Appendix L

Site Ranking and Comparative Evaluation Tables for Alternative Solutions

Table 1 Site 2 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**More Preferred** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred** Infrastructure would be protected, and the risk of failure and damage would be reduced. Limited increase in protection relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Debris and failing bank protection limit existing stream function. Continued decrease in geomorphic stability.	**More Preferred** Improved floodplain connectivity and removal of debris. Improved local geomorphic stability.	**Most Preferred** Channel bed remediation to address grade control through channel and re-establishment of a geomorphically stable bankfull channel. Improved reach-scale geomorphic stability.
	Slope Stability	**Least Preferred** Long term migration of the channel will eventually impact the stability of the valley wall.	**More Preferred** Improved toe protection and stability to mitigate local erosion to protect potential future valley wall erosion.	**Most Preferred** Improved toe protection and stability to mitigate reach scale bank erosion and potential valley wall contacts.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Current poor aquatic habitat remains and degradation continues due to unstable banks.	**More Preferred** Improved local aquatic habitat. Stabilization of channel banks and possible localized habitat improvements.	**Most Preferred** Improved reach-scale aquatic habitat. Bed and bank treatments provide stabilization and connectivity with upstream TRCA works.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting surface water quality.	**More Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.	**Most Preferred** Improved reach-scale surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources or floodplain connectivity. Ongoing erosion with minimal floodplain connectivity.	**More Preferred** Improved local groundwater resources and floodplain connectivity for increased infiltration.	**Most Preferred** Improved reach-scale groundwater resources and floodplain connectivity for increased infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** No benefit to terrestrial habitat or species in the long-term. Moderate short-term impacts related to continued loss of trees and habitat due to erosion.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land Based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.
	Flood Hazard	**Less Preferred** No impact to flood levels.	**Least Preferred** Minor impact to flood levels.	**Most Preferred** Potential to increase flow capacity and reduce flood impacts.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Long-term Impacts to Private Property	**Least Preferred** Continual erosion poses risk to private property.	**More Preferred** Short-term impact to private property, with long-term protection of property achieved.	**Most Preferred** Short-term impact to private property, with long-term protection of property achieved.
	Short-term Impacts to Community	**Most Preferred** No short-term negative impacts on community. Erosion and risk of trail damage and eventual closure. No construction noise impacts.	**Less Preferred** Short-term construction impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated.	**Least Preferred** Short-term construction impacts on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated.
	Long-term Impacts to Community	**Least Preferred** Closure of the trail.	**More Preferred** Local portion of the trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** Potential for archaeological resources within the affected erosion area. No protection of potential archaeological resources.	**More Preferred** Protection of potential archaeological resources from local erosion. Archaeological potential in portions of the affected work area. Test pit survey required.	**Most Preferred** Protection of potential archaeological resources from reach-scale erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required prior to construction.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd lowest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**More Preferred** 2nd lowest lifecycle costs compared to other alternatives, due to the frequent local emergency maintenance and rehabilitation requirements.	**Most Preferred** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Least Preferred** Highest lifecycle costs of all alternatives. Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Efficiency	**Least Preferred** No partnerships. Need for multiple future improvements to mitigate erosion concerns and damage to infrastructure.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address trail erosion concerns in the vicinity of the Site.	**Most Preferred** Multiple partnerships for the multiple improvements completed under one scope. Extends upstream and downstream from local Site to address multiple concerns.
Technical and Engineering Considerations	Regulatory Agency Acceptance	**Least Preferred** Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed, and the risk is minimized.	**Most Preferred (tied)** Likely satisfies regulatory agencies because the hazard is addressed, and the risk is minimized.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Resource Allocation	**Least Preferred** No improvements would be completed. Multiple independent improvements needed in the future each with separate permitting, administration, and engineering resources.	**More Preferred** Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	**Most Preferred** Multiple improvements under one scope. Extends upstream and downstream from local Site and eliminates the need for repeating permitting, administration, and engineering resources.
	Natural Infrastructure Opportunity	**Least Preferred** No improvements would be completed.	**More Preferred** Construction of local scale improvements involving natural and hybrid engineering solutions.	**Most Preferred** Multiple improvements under one scope involving natural and hybrid engineering solutions.

