



Report to: Council Meeting

Meeting Date: April 28, 2020

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**SUBJECT:** Whistle Cessation (Packages 1, 2 and 3) – Project and Financial Update (Wards 3, 4, 5 & 8)

**PREPARED BY:** Alain Cachola, Senior Manager, Infrastructure and Capital Projects, Ext. 2711

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**RECOMMENDATION:**

1. That the Staff report entitled “Whistle Cessation (Packages 1, 2 and 3) – Project and Financial Update (Wards 3, 4, 5 & 8)”, be received; and
2. That Purchase Order PD 18118 issued to Grascan Construction Ltd., for the construction of Whistle Cessation Package 2 be increased by \$877,259.88, inclusive of HST, to cover the project overrun and delay claims for the project; and
3. That Purchase Order PD 18210 issued to Grascan Construction Ltd., for the construction of Whistle Cessation Package 3 be increased by \$102,194.95, inclusive of HST, to cover the delay claim for the project; and
4. That the additional Engineering Department Capital Administration Fee in the amount of \$102,432.34, inclusive of HST, be approved to cover the additional effort from Staff to administer the project; and
5. That the additional project costs in the amount of \$1,081,887.17 (\$877,259.88 + \$102,194.95 + \$102,432.34) be funded from the following sources;
  - a. Project 16053 Anti-Whistling - Stouffville GO Line (\$412.60)
  - b. Project 17038 Anti-Whistling 2017 (73,658.00)
  - c. Regional Municipality of York (\$170,094.42)
  - d. Ramp Up Reserve (\$837,722.15); and
6. That the 2017 Engineering Department Capital Account 17038 (Anti-Whistling 2017) be increased by \$1,007,816.57, inclusive of HST, from \$5,433,414.50 to \$6,441,231.07, as identified in recommendations 5c and 5d; and
7. That Staff continue to review the final cost sharing summary of the project with Regional Municipality of York, and if required, the CAO be authorized to approve the final project cost; and
8. That the Regional Municipality of York be requested to pay its share of the project overrun and delay claim in the amount of \$170,094.42; and further,
9. That Staff be authorized and directed to do all things necessary to give effect to this resolution;

**EXECUTIVE SUMMARY:**

The whistle cessation project is a joint project between the City of Markham, the Regional Municipality of York (“York Region”) and Metrolinx. In September 2015, Markham Council authorized Staff to initiate the implementation of whistle cessation at 13 crossing locations along the Stouffville GO Line. Since that time, staff has reported at least nine (9) times between 2015 to 2018 to Development Services Committee and Council on budget, project progress and various challenges, authority to enter into MOU

and agreements, passing the whistle cessation bylaw, etc. Most of these meetings were attended by the public and deputations were made.

The studies which identified the safety measures required for whistle cessation implementation were completed in 2016 and the detailed design commenced thereafter. The project was split into three (3) construction contracts, as identified further in this report, with the construction work commencing in November 2017, and concluding in September 2019. Whistle cessation was implemented as follows: (September 2018 – 7 locations, November 2019 – 4 locations and February 2020 – 2 locations).

There were a number of challenges encountered during the construction of the project (i.e. work plan approvals, flagging availability, coordination with other Metrolinx projects, etc.) which resulted in delays. In addition, extra effort was required by all parties involved to navigate issues and challenges and deliver the project. As a result of the delays and challenges, additional effort was required from City Staff, consultants, contractors and Metrolinx. The details of the issues and challenges encountered during the project are discussed further in this report.

This report identifies the additional efforts and associated costs required to complete the project.

Staff request that the project budget be increased by \$1,007,816.57, for the additional costs associated with the whistle cessation project.

