



Colborne Street (East) Slope Stabilization Municipal Class Environmental Assessment Public Information Centre No. 2

Tuesday, March 12, 2019
Woodman Park Community Centre



The Purpose of this Information Centre

- Provide information on the Environmental Assessment (EA) study purpose and background
- Provide an update of the EA activities now in progress
- Provide summaries of the existing conditions assessments
 - Historical Slope Movements and Geotechnical Condition
 - Water Resources and Geomorphic Conditions
 - Natural Heritage
 - Archaeological and Cultural Heritage
- Present alternative solutions and proposed evaluation criteria
- Present the recommended alternative solution
- Provide an opportunity for your input on the alternative solutions

Study Purpose

The EA study follows the **Municipal Class Environmental Assessment** under Schedule 'C' for the slope area situated between Colborne Street (East) and the north bank of the Grand River at a road section between Calvin Street to the west, and Johnson Road to the east in the City of Brantford.

Problem Statement:

Since the landslide event that occurred in 1986, several studies have been completed to determine cause and effects. Monitoring shows that slope movement continues to occur. Slope stability concerns revolve around soil type and moisture issues as well as toe erosion.

The EA is being completed to develop feasible alternatives to address stability concerns and to create a management strategy for the area.

Background Information and Timeline



Beach Road after 1986 landslide



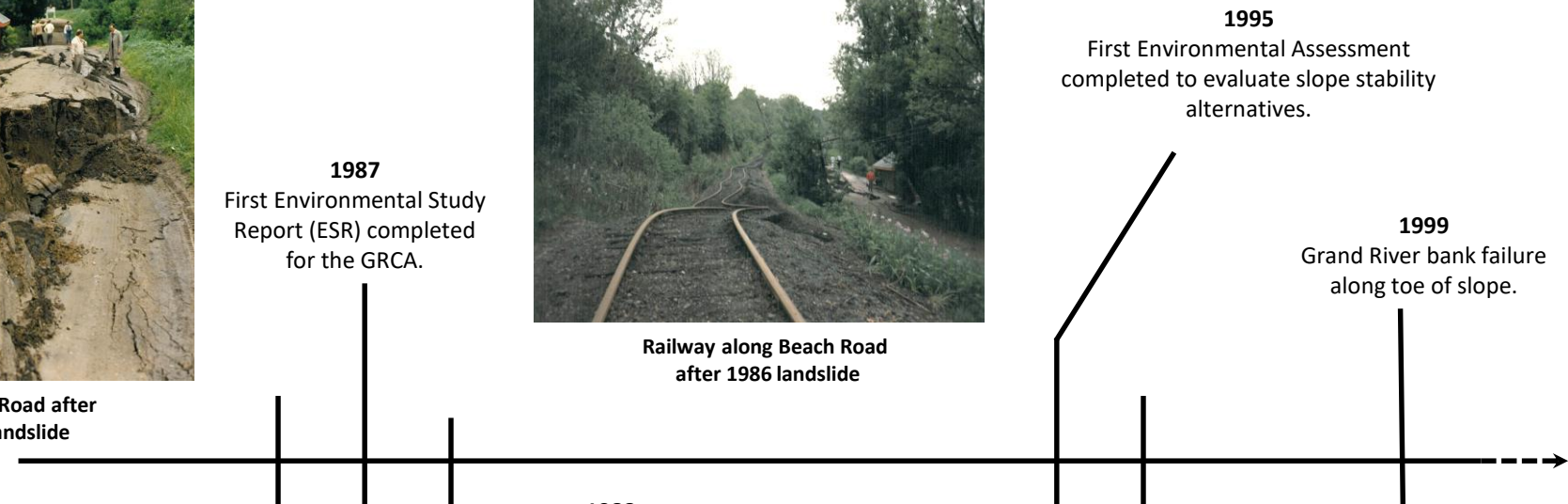
Railway along Beach Road after 1986 landslide