Table 2 Site 2 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	1	3	4
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	3	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	2	1	4
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	14	30	35
	Weighted Score (Maximum of 20 Points)	**7**	**15**	**17.5**
Social and Cultural Environment	Long-term Impacts to Private Property	1	3	4
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	3	4
	Cultural Heritage	1	3	4
	Criteria Subtotal	7	11	13
	Weighted Score (Maximum of 20 Points)	**8.75**	**13.75**	**16.25**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	3	4	1
	Cost Efficiency	1	3	4
	Criteria Subtotal	8	10	6
	Weighted Score (Maximum of 20 Points)	**13.3**	**16.7**	**10**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5**	**16.7**	**20**
Overall Score (Maximum of 100 Points)		**39.1**	**77.1**	**83.8**
Overall Ranking and Recommendation		**3rd**	**2nd**	**1st**

Table 3 Site 4 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**More Preferred** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred** Infrastructure would be protected, and the risk of failure and damage would be reduced. Limited increase in protection relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Debris and failing bank protection limit existing stream function. Continued decrease in geomorphic stability.	**More Preferred** Improved floodplain connectivity and removal of debris. Improved local geomorphic stability.	**Most Preferred** Re-establishment of a geomorphically stable bankfull channel and increased connection to the floodplain. Improved reach-scale geomorphic stability.
	Slope Stability	**Least Preferred** Continued decrease in slope stability. Continued erosion and continued displacement of existing bank protection. Long term migration of the channel will impact the stability of the valley wall.	**More Preferred** Improved local slope stability through mitigation of toe erosion along the valley wall contact adjacent to Avoca Avenue.	**Most Preferred** Improved reach-scale slope stability through mitigation of reach scale bank erosion and toe erosion at valley wall contacts adjacent to Avoca Avenue, the pedestrian trail entering from Avoca Avenue and properties on Inglewood Drive adjacent to the Old Mill erosion.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Current poor aquatic habitat and instability remains. Habitat degradation continues.	**More Preferred** Improved local aquatic habitat. Quality of habitat expected to increase with bank stabilization.	**Most Preferred** Improved reach-scale aquatic habitat. Quality of habitat expected to increase with more extensive bank stabilization.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting surface water quality.	**More Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.	**Most Preferred** Improved reach-scale surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources or floodplain connectivity. Ongoing erosion with minimal floodplain connectivity.	**More Preferred** Improved local groundwater resources and floodplain connectivity for increased infiltration.	**Most Preferred** Improved reach-scale groundwater resources and floodplain connectivity for increased infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** Moderate short-term impacts. Current poor habitat and instability remains. Habitat degradation continues. No benefit to terrestrial habitat or species in the long-term.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts.	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land-based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.
	Flood Hazard	**Least Preferred** No impact on flood levels.	**More Preferred** Potential to increase flow capacity over a relatively short section of channel and reduce flood impacts.	**Most Preferred** Potential to increase flow capacity over a relatively long section of channel and reduce flood impacts.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Long-term Impacts to Private Property	**Least Preferred** Continual erosion poses risk to pedestrian trail. Potential safety risk to public trail users.	**More Preferred** Protects local portion of the trail from erosion risk. Short-term closure of trail immediately adjacent to construction.	**Most Preferred** Protects reach scale portion of the trail from erosion risk. Short-term closure of trail immediately adjacent to construction.
	Short-term Impacts to Community	**Most Preferred** No short-term negative impacts on community. Erosion and risk of trail damage and eventual closure. No construction noise impacts.	**Less Preferred** Short-term construction impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated.	**Least Preferred** Short-term construction impact on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated.
	Long-term Impacts to Community	**Least Preferred** Closure of trail.	**More Preferred** Local length of trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** Potential long-term risk to 120 Inglewood Drive and 122 Inglewood Drive. No protection of potential archaeological or heritage resources. Potential for archaeological resources within the affected erosion area.	**Less Preferred** Potential long-term risk to 120 Inglewood Drive and 122 Inglewood Drive. No protection of heritage resources. Protection of potential archaeological resources from local erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required.	**More Preferred** Protection for heritage and archaeological resources. Protects 120 Inglewood Drive and 122 Inglewood Drive from long-term risk. Protection of potential archaeological resources from reach-scale erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd lowest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**More Preferred** 2nd lowest lifecycle costs compared to other alternatives, due to the frequent local emergency maintenance and rehabilitation requirements.	**Most Preferred** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Least Preferred** Highest lifecycle costs of all alternatives. Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Efficiency	**Least Preferred** No improvements would be completed. No partnerships involved and multiple independent improvements needed in the future.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address trail erosion concerns in the vicinity of the Site.	**Most Preferred** Multiple partnerships for multiple improvements under one scope. Extends upstream and downstream from local Site to reduce engineering, permitting, administration, and mobilization costs.
Technical and Engineering Considerations	Regulatory Agency Acceptance	**Least Preferred** Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed, and the risk is minimized.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed, and the risk is minimized.
	Resource Allocation	**Least Preferred** No improvements would be completed. Multiple independent improvements needed in the future each with	**More Preferred**	**Most Preferred**