## **PURPOSE:**

The purpose of this report is to obtain Council authority to:

- Increase the PO PD 18118 for Grasca Construction Ltd., for the construction of Whistle Cessation Package 2 in the amount of \$877,259.88, inclusive of HST, to cover the project overrun and delay claims for the project
- Increase the PO PD 18210 for Grasca Construction Ltd., for the construction of Whistle Cessation Package 3 in the amount of \$102,194.95, inclusive of HST, to cover the delay claims for the project
- Approve the additional Engineering Department Capital Administration Fee in the amount of \$102,432.34, to cover the additional effort from Staff to administer the project
- Increase the 2017 Engineering Department Capital Account 17038 (Anti-Whistling 2017) in the amount of \$1,007,816.57, inclusive of HST, for the additional costs associated with the whistle cessation project, and to be funded from the following accounts / reserves:
  - Regional Municipality of York (\$170,094.42)
  - Ramp Up Reserve (\$837,722.15)

## BACKGROUND:

On September 28, 2015, Council passed a resolution to provide safety measures to implement train whistle cessation along the Uxbridge Subdivision (Stouffville GO Line) for 13 crossings within the urbanized part of Markham. These 13 crossing locations are listed below. Of these 13 crossings, 6 crossings are under the jurisdiction of York Region.

Package 1	Package 2	Package 3
Eureka Street	*Hwy 7	Denison Street
*Major Mackenzie Drive	*McCowan Road	*16th Avenue
Main Street, Markham	Bur Oak Avenue	
Castlemore Avenue	*Kennedy Road (South)	
*Kennedy Road (North)	Main Street, Unionville	
	Snider Drive	

\*York Region crossing locations

### Budget and Cost Sharing

On November 21, 2016, Staff provided the updated cost estimate of the whistle cessation project to Council, as well as the following proposed cost sharing model amongst the City of Markham, York Region and Metrolinx:

Organization	Share of Costs
City of Markham	\$ 2.30M
York Region	\$ 3.80M
Metrolinx	\$ 0.098M
Total:	\$ 6.198M

A Capital Budget was approved in 2016 (Account 16053) and in 2017 (Account 17038) to fund the proposed work. A Memorandum of Understanding (MOU) was entered into by the City of Markham, York Region and Metrolinx on January 1, 2018, which stipulates the details of the proposed work and cost share.

### Detailed Design and Contract Administration

In June 2016, the detailed design and contract administrations services for the whistle cessation project was awarded to WSP Canada. The scope of work included the design of the whistle cessation safety infrastructure required for the 13 grade crossings, preparation of the tender documents, coordination with Metrolinx and its third party reviewer (AECOM) to ensure that all design work was completed to the satisfaction of Metrolinx (the owner of the railway corridor at the location of the crossings) and any applicable standards, and secure all permits for construction. The scope of work also included management and administration of the delivery of the whistle cessation project, which includes site inspection, design changes, coordination with all approval agencies

prior to and during construction, certification and preparing documentation and as-constructed drawings.

### Third Party Peer Reviewer

As part of the detailed design exercise, Metrolinx required the City to retain a Metrolinx-approved third party peer reviewer to review the detailed design for the project. In February 2017, AECOM was retained by the City for this purpose. AECOM approved the detailed design on behalf of Metrolinx. In addition, AECOM also represented Metrolinx during the construction and implementation of the whistle cessation project.

### Construction was completed through Three Contracts

Upon completion of the detailed design, Staff reviewed the schedule of the delivery of the proposed 13 locations. The construction work required to complete the project was divided into three (3) different contracts, as follows:

- Package 1 contract was awarded to Aquatech Solutions Inc. in September 2017. The proposed work was mostly civil related which included construction of sidewalks, signage, pavement markings, and maze barriers at five (5) locations as shown in the table above.
- Package 2 contract was awarded to Grascan Construction Ltd. in April 2018. The proposed work was a combination of civil works (i.e. similar to Package 1) and pedestrian gate installation at six (6) locations as shown in the table above.
- Package 3 contract was awarded to Grascan Construction Ltd. in June 2018. The proposed work was a combination of civil works and pedestrian gate installation. The two (2) locations include Denison Street and 16<sup>th</sup> Avenue as shown in the table above.

As part of the construction work, the contractors were required to submit work plans to Metrolinx / AECOM in order to be allowed to work within the Metrolinx right-of-way. There are stringent requirements for the work plan which resulted in multiple submissions and delays to the project. The challenges during the construction work are discussed further in this report. The governance structure of this project is shown in Attachment 'A'.

