

Short List Alternative Analysis

| | | Alternative 2A: Centre Street | | Alternative 2B: Centre and Beech Street | | Alternative 4B: Main, Vodden and Centre Street | | Alternative 4C: Main and Mill Street | | Alternative 4D: Main, Church and Centre Street | | Alternative 5: West Neighbourhood | | | |
|----------------------------|---|---|--|--|--|---|---|--|--|--|---|--|---|---|---|
| Type | Evaluation Criteria | Description | Main Considerations | Rationale for Scoring | Score | Rationale for Scoring | Score | Rationale for Scoring | Score | Rationale for Scoring | Score | Rationale for Scoring | Score | | |
| Technical Considerations | Implementation Feasibility and Constraints | <p>Feasibility of Implementation in terms of:</p> <ul style="list-style-type: none"> -Constructability (Method of construction) -Construction accessibility -Construction Constraints while working within proximity of critical infrastructure like utility corridors, major roads, employment areas, institutional areas, hydro corridors, railways and watercourse including crossings. -Construction compounds/Corridor -Length of pipe | <ul style="list-style-type: none"> -Open cut method of construction preferred due to lower capital cost and risk. -Preference is to locate watermain and chambers within road right of way to avoid requirement for temporary access road construction (compounds within TRCA lands and Railway lands require permits) -Railway or watercourse crossing less preferred due to delays caused by permits and approvals requirement (Crossing is assumed to be installed by microtunneling method). -Shorter length of watermain preferred to keep the capital cost and potential traffic disruption low. | <p>Constructability:</p> <ul style="list-style-type: none"> -Microtunnel (750mm watermain within 1500mm casing) for the alignment on Centre st. due to limited space within narrower road right of way (i.e., existing utilities: 250mm sanitary, 525/500mm stormsewer and 300mm watermain, limited road width: 11.8m and mature trees) -Open cut for the alignment proposed on Beech St. <p>Construction accessibility:</p> <ul style="list-style-type: none"> -Construction access on Collector road right of way. <p>Construction constraints:</p> <ul style="list-style-type: none"> -existing utilities and mature trees -tight curves -school zone area and highly dense residential area -local road closure, traffic management and diversion required <p>Construction compounds</p> <ul style="list-style-type: none"> -Shaft compounds are located within road right of way. -1 Shaft compound affecting approx. 6 driveways for a duration of approximately 2 months. <p>Length of Pipe:</p> <ul style="list-style-type: none"> -2.3km total length. | ● | <p>Constructability:</p> <ul style="list-style-type: none"> -Microtunnel (750mm watermain within 1500mm casing) for the alignment on Centre st. due to limited space within narrower road right of way (i.e., existing utilities: 250mm sanitary, 525/500mm stormsewer and 300mm watermain, limited road width: 11.8m and mature trees) -Open cut for the alignment proposed on Main st and Vodden st. <p>Construction accessibility:</p> <ul style="list-style-type: none"> -Construction access on Collector road and local road right of way. <p>Construction constraints:</p> <ul style="list-style-type: none"> -existing utilities and mature trees. -tight curves -school zone area and highly dense residential area -local road closure, traffic management and diversion required <p>Construction compounds</p> <ul style="list-style-type: none"> -Shaft compounds are located within road right of way. -1 Shaft compound affecting approx. 6 driveways for a duration of approximately 2 months. <p>Length of Pipe:</p> <ul style="list-style-type: none"> -2.4km total length. | ● | <p>Constructability:</p> <ul style="list-style-type: none"> -Microtunnel (750mm watermain within 1500mm casing) for the alignment on Centre st. due to limited space within narrower road right of way (i.e., existing utilities: 250mm sanitary, 525/500mm stormsewer and 300mm watermain, limited road width: 9.8m to 11.8m and mature trees) -Open cut for the alignment proposed on Main st and other local streets. -CN Railway crossing by microtunneling method. <p>Construction accessibility:</p> <ul style="list-style-type: none"> -Construction access on Major Arterial road and Collector road right of way. <p>Construction constraints:</p> <ul style="list-style-type: none"> -existing utilities and mature trees on local streets. -CN Railway crossing on Mill St. -Etobicoke creek crossing on Vodden St. <p>Construction compounds</p> <ul style="list-style-type: none"> -Shaft compounds are located on CN Rail parking and road right of way. <p>Length of Pipe:</p> <ul style="list-style-type: none"> -2.3km total length. | ● | <p>Constructability:</p> <ul style="list-style-type: none"> -Microtunnel (750mm watermain within 1500mm casing) for the alignment on Centre st. due to limited space within narrower road right of way (i.e., existing utilities: 250mm sanitary, 525/500mm stormsewer and 300mm watermain, limited road width: 7.5 to 10m and mature trees) -Open cut for the alignment proposed on Main st and Church st. -Etobicoke Creek crossing on Church St. by microtunneling method. <p>Construction accessibility:</p> <ul style="list-style-type: none"> -Construction