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
		separate permitting, administration, and engineering resources.	Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	Multiple improvements under one scope. Extends upstream and downstream from local Site and eliminates the need for repeating permitting, administration, and engineering resources.
	Natural Infrastructure Opportunity	**Least Preferred** No improvements would be completed.	**More Preferred** Construction of local scale improvements involving natural and hybrid engineering solutions.	**Most Preferred** Multiple improvements under one scope involving natural and hybrid engineering solutions.

Table 4 Site 4 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	1	3	4
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	3	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	1	3	4
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	13	32	35
	Weighted Score (Maximum of 20 Points)	**6.5**	**16**	**17.5**
Social and Cultural Environment	Long-term Impacts to Private Property	1	3	4
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	3	4
	Cultural Heritage	1	2	4
	Criteria Subtotal	7	10	13
	Weighted Score (Maximum of 20 Points)	**8.75**	**12.5**	**16.25**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	3	4	1
	Cost Efficiency	1	3	4
	Criteria Subtotal	8	10	6

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Weighted Score (Maximum of 20 Points)	**13.3**	**16.7**	**10**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5**	**16.7**	**20**
	Overall Score (Maximum of 100 Points)	**38.6**	**76.9**	**83.8**
	Overall Ranking and Recommendation	**3rd**	**2nd**	**1st**

Table 5 Site 5/6 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**More Preferred** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced. Limited increase in protection relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Debris and failing bed protection limit existing stream function. Continued decrease in geomorphic stability.	**More Preferred** Improved local geomorphic stability. Establishment of a more natural bed to cover the exposed till and concrete bed.	**Most Preferred** Improved reach-scale geomorphic stability. Re-establishment of a geomorphically stable bankfull channel and increased connection to the floodplain. Elimination of the bridge pinch point and establishment of more natural bed cover.
	Slope Stability	**More Preferred (tied)** No valley wall contacts within the Site area.	**More Preferred (tied)** No valley wall contacts within the Site area.	**More Preferred (tied)** No valley wall contacts within the Site area.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Current poor aquatic habitat and instability remains. Habitat degradation continues.	**More Preferred** Improved local aquatic habitat. Stabilization of local channel bed and potential for limited habitat improvements.	**Most Preferred** Improved reach-scale aquatic habitat. Stabilization of bed and banks; mitigation of barrier to fish passage caused by concrete apron at pedestrian bridge.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting surface water quality.	**More Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.	**Most Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources or floodplain connectivity. Ongoing erosion with minimal floodplain connectivity.	**More Preferred** Improved local groundwater resources and floodplain connectivity for increased infiltration.	**Most Preferred** Improved local groundwater resources and floodplain connectivity for increased infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** Moderate short-term impacts. Current poor habitat and instability remains. Habitat degradation continues. No benefit to terrestrial habitat or species in the long-term.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts.	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land-based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.
	Flood Hazard	**Less Preferred** Continued flooding impacts due to overbank flow around the pedestrian crossing.	**Least Preferred** Potential local increase in flood levels and impacts of flooding due to raising the bed. Continued overbank flow around the pedestrian crossing.	**More Preferred** Moderate impact to flood levels due to increase in channel bed elevation. Potential to reduce impacts of flooding through an increased flow capacity and widened crossing.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Long-term Impacts to Private Property	**Least Preferred** Continual erosion and overbank flow around the pedestrian crossing poses risk to pedestrian bridge crossing. Potential safety risk to public trail users.	**Less Preferred** Reduced erosion; however, continued overbank flow around the pedestrian crossing. Potential safety risk to public trail users. Short-term closure of trail immediately adjacent to construction.	**Most Preferred** Protects pedestrian bridge crossing and trail. Short-term closure of trail and crossing during construction.
	Short-term Impacts to Community	**Most Preferred** No short-term negative impacts on community. Erosion and risk of trail damage and eventual closure. No construction noise impacts.	**Less Preferred** Minor short-term negative impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated	**Least Preferred** Moderate short-term negative impact on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated
	Long-term Impacts to Community	**Least Preferred** Closure of the trail.	**More Preferred** Local length of trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** Limited channel bank erosion; however, no protection of potential archaeological resources adjacent to channel.	**More Preferred** Protection of potential archaeological resources on local scale through reduced local erosion. Potential archaeological resources in portions of the anticipated access route. Test pit survey required.	**Most Preferred** Protection of potential archaeological resources on a reach scale through reduced reach-scale erosion. Potential archaeological resources in portions of the anticipated access route. Test pit survey required.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd highest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**More Preferred** 2nd lowest lifecycle costs compared to other alternatives, due to the frequent local emergency maintenance and rehabilitation requirements.	**Most Preferred (tied)** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Most Preferred (tied)** Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Efficiency	**Least Preferred** No partnerships. Need for multiple future improvements to mitigate erosion concerns and damage to infrastructure.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address trail erosion concerns in the vicinity of the Site.	**Most Preferred** Multiple partnerships for construction of multiple improvements under one scope. Extends upstream and downstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization costs.
	Regulatory Agency Acceptance	**Least Preferred**	**Most Preferred (tied)**	**Most Preferred (tied)**