### Metrolinx Flagging Requirements

One of the requirements for the construction work is for the contractor to request approval for the flagging required to conduct the work within the Metrolinx right-of-way. Flagging is a specialized type of work and Metrolinx had only two (2) approved contractors who were able to provide the flagging services on the Metrolinx corridor. The costs of the flagging was only an estimate at the time of award of the contracts and the City issued payments to Metrolinx flagging based on the original schedule of work.

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**OPTIONS/ DISCUSSION:****Original Project Schedule**

The project was designed as one project, but was divided into three (3) separate construction contracts (“Package 1”, “Package 2” and “Package 3”) to expedite the project schedule. The design for Package 1 was mostly civil work (i.e. maze barriers) and did not require pedestrian gates installation and electrical signal work. Package 2 locations were mostly for pedestrian gate works and Package 3 was for locations that require a more time to design and obtain approval from Metrolinx / AECOM. When the construction tenders were issued, the original schedule to complete the project was as follows:

**Table 1 – Original Project Schedule**

<b>Project Name</b>	<b>Original Schedule</b>
Package 1	40 days
Package 2	40 days
Package 3	15 Days

The dates as noted above were the estimated time lines identified by the consultant based on information during the time of tendering, and did not accurately reflect delays due to the project challenges and issues as described below.

**Project Challenges and Issues**

Prior to the start of construction for the project, Staff identified the following challenges associated with the delivery of the project:

- Material delivery for the pedestrian signal warning gate system – the materials required by Metrolinx for the pedestrian crossings were not readily available and had to be specially ordered from specific manufacturers in the United States. These specialized orders required long lead time for ordering, manufacturing and delivery.
- Design Review and Permit issuance and review process, by third party peer reviewer (AECOM) and Metrolinx, required multiple steps. For example, the approval of pedestrian signal design took over 4 months to finalize due to stringent requirements from Metrolinx and its third party peer reviewer. There were a number of requirements that had to be reviewed and resubmitted to ensure that the design was compliant to Metrolinx’s requirements.
- To further delay matters, flagging was limited due to other Metrolinx priorities on their projects. In addition, during the construction of the three (3) packages, Metrolinx had a number of major project improvements within the Stouffville GO Line (i.e. Steeles Grade Separation, Double Tracking work, Track Improvements, Station Improvements, etc.) which lead to delays. Metrolinx was also expanding

the rail system throughout its network and Metrolinx capital projects including any emergencies, had priority for flagging over all other projects. Flagging is booked on a weekly basis and any cancellation of flagging is a delay for at least one to two weeks. On several occasions, flagging was confirmed for the whistle cessation project, but was cancelled at the last minute to support other Metrolinx projects.

- Service change from Metrolinx (i.e. frequency of trains) increased during the timeframe of this project, including the introduction of weekend services. As result of the additional service levels, some of the works required for the whistle cessation had to be carried out during limited night-time hours (12am to 5am) as required by Metrolinx. This created delays and extra time to complete the project.
- Inclement weather during construction also meant that contractor was not able to complete the work in a timely manner. In addition, due to these delays, some of the works had to be completed during the winter months in order to deliver the project. Completing the work during the winter months provided its own challenges (i.e. reduced daylight, climate and personal protection, etc.) which resulted in additional costs.
- Design related issues also resulted in delays for the project. As-built information for existing electrical signal system control boxes (bungalows) were found to be different than what was constructed. The discrepancies were not revealed until the construction had commenced, which resulted in the contractor being delayed, while the consultant and Metrolinx confirmed the as-built information. As a result, the re-design, review and approval processed had to be repeated. There were also a number of new design requirements / clarifications, change of materials from Metrolinx and their third party reviewer during the construction which resulted in further delays.
- Implementation requirements from Metrolinx, especially at locations with pedestrian crossings, were delayed due to requirements from Metrolinx and their third party reviewer. A number of inspections and modifications were required to be completed to ensure that all safety requirements were confirmed prior to implementation of whistle cessation.