929 Colborne Street (East) after 1986 landslide



951 Colborne Street (East) after 1986 landslide



1986
Major slope failure on South side of Colborne Street.

1987
First Environmental Study Report (ESR) completed for the GRCA.

1988
Canadian Pacific Railway removed.

1996
Former railbed converted to Hamilton-Brantford Rail Trail.

1995
First Environmental Assessment completed to evaluate slope stability alternatives.

1999
Grand River bank failure along toe of slope.

Background Information and Timeline



Evidence of toe erosion, including bare banks and fallen trees, April 2016



Slumping of the slope adjacent to the Rail Trail, October 2018



Hamilton-Brantford Rail Trail within Study Area, April 2016



Slope monitoring in 2016, unstable slope evidence (left) and slumping near property line (right)

2012
Update made to the 1995 Environmental Assessment.

Sept 2018
First PIC for Colborne Street (East) EA.

2015/2016
Additional studies to review slope monitoring data and collect additional field observations.

March 2019 (today)
Second PIC for Colborne Street (East) EA.

Summer/Fall 2019
Third PIC (Summer) and final draft of Environmental Study Report (Fall).



Municipal Class EA Process Overview

STUDY DURATION (12-14 Month Process)

PIC #1

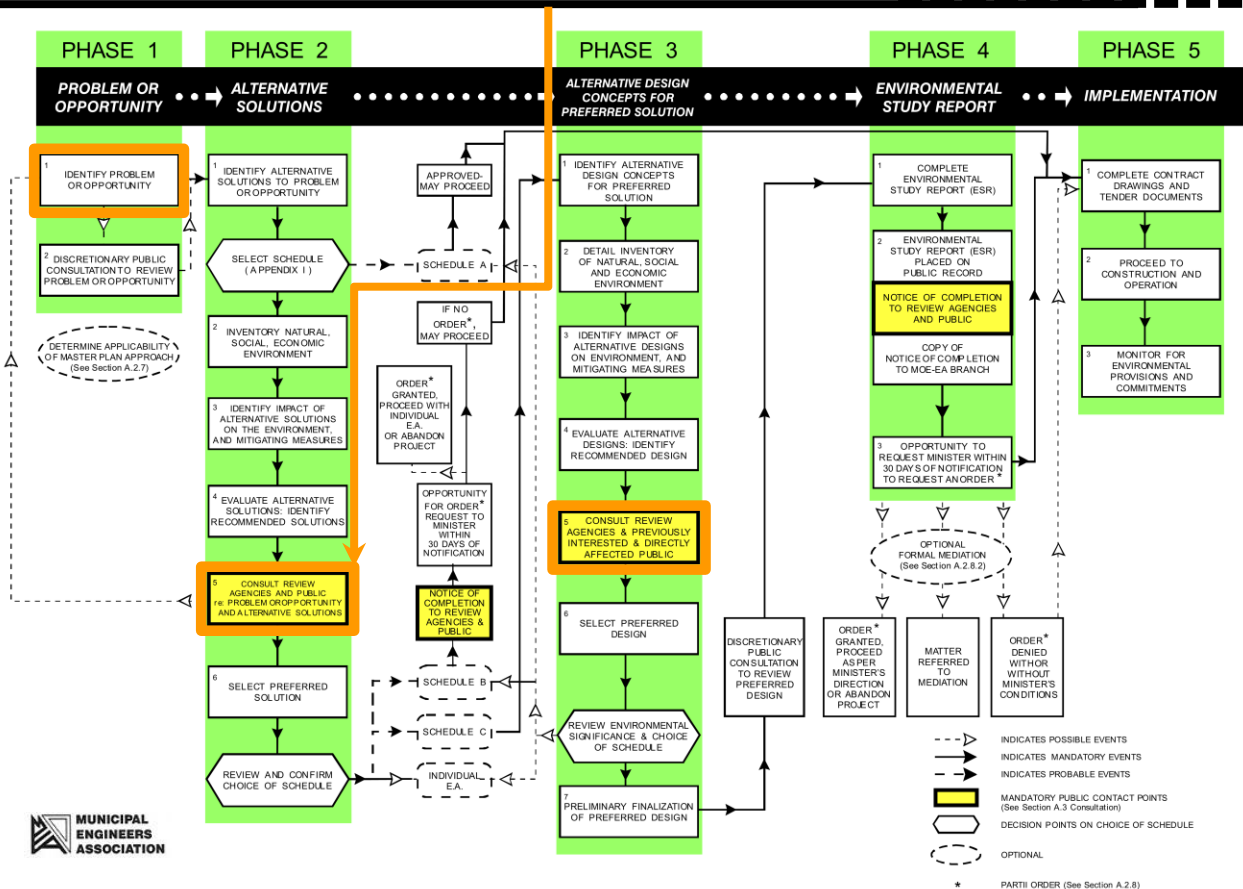
September 13, 2018

PIC #2

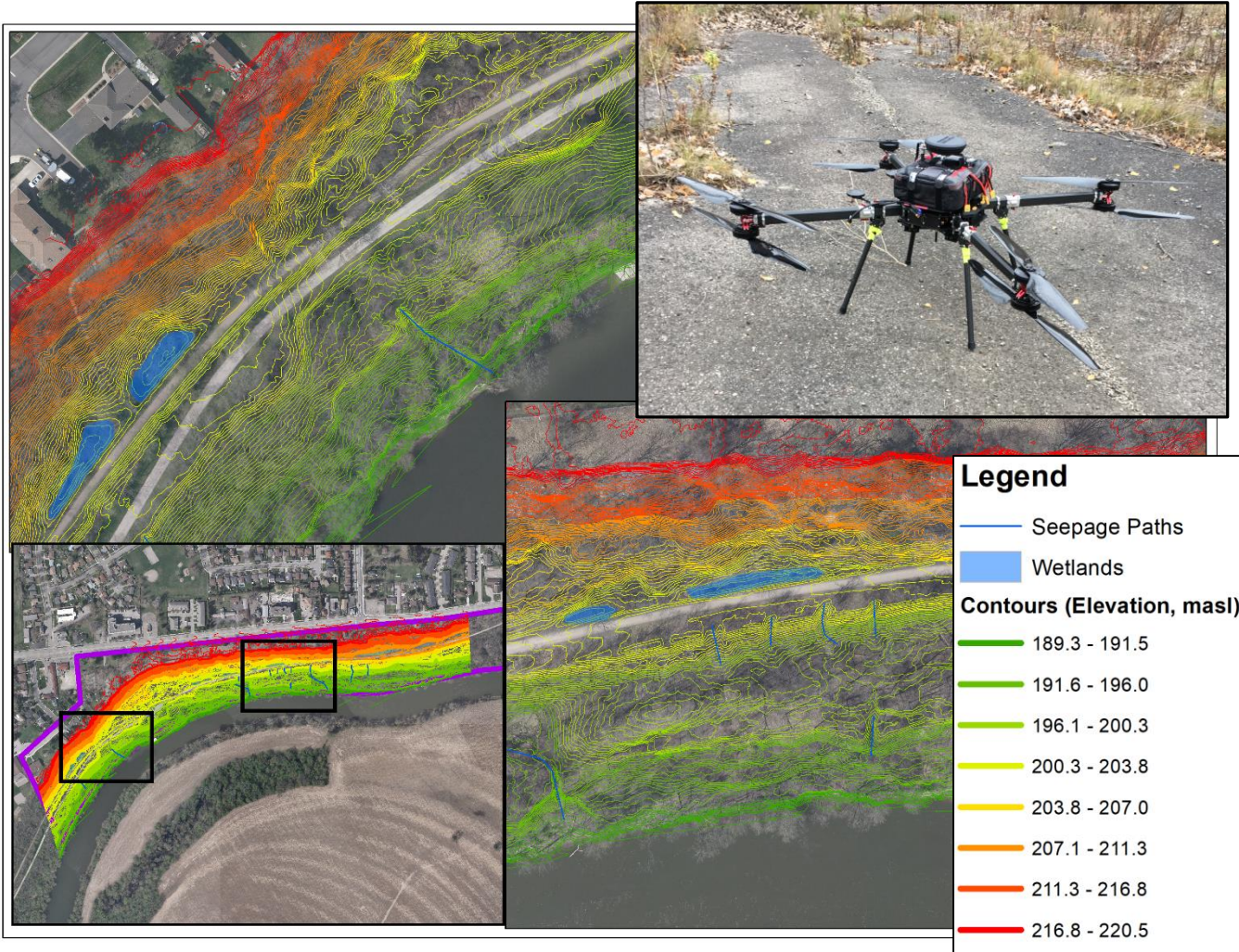
March 12, 2019

PIC #3

Summer 2019