access on Major Arterial road and Collector road right of way. <p>Construction constraints:</p> <ul style="list-style-type: none"> -Significant traffic management on Main st. and Church St. -existing utilities and mature trees on Centre st. -Etobicoke creek crossing on Vodden st. <p>Construction compounds</p> <ul style="list-style-type: none"> -Shaft compounds are located on TRCA land and road right of way <p>Length of Pipe:</p> <ul style="list-style-type: none"> -2.7km total length. | ● | <p>Constructability:</p> <ul style="list-style-type: none"> -Microtunnel (750mm watermain within 1500mm casing) for the alignment on Isabella st., Rosedale st. and Mill st. North due to limited space within narrower road right of way (i.e., existing utilities: 250mm sanitary, 525/500mm stormsewer and 300mm watermain, limited road width: 7.5 to 10m and mature trees) -Open cut for the alignment proposed on other local streets. -CN Railway crossing by microtunneling method. <p>Construction accessibility:</p> <ul style="list-style-type: none"> -Construction access on local road right of way. Mainly residential streets. <p>Construction constraints:</p> <ul style="list-style-type: none"> -existing utilities and mature trees on some local streets. -CN Railway crossing on Mill St. <p>Construction compounds</p> <ul style="list-style-type: none"> -Shaft compounds are located on CN rail parking and road right of way <p>Length of Pipe:</p> <ul style="list-style-type: none"> -2.5km total length. | ● | | |
| | Compatibility with Existing/Proposed Infrastructure | Potential impacts of existing/proposed infrastructure on functions or performance of proposed watermain. | <ul style="list-style-type: none"> -Preference for maximum opportunities and minimum conflicts with existing/planned infrastructure. -Potential impact of existing/proposed infrastructure on performance or function of proposed watermain | <p>Opportunities for interconnections:</p> <ul style="list-style-type: none"> -with existing 600mm watermain at Queen St (redundancy) -with proposed 600 mm watermain at Church and Vodden St -existing 600 mm watermain at John St intersection -Williams Parkway 900mm watermain (connection provided) <p>Potential impact of existing/proposed infrastructure:</p> <ul style="list-style-type: none"> -construction / commissioning of the 750 mm watermain constrained by commissioning of William Parkway, 900 mm watermain -construction by microtunneling on Centre st. required to avoid impacting existing utilities in narrow right-of-way. | ● | <p>Opportunities for interconnections:</p> <ul style="list-style-type: none"> -with existing 600mm watermain at Queen St (redundancy) -existing 600 mm watermain at John St intersection -Williams Parkway 900mm watermain (connection provided) <p>Potential impact of existing/proposed infrastructure:</p> <ul style="list-style-type: none"> -construction / commissioning of the 750 mm watermain constrained by commissioning of William Parkway, 900 mm watermain -construction by microtunneling on Centre st. required to avoid impacting existing utilities in narrow right-of-way. | ● | <p>Opportunities for interconnections:</p> <ul style="list-style-type: none"> -with existing 600mm watermain at Queen St (redundancy) -existing 600 mm watermain at John St intersection -Williams Parkway 900mm watermain (connection provided) <p>Potential impact of existing/proposed infrastructure:</p> <ul style="list-style-type: none"> -construction / commissioning of the 750 mm watermain constrained by commissioning of William Parkway, 900 mm watermain -construction by microtunneling on Centre st. required to avoid impacting existing utilities in narrow right-of-way. | ● | <p>Opportunities for interconnections:</p> <ul style="list-style-type: none"> -with existing 600mm watermain at Queen St (redundancy) -existing 600 mm watermain at John St intersection -with proposed 600 mm watermain at Church St (interconnection at both Main and Centre st.) -Williams Parkway 900mm watermain (connection provided) <p>Potential impact of existing/proposed infrastructure:</p> <ul style="list-style-type: none"> -construction / commissioning of the 750 mm watermain constrained by commissioning of William Parkway, 900 mm watermain -construction by microtunneling on Centre st. required to avoid impacting existing utilities in narrow right-of-way. <p>Conflicts:</p> <ul style="list-style-type: none"> -Proposed CN Rail expansion expected in 2024 requires coordination with CN Railway. | ● | <p>Opportunities for interconnections:</p> <ul style="list-style-type: none"> -with existing 600mm watermain at Queen St (redundancy) -existing 600 mm watermain at John St intersection -with proposed 600 mm watermain at Church St (interconnection at both Main and Centre st.) -Williams Parkway 900mm watermain (connection provided) <p>Potential impact of existing/proposed infrastructure:</p> <ul style="list-style-type: none"> -construction / commissioning of the 750 mm watermain constrained by commissioning of William Parkway, 900 mm watermain -construction by microtunneling on Centre st. required to avoid impacting existing utilities in narrow right-of-way. <p>Conflicts:</p> <ul style="list-style-type: none"> -Proposed Flood Mitigation works on Etobicoke creek at Church st. requires coordination with TRCA | ● | | |