During the construction period, the above challenges required substantial time and effort from Staff, consultant and contractor to address these issues. The original schedules and timelines as identified above were no longer valid as result of these challenges. The actual dates required to complete the project are as follows:

**Table 2 – Actual Project Duration**

<b>Project Name</b>	<b>Original Schedule</b>	<b>Actual Days</b>
Package 1	40 days	200 days
Package 2	40 days	240 days
Package 3	15 days	60 days

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### Metrolinx Flagging Costs

As a part of the Metrolinx approval process, the City was required to issue payment to Metrolinx, prior to start of the work, to cover the anticipated flagging costs for the project. The amount issued to Metrolinx was based on the original construction schedule for each project, as estimated by the consultant.

All three packages substantially exceeded the original estimated days for construction as noted above.

Staff has reviewed and validated the submitted dates for the flagging, and the flagging costs as shown in the Table 5 are accurate.

### Consultant Fees (Design / Contract Administration and Third Party Peer Review)

The original scope of work for the design consultant (WSP) was to complete the detailed design and administer the construction contract of the whistle cessation project. The cost increase in the consultant fees are due to multiple design submissions to Metrolinx / AECOM, and due to more time and effort required in administering the contract as well as the inspections required for the work.

The original scope of work for the third party peer reviewer (AECOM) was to review and approve the original design, on behalf of Metrolinx. During the design review, approval and construction processes, a number of changes were required to the original design which resulted in additional review and approval time by AECOM.

Staff has reviewed the additional AECOM and WSP consultant fees and have confirmed that the additional fees are reasonable and proper supporting documentation has been provided.

### Package 1 – Construction

This contract was originally scheduled to be completed in 40 working days, as originally estimated by the consultant. However, due to the challenges as noted above, particularly with the work permit approval and flagging availability challenges of Metrolinx, the project was delayed and the work took 200 days to complete.

Package 1 work was completed in September 2018, and whistle cessation was implemented at the following crossing locations on September 24, 2018:

- Eureka Street
- Major Mackenzie Drive

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- Main Street Markham
  - Castlemore Avenue
  - Kennedy Road north

### Package 2 – Construction

This contract was originally scheduled to be completed in 40 days, as originally estimated by the consultant. However, due to the challenges as noted above, particularly with the work permit approval and flagging availability, the project was delayed and the work took 240 days to complete. One of the major delays was the inspections and approvals required from Metrolinx and their third party peer reviewer to implement whistle cessation on crossings that have pedestrian gate signals. A number of technical requirements were required to be clarified prior to whistle cessation being approved at these locations.

Package 2 work was completed in July 2019. The whistle cessation was implemented at the following locations / dates:

- Main Street Unionville (September 24, 2018)
- Snider Drive (September 24, 2018)
- Kennedy Road South (November 11, 2019)
- Highway 7 (November 11, 2019)
- Bur Oak Avenue (February 20, 2020)
- McCowan Road (February 24, 2020)

### Package 3 – Construction

This contract was originally scheduled to be completed in 15 days, as originally estimated by the consultant. However, due to the challenges noted above, the project was delayed and took 60 days to complete. Package 3 works were completed in September 2019. The whistle cessation was implemented at the following locations on November 11, 2019:

- Denison Avenue
- 16<sup>th</sup> Avenue

### Contract Overruns and Delay Claims

As result of the delays in the project, the contractor (Grascan) for Package 2 and 3 projects submitted contract overruns and delay claims. The contractor completed the work and ensured that all requirements from Metrolinx and its third party peer reviewer were addressed. Staff has negotiated with the contractor on these claims and the recommended amounts as shown on Table 5 are the result, and proper supporting documentation has been provided.



