



P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. 06
Halifax Regional Council
October 20, 2015

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed by Director

Jane Fraser, Director, Operations Support

DATE: August 26, 2015

SUBJECT: Daylight River in Sawmill Creek

INFORMATION REPORT

ORIGIN

Item 14.2 Halifax Regional Council Action Summary – May 26, 2015

Motion approved that Halifax Regional Council request a supplementary staff report to determine the cost, time and scope in regard to undertaking a full investigation of costing the potential of the daylighting of the Sawmill River in Dartmouth, including:

1. Consideration of the expenditure of unbudgeted funds, to be reviewed by the Audit and Finance Standing Committee for possible funding source; to engage external consultants to assist in obtaining the pertinent data outside the resources of the Municipality in order to provide sufficient data for an informed decision of Regional Council on the issue of daylighting Sawmill River; and
2. That any potential for flood water damage to surrounding businesses and residents and risks related be included in the scoping of the report.

LEGISLATIVE AUTHORITY

Section 25(a) of the Halifax Charter states that: The powers and duties of a Community Council may include: (a) monitoring the provision of services to the community and recommending the appropriate levels of services, areas where additional services are required and ways in which services can be improved.

BACKGROUND

Halifax Regional Water Commission (HRWC) has identified the need to renew or replace the existing storm sewer from Sullivan's Pond to the Dartmouth Cove. HRWC has hired CBCL Limited – Consulting Engineers to prepare a report to assess the storm water management options and required regulatory compliance for fish passage. The current storm sewer is approximately 600 meters in length and is constructed of a corrugated steel pipe that was installed in the late 1960s and early 1970s and has reached the end of its useful life.

Storm water can be accomplished by either a buried piped system or a naturalized solution, or any number of options in between these extremes. The naturalized solution would provide for an open stream that takes advantage of the scenic and recreational potential of water movement. The daylighting of the storm water system has been referred to as Sawmill Creek. Sawmill Creek has been informally used to describe the proposed route of the open air water channel from Sullivan's Pond to Halifax Harbour. This is commonly referred to as daylighting. Daylighting is defined as the process of removal of culverts and exposing of streams or rivers. There have been a number of daylighting projects throughout North America.

CBCL's report was completed in July 2015 and includes options for replacement of the existing storm water infrastructure. Option 1B is recommended and includes the following:

- Construction of a single concrete box culvert;
- Integration of fish passage in the box culvert by using concrete baffles;
- Steel grated daylighting from Irishtown Road to Sullivan's Pond;
- Storm manhole daylighting from Irishtown Road to Dartmouth Cove;
- Discussion on the construction challenges; and
- Estimated total construction cost of \$14,725,000.

The recommended solution by CBCL is scoped to address the civil engineering issues of storm water management and fish passage. This approach complies with HRWC's mandate to provide a cost effective solution. The recommended design solution has received support from Ecology Action Centre – See Appendix 'A'.

The daylighted portion of the proposed system between Irishtown Road and Ochterloney Street is essentially a three-sided concrete channel with a grated top to optimize light access for fish passage. However, this option does not include features that are included in "naturalized" solutions and will not meet the expectations to construct a "stream" in an urban park that is landscaped and has public access. A naturalized cross-section (as generally depicted on Attachment B) has the features of sloped banks and a wide flood plane relative to the open channel. The required width for a naturalized channel far exceeds the width of the existing Halifax Water easement and thus is not suitable along the available alignment.

HRWC proposes to construct their project in two phases. Phase 1 would be the approximately 260 m length from the harbour to Irishtown Road completed in conjunction with HRM's Alderney Intersection Improvement project. Phase 2 of the project from Irishtown Road to Sullivan's Pond would be completed in later years pending funding approval and project prioritization.

HRM Projects

HRM staff has received direction from Regional Council for the planning, design and construction of the Canal Greenway Project. The goal of this project is to construct an urban park that will reflect the corridor's urban character and will integrate cultural/historical aspects of the Shubenacadie Canal System with connections to First Nation artifacts.

Canal Greenway Project - Underway

- During the planning for the Shubie Canal Greenway project, the feasibility of daylighting was explored. Due to the restricted land available, elevation issues and cost, daylighting was not explored in detail. It is not practical to create a naturalized daylighted stream in the Canal Greenway. The width to include the flooding plane will require the removal of important archeological features namely, the original rail foundations for the inclined plane and the turbine chamber.
- The elevation of the harbour is 0.8 meters and the elevation of Sullivan's Pond is 17.3 meters. By projecting a line from Sullivan's Pond to the harbour, the elevation of the stream at the turbine chamber would be 8.2 meters. This is 3.6 meters below the existing grade on site.
- A naturalized daylighting on or near the inclined plane/proposed Canal Greenway Park would require addressing the environmental issues. The excavations for the stream and the flood plane will require the removal from site of significant quantities of contaminated materials, at significant cost.
- The goal of the Canal Greenway project is to restore, where feasible, the historic features to circa 1862. In 1862, the water from Sullivan's Pond was contained in an elevated flume, not in a stream. Water exited from the mechanical workings below the tailrace.