Drone Survey



- ❑ Light Detection and Ranging (LiDAR) survey completed using a drone in November 2018
- ❑ Drone collected 40-80 elevation points per square metre, which was used to build a bare earth digital terrain model (DTM) and elevation contours of the site

Characterization of Existing Conditions

Site Geometry

Description: General description of the slope area

Quick Facts:

- Study area spans approximately 1.1km along the Grand River.
- Slope height is an average of 31m.

Geomorphological

Description: Grand River impacts on slope

Quick Facts:

- Toe erosion from Grand River is a factor in slope instability.
- Slope toe movement tends to be greater in lower zones.
- Grand River width was reduced to half as a result of the 1986 slope failure. Since 2012 it has returned to its pre-failure width.

Natural Heritage

Description: Potential impacts on natural environment

Quick Facts:

- No species at risk have been identified; however significant plant, fish and mussel species are known to be in the area.
- Potentially suitable bat habitat exists.

Geotechnical

Description: Slope condition and hydrogeologic factors

Quick Facts:

- Slope is defined with a table land, upper slope and lower slope.
- Overburden is approximately 40m thick with two silty clay layers intersected by a sand layer.
- Groundwater measured within 1m of lower slope and rises to 3m below table land surface.
- Main influencing factors affecting slope stability are high groundwater levels, weak native soils and toe erosion.

Surface Runoff

Description: Impact of overland flow on slope

Quick Facts:

- Surface runoff from Colborne Street increases soil moisture at top of slope.
- Outfalls and seepage pathways identified in slope area from field investigations and LiDAR survey.
- Local drainage issues increase risk of slope failure, and should be a consideration in the alternative solution.

Characterization of Existing Conditions

Social

Description: Impacts on communities

Quick Facts:

- Relocation of eight (8) properties within the study area occurred between 1995 and 2012, currently six (6) private properties are located adjacent to the slope.
- Hamilton-Brantford Rail Trail, which begins along Beach Road within the study area, is a well-used recreational asset.

Archaeological

Description: Archaeological significance of Study Area

Quick Facts:

- The study area is within 1 km of 43 registered archaeological sites, including an ossuary.
- Area is within the historic community of Cainsville.
- A Stage 1 Archaeological Assessment has been completed, and recommends further Stage 2 assessment for the slope area.

Economic

Description: Costs and life cycle impacts

Quick Facts:

- Colborne Street (East) is a major arterial road.
- The study area contains a mix of land uses, including eight (8) commercial properties.

