











































BURNSIDE

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Appendix E Evaluation of Alternative Solutions

Credit Meadows Park Expansion EA- Evaluation of Alternative Solutions

	Criteria for Evaluating Alternatives	Indicators	Do Nothing: Use of the Park without any connecting trails/bridges.	Alternative 1 – Northern Route: Construction of Crossing #1 and the Fletcher's Creek Crossing and connecting trails.	Alternative 2 – Eastern Route: Construction of Crossing #2 and the Fletcher's Creek Crossing and connecting trails.	Alternative 3 – Southern Route: Construction of Crossing #1 and Crossing #2 and connecting trails.
A	Natural Environment					
1	Impacts to wetlands	Proximity to, or removal of, wetlands	No impacts to wetlands.	No wetlands will be directly affected. Approx. 0.28 ha of trail will be within 30m of a wetland.	No wetlands will be directly affected. Approx. 0.28 ha of trail will be within 30m of a wetland.	No wetlands will be directly affected. Approx. 0.04 ha of trail will be within 30m of a wetland.
	<i>Rating</i>					
2	Impacts to significant woodlands	Area of Significant Woodland to be removed	No impacts to Significant Woodlands.	Approx. 0.52 ha of Significant Woodland will need to be cleared.	Approx. 0.42 ha of Significant Woodland will need to be cleared.	Approx. 0.37 ha of Significant Woodland will need to be cleared.
	<i>Rating</i>					
3	Impacts to significant wildlife habitats	Proximity to, or removal of, Significant Wildlife Habitats	No impacts to Significant Wildlife Habitats.	Approx. 0.52 ha of various woodland wildlife habitat, 0.18 ha of meadow wildlife habitat and 0.08 ha of rare vegetation communities will need to be cleared. Approx. .28 ha of trail will be within 30m of wetland habitat.	Approx. 0.51 ha of various woodland wildlife habitat, 0.10 ha of rare vegetation communities and 0.40 ha of Highly Diverse Areas will need to be cleared. No meadow habitat will be affected. Approx. 0.28 ha of trail will be within 30m of wetland habitat.	Approx. 0.11 ha of woodland habitat, 0.18 ha of meadow habitat, 0.15 ha of rare vegetation communities and 0.11 ha of Highly Diverse Areas will need to be cleared. Approx. 0.04 ha of trail will be within 30m of wetland habitat.
	<i>Rating</i>					
4	Impacts to the Meadowvale Station Woods ANSI	Proximity to, or removal of, Regionally Significant Meadowvale Station Woods ANSI	No impacts to the ANSI.	Approx. 0.26 ha of the ANSI will need to be cleared.	Approx. 0.26 ha of the ANSI will need to be cleared.	No impacts to the ANSI.
	<i>Rating</i>					
5	Impacts to Species at Risk	Area of SAR habitat to be removed/impacted; Proximity to SAR habitat	No impacts to Species at Risk.	No impacts to the Butternut tree. Approx. 0.18 ha of Bobolink habitat will need to be cleared. Approx. 0.18 ha of regulated Redside Dace habitat will need to be cleared. The trail to the Fletcher's Creek crossing is within 30m of Jefferson Salamander habitat.	No impacts to the Butternut tree. No impacts to Bobolink habitat. Approx. 0.18 ha of regulated Redside Dace habitat will need to be cleared. The trail to the Fletcher's Creek crossing is within 30m of Jefferson Salamander habitat.	No impacts to the Butternut tree. Approx. 0.18 ha of Bobolink habitat will need to be cleared. No impacts to Redside Dace habitat.
	<i>Rating</i>					
6	Impacts to aquatic habitat	Proximity to, or removal of, key aquatic habitats	No impacts to aquatic habitat.	Crossing #1 and Fletcher's Creek crossing are located in preferred location at riffles. Bridges must be designed to avoid in-water work and the need for bank stabilization measures.	Crossing #2 and Fletcher's Creek crossing are located in preferred location at riffles. Bridges must be designed to avoid in-water work and the need for bank stabilization measures.	Crossing #1 and Crossing #2 are located in preferred location at riffles. Bridges must be designed to avoid in-water work and the need for bank stabilization measures.
	<i>Rating</i>					
	Summary Natural Environment					