## FINANCIAL CONSIDERATION

### Original Project Award Cost

The original award for the 3 packages was \$4,177,636.23. The following table shows the award amounts broken down by the three (3) construction packages and assessment of costs by organization:

**Table 3 – Award Costs and Cost Share Summary**

<b>Description</b>	<b>Markham</b>	<b>York Region</b>	<b>Metrolinx</b>	<b>*Award Amount</b>
	a	b	c	d=a+b+c
Package 1	\$ 774,982.47	\$ 394,307.46	\$ 1,300.00	\$ 1,170,589.93
Package 2	\$ 574,944.20	\$ 1,500,804.65	\$ 28,898.45	\$ 2,104,647.30
Package 3	\$ 776,254.94	\$ 112,046.42	\$ 14,097.64	\$ 902,399.00
<b>Total:</b>	<b>\$ 2,126,181.61</b>	<b>\$ 2,007,158.54</b>	<b>\$ 44,296.09</b>	<b>*\$ 4,177,636.23</b>

\*Award amount includes all costs for the project, including but not limited to, construction, detailed design and contract administration, peer review fees, flagging costs, capital administration fees, HST, etc.

Engineering staff prepared a cost summary and identified all of the cost overruns for the project. Total final costs is \$7,239,776.65 (see Table 4), which is \$3,062,140.42 higher than the original award cost of \$4,177,636.23. These cost overrun have been reviewed and negotiated by Engineering staff and the consultants / Metrolinx / contractors. The amounts shown below represents the final negotiated amounts and assessment to each organization.

**Table 4 – Final Negotiated Costs and Cost Share Summary**

<b>Description</b>	<b>Markham</b>	<b>York Region</b>	<b>Metrolinx</b>	<b>Total Cost</b>
	a	b	c	d=a+b+c
Package 1	\$ 665,634.59	\$ 616,219.63	\$ 2,616.77	\$ 1,284,470.99
Package 2	\$ 1,512,277.22	\$ 3,158,316.87	\$ 26,060.92	\$ 4,696,655.01
Package 3	\$ 1,060,173.68	\$ 186,351.96	\$ 12,125.01	\$ 1,258,650.64
<b>Total:</b>	<b>\$ 3,238,085.49</b>	<b>\$ 3,960,888.46</b>	<b>\$ 40,802.70</b>	<b>\$ 7,239,776.65</b>

Engineering staff has been in discussions with York Region to confirm the final cost of the project as well as its share of the works. York Region to issue their approval of their share of costs upon completion of their review.

The total cost overrun for the project is \$3,062,140.42. A portion of this amount, \$1,980,253.24 (see Table 5) was approved for costs associated with the consultant, peer review, flagging costs and a portion of the construction cost during the construction of

the project. The approval was in accordance to the City's Purchasing By-Law and Expenditure Control Policy.

This report requests Council approval for the remaining cost overrun of \$1,081,887.18 (see Table 5), which are related to the construction work (project overrun and delay claim) and administration fees, as listed below:

**Table 5 – Award Costs and Overruns**

Description	Supplier	Award Amount	Approved Overrun	Remaining Overrun	Total Cost
		a	b	c	d=a+b+c
Consultant Cost	WSP	\$ 505,261.08	\$ 309,301.02	\$ 0.00	\$ 814,562.09
Peer Review	AECOM	\$ 287,461.82	\$ 192,065.64	\$ 0.00	\$ 479,527.46
Flagging Costs	Metrolinx	\$ 344,355.84	\$ 823,132.94	\$ 0.00	\$ 1,167,488.78
Construction	Grascan	\$ 2,624,742.68	\$ 655,753.64	\$ 979,454.84	\$ 4,259,951.16
Admin Fees	Markham	\$ 415,814.81	\$ 0.00	\$ 102,432.34	\$ 518,247.15
	<b>Total:</b>	<b>\$ 4,177,636.23</b>	<b>\$ 1,980,253.24</b>	<b>\$ 1,081,887.18</b>	<b>\$ 7,239,776.65</b>

The remaining cost overruns of \$1,081,887.18 are broken down as follows:

**Table 6 – Remaining Overruns**

Description	Supplier	PO Number	Original Amount	Increase
Package 2 Contract	Grascan	PD 18118	\$ 1,298,457.60	\$ 877,259.88
Package 3 Contract	Grascan	PD 18210	\$ 576,582.34	\$ 102,194.95
Capital Admin Fees			\$ 415,814.81	\$ 102,432.34
			<b>Total:</b>	<b>\$ 1,081,887.18</b>

The recommended amount of increase was negotiated by Engineering staff and the contractor (Grascan). The information as it relates to the cost overruns and delay claims were reviewed and validated by Engineering staff. The recommended amount includes a cost reduction as negotiated with the contractor. Engineering staff recommend that Council approve the PO increase as noted above in order to settle the remaining cost of the project with the contractor.

