April 13, 2018



Ray Ritcey, Chair Halifax Water Halifax, Nova Scotia

A special meeting of the Halifax Water Board will be held on April 19, 2018 at 12:00 p.m. in the Boardroom at 450 Cowie Hill Road, Halifax.

AGENDA

Regular Report

1. Capital Project:

Ellenvale Run Retaining Wall System Replacement......\$1,319,000

Original Signed By:

James G. Spurr Secretary



TO:	Ray Ritcey, Chair and Members of the Halifax Regional Water Commission Board
SUBMITTED BY:	Original Signed By:
	Jamie Hannam, P. Eng. Director, Engineering & Information Services
APPROVED:	Original Signed By:
	Carl Yates, M.A.Sc., P.Eng., General Manager
DATE:	April 13, 2018
SUBJECT:	Ellenvale Run Retaining Wall System Replacement

<u>ORIGIN</u>

2017/18 Capital Budget

RECOMMENDATION

The Halifax Water Board approve additional funding in the amount of \$1,319,000 for the "Ellenvale Run Retaining Wall System Replacement" project, for a total estimated project cost of \$2,854,000.

BACKGROUND & DISCUSSION

Ellenvale Run is an urban stormwater drainage system in Dartmouth that Halifax Water is responsible for as specifically identified in the 2007 Transfer Agreement between the Halifax Regional Municipality and Halifax Water. The approximately five (5) kilometres long drainage system with headwaters at Lake LeMont/Topsail Lake serves approximately 900 hectares of land and consists of natural riparian areas, culverts, various types of retaining walls, and buried pipe which eventually discharges into the northwest end of Morris Lake.

The drainage corridor of Ellenvale Run (indicated on Attachment 1) has several sections that form a rectangular channel that is framed by two (2) retaining walls and a relatively flat bottom. Significant sections of these retaining walls are at the end of their service life and in some cases have required immediate attention by Halifax Water Operations Staff to temporarily stabilize them. The risks associated with the failure of these assets range from possible flooding to public health and safety.

Halifax Water engaged DesignPoint Engineering & Surveying Ltd. To undertake an assessment of the retaining wall system. In December 2016, DesignPoint delivered their final report on the condition assessment, which presented a prioritized list of 11 sections of the Ellenvale Run. Detailed design on the first two prioritized sections (Sections 3 & 8) was completed in August 2017. Funding in the amount of \$1,535,000 was approved for the project in May 2017.

The project was originally tendered in the fall of 2017, however, the construction tender for this work was postponed due the general inability of the manufacturing industry to produce the required pre-cast concrete products within the short time frame. The project was re-tendered in February 2018. The compliant low tender had a bid of \$2,542,889, including net HST.

With the outcome of the tender results, Halifax Water reviewed the project in detail with the design team and the low bid contractor in an effort to both understand the variation in the cost and the opportunity for any cost reduction scope changes. The results of this review are documented within the technical memo from DesignPoint dated April 9, 2018 (attachment 2).

Based on the criticality of the Ellenvale project (as detailed in the original DesignPoint report) and the tender review process, it is recommended to proceed with the project at this time. A further delay in the delivery would increase the operational risk within the channel and there is no indication that a lower tender price would be obtained.

Based on the low bid tender, the total project cost was revised to \$2,854,000 as per the attached revised Project Cost Estimate (attachment 3). Accordingly, an additional \$1,319,000 in funding is required to undertake the project.

BUDGET IMPLICATIONS

Original funding in the amount of \$1,535,000 was approved for this project by Halifax Water on April 24, 2017, and by the NSUARB on May 17, 2017.

The required additional funding is available from two sources including a series of reallocated funds from a series of Stormwater projects that have been completed or

deferred, and from the next phase of the Ellenvale project contained within the 2018/19 capital budget.

Approved capital funding from a series of stormwater projects is available for reallocation. Table 1 shows the capital line items and the amounts available for reallocation to the Ellenvale Run Retaining Wall System Replacement.

Capital Line Item	Approval	Approval	Amount for	Reason *
-	Year	Amount	Reallocation	
Upper Water Street Drainage	2009	\$225,000	\$149,000	1
Storm Sewer Condition	2017	\$150,000	\$75,000	2
Assessment				
Culvert Replacement Program –	2016	\$50,000	\$50,000	3
Surveying Services				
Strath Lane HRM Integrated	2016	\$102,000	\$80,000	4
Project				
George Dauphinee Dr HRM	2016	\$34,000	\$34,000	4
Integrated Project				
Cow Bay Road HRM Integrated	2017	\$9,000	\$9,000	4
Project				
Armcrescent East Drive HRM	2017	\$25,000	\$25,000	4
Integrated Project				
First Street HRM Integrated	2017	\$13,000	\$13,000	4
Project				
Franklyn Drive HRM Integrated	2017	\$17,000	\$17,000	4
Project				
Sherri Lane HRM Integrated	2017	\$21,000	\$21,000	4
Project				
Total Available for Reallocation			\$473,000	

Table 1: Proposed Reallocated Funding Sources

* Reason "1" represents work reprioritized and no longer required, reason "2" represents underspending in approved projects, reason "3" represents both underspending and costs reallocated to subsequent capital projects and reason "4" represents work not completed due to reprioritizations of HRM integrated projects.

In addition to the proposed reallocated funds, the balance of the required funding in the amount of \$846,000 is available within the approved 2018/19 Capital Budget within the Stormwater – Ellenvale Run Retaining Wall System Replacement project. Pending completion of the detailed design for the 2018/19 phase of the Ellenvale project, a revised scope and budget will be developed for the 2018/19 project.

