



Staff Report

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Report To: Joint Committees

Date of Meeting: April 27, 2020 **Report Number:** EGD-006-20

Submitted By: Ron Albright, Acting Director of Engineering Services

Reviewed By: Andrew C. Allison, CAO **Resolution#:** JC-065-20, C-207-20,
GG-113-20, C-245-20, C-444-20, GG-464-20, PD-121-21

File Number: B.BF.12.03.GA.01 **By-law Number:**

Report Subject: Cedar Crest Beach Rd and West Beach Rd Berm Review and Estimates

Recommendations:

1. That Report EGD-006-20 be received;
2. That no further flood mitigation work be undertaken on West Beach Rd;
3. That Council provide direction to staff to proceed with the construction of a flood mitigation berm along the length of the Cedar Crest Beach Road at an estimated cost of \$85,000; and
4. That all interested parties listed in Report EGD-006-20 and any delegations be advised of Council's decision.

Report Overview

The residents of the Cedar Crest Beach Road and West Beach Road portions of the Port Darlington (west shore) reach have experienced flooding of their access roads in 2017 and 2019. Based on direction provided by Council, staff have reviewed both West Beach Road (most southerly portion) and Cedar Crest Beach Road relative to options for raising the roads and providing flood mitigation berms along the marsh side of the roads. This report summarizes staffs' findings, preliminary costs and recommendations.

1. Background

- 1.1 Report CAO-006-19 dated June 17, 2019 outlines the history and background of the actions that have been taken over the past 3-4 years by the Central Lake Ontario Conservation Authority (CLOCA) and the Municipality with regard to the multiple natural hazards present in the Port Darlington (west shore) reach of Lake Ontario shoreline. This report focuses on the riverine flood hazard from the adjacent Westside Creek, Bowmanville/Soper Creek and marsh systems.
- 1.2 At the March 19, 2020 CLOCA Board Meeting the CLOCA Board approved the following motion:

“THAT the CLOCA Board of Directors recommends that the Council of the Municipality of Clarington consider the options to improve safe access along municipal road in the Port Darlington area as part of capital planning and budgeting and that the implementing road works be constructed where feasible and appropriate.”
- 1.3 In response, Council considered the following as part of a larger motion during the April 17, 2020 Council meeting, and resolved to refer it back to staff for a report detailing a cost estimate for the proposed work:

“That Clarington adopt CLOCA “Port Darlington Shoreline Hazard Study” Staff Report #5630-19 Recommendation #5 to raise the road elevation of Cedar Crest Beach Road via the deployment of gravel by Operations;

That Clarington construct a berm/berms on the marsh side of Cedar Crest Beach Rd. and West beach Rd. (southerly section) with 50% of the funds drawn from the “Clarington Station A Reserve Fund” and requesting that St. Marys pay the other 50% of the cost;”
- 1.4 During the discussion at Council, emphasis was placed on the berm mitigation option and that is the focus of this report. The main purpose of the berm is to reduce the possibility of road flooding when the marshes that abut the road are experiencing high water levels which occurred in 2017 and 2019. Another purpose is to construct a

permanent berm solution to avoid having to deploy resources to create a barrier with sand bagging along this edge as has been done in the past. Figures 1-3 show past flooding of Cedar Crest Beach Road.



Figure 1: Cedar Crest Beach Road Flooding



Figure 2: Cedar Crest Beach Road Flooding



Figure 3: Sandbag Berm on Cedar Crest Beach Road

- 1.5 While staff did not undertake a detailed analysis of the option to raise the roads, which would need to be done especially for Cedar Crest Beach Road, it should be noted that gravel has been previously placed along a particularly susceptible area of West Beach Road to address localized flooding. To date, this solution has successfully addressed

the flooding issue. Any further adjustment would restrict the ability of service vehicles to use the road, mainly garbage trucks, due to reduced clearance from overhead utilities. Figure 4 shows the current West Beach Road.



Figure 4: West Beach Road

- 1.6 In reviewing the implementation of a flood mitigation berm solution for West Beach Road, there are a number of challenges such as the irregular property boundaries, varied ownership and the close proximity of the marsh water's edge to the road. These challenges would make it very difficult to implement a berm solution without filling in part of the marsh. Based on past experience with natural environmental features such as this marsh, staff would need to undertake a significantly more detailed review and consultation with approval authorities in order to determine if berm mitigation would be a potential option for West Beach Road. For this reason, and the success of road works

to date, it is suggested that staff continue to monitor this section of road, but no further flood mitigation be undertaken. Figure 5 shows an aerial photo of the irregular property limits as well as the proximity of the marsh to West Beach Road.



