

ATTACHMENT 3:

Feasibility Study Boundary, Timeline of Closures
and Slope FailuresTT2015-0816
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History of slope movements

The Pathway has sustained damage from active slope movement following heavy rain and extreme weather events of 2005, 2007, 2011, 2012, 2013, 2014 and 2015. From 2012 to 2015 sections of the Pathway were closed to the public as shown in Figure 1. In 2015 August, the City completed temporary minor repairs to temporarily reopen the Pathway to the public. The repairs are not intended to stabilize the slope. It is unknown when new slope movements will occur and how long the Pathway will be able to remain open to the public. The history of slope movements, damage to the pathway and expenditures is below.

Table 1 – History of slope movements and work to date

Location	Timeline	Work to date (approximate costs)	Notes
Hot Spot #1 Douglasdale Point SE (north of 130 th Ave SE)	<ul style="list-style-type: none"> 2005, 2008, 2011, 2012, 2013— slope movement damaging pathway 2014, 2015 – large drop on pathway and grades shifted 	<ul style="list-style-type: none"> \$60,000 - 2005 DRP funded localized Pathway repair \$35,000 monitoring & \$70,000 minor repairs from 2005 to 2013 from City 2015 temporary minor repairs* 	<ul style="list-style-type: none"> \$10M 2005 DRP request for stabilization of the slope rejected Tension cracks re-appear within a year or two of a repair and movement is accelerated during periods of heavy rain Grade shifts caused equipment to slide during snow clearing operations, creating safety concerns to personnel and equipment. Snow clearing restrictions contribute to icing and slipping hazards.
Hot Spot #2 Mt. Douglas Point SE (north of 130 th Ave SE)	<ul style="list-style-type: none"> 2014 and 2015 – slope movement damaging pathway and shifting grades 	<ul style="list-style-type: none"> 2015 temporary minor repairs* 	<ul style="list-style-type: none"> Grade shifts – same as above.
Hot Spot #3 Mt. Douglas Close SE	<ul style="list-style-type: none"> 2007, 2014, 2015 – slope movement damaging pathway 	<ul style="list-style-type: none"> \$165,000 - 2007 DRP funded pathway relocation 2015 temporary minor repairs* 	<ul style="list-style-type: none"> Hot Spot #3 sustained significant damage in 2007 resulting in relocation of the pathway. Further slope movement damaging the pathway occurred in 2014 and 2015.
Hot Spot #4 129-149 Mt. Alberta View SE	<ul style="list-style-type: none"> 2007 	<ul style="list-style-type: none"> \$3.4 million - 2007 DRP funded caisson retaining wall to provide a stable base for the pathway 	<ul style="list-style-type: none"> No further damage observed following the construction of the caisson wall, however damage to the pathway can be observed to the north and south of the caisson wall. The scope of the 2007 work was limited to a small area due to budget constraints.

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Location	Timeline	Work to date (approximate costs)	Notes
Hot Spot #5 Mt. 77 – 129 Mt. Alberta View SE	<ul style="list-style-type: none"> 2012, 2013, 2014, 2015 - substantial damage in 2012 resulting in closures further damage continues 	<ul style="list-style-type: none"> \$500,000 for Monitoring, investigation and design for short term and long term repairs, of which \$130,000 is expected to be recovered from DRP 2015 temporary minor repairs* 	<ul style="list-style-type: none"> Most significant damage. 2012 and 2013 DRP approved funds of \$260K for relocation of the Pathway only. However, pathway relocation is not an option due to limited land at the top of the Escarpment and high risk of destabilizing the slope and causing additional damage during construction. The Province verbally indicated they will not commit funds for the long term stabilization of the Pathway.
* 2015 temporary minor repairs at Hot Spots #1, 2, 3 and 5	<ul style="list-style-type: none"> 2015 minor repairs completed to temporarily reopen the pathway to the public in stages from July to August. 	<ul style="list-style-type: none"> \$50,000 	<ul style="list-style-type: none"> The temporary repairs are not intended to stabilize the slope and will not resolve the winter snow clearing concerns. It is unknown when new slope movements will occur and how long the Pathway will be able to remain open to the public.
Formal monitoring and reporting	2005 to 2015	<ul style="list-style-type: none"> \$120,000 	<ul style="list-style-type: none"> Monitoring of the Escarpment from north to south boundaries of the Feasibility Study as shown on Figure 1

Approximately \$4.4 million have been spent to date for localized slope stabilization, pathway relocation, and isolated repairs. Of the total expenditures, approximately \$3.8 million has been recovered or will be recovered from the Disaster Recovery Program (DRP).

Figure 1 below shows the timeline of Pathway closures and slope failures and the boundary of the *Feasibility Study Bow River Regional Pathway Douglasdale/ McKenzie Lake, Calgary AB, Draft* (Feasibility Study) completed by Golder Associates in 2015 included as Attachment 2.

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Figure 1 - Feasibility Study Boundary, Timeline of Closures and Slope Failures