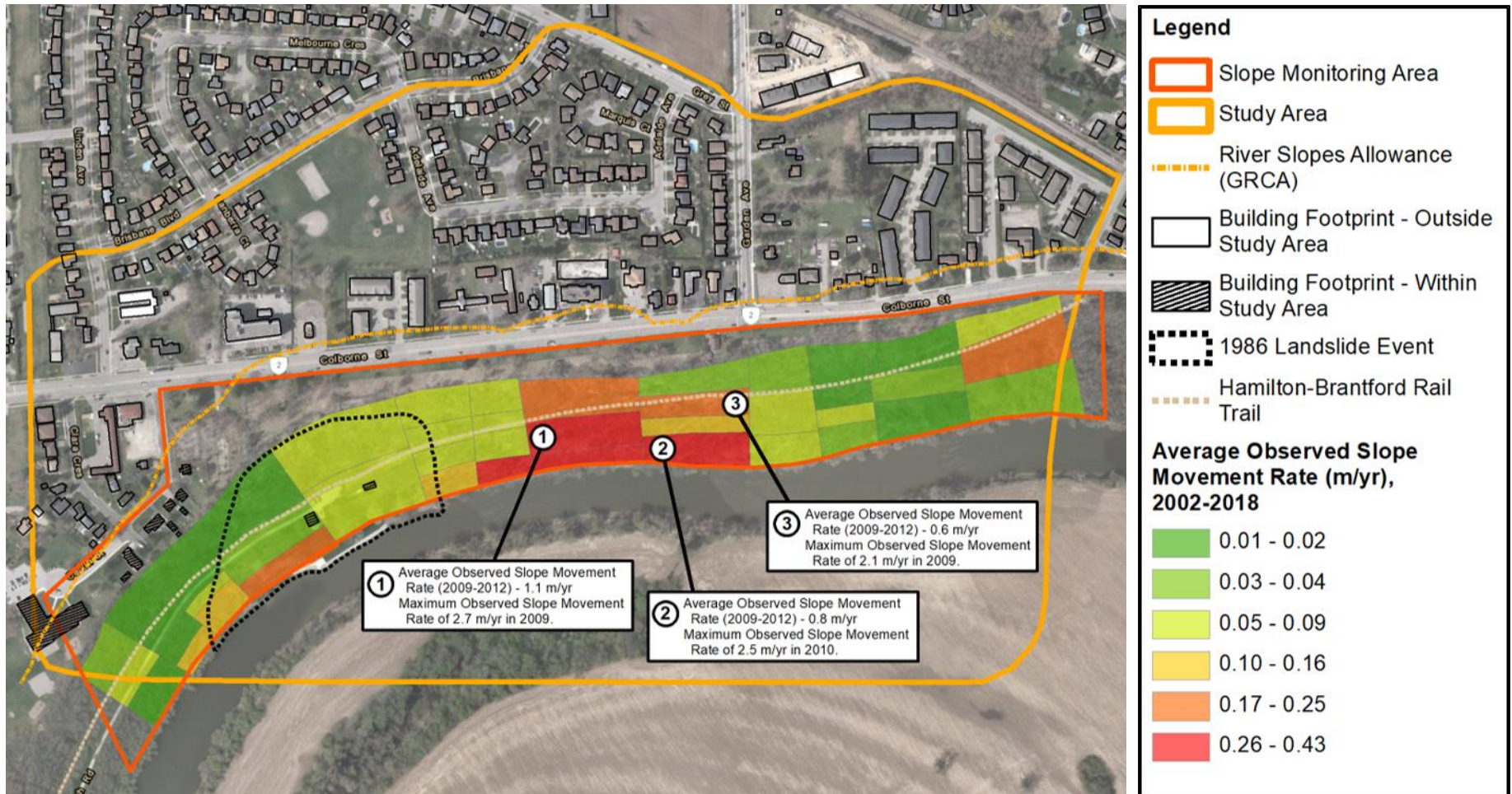
Built and Cultural Heritage

Description: Built heritage and cultural heritage landscapes

Quick Facts:

- The study area is within a Canadian Heritage River watershed, and is adjacent to the Grand River.
- The study area contains structures over 40 years old.
- Built and Cultural Heritage Assessment identified several important assets in the study area, including the rail trail, and several properties along Colborne Street (East), Clara Crescent and near Johnson Road.
- A Heritage Impact Assessment report is recommended to be undertaken once a preferred alternative is selected.