In addition to the Purchase Order increase, Engineering staff is also recommending that the budget be increased for the additional Capital Administration Fee (based on % of the total project cost) in the amount of \$102,432.34, inclusive of HST. Engineering staff required additional time and effort to manage and administer the project until completion.

There is currently partial funding available in the amount of \$74,070.60 in projects 16053 and 17038 to fund the identified overrun of \$1,081,887.18. The remaining shortfall of \$1,007,816.57 (\$1,081,887.18 - \$74,070.60) will require additional funding. Table 7 below provides a financial summary of the budget as it relates to the original award and subsequent cost overruns.

**Table 7 – Financial Summary**

<b>Description</b>	<b>Amounts</b>
Budget (Projects 16053 & 17038) (A)	\$6,231,960
Original Award (B)	<u>(\$4,177,636)</u>
<b>Balance Available (C=A+B)</b>	<b>\$2,054,324</b>
PO Increases Previously Authorized (D)	<u>(\$1,980,253)</u>
<b>Current Balance Available (E=C+D)</b>	<b>\$74,071</b>
Increases Requested Through Report (F)	<u>(\$1,081,887)</u>
<b>Shortfall Requiring Additional Funding (F=E+F)</b>	<b><u>(\$1,007,816)</u></b>

The remaining shortfall of \$1,007,816.57 will require additional budget/funding as identified in Table 8 below.

**Table 8 – Available Funding and Overruns**

<b>Account No. / Description</b>	<b>Markham</b>	<b>York</b>	<b>Metrolinx</b>	<b>Total</b>
	a	b	C	d=a+b+c
Account 16053 / 17038 Budget	\$2,367,805.67	\$3,784,183.41	\$79,971.00	\$6,231,960.08
Final Project Cost	\$3,238,085.49	\$3,960,888.46	\$40,802.70	\$7,239,776.65
<b>Variance:</b>	<b><u>(\$870,279.82)</u></b>	<b><u>(\$176,705.06)</u></b>	<b><u>\$39,168.30</u></b>	<b><u>(\$1,007,816.57)</u></b>
Allocate Excess Metrolinx Funds*:	\$32,557.67	\$6,610.63	\$39,168.30	\$0
<b>Variance (offset):</b>	<b><u>(\$837,722.15)</u></b>	<b><u>(\$170,094.42)</u></b>	<b><u>\$0</u></b>	<b><u>(\$1,007,816.57)</u></b>

\*Metrolinx's final cost will be \$40,802.70. The excess funds of \$39,168.30 will be allocated towards offsetting Markham and York Region's funding shortfall.

Out of the York Region's final project share of \$3,960,888.46, the Region has paid \$683,000.00 for their share of the works (2018 invoice). An invoice for the 2019 works was issued in December 2019 in the amount of \$2,028,530.02. The remaining \$1,249,358.44 will be issued as the final invoice.

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Based on the above and the principles as set out in the Memorandum of Understanding, it is recommended that the budget for the project be increased by \$1,007,816.57, inclusive of HST, and to be funded from the Ramp Up Reserve (\$837,722.15) and York Region (\$170,094.42).

**ALIGNMENT WITH STRATEGIC PRIORITIES:**

The completed work for the Whistle Cessation Project was required to address the growing concerns from the community as it relates to the nuisance of train whistles at public grade crossing, and the increase in the train whistle along the Stouffville GO Line. The recommendations align with the City's Strategic Plan Goals of "Safe and Sustainable Community".

**BUSINESS UNITS CONSULTED AND AFFECTED:**

The Finance and Legal Departments were consulted and their comments have been addressed in this report.

**RECOMMENDED BY:**

Brian Lee, P.Eng.  
Director of Engineering

Arvin Prasad, MCIP, RPP  
Commissioner, Development Services

**ATTACHMENTS:**

Attachment 'A' – Whistle Cessation Legislation & Governance Structure