
MEETING TYPE: Regular Council Meeting
MEETING DATE: Tuesday, September 20, 2022
AUTHOR: Scott Unser, Public Works Manager
DEPARTMENT: Engineering and Environmental Services
ITEM TITLE: **Pelmewash Slope Stability Mitigation**
DESCRIPTION: Proposed rockfall mitigation measures on Pelmewash Parkway

QUESTION

Does Council want staff to bring forward proactive slope stability mitigation measures on Pelmewash Parkway as part of the 2023 budget deliberations?

OPTIONS

- A. THAT staff be directed to bring forward a 2023 capital budget request for Pelmewash Parkway slope stability mitigation, including the following solutions as identified in Attachment A to this report:
- Area 1 – Proposed solution with Option 1
 - Area 2 – Proposed solution
 - Area 3 – Proposed solution
- B. THAT staff be directed to bring forward a 2023 capital budget request for Pelmewash Parkway slope stability mitigation, including the following solutions as identified in Attachment A to this report:
- _____
 - _____
 - _____
- C. THAT a capital budget request for Pelmewash Parkway slope stability mitigation not be brought forward to the 2023 budget deliberation.

EXECUTIVE SUMMARY

Council adopted Slope Stability Management Policy 191 in November of 2021, this policy established a reactive inspection and maintenance system for managing slope stability concerns throughout the District. Staff have been directed to explore proactive solutions to slope stability concerns on Pelmewash Parkway. Traditional and alternative mitigation methods have been investigated for Council to consider. The focus of mitigation is on the three primary areas where rockfall debris is occurring on Pelmewash Parkway.

KEY INFORMATION

The District of Lake Country operates and maintains 208 lineal kilometers of roadway, due to the topography of our area many of these roads are adjacent to steep slopes with the potential for debris falling events. Council adopted the Slope Stability Management Policy 191 that defined a consistent level of service.

Recent weather patterns, specifically extended periods of freeze/thaw cycles, have caused an increase in debris from these slopes. District staff deal with the clean-up of debris and assessment of potential mitigation measures

as required within operational budget allowances. Larger proactive mitigation efforts will require Council endorsement and funding through Capital budget requests. Staff have produced a report identifying enhanced mitigation measures for each of the three primary areas of focus (Pelmewash Parkway Rockfall Mitigation Proposal - Attachment 1).

DESIRED BENEFIT

Any proactive mitigation measures would reduce risk in designated areas.

STRATEGIC RELEVANCE AND COMMUNITY SUSTAINABILITY

Aligns with the District's transportation vision of "Getting around Lake Country in safe and enjoyable ways."

BACKGROUND/HISTORY

Pelmewash Parkway was the former Highway 97 corridor between Winfield and Oyama. This corridor was maintained by the Ministry of Transportation and Infrastructure (MoTI) since it was built until 2018 when the District of Lake Country assumed maintenance responsibilities. With respect to Slope Stability the District's current policy of reactive inspection and maintenance is in line with previous MoTI policy.

In 2018 the District undertook works on Pelmewash Parkway to add active transportation components and re-surface the roadway prior to assuming maintenance of this corridor. The District employed a consultant to complete a geotechnical review to assess slope stability issues along this corridor. The report from the geotechnical review identified 18 rock faces along the corridor with varying degrees of risk and reasoning for this rating. The report also identified that the most significant factor in the higher risk areas is the lack of containment below the rock faces. The recommendations from the report have informed the proposed mitigation options detailed in Attachment 1.

DISCUSSION/ANALYSIS

There are two general types of slope stability mitigation works:

- Stabilization – generally seen as a preventative measure which includes rock scaling, bolting or pinning and re-profiling.
- Catchment area increase – generally seen as a reactive measure and includes road re-alignment, netting, barriers and fencing

Stabilization methods are generally more costly to install and maintain. These methods on the Pelmewash corridor are further hampered by property boundary constraints, with many of the rock faces extending onto private property.

Catchment area increases are generally more cost effective and adaptable to changing conditions. The District has already increased one catchment area on Pelmewash to reduce risk and that has proven successful.

Staff have determined that catchment area increases is the preferred mitigation strategy for the three primary areas:

- Area 1 – Preferred option is draped netting with rock anchors to support
 - Cost estimate \$66,000
- Area 2 – Single lane alternating traffic with concrete barrier
 - Cost estimate without signals \$ 35,000
 - Potential signal cost estimate \$ 55,000
- Area 3 – Concrete barrier with fencing
 - Cost estimate \$ 32,000

Staff have considered other options that were deemed not feasible or cost effective including: one way traffic pattern, road re-alignment and rock scaling.

With any natural features it is important to note that is difficult to predict where the next event may occur and that mitigation efforts in areas of observed activity only reduce risk in these areas. The options presented are those that staff have determined strike the balance of cost effectiveness and reducing risk, given the information currently available.

IMPACT ON INFRASTRUCTURE OR MUNICIPAL SERVICES

Any proposed works would require on-going inspection, maintenance and repair, the scope of this requirement is largely unknown due to naturally occurring factors.

IMPACT ON STAFF CAPACITY AND FINANCIAL RESOURCES

This work would be undertaken within existing staff capacity. Financial resources would be determined and brought forward as part of the 2023 budget process

COMMENTS FROM EXTERNAL AGENCIES, COMMITTEES AND STAKEHOLDERS

Staff have consulted with Emergency service providers and no concerns were raised. Further engagement would be undertaken if this project is moved forward.

CONSULTATION AND COMMUNICATION

The District will utilize our standard communication channels to inform stakeholders and the public

ANALYSIS OF OPTIONS FOR CONSIDERATION

- A. Bring forward for 2023 budget consideration.** Additional staff time and resources would be utilized to prepare request for budget.
- B. Bring forward other options as identified by Council.** Additional staff time and resources would be utilized to investigate options and prepare request for budget.
- C. Do not bring forward to budget.** Staff will continue to inspect and maintain slopes reactively in accordance with Slope Stability Management Policy 191

Respectfully Submitted,
Scott Unser, Public Works Manager

Report Approval Details

Document Title:	Pelmewash Slope Stability Mitigation 2023.docx
Attachments:	- Pelmewash Parkway Rockfall Mitigation Proposal.docx
Final Approval Date:	Sep 13, 2022

This report and all of its attachments were approved and signed as outlined below:

Matthew Salmon, Director of Engineering and Environmental Services - Sep 9, 2022 - 4:22 PM

Trevor James, CFO, Director of Finance & Administration - Sep 13, 2022 - 2:35 PM