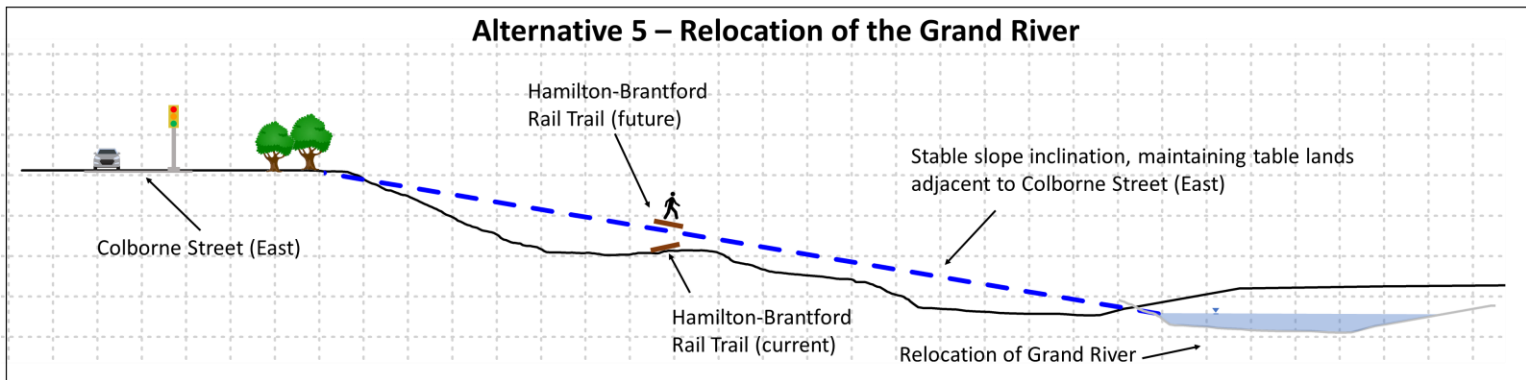
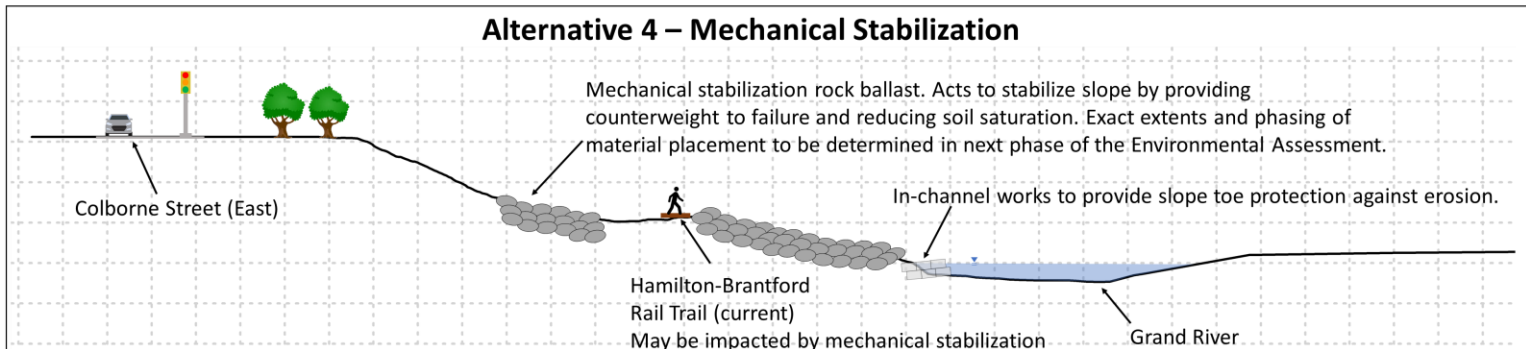
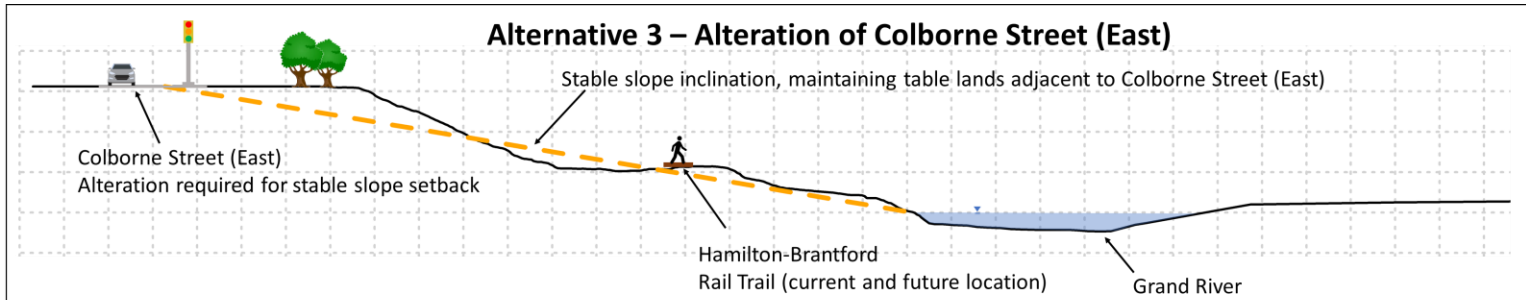
Existing Conditions – Slope Movement Rates