The proposed expenditures meet the "No Regrets – Unavoidable Needs" approach of the 2012 Integrated Resource Plan. The proposed works meet the NR-UN criteria of "Firm regulatory requirement" and "Required to ensure infrastructure system integrity and safety," as significant lengths of the retaining walls are at the end of their service life along with some sections that have previously failed and been temporarily repaired by Halifax Water Operations Staff.

ATTACHMENTS

Attachment 1 – Ellenvale Run – Site Plan Attachment 2 – Ellenvale Run tender cost analysis – DesignPoint Attachment 3 – Construction cost estimate

Report Prepared By:	Original Signed By:		
	Peter Maynard, P.Eng.		
	Project Engineer, Stormwater Infrastructure 902-478-7350		
Financial Approved by:	Original Signed By:		
	Allan Campbell, B. Comm, CPA, CMA, Manager, Finance 902-266-8655		





April 9, 2018

Halifax Regional Water Commission 450 Cowie Hill Road Halifax, Nova Scotia B3K 5M1 Attention: Peter Maynard, P.Eng., Project Engineer

RE: Ellenvale Run (Tender T02.2018) Cost Savings Analysis DesignPoint Project #: 17-014

Mr. Maynard,

At your request, we have reviewed the tender submitted and the proposed cost saving options provided by Brycon to determine their potential impacts on the overall lifecycle performance of the project. This letter summarizes our assessment of each particular item and its relative cost-benefit assessment.

The estimated total cost for Sections 3 and 8, presented in our preliminary design assessment was \$1,703,452.68 (including HST). The pre-tender estimate was \$2,039,325.50. The low bid by Brycon was \$2,804,137.00. This variation is partly due to the fact that in 2017, the construction industry experienced higher than normal bid prices due to high volume of construction activity. It is also important to understand that the work for this project is relatively new and unique such that we did not have many similar or comparable projects on which to base our estimated unit rates. We will review the remaining phases of this multi-year project and adjust our construction cost estimates accordingly with the knowledge we have gained from this tender.

Galvanized Reinforcing: Credit Value \$55,000

Although not mandatory according to the Canadian Highway Bridge Design Code (CSA S6-14), galvanized reinforcing steel has become standard practice by the Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR) for their bridge structures. Although the durability benefit of galvanized rebar is difficult to precisely ascertain, galvanization provides additional corrosion protection and longevity in concrete structures. This is particularly true of cast-in-place concrete, where site conditions can pose challenges for quality control.

Considering the site constraints for this project, and the logistic challenges of future repairs, it is our opinion that the anticipated increase in lifecycle performance by using galvanized rebar out-weigh the cost savings of using non-galvanized reinforcing.

Faux Stone Concrete Channel Liner: Credit Value \$65,000

The faux stone finish does not provide any structural benefit. Its purpose is aesthetic and environmental in nature. The rough texture of the faux stone form liner is intended to provide increased friction at the channel boundaries to reduce velocities in these areas, which creates a hydraulic profile that is conducive to vegetation growth and fish migration patterns. The eddies created by this velocity profile further mimic a natural stream channel.

The aesthetic consideration of the form liner is also important; this channel runs through a residential neighbourhood, surrounded by established homes that abut directly onto the channel. Some of the properties have landscaped their yards to include the existing channel as an aesthetic feature.



Based on the hydraulic benefits and the aesthetic sensitivity, it is our opinion that the omission of the faux stone finish would compromise the environmental profile of the finished product and would lead to disgruntled homeowners.

Galvanized Steel Railing: Credit Value \$32,300 to \$39,100

The project as tendered includes a decorative galvanized steel railing along the top of the channel. This steel railing could be replaced with a 1.2m high chainlink fence (either black finished or galvanized). This galvanized steel railing is intended to provide an aesthetic benefit as well as added durability.

Chanlink fence is prone to sagging, debris collection, and vegetation damage; this translates into additional maintenance costs. This also deters from the aesthetics of the channel and homeowners' yards. It is, therefore, our opinion that the cost savings of replacing galvanized steel railing with chainlink fencing would be outweighed by the increased maintenance costs and complaints from disgruntled homeowners.

Closing

This project is being considered as a 'pilot project' by Provincial and Federal Regulators (NSE and DFO) for stream reconstruction and naturalization. The features noted above were designed in close collaboration with these regulators and with the abutting homeowners to ensure a long-lasting, aesthetically pleasing, and functional design.

Considering the environmental implications, the public interest, and the technical advantages each of the above items contribute to the lifecycle performance of the overall project, it is our opinion that the nominal cost savings do not justify their omission.

I trust this letter satisfies your current requirements. If you have any questions or concerns, or should you require any further information, please feel free to contact the undersigned at your earliest convenience.

Best regards, DesignPoint Engineering & Surveying Ltd.

Evan Teasdale, P.Eng. Senior Engineer & Principal

Ellenvale Run - Sections 3 & 8

ITEM # 1 HRWC Board April 19, 2018 Attachment 3

Cost Estimate		
Low Tender Bid	\$2,438,380	
Construction Contingency (10%)	\$243,838	
Subtotal	\$2,682,218	
4.286% Net HST	\$114,960	
Subtotal	\$2,797,178	
Direct Halifax Water Cost (1%)	\$27,972	
Subtotal	\$2,825,150	
Interest & Overhead (1%)	\$28,251	
Total	\$2,853,401	