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Technical and Engineering Considerations		Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.	Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.
	Resource Allocation	**Least Preferred** No improvements would be completed. Multiple independent improvements needed in the future each with separate permitting, administration, and engineering resources.	**More Preferred** Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	**Most Preferred** Multiple improvements under one scope. Extends upstream and downstream from local Site and eliminates the need for repeating permitting, administration, and engineering resources.
	Natural Infrastructure Opportunity	**Least Preferred** No improvements would be completed.	**More Preferred** Construction of local scale improvements involving natural and hybrid engineering solutions.	**Most Preferred** Multiple improvements under one scope involving natural and hybrid engineering solutions.

Table 6 Site 5/6 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	3	3	3
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	2	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	2	1	3
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	16	29	34
	Weighted Score (Maximum of 20 Points)	**8**	**14.5**	**17**
Social and Cultural Environment	Long-term Impacts to Private Property	1	2	4
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	2	4
	Cultural Heritage	1	3	4
	Criteria Subtotal	14	29	34
	Weighted Score (Maximum of 20 Points)	**7**	**14.5**	**17**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	3	4	4
	Cost Efficiency	1	3	4
	Criteria Subtotal	8	10	9
	Weighted Score (Maximum of 20 Points)	**13.3**	**16.7**	**15**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5**	**16.7**	**20**
	Overall Score (Maximum of 100 Points)	**38.3**	**77.4**	**89**
Overall Ranking and Recommendation		**3rd**	**2nd**	**1st**