B	Social Environment					
1	Route layout and connectivity	Ability of alternative to connect adjacent residential neighbourhoods and the lower portion of Credit Meadows	Does not provide any connectivity to the residential neighbourhood to the east or the lower portion of Credit Meadows.	Provides the desired external connectivity. This configuration provides the most direct connection between the former Harris lands and the existing Credit Meadows. There is a long and indirect connection between the neighbourhood to the east and the existing Credit Meadows. Connection to the 2nd Line/Hwy 401 pedestrian bridge can be provided via sidewalks and bike lanes on Donway Dr.	Provides the desired external connectivity. This configuration provides the most direct connection between the neighbourhood to the east and the existing Credit Meadows. There is a long and indirect connection between the former Harris lands and the existing Credit Meadows. Connection to the 2nd Line/Hwy 401 pedestrian bridge can be provided via sidewalks and bike lanes on Donway Dr.	Provides the desired external connectivity. This configuration provides the most direct route between the former Harris lands and the existing Credit Meadows. This configuration also provides the most direct connection between the neighbourhood to the east and the existing Credit Meadows. Connection to the 2nd Line/Hwy 401 pedestrian bridge can be provided via sidewalks and bike lanes on Donway Dr.
	<i>Rating</i>					
2	Compatibility with existing parks and trails plans	Qualitative analysis of compatibility with various trail plans	Not compatible with previous trail plans as no external connections are provided.	Crossing #1 was not identified in the Credit River Parks Strategy or Cycling Master Plan. However, the general intent and goals of previous plans are met. The rail abutment is not wide enough to support a multi-use trail; a narrower secondary trail type would be required along the ridge portion of the trail. This is not compatible with various trail plans. Active transportation plans support more direct connections for primary trails; direct connections are partially provided.	Provides linkages similar to those in the Credit River Parks Strategy, and Cycling Master Plan. The rail abutment is not wide enough to support a multi-use trail; a narrower secondary trail type would be required along the ridge portion of the trail. This is not compatible with various trail plans. Active transportation plans support more direct connections for primary trails; direct connections are partially provided.	Crossing #1 was not identified in the Credit River Parks Strategy or Cycling Master Plan. However, the general intent and goals of previous plans are met. All trails can be designed as City multi-use trails, in line with various trails plans. Active transportation plans support more direct connections for primary trails; direct connections are provided.
	<i>Rating</i>					
3	Aesthetics/trail experience and appeal	Qualitative analysis of visual appeal and trail experience based on views and proximity to natural features	Poor trail experience as no connections beyond the park are provided.	The trails around the Fletcher's Creek bridge offer interest and natural beauty. The trails through the Bobolink habitat at Crossing #1 may have visual appeal if the meadows are restored and enhanced.	The trails around the Fletcher's Creek bridge offer interest and natural beauty. The view at Crossing #2 offers an appealing vista.	The trails through the Bobolink habitat at Crossing #1 may have visual appeal if the meadows are restored and enhanced. The view at Crossing #2 offers an appealing vista.
	<i>Rating</i>					
4	Effect on private property	Trail proximity to private property	No effect on private property	The trail south of the Fletcher's Creek bridge runs along the toe of slope below Haydonbridge Ct. and Diamond Ct. The slope and existing vegetation offer a visual and noise buffer between the trail and private properties. Properties adjacent to the trail head at Swinbourne Dr. which may be affected by minor noise and construction vehicle access during construction.	The trail south of the Fletcher's Creek bridge runs along the toe of slope below Haydonbridge Ct. and Diamond Ct. The slope and existing vegetation offer a visual and noise buffer between the trail and private properties. Properties adjacent to the trail head at Swinbourne Dr. which may be affected by minor noise and construction vehicle access during construction.	The trail does not approach any private properties with the exception of the trail head at Swinbourne Dr. which may be affected by minor noise and construction vehicle access during construction.

	Rating					
Summary Social Environment						

C	Cultural Environments					
1	Impacts to cultural heritage resources	Feature of heritage value to be removed or disturbed	No disturbance to cultural heritage resources.	There will be no direct impact to the farmhouse or other culturally significant structures. Bridges and trails can be designed in a manner that is consistent with the existing cultural heritage landscape. The Fletcher's Creek trail offers an opportunity for cultural heritage interpretation/education related to the former rail uses.	There will be no direct impact to the farmhouse or other culturally significant structures. Bridges and trails can be designed in a manner that is consistent with the existing cultural heritage landscape. The Fletcher's Creek trail offers an opportunity for cultural heritage interpretation/education related to the former rail uses.	There will be no direct impact to the farmhouse or other culturally significant structures. Bridges and trails can be designed in a manner that is consistent with the existing cultural heritage landscape.
	Rating					
2	Impacts to archaeological resources	Area of high or known archaeological potential to be removed or disturbed	No disturbance to archaeological resources.	No significant archaeological resources have been found at bridge locations to date. Field studies are ongoing. Trails can be re-routed as required to avoid archaeological resources, if found.	Field studies are ongoing. Trails can be re-routed as required to avoid archaeological resources, if found. Archaeological resources may be present at the Crossing #2 location. Additional studies and mitigation may be required.	Field studies are ongoing. Trails can be re-routed as required to avoid archaeological resources, if found. Archaeological resources may be present at the Crossing #2 location. Additional studies and mitigation may be required.
	Rating					
Summary Cultural Environments						