Figure 5: Property Limits and Marsh Along West Beach Road

- 1.7 In reviewing the flood data from the 2017 and 2019 highwater events, it was found that 75.85 m was the flood elevation that compromised Cedar Crest Beach Road. During these events, attempts were made to protect the road with sand bagging at strategic low-lying areas along the north side of the road, however some flooding still occurred.
- 1.8 The detailed topographic information for the area indicates it is relatively flat between the West Side Creek bridge and Watson Crescent. Due to this, the flood mitigation berm will need to run the entire length of the road to ensure that the flood waters do not “wrap around” the end of the berm and compromise the road. A typical design of this nature would incorporate a 0.3 m (1 foot) buffer from the high-water level to the top of the berm. However, for this area, we are proposing a 0.15 m buffer to reduce the impact of the berm footprint on the area and to reduce the cost of the flood mitigation. This design would see roughly 700 m of berm constructed on the land between Cedar Crest Beach Road and the West Side marsh. In order to address road drainage during normal rain events and winter snow melt, several openings in the berm will be required to allow for drainage from the road to the marsh. These openings could be culverts

through the berms or reduction in berm height in certain areas to form an opening. There would be approx. 8-12 openings that would need to be blocked with several sandbags during all subsequent flood events in the marsh. Based on initial design, the cost of a flood mitigation berm is estimated at \$85,000. This estimate differs from the one provided at Council on April 14, 2020 as a result of extending the berm to provide a barrier along the entire length of the road. This change represents an increase in length of approximately twice that of the original design which was estimated without the benefit of detailed topographic information.

- 1.9 While staff have used projects with aspects that are comparable to this berm to develop the estimate, the actual cost will be determined through a request for quotations for the work.
- 1.10 It should be noted that if Council chooses to protect these areas from marsh flooding with the temporary option of sandbags, it would require filling and deploying 8,000 to 10,000 sandbags.
- 1.11 While there is enough land to construct the berm, it should be noted that a large number of trees and shrubs will have to be removed in order to construct the berm. Additionally, there are several areas where residents have made improvements such as grading, cutting grass and planting gardens. While the construction of the berm will be adjusted to reduce the impact, these areas will still be affected. The following link provides a short video showing the area noted above: [Cedar Crest Beach Road – April 2020](#)
- 1.12 Based on the forecasts provided by experts in the field, it is estimated that the highest water levels in Lake Ontario this year will be experienced between mid-May and early-June. Should Council wish to proceed with this solution, it is suggested that staff be directed to post a request for quotations for one week following Council's direction. Per our Purchasing By-law, the Director of Engineering can then approve the award of the work to the successful bidder.
- 1.13 Should Council direct staff to proceed with this option at the May 4, 2020 Council meeting, a request for quotations will be posted the following day for one week, closing on May 12, 2020 at 4:30:00 pm local time. The scope of this work is such that the quote should be able to be reviewed and awarded by the end of the week. Start of construction will be dependant on the contractor receiving the necessary clearances from the utility locating agencies. Wherever possible, staff will consult with the agencies in advance to expedite the required locates.
- 1.14 Should Council direct staff to proceed, staff will consult with CLOCA on the final design to ensure all necessary approvals are in place prior to commencement of construction. Staff have been in contact with CLOCA during the preparation of this design, cost estimate and report to ensure they are informed and aware of the status of this project.

- 1.15 As approved by Council, funding for the work can be provided from a reserve fund account identified by the Director of Finance. As directed by Council, staff will request a 50% contribution for the project from St. Marys Cement.

2. Concurrence

This report has been reviewed by the Director of Finance who concurs with the recommendations.

3. Conclusion

Staff have prepared a design for a flood mitigation berm along the length of Cedar Crest Beach Road and request direction from Council if they wish to proceed with the work at an estimated cost of \$85,000. Staff recommend that the current gravel treatment provided for West Beach Road be monitored over the year to gauge performance and that no further flood mitigation be undertaken along this road due to the complications highlighted in this report.

Staff Contact: Ron Albright, Acting Director of Engineering Services, x2302 or
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Attachments:

Not Applicable

Interested Parties:

List of Interested Parties available from Department.