| | Future Maintenance and operational access | Technical viability to maintain operational access and servicing | Access to watermain and associated chambers via right of way preferred to avoid easements. | Watermain and chambers within road right of way facilitates access during maintenance | ● | Watermain and chambers within road right of way facilitates access during maintenance | ● | Watermain and chambers within road right of way facilitates access during maintenance | ● | Watermain and chambers within road right of way facilitates access during maintenance | ● | Watermain and chambers within road right of way facilitates access during maintenance | ● | Watermain and chambers within road right of way facilitates access during maintenance | ● |
| | Effectiveness and Flexibility | Effectiveness and Flexibility in being able to meet current and future demands/requirements/expansion requirements; flexibility in future regulatory requirements | Impacts and opportunities associated with future scope of works | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works. | ● | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works. | ● | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works | ● | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works | ● | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works | ● | Alignment supports future work planned in the vicinity, no other opportunity with future scope of works | ● |
| | Permits and Approvals | Ease of receiving permits and approvals, including the agency approvals necessary | Minimum number of key stakeholders to obtain permits/approvals from preferred. Minimum extent of infrastructure within lands of concern to each of the key stakeholders preferred. | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) -TRCA: Permit for any shafts located off road as the Centre street is within TRCA regulated limits. | ● | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) -TRCA: Permit for any shafts located off road as the Centre street is within TRCA regulated limits. | ● | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -MFCP permit: for impacts to flora and fauna and their habitat (if required at Creek Crossing, additional assessment required to confirm) -CN Rail Permit: Rail Crossing -DFO permit: for impacts to fish or fish habitat protection (if required at Creek Crossing) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) | ● | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -City of Brampton: Road Closure (if required at the shaft location) -MFCP permit: for impacts to flora and fauna (if required at Creek Crossing, additional assessment required to confirm) -DFO permit: for impacts to fish or fish habitat protection (if required at Creek Crossing) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) | ● | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -City of Brampton: Road Closure (if required at the shaft location) -MFCP permit: for impacts to flora and fauna (if required at Creek Crossing, additional assessment required to confirm) -DFO permit: for impacts to fish or fish habitat protection (if required at Creek Crossing) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) | ● | <p>Key Permits and Approvals:</p> <ul style="list-style-type: none"> -TRCA permit: Creek Crossing (if required at the shaft location) -City of Brampton: Road Closure (if required at the shaft location) -City of Brampton: Tree Removal Permit (if street trees are to be removed at shaft locations) -CN Rail Permit: Rail Crossing | ● |
| Criteria Score | | | Although narrower right of way of collector road and presence of mature trees and utilities leads to requirements for microtunneling, construction would have reduced impact on travelled portion of road and tree removal permits. Shafts can be located on right of way. Long-term maintenance is supported by installation in right-of-way and routing aligns with connections to existing and future watermain. | ● | Although narrower right of way of collector road and presence of mature trees leads to requirements for microtunneling on Centre st, construction would have reduced impact on travelled portion of road. Shafts can be located on right of way. Open cut construction on Beech Street allows for reduction in micro-tunneling. Long-term maintenance is supported by installation in right-of-way and routing aligns with connections to existing and future watermain. Less opportunity for interconnections than option 2A. | ● | Open cut along Main st and Vodden st will be feasible with two way traffic operation and reduced lanes but will result in delays. This alternative requires Creek crossing with additional permit requirements. The alternative provides higher hydraulic benefits than other alternatives and higher number of interconnections. | ● | Narrower right of way of local road and presence of mature trees leads to requirements for microtunneling on Isabella st, Rosedale st. and Mill st. N. Open cut along Main st. will be feasible with two way traffic operation and reduced lanes but will result in delays. This alternative requires CN rail crossing, additional permit requirements and allows for less interconnections. The alternative may be impacted by CN Rail expansion project and will require coordination. | ● | Open cut along Main st will be feasible with two way traffic operation and reduced lanes but will result in delays. Church St. will require closure and may result in delays. This alternative requires Creek crossing with additional permit requirements. Although this alternative provides highest hydraulic benefits than any other alternatives and a higher number of interconnections, this alternative affects the TRCA Flood Mitigation works on the creek and will require significant coordination. | ● | Narrower right of way of local road and presence of mature trees leads to requirements for microtunneling on Isabella st, Rosedale st. and Mill st. N. This alternative requires CN rail crossing, additional permit requirements and allows for less interconnections. The alternative may be impacted by CN Rail expansion project and will require coordination. | ● | |