Alderney/Portland/Prince Albert Intersection Improvements, Concept Completed

Improvements to the intersection at Alderney/Portland/Prince Albert Road is required as well as a street recapitulation of Alderney (King's Wharf to Portland), Portland (Victoria to Canal), and Prince Albert Road (Portland to Irishtown Road). A concept design has been completed.

- The TPW scope of work consists of an intersection realignment, new traffic signals, new concrete curb and gutter, new asphalt paving and a new greenway trail.
- A naturalized daylighting of the storm sewer system under the proposed intersection would significantly increase the cost of the project and may not be cost-effective. It is anticipated a proposed bridge through the intersection of Alderney/Portland/Prince Albert Road would be as wide or wider than the existing roadway, and would not permit space for daylighting or naturalization. As a note, preliminary design would be required to better understand the magnitude of the costs and level of feasibility.
- The current intersection signals need to be replaced and a delay will increase the likelihood of system failure.
- The closure of Irishtown Road is being considered to improve traffic flow in this area.

Cost of Delay

- The current intersection signals need to be replaced and a delay will increase on-going maintenance costs and poor intersection performance. Non-LED traffic signals need to be replaced on average every 2-3 years. With a potential delay in construction to 2017, it is anticipated the bulbs will need to be replaced at a minimal cost (roughly \$4000) prior to the renewal of the the full intersection. The power consumption from non-LED fixtures is also higher than for LED bulbs.
- In the last four years, \$50,000 of asphalt patching has been done. Based on the condition of the asphalt pavement and its traffic loading, it is likely to require additional patching maintenance before it is repaved as part of the integrated project.

The efficient phasing of these projects is important to avoid costs related to re-work and to reduce the disruption to the public. The Canal Greenway project at Pleasant Street is independent from other projects. The active transportation corridor, the Alderney/Portland/Prince Albert intersection cannot be completed until the storm water improvements have been made.

DISCUSSION

The request for a full investigation of costing the potential of daylighting the Sawmill Creek in Dartmouth considers not only the design and construction of the infrastructure for the project but also the indirect costs and benefits. These indirect considerations for the project, or full cost accounting, assess the economic, environmental and social impacts of any decision to daylight the Sawmill Creek. The potential benefits which would be factored into the full investigation include:

- Economic Benefits, such as:
 - Added economic value of surrounding land;
 - Increased attractiveness of downtown to businesses;
 - Increased recreational fishing; and
 - Increased tourism attraction and improvements to the site for festivals.
- Environmental benefits, such as:
 - Improvements to habitat for fish, birds and pollinators;
 - Improvements to water quality;
 - Improved air quality; and
 - Increased biodiversity.
- Social benefits including:
 - Reconnections with nature;
 - Educational opportunities;
 - Involvement of local businesses;
 - Community gathering place; and
 - Civic pride.
- Cultural/Recreational benefits featuring the sites role:
 - As an important historical paddling route for Mi'kmaq;
 - In the eels (& elvers) that are within the system and their high cultural value for Mi'kmaq;
 - As an important area for interpretation of the Shubenacadie Canal; and
 - In recreational paddling (white water).

Full cost accounting assessments are generally linked to environmental policy setting and decision making to result in greater long-term accountability and stewardship beyond the initial capital project cost. The process to assign a financial value to these three indirect project impacts includes a great deal of research and analysis from various economic literature resources, studies and surveys. The results of the assessment are limited to the availability and quality of information. Forward-looking studies are based on current-day perceptions and plans, which may develop quite differently in reality as years progress, due to multiple influences. Unlike financial accounting, full cost accounting can never be precise due to these uncertainties and changing factors. Full cost accounting can, however, provide guidance on the potential magnitude of various positive and negative impacts of a decision for a complete picture of a project beyond the construction cost.

To achieve the vision of an open stream between Sullivan's Pond and Irishtown Road will require a multi-discipline investigation to address the environmental, archaeological, real estate, recreational and landscape issues, for each of the following five sections, namely: 1. Sullivan's Pond to north side of Ochterloney Street – There is an opportunity to create a naturalized solution by constructing a stream that could flow from Sullivan's Pond to Ochterloney Street.

2. North side of Ochterloney Street through Lock 4 property to Irishtown Road - The fully naturalized solution under Ochterloney Street will require the construction of a new bridge structure. The right-of-way from Ochterloney to Irishtown Road represents significant challenges to construct a naturalized solution. The right-of-way is narrow and is currently being used for a parking lot.

3. Ochterloney Street through Canal Greenway - In consultation with the Shubenacadie Canal Commission, construction is not recommended through the Canal Greenway. The Canal Greenway is

under construction and the width required for a naturalized solution would negatively impact the historic artifacts.

4. Adjacent Irishtown Road – There is an opportunity to create a naturalized solution to storm water at the lower end of the Canal Greenway. This area is away from the historic features.