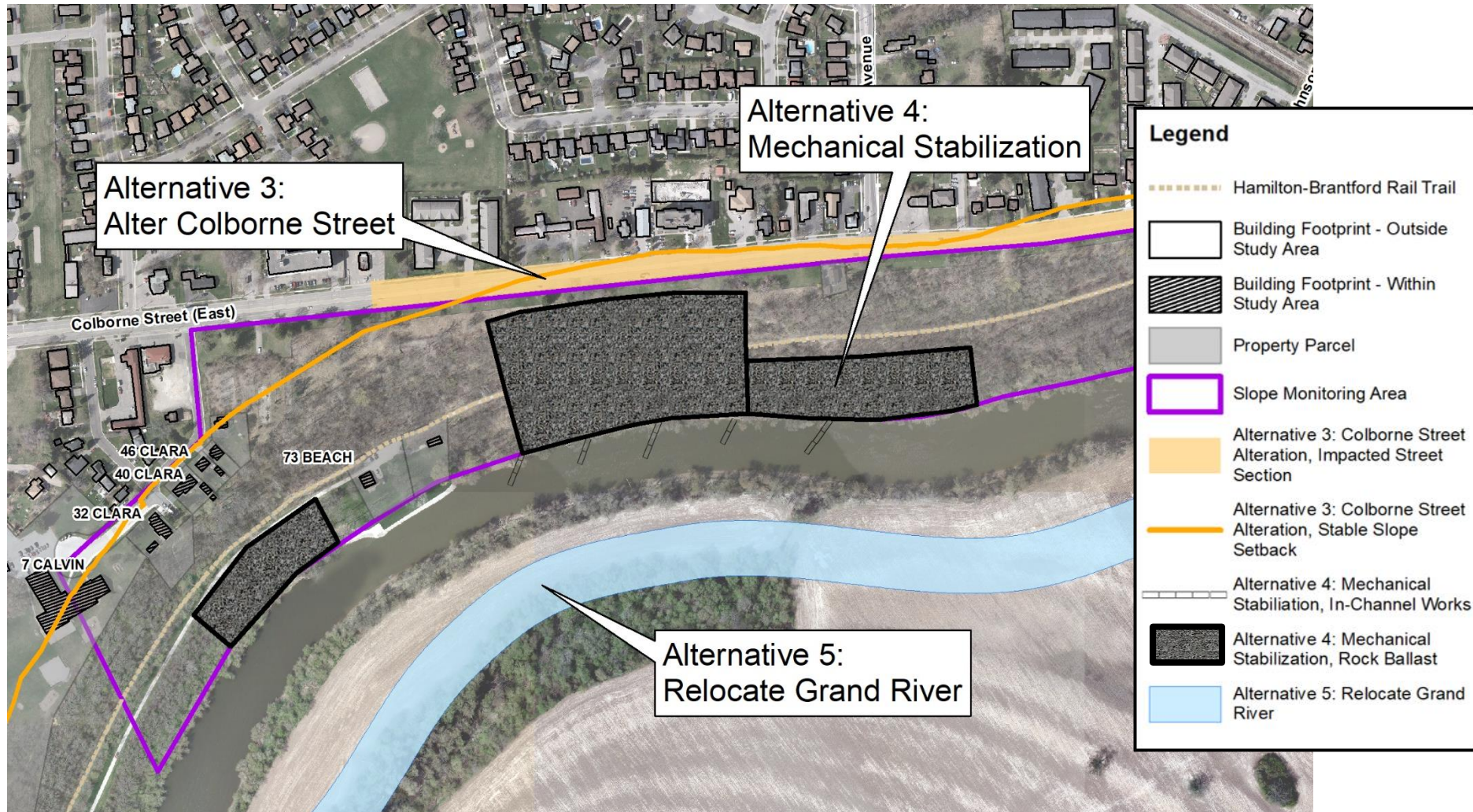
Alternative Solutions

Alternative No.	Alternatives	Details
1	Do Nothing	<ul style="list-style-type: none"> Continue physical topographic survey and monitoring
2	Monitoring, Assessment and Phased Stabilization	<ul style="list-style-type: none"> Bi-annual LiDAR survey and monitoring Acquire private properties if required or if available to reduce risk to public Implement real-time monitoring and mitigation plan Implement phased slope stabilization and toe protection, based on monitoring and assessment
3	Alter the top of slope constraint (change the level of service of Colborne Street East)	<ul style="list-style-type: none"> Alter level of service of Colborne Street (East) Reduce the slope through a cut at the top of the slope that would extend into Colborne Street (East) Acquire private properties or provide mechanical stabilization where required Continue slope monitoring to ensure success
4	Mechanical Slope Stabilization (maintain both the top and toe of slope)	<ul style="list-style-type: none"> Stabilize slope using mechanical/structural approach Stabilize toe of slope at the bank of the Grand River Could be implemented in stages, or phased Continue slope monitoring to ensure success
5	Alter the toe of slope constraint (realign the Grand River)	<ul style="list-style-type: none"> Realign the Grand River away from the slope (70m minimum) Reduce the slope through filling from the toe Acquire private properties or provide mechanical stabilization where required Continue slope monitoring to ensure success

Alternative Solutions



Alternative Solutions

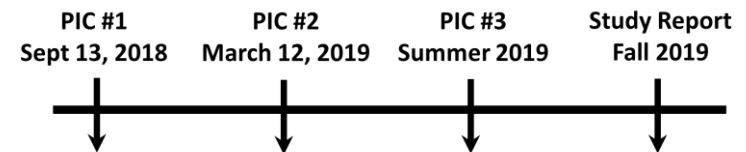


Evaluation of Alternative Solutions

Category	Criteria
Public Health and Safety	<ul style="list-style-type: none"> • Protection of residents and property/ buildings from eventual slope failure • Protection of travelling public along Colborne Street from eventual slope failure • Protection of residents from potential flood impacts • Reduction of risk impact to major future slope failures