| Socio-Cultural Environment | Recreational Land Uses and Visual Landscape | Potential to impact existing parks and open spaces or impact the character of the existing community (i.e., interfere with views) | Potential to impact existing parks and open spaces, land use, TRCA Property not preferable. Potential to impact character of the existing community, businesses or interfere with views not preferable. | ● | Some shafts adjacent to TRCA Natural Heritage System, parks, open space so less impact. Potential to affect visual landscaping as shaft compound may require tree removal. | ● | - Shaft compound to impact open space north of Vodden during construction of Etobicoke Crossing. Shafts will be located within TRCA property | ● | - Shaft compound locations will impact Go Station parking and a mechanics shop parking during construction | ● | - Church Street shaft compound will temporarily impact walkway to Etobicoke Creek Trail during construction. Shafts will be located within TRCA property. | ● | - Shaft compound locations will impact Go Station parking and a mechanics shop parking during construction. | ● | |
| | Future Planning Policies/Initiatives | Compatibility with Master Plan and Region of Peel & City of Brampton growth initiatives | Complies with 2020 Water and Wastewater Master Plan for the Lake-based Systems (MP). Potential to impact Region of Peel and City of Brampton growth initiatives as identified in the Phase 1 report not preferable. | ● | Complies with MP Strategy and provides for water supply to Downtown Brampton to account for a future increase in population and water demand. Minor impact to Region of Peel and City of Brampton growth initiatives; small section of watermain across Queen Street may be affected by Queen Street BRT project | ● | Complies with Master Plan Strategy and provides for water supply to Downtown Brampton to account for a future increase in population | ● | Complies with Master Plan Strategy and provides for water supply to Downtown Brampton to account for a future increase in population | ● | Complies with Master Plan Strategy and provides for water supply to Downtown Brampton to account for a future increase in population | ● | Complies with Master Plan Strategy and provides for water supply to Downtown Brampton to account for a future increase in population | ● | |
| | Disruption During Construction | Disruption due to traffic management to existing community during construction. | 1. Traffic impacts are rated based on amount of traffic diversions anticipated from the closure and the amount of capacity remaining on major parallel routes to accommodate these diversions. 2. Transit impacts are rated based on the number and length of bus routes impacted with higher order transit (e.g. ZUM routes) rated as being more severe. Proximity of road closures to GO station accesses also factored in the rating. 3. Local access and cycling impacts were rated as combined category factoring adjacent land uses (schools, parking, businesses, emergency and medical services, etc.), driveway impacts and required closure of bike routes or impacts to cycling friendly streets. | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Less impact due to traffic diversion as the watermain is proposed to be laid by microtunneling (predominantly residential area with one public school, large park and commercial uses at Queen Street). -Local traffic and transit diversion required due to some shafts. <p>Transit impacts:</p> <ul style="list-style-type: none"> -Local transit diversion for Brampton Transit route 8 <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Affects upto 6 driveways adjacent to 1 shaft for upto 8 weeks. -Minimum impact to driveways along the route as watermain laid by tunnelling. -Affects upto 6 driveways adjacent to 1 shaft for upto 8 weeks. (Based on preliminary shaft location) -No cycling route affected | ● | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Traffic impact anticipated on Beech Street due to open-cut construction, while traffic impact on Centre Street to be mitigated through micro-tunneling (predominantly residential area with one public school, a cemetery and commercial uses at Queen Street) -Local traffic and transit diversion required due to some shafts. <p>Transit impacts:</p> <ul style="list-style-type: none"> -Local transit diversion for Brampton Transit route 8 <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Affects upto 6 driveways adjacent to 1 shaft for upto 8 weeks. -Minimum impact to driveways along the route as