Table 7 Site 7 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced. Negligible increase in protection relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Debris and failing bank protection limit existing stream function. Continued decrease in geomorphic stability.	**More Preferred** Improved local geomorphic stability. Stabilization to prevent downcutting into underlying till within the bank.	**Most Preferred** Improved reach-scale geomorphic stability. Stabilization to prevent downcutting into underlying till within the bank and bed.
	Slope Stability	**Least Preferred** Continued erosion creates potential for future valley wall erosion to the south.	**Less Preferred** Protection of toe does not reduce local likelihood of potential future valley wall erosion to the south.	**Most Preferred** Protection of toe reduces likelihood of potential future valley wall erosion to the south.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Current instability remains and habitat degradation continues.	**More Preferred** Improved local aquatic habitat. Stabilization of local channel bank and potential for limited habitat improvements.	**Most Preferred** Improved reach-scale aquatic habitat. Stabilization of bed and banks; mitigation of barrier to fish passage caused by knickpoint.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting water quality.	**More Preferred** Improved local surface water quality through improved erosion protection.	**Most Preferred** Improved reach-scale surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources. Ongoing downcutting negatively impacting the floodplain connectivity.	**Less Preferred** Minor improvement to local groundwater resources. Reduced local bank erosion but continued downcutting negatively impacting floodplain connectivity for increased infiltration.	**Most Preferred** Moderate improvement to reach-scale groundwater resources. Channel bed and bank protection to mitigate downcutting and improve floodplain connectivity for increased infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** Moderate short-term impacts. Current poor habitat and instability remains. Habitat degradation continues. No benefit to terrestrial habitat or species in the long-term.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts.	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land-based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.
	Flood Hazard	**More Preferred** No impact to flood levels.	**Most Preferred** Minor improvement to flood levels and reduction of flooding effects.	**Least Preferred (tied)** Moderate impact to flood levels due to increase in channel bed elevation. Potential to reduce effects through increased flow capacity.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Long-term Impacts to Private Property	**Least Preferred** Ongoing erosion and displacement of bank and bed protection, leading to poor aesthetics.	**Most Preferred** Reduced erosion. Short-term closure of trail immediately adjacent to construction.	**More Preferred** Reduced erosion. Longer-term closure of trail during construction relative to Alternative 2.
	Short-term Impacts to Community	**Most Preferred** No short-term negative impacts on community. No construction noise impacts.	**Less Preferred** Short-term construction impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated	**Least Preferred** Short-term construction impact on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated
	Long-term Impacts to Community	**Least Preferred** Closure of the trail.	**More Preferred** Local length of trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** No protection for potential archaeological resources. Potential for archaeological resources within the affected erosion area.	**More Preferred** Protection for potential archaeological resources against local erosion. Potential archaeological resources in portions of the anticipated access route area. Test pit survey required.	**Most Preferred** Protection for potential archaeological resources against reach-scale erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd highest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**Least Preferred** Highest lifecycle costs compared to other alternatives, due to the more frequent emergency maintenance and rehabilitation requirements.	**Most Preferred (tied)** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Most Preferred (tied)** Lowest lifecycle costs. Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Efficiency	**Least Preferred** No partnerships. Need for multiple future improvements to mitigate erosion concerns and damage to infrastructure.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address erosion at Site 8/9.	**Most Preferred** Multiple partnerships for the multiple improvements under one scope. Extends upstream and downstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization costs through constructing Sites 7 and 8/9 together.
Technical and Engineering Considerations	Regulatory Agency Acceptance	**Least Preferred** Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addresses and risk is minimized.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Resource Allocation	**Least Preferred** No improvements would be completed. Multiple independent improvements needed in the future each with separate permitting, administration, and engineering resources.	**More Preferred** Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	**Most Preferred** Multiple improvements under one scope. Extends upstream and downstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization resources through constructing Sites 7 and 8/9 together.
	Natural Infrastructure Opportunity	**Least Preferred** No improvements would be completed.	**More Preferred** Construction of local scale improvements involving natural and hybrid engineering solutions.	**Most Preferred** Multiple improvements under one scope involving natural and hybrid engineering solutions.

Table 8 Site 7 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	1	2	4
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	2	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	3	4	1
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	15	31	32
	Weighted Score (Maximum of 20 Points)	**7.5**	**15.5**	**16**
Social and Cultural Environment	Long-term Impacts to Private Property	1	4	3
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	3	4
	Cultural Heritage	1	3	4
	Criteria Subtotal	7	12	12
	Weighted Score (Maximum of 20 Points)	**8.75**	**15**	**15**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	1	4	4
	Cost Efficiency	1	3	4
	Criteria Subtotal	6	**10**	9
	Weighted Score (Maximum of 20 Points)	**10.0**	**16.7**	**15.0**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5**	**16.7**	**20**
	Overall Score (Maximum of 100 Points)	**36.3**	**78.9**	**86.0**
Overall Ranking and Recommendation		**3rd**	**2nd**	**1st**