Technical	<ul style="list-style-type: none"> • Protection from erosion • Impacts to river stability and flood risk • Protection of traffic use along Colborne Street (East) • Impacts on water quality in the Grand River
Environmental	<ul style="list-style-type: none"> • Impact on fish habitat and vegetation • Impact on terrestrial habitat
Archaeological and Heritage Resources	<ul style="list-style-type: none"> • Disturbance of potential archaeological resources • Disturbance of heritage resources
Socio-economic	<ul style="list-style-type: none"> • Impact on existing usage of the Hamilton-Brantford rail trail • Disruption of businesses • Impacts to private property
Construction Cost	<ul style="list-style-type: none"> • Property acquisition costs • Construction costs • Operation and Maintenance costs
Constructability	<ul style="list-style-type: none"> • Design implementation and access • Project constructability • Maintenance requirements • Impact to existing utilities

Next Steps Before PIC #3

- ❑ Selection of the alternative solution
- ❑ Develop alternative designs to the selected alternative solution
- ❑ Develop evaluation criteria
- ❑ Conduct evaluation of alternative designs
- ❑ Public Information Centre #3 (Summer 2019)
 - Present the selected alternative solution
 - Present alternative design concepts to the alternative solution
 - Present evaluation criteria for the alternative design
 - Announce 30-day period following notice of completion for study
- ❑ Final report and City Council presentation (Fall 2019)



Project Contacts



Please complete a Comment Sheet and leave it here today, or return it to Jeff Prince by March 26, 2019.

Should you have any questions or concerns at any time during the project, please contact either of the following people:

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QUESTIONS

