

**B. M. ROSS AND ASSOCIATES LIMITED**  
**Engineers and Planners**  
62 North Street, Goderich, ON N7A 2T4  
p. (519) 524-2641 • f. (519) 524-4403  
[www.bmross.net](http://www.bmross.net)

File No. 17245

September 25, 2017

Jo-Anne Harbinson  
Manager of Water Resources and Stewardship Services  
Saugeen Valley Conservation Authority  
1078 Bruce Rd. #12, Box 150  
Formosa, ON N0G 1W0

Dear Jo-Anne:

**RE: Walkerton Flood Control Dyke Repairs  
Catherine Street Storm Sewer Outlet  
Engineering Fee Estimate**

At the request of the Saugeen Valley Conservation Authority, BMROSS reviewed the existing storm sewer outfall and dyke separating the Saugeen River from the existing properties at the end of Catherine Street. The storm sewer outlet extends through the dyke on the south bank of the Main Saugeen River and conveys drainage from the upstream tributary drainage area in Walkerton.

**Existing Infrastructure**

Based on our recent site visit, completed on Sept. 9, 2017, the existing pipe is a 600 mm dia. corrugated steel pipe that connects to a concrete headwall and flap-gate on the river side of the dyke. Recently, the storm sewer outfall has been repaired to address concerns related to the condition of the existing pipe under the dyke including issues with bottom and top pipe rot. The repairs were completed to address washout from behind the headwall that we suspect were formed as a result of the rotted openings in the pipe. The following photographs were taken showing the washout from behind the wall.



Although the repairs were undertaken in advance of our visit, from what we can see, the temporary remediation work was done in a professional manner:



Recognizing that the repairs only cover the area that was immediately accessible from the pipe opening at the headwall, and we could not see beyond the repair, we expect that the repaired pipe will last over the winter months. That said, a more permanent fix is required to ensure that it will continue to effectively operate during all runoff events.

From what we observed both the headwall and the flap-gate appear to be in excellent condition and could likely be left in place. Some additional rip-rap protection near the normal water level at the headwall may be warranted.

### **Project Objective**

Given the above, it is understood that the objective of the project is to determine the appropriate method and engineered design which addresses the long-term stability of the Catherine Street storm outlet under the dyke. Additionally, and for budgeting purposes, you have asked that we provide you with an idea of what the engineering fees and possible construction costs may be associated with a project.

### **Suggested Remedial Works**

Based upon our review of the site, our history with projects of a similar nature, and the dilapidated state of the corrugated steel pipe, we anticipate that this project will include the following:

- Replacement of storm outlet pipe by open-cut methods of construction. It is suggested that the replacement extend from the existing storm structure on the south side of the dyke to the existing headwall on the north side (approximately 20 metres of pipe);
- Re-use of the headwall and flap-gate;
- Full restoration of dyke slopes including erosion protection as may be required;
- Full restoration of the walking path;
- Minor regrading and rip-rap placement at the outlet location.

## Engineering Services - Design

To prepare a design for the pipe replacement efforts suggested above, the scope of services and work plan should include the following:

- Detailed topographical survey including dyke riverbank and area at the end of Catherine St.
- Preparation of base plan and cross sections for design purposes. Through the process the design should consider:
  - Dyke repairs and/or reconstruction be undertaken to withstand flooding;
  - Capacity of the municipal system;
  - Design work be completed following Municipal standards and criteria;
  - Regular liaison with the Municipality and the SVCA be undertaken through the process.
- Preparation of contract drawing(s) and specifications.
- Provide an opinion of probable cost with a break-down of the items related to construction and possible cost sharing.

Similar to previous projects we have undertaken for the Conservation Authority, it is anticipated that the SVCA will co-ordinate approvals with other agencies. If required we would be able to attend any meetings that may be necessary throughout the approval process. We would bill at our normal rates for time and expenses associated with these additional meetings.

We expect our engineering fees related to the design to be as follows:

- Preliminary Investigation and Site Visit (completed):	\$1,000
- Topographic Site Survey:	\$ 750
- Development of Base Plan and utility information:	\$ 750
- Preparation of Design Drawing:	\$1,750
- Preparation of Specifications:	\$ 750
- Correspondence, Design Report, and Probable Cost:	\$ 900

**Subtotal (Design):** **\$5,900 +HST**

This probable cost covers the scope of work as noted above including the preliminary investigation completed on-site. It has been assumed that the changes to the pipe size will not be required. Should the Municipality wish to review the capacity of the existing pipe that could be completed on a time basis through the process. Any changes in pipe will likely result in the need to replace the headwall and/or flapgate.

At this time, we do not anticipate that MOECC approval will be required; however, if following completion of the preliminary design it is determined otherwise, we would be available to assist the Brockton/SVCA in the approval process.

We could have a draft plan and specifications ready for approval sometime in December should you wish to proceed with the design component.

## Engineering Services - Tendering and Construction Review

It is understood that the timing associated with tendering and construction phases has not been finalized at this time. Should it be determined that our services would be required we would expect the scope of services for tendering and construction review to include the following:

- Prepare tender document and distribute;
- Review tenders and prepare contracts for signing;
- Work with the contractor to ensure conformance with the design and make revisions as required during construction;
- Prepare payment certificates.

Depending on the contractor selected and the duration of the contract the fees associated with this component are difficult to pin down. Assuming approximately 5 site visits (including about 5 hours per visit with travel time) we expect our fees (exclusive of HST) for tendering and construction review to be as follows:

- Prepare tender document, ad, and final drawings:	\$1,750
- Review tender submission and recommendation letter:	\$ 500
- Contract Administration, correspondence:	\$1,050
- Construction Review (5 – 5 hour visits):	\$2,200
<b>Subtotal (Tendering and Construction Review):</b>	<b>\$5,500 + HST</b>

## Opinion of Probable Construction Costs

Based on an assumption that the work will involve the installation of approximately 20m of 600mm dia. storm sewer including placement of approved and/or imported clay through the dyke, we estimate that construction costs may vary from between **\$20,000 and \$30,000 + HST**. This suggested range is based on the Queen Street outlet repair project that was completed in 2011. If there is a thought that the pipe size needs to increase and/or the headwall needs to be replaced these budget costs may be impacted.

We trust that the above is satisfactory for your current use and we look forward to working with you if the SVCA should choose to proceed with the project. If you have any questions, please do not hesitate to call.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per

Dale Erb, P. Eng.

DLE:hv

cc. Colin Saunders, Municipality of Brockton