Table 9 Site 8/9 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced. Negligible increase in protection relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Continued decrease in geomorphic stability. Debris and failing bank protection limit existing stream function.	**More Preferred** Improved local geomorphic stability. Opportunity to establish a bioengineered bank to replace the vertical stone wall.	**Most Preferred** Improved reach-scale geomorphic stability. Opportunity to establish a bioengineered bank to replace the vertical stone wall over a longer section of creek.
	Slope Stability	**Least Preferred** Continued erosion creates potential for future valley wall erosion.	**More Preferred** Protection of toe reduces local likelihood of potential future valley wall erosion.	**Most Preferred** Protection of toe reduces reach-scale likelihood of potential future valley wall erosion.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Existing poor aquatic habitat remains, and degradation continues.	**More Preferred** Improved aquatic habitat. Localized habitat improvements through stabilization of channel banks.	**Most Preferred** Improved aquatic habitat. More extensive improvements to habitat diversity are possible. Connectivity with upstream TRCA works.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting water quality.	**More Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.	**Most Preferred** Improved reach-scale surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources or floodplain connectivity. Ongoing erosion with minimal floodplain connectivity.	**More Preferred** Minimal improvement to groundwater resources due to increased floodplain connectivity for infiltration.	**Most Preferred** Minor improvement to groundwater resources due to increased floodplain connectivity for infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** Moderate short-term impacts. Current poor habitat and instability remains. Habitat degradation continues. No benefit to terrestrial habitat or species in the long-term.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts.	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land-based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.
	Flood Hazard	**Less Preferred** No impact to flood levels.	**Least Preferred** Minor impact to flood levels.	**Most Preferred** Minor impact to flood levels. Potential to reduce adverse flood impacts through an increased flow capacity.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Long-term Impacts to Private Property	**Least Preferred** Continual erosion poses risk to CP Railway property.	**More Preferred** Localized protection to CP Railway property.	**Most Preferred** Reach-scale protection to CP Railway property.
	Short-term Impacts to Community	**Most Preferred** No short-term construction impacts on community. No construction noise impacts.	**Less Preferred** Short-term construction impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated	**Least Preferred** Short-term construction impact on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated
	Long-term Impacts to Community	**Least Preferred** Closure of the trail.	**More Preferred** Local length of trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** No protection of potential archaeological resources. Potential for archaeological resources within the affected erosion area.	**More Preferred** Protection of potential archaeological resources against local erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required.	**Most Preferred** Protection of potential archaeological resources against reach-scale erosion. Potential archaeological resources in portions of the affected work area. Test pit survey required.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd highest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**Least Preferred** Highest lifecycle costs compared to other alternatives, due to the more frequent emergency maintenance and rehabilitation requirements.	**Most Preferred (tied)** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Most Preferred (tied)** Lowest lifecycle costs. Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Efficiency	**Least Preferred** No partnerships. Need for multiple future improvements to mitigate erosion concerns and damage to infrastructure.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address erosion at Site 7.	**Most Preferred** Multiple partnerships for multiple improvements under one scope. Extends upstream and downstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization costs through constructing Sites 7 and 8/9 together.
Technical and Engineering Considerations	Regulatory Agency Acceptance	**Least Preferred** Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.
	Resource Allocation	**Least Preferred**	**More Preferred**	**Most Preferred**

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
		No improvements would be completed. Multiple independent improvements needed in the future each with separate permitting, administration, and engineering resources.	Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	Multiple improvements under one scope. Extends upstream and downstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization resources through constructing Sites 7 and 8/9 together.
	Natural Infrastructure Opportunity	**Least Preferred** No improvements would be completed.	**More Preferred** Construction of local scale improvements involving natural and hybrid engineering solutions.	**Most Preferred** Multiple improvements under one scope involving natural and hybrid engineering solutions.

Table 10 Site 8/9 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	1	3	4
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	3	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	2	1	4
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	14	30	35
	Weighted Score (Maximum of 20 Points)	**7**	**15**	**17.5**
Social and Cultural Environment	Long-term Impacts to Private Property	1	4	3
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	3	4
	Cultural Heritage	1	3	4
	Criteria Subtotal	7	12	12
	Weighted Score (Maximum of 20 Points)	**8.75**	**15**	**15**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	1	4	4
	Cost Efficiency	1	3	4
	Criteria Subtotal	6	10	9
	Weighted Score (Maximum of 20 Points)	**10**	**16.7**	**15**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5**	**16.7**	**20**
	Overall Score (Maximum of 100 Points)	**35.8**	**78.4**	**87.5**
Overall Ranking and Recommendation		**3rd**	**2nd**	**1st**