watermain laid by microtunneling on Centre st and potential impact on Beech st. due to open cut. -No cycling route affected | ● | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Significant impact due to traffic diversion on Main street, a Major Arterial Road as watermain laid by open cut and partial lane closures required. (Main St is large-format retail area) -Potential impact due to traffic diversion on Vodden Street, a Collector road as watermain laid by open cut and partial lane closures required. (Vodden St. has access to large format retail, parkland and fire-station) -Less impact due to traffic diversion as the watermain is proposed to be laid by microtunneling on Centre st. (predominantly residential area with one public school and commercial uses at Queen Street) <p>Transit impacts:</p> <ul style="list-style-type: none"> -Potential impact to Brampton Transit routes 2 and 502 (ZUM), Route 9 and Route 8. <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Potential delays on transit routes on Main and Vodden due to partial road closures. -Local access and cycling impacts: Minimum impact to driveways along the route as watermain laid by microtunneling on Centre st. -No cycling route affected | ● | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Significant impact due to traffic diversion on Main street, a Major Arterial Road as watermain laid by open cut and partial lane closures required. (Main St is large-format retail area) -Less impact due to traffic diversion on Church Street, a Collector road as watermain is proposed to be laid by microtunneling (predominantly residential area). -Potential impact to general traffic on Queen Street as watermain to be laid by open cut for a short length. <p>Transit impacts:</p> <ul style="list-style-type: none"> -Potential impact to Brampton Transit routes 2 and 502 (ZUM), Route 9 and Route 52. <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Minor impact to driveways along the route where watermain is laid by open cut. -No cycling route affected -Potential impact to GO transit parking lot due to shaft construction. | ● | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Significant impact due to traffic diversion on Main street, a Major Arterial Road as watermain laid by open cut and partial lane closures required. (Main St is large-format retail area) -Potential impact due to traffic diversion on Church Street, a Collector road as watermain laid by open cut and road closures required. (Church St. has low and high density residential, church and park.) -Less impact due to traffic diversion as the watermain is proposed to be laid by microtunneling on Centre st. (predominantly residential area with one public school and commercial uses at Queen Street) <p>Transit impacts:</p> <ul style="list-style-type: none"> -Potential impact to Brampton Transit routes 2 and 502 (ZUM) and Route 8. <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Significant impact to driveways along the Church st. as watermain laid by open cut. -Potential impact to trail access points along Church St. | ● | <p>Traffic impacts:</p> <ul style="list-style-type: none"> -Less impact to Isabella, Rosedale, Mill st. N, etc. due to traffic diversion as the watermain is proposed to be laid by microtunneling (predominantly residential area) -Potential impact to local traffic on other local roads where watermain is proposed to be laid by open cut. (residential area) -Potential impact to general traffic on Queen Street as watermain to be laid by open cut for a short length. <p>Transit impacts:</p> <ul style="list-style-type: none"> -Potential impact to Brampton Transit routes 52. <p>Local access and cycling impacts:</p> <ul style="list-style-type: none"> -Minor impact to driveways along the route where watermain is laid by open cut. -No cycling route affected -Potential impact to GO transit parking lot due to shaft construction. | ● |

| | | | | | | | | | |
|---------------------|--|---|---|---|--|--|--|---|---|
| | Archaeological and Cultural Resources | Potential impacts to known archaeological and cultural resources or ongoing operation | Potential impact to archaeological and cultural resources not preferred. Route within or adjacent to cultural heritage resource not preferred. | Archaeological: -No Potential impacts: Located adjacent to Brampton Cemetery but no further investigation required as route is through paved area. Cultural Heritage: 1. Potential Direct Impacts -none 2. Potential Indirect Impacts -Route is adjacent to 1 cultural heritage resource | Archaeological: -No Potential impacts: Located adjacent to Brampton Cemetery but no further investigation required as route is through paved area. Cultural Heritage: 1. Potential Direct Impacts -none 2. Potential Indirect Impacts -Route is adjacent to 4 cultural heritage resources | Archaeological: -Potential Impact: Shaft location on Vodden St. Creek Crossing requires stage 2 archaeological assessment -No Potential impact: Located adjacent to Brampton Pioneer Cemetery but no further investigation required as route is through paved area. Cultural Heritage: 1. Potential Direct Impacts -none 2. Potential Indirect Impacts -Route is adjacent to 4 cultural heritage resources | Archaeological: -Potential Impact: Located adjacent to Brampton Pioneer Cemetery but no further investigation required