D	Technical Environment					
1	Flood potential	Likelihood of the trail route and bridges to experience flooding Likelihood of the bridges to increase flood risk	Would not result in increased flood risk. No trails would be constructed within the floodplain.	No increased flood risk is anticipated based on modeling results. An approx. construction area of 0.60 ha and 0.73 ha will be below the 25-year and regional flood elevations, respectively.	No increased flood risk is anticipated based on modeling results. An approx. construction area of 0.40 ha and 0.55 ha will be below the 25-year and regional flood elevations, respectively.	No increased flood risk is anticipated based on modeling results. An approx. construction area of 0.76 ha and 0.77 ha will be below the 25-year and regional flood elevations, respectively.
	Rating					
2	Bank/stream stability	Stability of banks in vicinity of the bridges	No stability concerns.	Any potential bank instability will be addressed through geotechnical and fluvial geomorphological studies and appropriate bridge design.	Any potential bank instability will be addressed through geotechnical and fluvial geomorphological studies and appropriate bridge design.	Any potential bank instability will be addressed through geotechnical and fluvial geomorphological studies and appropriate bridge design.
	Rating					
3	Ease/complexity of construction	Qualitative analysis of construction effort/challenges	No construction challenges.	Crossing #1 presents a minor challenge due to the close proximity of the sanitary sewer easement and steep slope on the south bank. The Fletcher's Creek crossing is challenging to access and construction may be delayed due to complicated construction phasing requirements.	The Fletcher's Creek crossing is challenging to access and construction may be delayed due to complicated construction phasing requirements.	Crossing #1 presents a minor challenge due to the close proximity of the sanitary sewer easement and steep slope on the south bank.
	Rating					
4	Ease/complexity of permitting	Qualitative analysis of permitting effort/challenges	No permitting required.	The Fletcher's Creek crossing requires an Endangered Species Act approval for work in Redside Dace habitat. Large wooded areas around Fletcher's Creek may require authorization for removal of bat habitat. Trails associated with Crossing #1 will require registration and compensation for Bobolink habitat as required under the Endangered Species Act. Authorization with respect to American Eel habitat may be necessary.	The Fletcher's Creek crossing requires an Endangered Species Act approval for work in Redside Dace habitat. Large wooded areas around Fletcher's Creek may require authorization for removal of bat habitat. Authorization with respect to American Eel habitat may be necessary.	Trails associated with Crossing #1 will require registration and compensation for Bobolink habitat as required under the Endangered Species Act. Authorization with respect to American Eel habitat may be necessary.
	Rating					
Summary Technical Environment						

E	Economic Environment					
1	Comparative capital costs of bridges	High level estimates of capital costs	No capital costs required.	Capital Cost of Crossing #1 approx. \$971,000 Capital Cost of Fletcher's Creek Crossing approx \$366,000 Due to complexity of the Fletcher's Creek bridge construction, there is greater inherent risk of delays and increased costs to access the site. Additional costs to provide compensation for work within Redside Dace habitat will apply.	Capital Cost of Crossing #2 approx. \$1.3M Capital Cost of Fletcher's Creek Crossing approx \$366,000 Due to complexity of the Fletcher's Creek bridge construction, there is greater inherent risk of delays and increased costs to access the site. Additional costs to provide compensation for work within Redside Dace habitat will apply.	Capital Cost of Crossing #1 approx. \$971,000 Capital Cost of Crossing #2 approx. \$1.3M
	Rating					

2	Comparative capital cost of connecting trails	High level estimates of capital costs	No capital costs required.	Total length of connecting trails= 1986m At \$65/m ² the capital cost is approx. \$451,815 Additional costs for site clearing, temporary construction access, and ecological restoration (ANSI, Redside Dace and Bobolink habitat) may = \$174,000	Total length of connecting trails= 1660m At \$65/m ² the capital cost is approx. \$377,650 Additional costs for site clearing, temporary construction access and ecological restoration (ANSI, Redside Dace habitat) may = \$132,000.	Total length of connecting trails= 945m At \$65/m ² the capital cost is approx. \$215,000 Additional costs for site clearing and ecological restoration (Bobolink habitat) may = \$68,500).
	Rating					
	Summary Economic Environment					

F	Problem Statement					
1	Addresses Problem Statement	Does the Alternative address the problem statement?	No	Yes	Yes	Yes
	Summary Problem Statement		Not Preferred	Preferred	Preferred	Preferred

Overall Summary		Not Preferred	Least Preferred	Less Preferred	Most Preferred
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Order of Preference

Most Preferred



More Preferred



Somewhat Preferred



Less Preferred



Least Preferred