Table 11 Site 10 Criterion Rankings Based on Effects of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	**Least Preferred** Infrastructure would remain at-risk of damage and failure.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced.	**Most Preferred (tied)** Infrastructure would be protected, and the risk of failure and damage would be reduced. Negligible increase in protection to Toronto Water infrastructure relative to Alternative 2.
	Bed and Bank Erosion	**Least Preferred** Erosion continues, resulting in high TSS and bedload entering downstream systems.	**More Preferred** Identified erosion would be addressed, reducing TSS and bedload entering downstream systems.	**Most Preferred** Identified and future erosion would be addressed, providing greatest decrease in TSS and bedload entering downstream systems.
Physical and Natural Environmental	Geomorphic Form & Function	**Least Preferred** Debris and failing bank protection limit existing stream function. Continued decrease in geomorphic stability.	**More Preferred** Potential to replace the vertical stone walls with bioengineered bank treatment. Improved local geomorphic stability.	**Most Preferred** Re-establishment of a geomorphically stable bankfull channel and increased connection to the floodplain. Establishment of bioengeering bank treatments and more natural bed material. Improved reach-scale geomorphic stability.
	Slope Stability	**Least Preferred** Continued erosion and continued displacement of existing bank protection. Long term migration of the channel may eventually impact the stability of the valley wall.	**Less Preferred** Improved toe protection locally but potential valley wall contacts are not mitigated. No improvements to stability of valley wall contacts.	**Most Preferred** Improved toe protection and stability to mitigate reach scale bank erosion and potential valley wall contacts.
	Aquatic Habitat (Water-based Habitat)	**Least Preferred** Poor aquatic habitat. Existing poor habitat remains and degradation continues.	**More Preferred** Improved aquatic habitat. Localized habitat improvements through stabilization of channel banks at inlet and removal of concrete apron.	**Most Preferred** Improved aquatic habitat. More extensive improvements to habitat diversity are possible. Mitigation of multiple potential barriers to fish passage.
	Water Quality	**Least Preferred** Poor water quality. Ongoing erosion impacting water quality.	**More Preferred** Improved local surface water quality through improved floodplain connectivity and erosion protection.	**Most Preferred** Improved reach-scale surface water quality through improved floodplain connectivity and erosion protection.
	Groundwater	**Least Preferred** No change to groundwater resources or floodplain connectivity. Ongoing erosion with minimal floodplain connectivity.	**More Preferred** Improved local groundwater resources and floodplain connectivity for infiltration.	**Most Preferred** Improved reach-scale groundwater resources and floodplain connectivity for infiltration.
	Terrestrial Habitat (Land-based Habitat)	**Least Preferred** Moderate short-term impacts. Current poor habitat and instability remains. Habitat degradation continues. No benefit to terrestrial habitat or species in the long-term.	**Most Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with localized short-term construction related impacts.	**More Preferred** Benefit to terrestrial species and habitat in the long-term (post-restoration) with broader short-term construction related impacts
	Terrestrial Vegetation (Land-based Vegetation)	**Least Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. No trees removed due to construction. Continued loss of trees due to erosion.	**Most Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Localized tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for the establishment of native trees.	**More Preferred** No impacts to ESAs, ANSIs, wildlife corridors, etc. Broader tree removal for construction. Tree impact estimates would be further refined during detailed design. The continued loss of trees due to erosion reduced and restoration allows for a stable channel and establishment of native trees.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
	Flood Hazard	**Less Preferred** No impact on flood levels.	**Least Preferred** Minor impact to flood levels.	**Most Preferred** Minor impact to flood levels. Potential to reduce adverse impacts through an increased flow capacity.
	Species at Risk	**Most Preferred** No impacts (positive or negative) to species at risk or habitat.	**More Preferred** A potential to impact local bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.	**Less Preferred** A potential to impact reach-scale bat roosting trees or candidate species at risk habitat through tree removal for Site access. Opportunities to improve habitat diversity for target species through site restoration.
	Climate Change	**Least Preferred** Not adaptive to the potential increases in rainfall volume and intensity from climate change.	**More Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a local scale.	**Most Preferred** Adaptive to the potential increases in rainfall volume and intensity from climate change on a reach scale.
Social and Cultural Environment	Landowner and Public	**Least Preferred** Continual erosion poses risk to pedestrian trail. Potential safety risk to public trail users.	**More Preferred** Protects local portion of the trail from erosion risk. Short-term closure of trail immediately adjacent to construction.	**Most Preferred** Protects reach scale portion of the trail from erosion risk. Short-term closure of trail immediately adjacent to construction.
	Short-term Impacts to Community	**Most Preferred** No short-term negative impacts on community. No construction noise impacts.	**Less Preferred** Short-term construction impacts on community. Short duration noise and trail closure for local construction. Erosion and risk of trail damage and eventual closure mitigated.	**Least Preferred** Short-term construction impacts on community through moderate duration noise and trail closure for reach scale construction. Erosion and risk of trail damage and eventual closure mitigated.
	Long-term Impacts to Community	**Least Preferred** Closure of trail.	**More Preferred** Local length of trail remains open for the community's on-going long-term use but potential closure of other components of the trail on a reach-scale.	**Most Preferred** Reach-scale length of trail remains open for the community's on-going long-term use.
	Cultural Heritage	**Least Preferred** No protection of potential archaeological resources. Potential for archaeological resources within the affected erosion area.	**More Preferred** Protection of potential archaeological resources against local erosion affecting archaeological potential. Potential Archaeological resources in portions of the affected work area. Test pit survey required.	**Most Preferred** Protection of potential archaeological resources against reach-scale erosion. Potential Archaeological resources in portions of the affected work area. Test pit survey required.
Economic Environmental	Capital Costs	**Most Preferred** No capital costs.	**More Preferred** 2nd highest capital costs.	**Least Preferred** Highest capital costs of all alternatives.
	Lifecycle Cost Consideration	**More Preferred** 2nd lowest lifecycle costs compared to other alternatives, due to the frequent local emergency maintenance and rehabilitation requirements.	**Most Preferred** Lowest lifecycle costs. Potential need to intervene and address erosion issues on a local scale in long-term.	**Least Preferred** Highest lifecycle costs of all alternatives. Large initial cost to construct length of works but limited need to intervene and address erosion issues due to large scale works.
	Cost Effectiveness	**Least Preferred** No partnerships. Need for multiple future improvements to mitigate erosion concerns and damage to infrastructure.	**More Preferred** Limited partnerships for construction of local scale improvements. Other independent improvements would be required to address trail erosion concerns in the vicinity of the Site.	**Most Preferred** Multiple partnerships for the multiple improvements under one scope. Extends upstream from local Site to address multiple concerns and reduce engineering, permitting, administration, and mobilization costs.