5. Irishtown Road through intersection to the Harbour – In this section there is a significant concentration of civil engineering infrastructure related to the road and utilities’ network.

HRM does not have the available technical resources to prepare the documents, estimate and report on the full daylighting. The estimated cost to outsource this service is \$560,000 – See Table A, and would take 12 months to prepare – See Table B.

Table A - Estimated Cost for Consulting Services

Discipline	Deliverables	Full Naturalized
Project Management	Project Charter Project Management Plan Coordination of consultants Implementation planning Consolidated Report to HRM	\$50,000
Environmental	ESII (Environmental Study Level 2) Costing estimate, ‘Class C’ for environmental remediation	\$50,000
Archaeological	Archaeological Report on impact Special Places Permit Cost estimate - ‘Class C’ for Archaeological field services Documentation of the potential impacts and implications of the disruption of the historical features	\$50,000
Civil Engineering	Verification of findings of Sullivan’s Pond Storm Renewal Report Detail Design Report – including bridge structures Cost estimate ‘Class C’ for Civil Engineering construction	\$200,000
Landscape Architect	Detail Design Report Costing estimate, ‘Class C’ for Landscape Architecture	\$35,000
Traffic	Traffic Study Cost estimate ‘Class C’ for signals	\$50,000
Real Estate	Real Estate Impact Report (Analysis of the impacts to specific properties including sale and purchase, impact to property values and municipal taxes)	\$25,000
Recreational/ Tourism	Needs Assessment	\$50,000
Full Cost Accounting	Report (Cost-Benefit Analysis on Environmental, Social and Economic Impacts)	\$50,000
Total Estimated Cost		\$560,000

Table B - Schedule for Consulting Services

	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
Project Management	■	■	■	■	■	■	■	■	■	■	■	■
Procurement	■	■										
Recreational/Tourism			■	■	■							
Environmental			■	■	■							
Archaeological			■	■	■							
Traffic			■	■	■							
Landscape Architecture					■	■	■	■	■	■		
Civil Engineering					■	■	■	■	■	■		
Real Estate			■						■	■		
Full Cost Accounting									■	■	■	
Final Report											■	■

FINANCIAL IMPLICATIONS

There are no immediate financial implications associated with this report. If Regional Council directs staff to proceed with undertaking a full investigation of costing the potential of daylighting the Sawmill Creek in Dartmouth, there would be an unbudgeted 2015/16 cost to the Municipality of approximately \$560,000.

Funding for this unbudgeted capital expenditure would require a review of current capital projects, for surplus funds available on completed projects to be returned to CAPPOOL, or a review of reserve funds with business cases indicating qualification under its application of funds section.

The delay of up to twelve (12) months for project construction, due to approval of full investigation, may result in increased construction costs and increased risk of failing infrastructure. Upon completion of the investigation and presentation to Council, any decision to proceed with project implementation is currently unfunded and funding source will need to be identified before proceeding.

COMMUNITY ENGAGEMENT

Community Engagement took place during the preparation of the Canal Greenway Phase II - Coordinated Open Space Development Plan.

ENVIRONMENTAL IMPLICATIONS

Environmental assessments have been conducted on the Canal Greenway site only. Further environmental investigations will be required for a naturalized daylighted solution.

ATTACHMENTS

Appendix "A" – Correspondence from Ecology Action Centre
Appendix 'B' – Site Plan

A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/index.php> [or other appropriate Committee link] then choose the appropriate [Community Council/Board] and meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

Report Prepared by: Terry Gallagher, Manager, Facility Design & Construction, 902.476.4067
Crystal Nowlan, Sr. Financial Consultant, Finance & ICT 902.490.1342

Appendix "A"



tel. 902.429.2202 2705 Fern Lane,
fax. 902.405.3716 Halifax, NS, B3K 4L3

July 31, 2015

Carl Yates, General Manager
Halifax Regional Water Commission
PO Box 8388, RPO CSC
Halifax, NS, B3K 5M1

Dear Mr. Yates,

Thank you for your letter dated July 20th 2015 and the enclosed CD containing a copy of the CBCL report titled "7-182 Sullivan's Pond Storm Sewer Renewal Preliminary Design Report-Final". The findings of the report specifically regarding the preferred option (1b) are very encouraging in terms of cost, construction timeline, fish passage and the environment.

The Ecology Action Centre is pleased with the CBCL report recommendations. An open channel will be beneficial both for allowing fish to access Sullivan's Pond and upstream lakes, and as a spillway for potential flash flooding.

As the Halifax Water Commission and Board of Directors reviews this report and begins a decision-making process for the Sullivan's Pond Storm Sewer Replacement work, I am conveying that the Ecology Action Centre would be supportive of, and encourages you and your board to select the recommended option (1b) for this work.

Sincerely,

Jocelyne

Original Signed

Jocelyne Rankin, Water Coordinator

2705 Fern Lane, Halifax, NS, B3K 4L3
tel. 902.442.5046
ecologyaction.ca

Appendix "B"