as route is through paved area. Cultural Heritage: 1. Potential Direct Impacts -Direct impacts to 1 cultural heritage resource (CNR station) as shaft staging area is proposed to within the CNR parking lot 2. Potential Indirect Impacts -Route is adjacent to 25 cultural heritage resources. | Archaeological: -Potential Impact: Shaft location on Church St. Creek Crossing requires stage 2 archaeological assessment -No Potential impact: Located adjacent to Brampton Pioneer Cemetery but no further investigation required as route is through paved area. Cultural Heritage: 1. Potential Direct Impacts -No Potential impacts 2. Potential Indirect Impacts -Route is adjacent to 52 cultural heritage resources | Archaeological: -No potential impacts. Cultural Heritage: 1. Potential Direct Impacts -Direct impacts to 1 cultural heritage resource (CNR station) as shaft staging area is proposed to within the CNR parking lot 2. Potential Indirect Impacts -Route is adjacent to 25 cultural heritage resources. |
| | Criteria Score | | This alternative has less impact on socio-cultural factors when compared to other alternatives as the proposed alignment is through road right of way or boulevard. Microtunneling reduces impact on traffic, transit and driveways. The alternative also has minimum impacts on other Region and City projects planned in the area reducing the need for extensive coordination. | This alternative has less impact on socio-cultural factors when compared to other alternatives as the proposed alignment is through road right of way or boulevard. Microtunneling reduces impact on traffic, transit and driveways. The alternative also has minimum impacts on other Region and City projects planned in the area reducing the need for extensive coordination. | This alternative has higher impact on socio-cultural factors when compared to other alternatives due to the significant traffic delays on Main and Vodden st. This alternative has potential impact on TRCA land and a stage 2 archaeology assessment required due to the shaft located near the Etobicoke creek. | This alternative has potential impact on socio-cultural factors due to the significant traffic delays on Main st. This alternative also has potential impact on CN rail parking, CN rail expansion project and a mechanical shop. | This alternative has higher impact on socio-cultural factors when compared to other alternatives mainly due to the significant traffic delays on Main and Church st. This alternative also has potential impact on TRCA land and archaeology due to shaft located near the Etobicoke creek. Highest number of cultural heritage resources are located adjacent to the alignment and impact to which will need to be mitigated. | This alternative has higher impact on socio-cultural factors when compared to other alternatives mainly due to the significant traffic delays on Main st. This alternative also has potential impact on CN rail parking, CN rail expansion project and a mechanical shop. | |
| Natural Environment | Terrestrial Vegetation and Wildlife | Proximity to and potential impacts due to construction to: -sensitive features and regulated lands -local wildlife and their habitat -vegetation and trees | Presence of terrestrial species potentially affected temporarily and/or permanently not preferred Area of temporary or permanent loss of sensitive terrestrial feature not preferred | Sensitive features and regulated lands: -No anticipated impacts as works are proposed along existing road or boulevard, adjacent to parkland and built up area Local Wildlife: -No anticipated impacts as works are proposed along existing road or boulevard, adjacent to parkland and in built up area Vegetation and Trees: -Likelihood of street and parkland tree injury/harm due to removals required at shaft locations. Less mature trees to be removed. | Sensitive features and regulated lands: -No anticipated impacts as works are proposed along existing road or boulevard, adjacent to parkland and built up area Local Wildlife: -Potential for direct and indirect impacts to SAR habitat Vegetation and Trees: -Likelihood of street, ravine, woodland and parkland tree injury/harm due to removals required at shaft locations. | Sensitive features and regulated lands: -No anticipated impacts as works are proposed along existing road and built up area Local Wildlife: -Potential for direct and indirect impacts to SAR habitat Vegetation and Trees: -Likelihood of street and parkland tree injury/harm due to removals required at shaft locations. | Sensitive features and regulated lands: -Potential Impact to Etobicoke Creek Crossing within TRCA regulated land Local Wildlife: -Potential for direct and indirect impacts to SAR habitat Vegetation and Trees: -Likelihood of street, ravine, woodland and parkland tree injury/harm due to removals required at shaft locations. | Sensitive features and regulated lands: -Potential Impact to Etobicoke Creek Crossing within TRCA regulated land Local Wildlife: -Potential for direct and indirect impacts to SAR habitat Vegetation and Trees: -Likelihood of street, ravine, woodland and parkland tree injury/harm due to removals required at shaft locations. | Sensitive features and regulated lands: -No anticipated impacts as works are proposed along existing road and built up area Local Wildlife: -No anticipated impacts as works are proposed along existing road and built up area Vegetation and Trees: -Likelihood of street and parkland tree injury/harm due to removals required at shaft locations. |