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Technical and Engineering Considerations	Regulatory Agency Acceptance	**Least Preferred** Does not likely satisfy regulatory agencies. Hazard not addressed. Risk of infrastructure failure within the creek.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.	**Most Preferred (tied)** Likely satisfies regulatory agencies because hazard is addressed and risk is minimized.
	Resource Effectiveness	**Least Preferred** No improvements would be completed. Multiple independent improvements needed in the future each with separate permitting, administration, and engineering resources.	**More Preferred** Construction of local scale improvements; however, other independent improvements would require repeated permitting, administration, and engineering fees.	**Most Preferred** Multiple improvements under one scope. Extends upstream and downstream from local Site and eliminates the need for repeating permitting, administration, and engineering resources.

Table 12 Site 10 Comparative Evaluation Summary of the Alternative Solutions

Category	Evaluation Criteria	Alternative 1 – Do Nothing	Alternative 2 – Local Works and Protection	Alternative 3 – Sub-Reach Based Works
Toronto Water Infrastructure Risk	Risk Reduction	1	3	4
	Bed and Bank Erosion	1	3	4
	Criteria Subtotal	2	6	8
	Weighted Score (Maximum of 20 Points)	**5**	**15**	**20**
Physical and Natural Environmental	Geomorphic Form & Function	1	3	4
	Slope Stability	1	2	4
	Aquatic Habitat (Water-based Habitat)	1	3	4
	Water Quality	1	3	4
	Groundwater	1	3	4
	Terrestrial Habitat (Land-based Habitat)	1	4	3
	Terrestrial Vegetation (Land-based Vegetation)	1	4	3
	Flood Hazard	2	2	4
	Species at Risk	4	3	1
	Climate Change	1	3	4
	Criteria Subtotal	14	30	35
	Weighted Score (Maximum of 20 Points)	**7**	**15**	**17.5**
Social and Cultural Environment	Long-term Impacts to Private Property	1	4	3
	Short-term Impacts to Community	4	2	1
	Long-term Impacts to Community	1	3	4
	Cultural Heritage	1	3	4
	Criteria Subtotal	7	12	12
	Weighted Score (Maximum of 20 Points)	**8.75**	**15**	**15**
Economic Environmental	Capital Costs	4	3	1
	Lifecycle Cost Consideration	3	4	1
	Cost Efficiency	1	3	4
	Criteria Subtotal	**8**	**10**	6
	Weighted Score (Maximum of 20 Points)	**13.3**	**16.7**	**10**
Technical and Engineering Considerations	Regulatory Agency Acceptance	1	4	4
	Resource Allocation	1	3	4
	Natural Infrastructure Opportunity	1	3	4
	Criteria Subtotal	3	10	12
	Weighted Score (Maximum of 20 Points)	**5.0**	**16.7**	**20**
	Overall Score (Maximum of 100 Points)	**39.0**	**78.4**	**82.5**
Overall Ranking and Recommendation		**3rd**	**2nd**	**1st**