



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

Information Item No. 2
Harbour East-Marine Drive Community Council
May 14, 2015

TO: Chair and Members of Harbour East-Marine Drive Community Council

SUBMITTED BY: *Original signed*

Jane Fraser, Director Operations Support

DATE: May 1, 2015

SUBJECT: Daylight River in Sawmill Creek

INFORMATION REPORT

ORIGIN

Item 9.3.1 Harbour East-Marine Drive Community Council, November 13, 2014
The Ecology Action Centre gave a presentation to Harbour East-Marine Drive Community Council on the Daylighting of Sawmill Creek.
MOVED by Councillor McCluskey, seconded by Councillor Nicoll, that Harbour East-Marine Drive Community Council request a staff report on the presentation, with commentary from Halifax Water, using full-cost accounting.

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

On November 14, 2014, the Ecology Action Centre gave a presentation to Harbour East-Marine Drive Community Council on the Daylighting of Sawmill Creek. From that presentation came a request from Harbour East-Marine Drive Community Council for a staff report discussing the issue of daylighting Sawmill Creek including a discussion on full cost accounting.

Policy Direction on Daylighting

Regional Council Approval of Policy on Daylighting of Rivers August 8, 2006

The policy on daylighting directed HRM staff to consider “*the feasibility of daylighting in relation to the surrounding environment, land use and ownership, adequacy of space, drainage and potential flooding issues, safety and other practical or engineering considerations as appropriate. Legal and liability issues must also be considered. Replacement of culverts with bridges or a three-sided culvert rather than straight pipe is preferred wherever possible. Daylighting projects should be environmentally friendly and compatible with the surrounding area.*”

Daylighting of Sawmill Creek is complicated by the physical restrictions of the site as well as three major infrastructure projects that are in various stages of planning and construction.

Projects Underway

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, connections to First Nation artifacts and active transportation requirements from the south end of Lake Banook to the harbour. HRM staff has also received direction from Regional Council to proceed with road/signal improvements at the Alderney/Portland/Prince Albert intersection. These improvements will address the recapitalization of the road infrastructure and undertake traffic lane improvements. Halifax Regional Water Commission (HRWC) have advised that the existing Sullivan's Pond storm sewer is under capacity and the metal pipe has begun to deteriorate.

The following is a summary of the direction provided to date:

Approval of the Canal Greenway Phase II – Coordinated Open Space Development Plan April 15, 2008

Halifax Regional Council approved the Canal Greenway Phase II – Coordinated Open Space Development Plan. The plan had primary elements which included:

- Updating of the previous masterplan to reflect changes in site conditions
- Concept design to accommodate the park development
- Concept drawings for the Trans Canada Trail through the former Starr Manufacturing site, and
- Concept drawings for the interpretive facility related to Shubenacadie Canal elements circa 1862.

Halifax Regional Council Approval of Consultants for the Design of the Canal Greenway February 18, 2014

Halifax Regional Council approved Tender 13-161 Consultant Services for Coordination and Design of Canal Greenway Segments for the Canal Greenway. The study area was from Sullivan's Pond to the

Dartmouth Harbourfront Trail. The detailed design was to validate the 2006 report which was approved by Regional Council as the Canal Greenway Phase II – Coordinated Open Space Development Plan.

The consultant services award for the Canal Greenway project is to focus on the following historic elements:

- Tailrace
- Powerhouse/Turbine Chamber
- Inclined Plane
- Cradle
- Active Transportation link

It should be noted that as part of the pre-planning for the Shubie Canal Greenway project, the feasibility of daylighting was explored. Due to the restricted land access, elevation issues and potential cost, daylighting was not explored any further.

Sullivan's Pond Storm Sewer Renewal Project

The storm sewer renewal project is the responsibility of the Halifax Regional Water Commission. The Sullivan's Pond Stormwater system conveys stormwater from Lake Banook/Sullivan's Pond to Halifax Harbour. The pipe system was constructed in the 1970s and is at the end of its useful life. Full replacement of the pipe system is required due to the need to increase the pipe size as recommended in the watershed analysis to accommodate major storm events and impacts of climate change. Halifax Water has consulted with the Federal Department of Fisheries and Oceans through this process.

The preliminary design phase is currently in progress. Various routes have been identified including Prince Albert Road, Halifax Canal Greenway Property and the existing alignment. Halifax Water is focused on developing a design that can be accommodated within the existing easement corridor as Prince Albert Road is not a viable route due to the conflicting infrastructure; there is insufficient space within the Canal Greenway corridor.

Design for the Sullivan's Pond Storm Sewer Project will continue in 2015 with the initial phase of construction proposed for 2016. With the current preliminary design, it is anticipated that fish passage will be accommodated within a culvert solution.