| | Aquatic Systems | Proximity to and potential impacts due to construction to: -local aquatic species and habitat -aquatic species at risk | Presence of aquatic species potentially affected temporarily and/or permanently not preferred Area of temporary or permanent loss of aquatic feature not preferred | No anticipated impacts as works are proposed along existing road or boulevard, adjacent to Parkland and built up area | No anticipated impacts as works are proposed along existing road or boulevard, adjacent to Parkland and built up area | Local aquatic fauna: -Potential Direct and indirect adverse effects to fish and fish habitat during construction at shaft locations. Local aquatic flora: No anticipated impact | No anticipated impacts as works are proposed along existing road and built up area | Local aquatic fauna: -Potential Direct and indirect adverse effects to fish and fish habitat during construction at shaft locations. Local aquatic flora: No anticipated impact | No anticipated impacts as works are proposed along existing road and built up area |
| | Hydrogeology, Surfacewater and Groundwater | Hydrogeologic setting: -Potential impact on the quantity and quality of surface water and groundwater | Temporarily and/or permanently changes in quantity and quality of surface water bodies, such as creek not preferred Temporarily and/or permanently changes in groundwater takings quantity and/or location not preferred | No anticipated impacts on surface water during construction as works are undertaken within existing roads without waterbody crossing. - Potential for higher dewatering requirements at the shaft during construction due to high groundwater table(Groundwater at 1.5m below ground surface(mbgs)). | No anticipated impacts on surface water during construction as works are undertaken within existing roads without waterbody crossing. - Potential for higher dewatering requirements at the shaft during construction due to high groundwater table(Groundwater at 1.5m below ground surface(mbgs)). | Potential impacts on surface water quality during construction as works are undertaken close to Creek crossing. Erosion and sedimentation control required as direct run-off of particles from construction staging area to streams is expected. - Potential for higher dewatering requirements at the shaft and open trenches during construction due to high groundwater table(Groundwater at 0.5m below ground surface(mbgs)). | No anticipated impacts on surface water during construction as works are undertaken within existing roads without waterbody crossing. - Potential for higher dewatering requirements at the shaft and open trenches during construction due to high groundwater table(Groundwater at 1.5 m below ground surface(mbgs)). | Potential impacts on surface water quality during construction as works are undertaken close to Creek crossing. Erosion and sedimentation control required as direct run-off of particles from construction staging area to streams is expected. - No historical information available | Potential impacts on surface water quality during construction as works are undertaken close to Creek crossing. Erosion and sedimentation control required as direct run-off of particles from construction staging area to streams is expected. - No historical information available |
| | Soil, Bedrock and Geology | Geology and geotechnical considerations | Bedrock depth and variability: -More variation in the top of bedrock leads to possible challenges in tunneling -tunnel depth also influenced by bedrock depth and variability Higher number of boulders within soil pose difficulties during tunneling | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -Possible challenges due to bedrock variability, bedrock (Red Shale) at 6-13 mbgs -Possible impact on tunneling with some boulders present. | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -Less challenges due to bedrock variability, bedrock (Red Shale) at 4-5 mbgs on Main st. bedrock (Red Shale) at >8mbgs on Vodden st. | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -Less challenges due to bedrock variability, bedrock (Red Shale) at approximately 6 mbgs. | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -Less challenges due to bedrock variability, bedrock (Red Shale) at 4-5 mbgs on Main st. bedrock (Red Shale) at 6-13mbgs on Centre st. bedrock (Red Shale) at 8-9 mbgs on Church St. | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -Possible challenge due to bedrock variability at Centre st.; bedrock (Red Shale) at 4-5 mbgs on Main st. bedrock (Red Shale) at 6-13mbgs on Centre st. bedrock (Red Shale) at 8-9 mbgs on Church St. | Physiographic region identified as the Peel Plain. -The overburden in the Region consists predominantly of Halton Till deposits primarily comprised of stiff to hard silt, silty clay and sand soils. -No historical information available |
