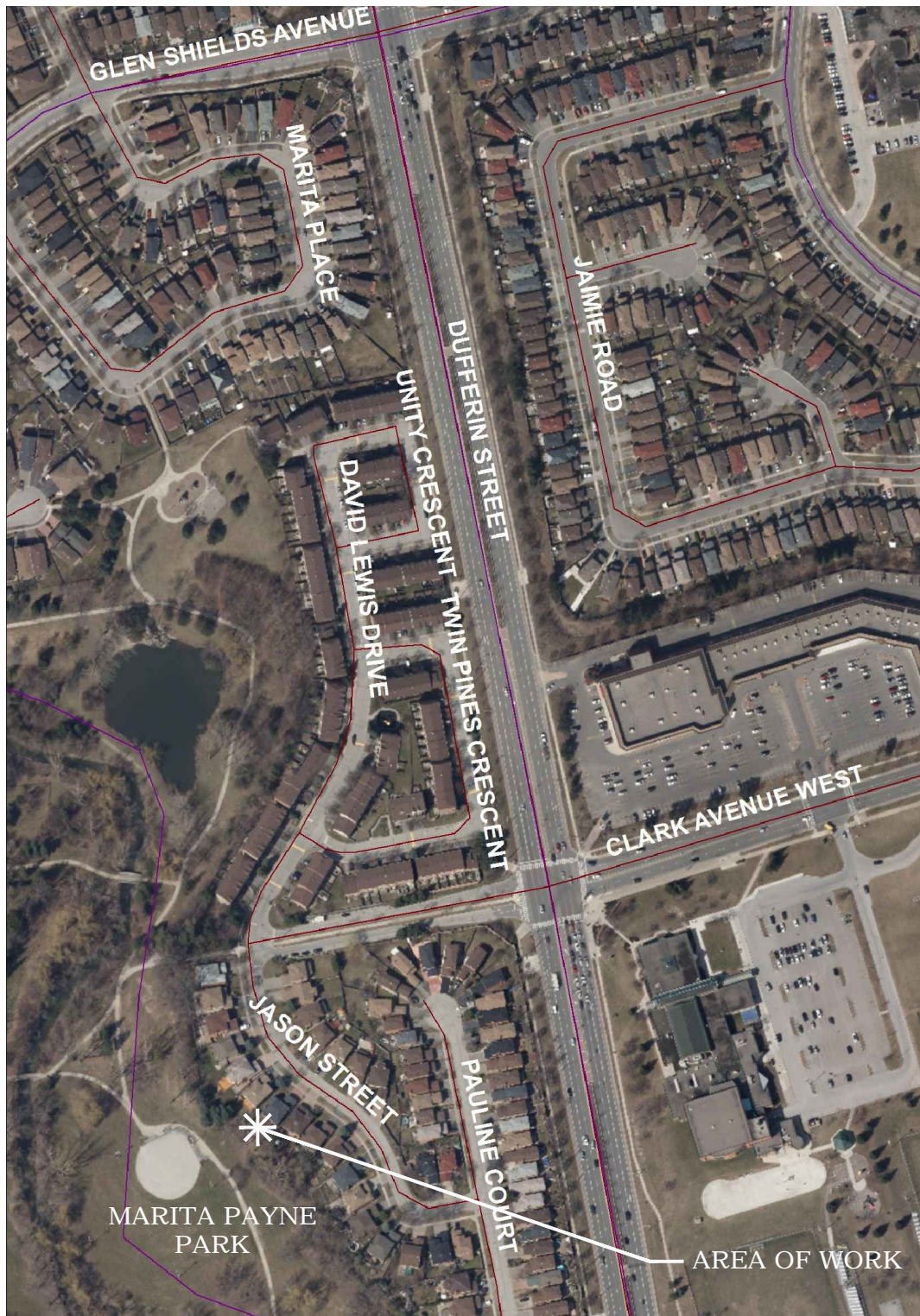
TRCA would be capable of assisting the City with any further work if requested, and you can contact the undersigned if you have any questions regarding the contents of this letter.

Regards,

A handwritten signature in black ink that reads "Matt Johnston". The signature is written in a cursive, flowing style.

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

cc: Moranne McDonnell, TRCA
Ali Shirazi, TRCA
Phil Wolfrain, TRCA
Erin Fraser, TRCA
Michael McNamara, City of Vaughan
Richard Fournier, City of Vaughan



Marita Payne Park Slope Stabilization



DRAWN: M.M. APPROVED: MM
SCALE: N.A. DATE: Sept.06.16

Location Map

PARKS
DEVELOPMENT
DEPARTMENT