Alderney/Portland/Prince Albert Intersection Improvements and Recapitalization

HRM Design and Construction have postponed the intersection improvements pending detailed design of the storm sewer improvements. The intersection design is dependent on the location and size of the storm sewer.

DISCUSSION

Barriers to Daylighting Sawmill Creek

There are significant property, technology and construction challenges to constructing a daylight solution over the entire length of Sawmill Creek or over discreet sections. The following lists the challenges by project.

Canal Greenway

- It is not practical to daylight a stream in the Canal Greenway. The width to include the flooding plane will need to be approximately 30 meters (100 feet) The excavations would 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.
- Daylighting the stream on or near the inclined plane/proposed Canal Greenway Park would require addressing the environmental issues. The excavations for the stream and the flood plain will require the removal from site of significant quantities of contaminated materials, at significant cost.
- The primary stakeholder in the project, Shubenacadie Canal Commission has reservations about daylighting through the Greenway due to possible impacts to the turbine chamber, inclined plane and the tailrace. Due to the narrow width of the Canal Greenway, there is insufficient width to accommodate the AT Trail, the turbine chamber, inclined plane and a daylighted storm sewer. Deleting one of the historic elements would significantly compromise the historical artifacts and compromise the interpretation of the Shubenacadie Canal.
- The goal of the 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.

Sullivan's Pond Storm Sewer Renewal Project

- Based on the preliminary designs, it is estimated the total cost of the Sullivan's Pond Storm Sewer project will be in the order of \$14M. This estimate assumes that the work can be completed within the existing easement and street right of ways. This estimate includes fish passage internal to the piped storm water by using weirs.
- Halifax Water reviewed various structural cross sections for the renewed storm sewer and concluded that a daylighted river cross section was not practical within the constraints of the available easements and street right of ways. Detailed estimates have not been prepared for an on grade daylighted solution.
- At this stage of the design, the requirement for adequate light relative to fish passage has been identified as a significant technical challenge. Given the length of the pipe, it is unknown if the fish passage is even technologically feasible.
- Daylighting a portion of the system would assist with fish passage relative to the provision of adequate light. However, such a daylighted system would be highly engineered and, even in the very best scenario, would have a very "constructed" appearance and would not appear as a natural stream. For example, the daylighted portion would require fabricated weirs to accommodate fish passage and concrete walls to contain the stream. The stream would also have grates across the top for safety reasons.

Alderney/Portland/Prince Albert Intersection Improvements and Recapitalization

- Daylighting of the storm sewer system under the proposed intersection would significantly increase the cost of the project.
- Schedule risks - daylighting of the storm sewer could delay the recapitalization of the intersection by 2 years, and would increase the duration of construction.
- The current intersection signals need to be replaced and a delay will increase the likelihood of system failure.

Ochterloney Crossing

- There is no practical route for a daylighted stream between Sullivan's Pond and the north end of the Canal Greenway.
- Canal structures are located in this area that have not been documented. There would be significant costs to excavate and document the archaeological features of the canal in compliance with Provincial legislation.

- The construction of the daylight solution in this area will require a wider right of way. Land would have to be purchased for a wider corridor through this section.
- Daylighting would require constructing a bridge over Ochterloney that would need to span a combination storm/sewer option or full daylight stream. A detailed cost estimate has not been prepared but this structure would cost millions of dollars to construct.
- To provide a detailed estimate for the cost through this section that would include all the legal, land, engineering and construction costs is estimated at \$200,000.

Fish Passage

- Fish passage has often been cited as a reason for daylighting. The distance from the harbour to Sullivan's Pond is approximately 600 meter (1,900 feet) with a change in elevation of 17 meters or (55 feet). HRM staff has not been able to find examples where fish passage has been constructed over this change in elevation in a man-made stream.
- Biological triggers of the movement of fish are not fully understood, i.e. salinity of the water, water temperature, phases of the moon.
- Staff are not confident that an "in sewer" or "at grade" fish passage solution would facilitate the movement of fish up or down the route.

There are challenges to manage a project that has significant risks for addressing environmental, archaeological, land and technological issues.

FINANCIAL IMPLICATIONS

Municipalities by and large do not use full cost accounting to report on project costs. Full cost accounting includes the allocation of all costs direct and indirect in the provision of goods and services. This definition can also be expanded to include the environmental cost or benefit of providing a service. Regardless of the definition that is used, the Municipality does not gather or allocate costs or benefits in the manner. The level of effort to do "full cost accounting" under either method would be a very onerous task. There are no financial implications of this report.

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. The level of contamination has been documented and all work will be in accordance with the appropriate industry regulations.

ATTACHMENTS

There are no attachments.

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 Construction and Design (902-476-4067)