| | Contamination | Considerations regarding contaminated areas. | The number of areas of potential environmental concerns (APEC) which has the potential for contamination above MECP standard as identified in the Desktop Environmental Site Assessment. Lower number preferred. | Potential for mobilization of contamination through groundwater. -6 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. | Potential for mobilization of contamination through groundwater. -5 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. | Potential for mobilization of contamination through groundwater. -9 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. | Potential for mobilization of contamination through groundwater. -9 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. | Potential for mobilization of contamination through groundwater. -7 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. | Potential for mobilization of contamination through groundwater. -7 Areas of Potential Environmental Concern located upgradient from the construction area which can mobilize through groundwater and may require mitigation during construction. |
| | Criteria Score | | This alternative has minimal impact on terrestrial or aquatic features as the alignment will be in road right of way or boulevard. Possible challenges due to ground conditions and contamination mitigations. | This alternative has minimal impact on terrestrial or aquatic features as the alignment will be in road right of way or boulevard. Possible challenges due to ground conditions and contamination mitigations are required. | This alternative has higher potential impact to terrestrial or aquatic features as the alignment will be crossing the creek. The higher groundwater level and potential environmental concern areas makes this alternative least preferred based on this criteria. | This alternative has minimum impact to terrestrial or aquatic features as the alignment will be completely within road right of way. The higher groundwater level and potential environmental concern areas makes this alternative less preferred based on this criteria. | This alternative has higher potential impact to terrestrial or aquatic features as the alignment will be crossing the creek. The higher groundwater level and potential environmental concern areas makes this alternative least preferred based on this criteria. | This alternative has minimum impact to terrestrial or aquatic features as the alignment will be completely within road right of way. The potential environmental concern areas makes this alternative less preferred based on this criteria. | |
| Economic Evaluation | Capital Cost | Estimated Capital Costs (2020 cost estimate including 30% contingency) | Capital costs includes engineering, construction and commissioning. Construction cost includes: Tunneling, Shaft construction, CPP pipe, steel liner, shaft preparation and restoration. Also includes open cut excavation, re-instatement, mobilization/demobilisation, traffic management, bonding, dewatering, etc. Lower capital cost alternative preferred | \$40M (Higher capital cost due to microtunneling for most of the length on Centre st.) | \$33M (Higher capital cost due to microtunneling for most of the length on Centre st. and creek crossing at Vodden st.) | \$32M (Higher capital cost due to microtunneling on Isabella st., Rosedale st. and Mill st. N and railway crossing at Mill st.) | \$25M (Lower capital cost due to open cut for most of the length with microtunneling for creek crossing at Church st. and the length of Centre st.) | \$33M (Higher capital cost due to microtunneling on Isabella st., Rosedale st. and Mill st. N and railway crossing at Mill st.) | |
| | Operation and Maintenance Cost | Estimated Operational and Maintenance Costs | Operational expenditure incurred throughout the life of the asset, including labour, power and consumables and asset monitoring. | Not considered significant, given that length of new asset could be considered negligible, given overall asset base | Not considered significant, given that length of new asset could be considered negligible, given overall asset base | Not considered significant, given that length of new asset could be considered negligible, given overall asset base | Not considered significant, given that length of new asset could be considered negligible, given overall asset base | Not considered significant, given that length of new asset could be considered negligible, given overall asset base | |
| | Criteria Score | | Due to significant length of microtunnel along Centre st., the Capital cost of this alternative is highest and therefore the criteria score is lowest. | A significant length of microtunnel along Centre st. but open cut along Beech st. results into an average criteria score. | A significant length of microtunnel along Centre st and the creek crossing but open cut for the length of watermain on Main and Vodden st, results into an average criteria score. | A significant length of microtunnel along some local streets and the railway crossing but open cut for the length of watermain on Main st., and other local streets results into an average criteria score. | A significant length of open cut on Main and Church st., and microtunnel for creek crossing and Centre st. results into a higher criteria score. | A significant length of microtunnel along some local streets and the railway crossing but open cut for the length of watermain on other local streets, results into an average criteria score. | |
| Overall Score | | Highest Score -Most Preferred | Highest Score -Most Preferred | | | | | | |