

















Evaluation Criteria				
Type	Comparative Criteria	Description	Main Consideration	Etobicoke Creek (EC) Alignment (Long List: Alt 1 - A1-B2-C2-D2-E1)
Considerations	<b>Implementation Feasibility</b>	Feasibility of implementation in terms of: - construction accessibility - constructability (including water crossings) - easements - length of pipe - pipe slope - construction compounds	- Construction access from existing rights-of-way preferred as it allows for lower construction cost and shorter construction period - Fewer creek crossings are preferred to reduce complexity during construction - Routes with fewer property owners is preferred to prevent delays in easement/property acquisition - Shorter length of pipe is preferred as the subsequent capital cost, construction time and disturbance to the natural and social environments are lower - Slopes between 0.15-0.5% preferred to achieve self-scouring velocity while avoiding solid settlement, separation, odours, corrosion and maintenance issues	<b>Construction accessibility:</b> - limited in the valley - limited near Highway 410 due to elevation of the slopes leading up to Highway 410 - some availability in remaining areas outside the valley and along Dixie Rd's Right-of-Way - provides opportunity to use Old Brampton WWTP site for construction compound <b>Constructability:</b> 3 creek crossings (some challenges expected) - connection from existing invert on Kennedy Rd moving from west to east - north of CAA Lands moving from west to east - crossing west to east from West-to-East connection to Dixie Rd <b>Easements:</b> Needed from 9 property owners - 4 private - 2 municipalities (Cities of Brampton and Mississauga) - 2 provincial agencies (MTO and IO) - 1 utility company <b>Length of pipe:</b> 4565m <b>Pipe slope:</b> 0.259% to 0.377%; within desired range <b>Compounds:</b> - 2 Major compounds at Old Brampton WWTP site and Khalsa and Dixie. - 2 Compounds for tunneling under each of Highways 407 and 410.
	<b>Permits and Approvals</b>	Ease of receiving permits and approvals, including the agency approvals necessary - number of key stakeholders to obtain permits/approvals from - extent of infrastructure within lands of concern to each of the key stakeholders	- Preferred to have the minimum number of key stakeholders (Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority) to obtain permits/approvals from - Minimum extent of infrastructure within lands of concern to each of the key stakeholders preferred	- <b>Key Permits and Approvals:</b> Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority - <b>Ministry of Transportation:</b> Highway 410 crossing approval - <b>407 ETR:</b> Highway 407 crossing approval and encroachment; cannot meet 407 ETR's requirements that crossing must be 90 degrees - <b>Hydro One:</b> crosses corridor diagonally south of Tomken - <b>Toronto and Region Conservation Authority:</b> majority of alignment located within regulated areas
	<b>Reliability</b>	Ability to provide reliable/continuous service: - degree of reliance on EWD for conveyance, therefore reducing overall system diversion capability - ability to service future CAA Lands development by gravity	- Ability to flow to both west and east trunks is preferred to provide reliable service and system redundancy - Preference is to service CAA Lands development entirely by gravity to minimize new pumped infrastructure and its subsequent capital and O&M costs	- Can operate independently of EWD, but connection available at south end to allow for diversion - Can service approximately 40% of the CAA Lands development by gravity flow

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Type	Comparative Criteria	Description	Main Consideration	Etobicoke Creek (EC) Alignment (Long List: Alt 1 - A1-B2-C2-D2-E1)	
Technical Cor	<b>Effectiveness</b>	Effectiveness at meeting current and future conveyance requirements (i.e., modelling results) - ability to conform to Region's Master Plan design parameter and be within 85% capacity - possibility of basement flooding issues indicated by freeboard < 1.8m	- Proposed and existing infrastructure preferred to be flowing below 85% capacity to minimize surcharge - Freeboard of 1.8m or higher in proposed and existing infrastructure preferred to minimize basement flooding potential	<b>Region's Sewer Design (&lt;=85% Capacity)</b> - 1 segment of proposed over 85% (87%) - No segment of north twin over 85% - No segment of south twin over 85% <b>Basement Flooding (If Freeboard &lt; 1.8m)</b> - No segment of proposed with FB <1.8m - 2 segments of north twin with FB <1.8m (1.6m, 1.5m); same two as CAA Alt - 2 segments of south twin with FB <1.8m (1.1m, 1.5m); same two as CAA Alt	
	<b>Compatibility with Existing Infrastructure</b>	Ease of connection with the existing sewer system Feasibility of connections: - Biscayne Connection - Westcreek Connection - West to East Connection - Khalsa Connection	- Preference to connect to as many existing connections as possible	Diversion Chambers required to proportion flow between the sewers at the following locations: - top end of the new trunk at Kennedy and Etobicoke Creek - at West to East connection (requires approx. 105m connection) - possible for Khalsa Connections available for Biscayne, Westcreek.	
	<b>Maximize Lifecycle Investment</b>	Continued use of existing infrastructure	- Connections to the existing Etobicoke Creek trunks are preferred to continue use of existing infrastructure for flow balancing	Flow balancing at north end of sewer allows for full capacity of infrastructure to be utilized	
	<b>Flexibility</b>	Flexibility: - with respect to routing and operating the system - in being able to meet future demands/expansion requirements; or future regulatory requirements	- Opportunities to use the existing Etobicoke Creek trunks for flow balancing is preferred for greater flexibility in operating the system - It is preferred that existing inverts and subsequent proposed infrastructure is deep to provide opportunities for flows beyond current future projection	- Flexibility through routing to one of three sewers ; allows for greater control in operating the system and diversion of flows into EWD - Matching existing inverts may impact ability to service future expanded service areas depending on service area elevations	
	<b>Operational Accessibility</b>	Right-of-Way accessibility for O&M needs	- Access to proposed infrastructure via right of way preferred to avoid permanent easements	Accessible from Tomken and Dixie Access to remaining length is challenged by location in valley	
	<b>Summary</b>			- Most limited in construction accessibility - More creek crossings - Most number of property owners to reach agreements with - Second longest alignment - Medium effort on permitting and approvals - Reliable service available as flows can go to West and East trunks - Cannot service all of CAA Lands' growth via gravity - less than half can be serviced (least serviceable) - Poses some risk to operating outside of design criteria - Most compatible in connecting to the existing system - Allows flow balancing - Offers operational flexibility but may be impacted in ability to service future expanded service areas - Limited accessibility for O&M	

Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Etobicoke Creek (EC) Alignment (Long List: Alt 1 - A1-B2-C2-D2-E1)	
Natural Environment	<b>Terrestrial Systems</b>	Proximity to any sensitive features and regulated lands Potential impacts to the local vegetation, trees, wildlife and species at risk due to construction and crossings	- Preference is to have as little of the alignment within TRCA regulation limit as possible - Shortest length of open cut work in green area is preferred - Alignment with less impact to wildlife habitat is preferred - Lowest potential to impact species at risk is preferred	- Approximately 50% of alignment within TRCA regulation limit - Approximately 50% is open cut in green areas - Vegetation impacts and tree removals anticipated along open cut areas and shaft locations - Impacts to wildlife habitat from vegetation and tree removals - Potential to impact Eastern Wood-Pewee habitat (species at risk) - Potential to impact bat maternal roosting habitat (species at risk)	
	<b>Aquatic Systems</b>	Proximity to any sensitive features and regulated lands Potential impact to the local aquatic flora and fauna, and species at risk due to construction and crossings	- Alignment that is furthest away from watercourse is preferred - Fewer creek crossings is preferred	- Construction close to creek - 3 crossings of Etobicoke Creek and 2 crossings of tributaries as well as approximately 600m of pipe installed along banks of Etobicoke Creek and 500m of pipe installed along banks of tributary	
	<b>Contamination</b>	Considerations regarding contaminated areas	- Fewest contaminated areas present adjacent to the alignment is preferred	5 areas of potential environmental concern	
	<b>Hydrogeology and Surface and Groundwater</b>	Hydrogeologic setting, description of groundwater in the area and impact to/on water table Potential impact to the quality of surface and groundwater	- Alignment with lowest potential to impact the water table is preferred - Alignment with smallest open-trench construction is preferred to minimize groundwater contamination - Alignment that entails of construction further away from water course is preferred to minimize impact to surface water	- Open-trench excavation will likely breach the water table; groundwater control needed during construction - Risk for surface run-off into Etobicoke Creek during precipitation events - Risk of surface run-off into trenches during precipitation events - Construction of an open trench near Etobicoke Creek may reduce groundwater discharge to nearby water features - Open-trench construction may have the potential to mobilize groundwater contamination if it is present - Construction close to Etobicoke Creek with creek crossings; construction activities may result in erosion of streambanks in the Etobicoke Creek which may generate turbidity	
	<b>Soil, Bedrock and Geology</b>	Geology and geotechnical considerations	- Preference is to be within rock as much as possible	- Bedrock (Red Shale) at 1-11 mbgs and it may be encountered near Highway 410 crossing - Some boulders expected to be encountered on overburden - Modern deposits (80% of alignment), Rock (5% of alignment), Mixed condition (15% of alignment)	




Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Etobicoke Creek (EC) Alignment (Long List: Alt 1 - A1-B2-C2-D2-E1)	
	Summary			<ul style="list-style-type: none"> <li>- Large area within TRCA regulation limit</li> <li>- Largest open-cut area</li> <li>- Most impact on vegetation and wildlife due to vegetation and tree removals (including SAR)</li> <li>- Greatest potential for impact on aquatic systems due to proximity of construction to watercourse (large section)</li> <li>- Significant presence of potentially contaminated lands</li> <li>- Greatest impact to hydrogeology (i.e., reduction in groundwater discharge to nearby water features) due to large open cut sections</li> <li>- High potential for mobilization of groundwater contamination</li> <li>- Greatest impact on surface water due to higher potential for runoff close to water course</li> <li>- Some boulders expected to be encountered during construction</li> </ul>	
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., interference with views)	- Alignment with least impact to the spaces used by the community (i.e., least number of spaces and shortest duration of impact) are preferred	<ul style="list-style-type: none"> <li>- Impact on paved multiuse trail along Etobicoke Creek</li> <li>- Potential to impact Brampton Sports Park access if construction proceeds in advance of redevelopment of CAA Lands</li> <li>- Construction to impact access to King's Park (east of Dixie Rd and north of Derry Rd)</li> </ul>	
	Future Planning Policies/Initiatives	Compatibility with Region of Peel & municipal growth initiatives MP Strategies (pumped vs gravity)	<ul style="list-style-type: none"> <li>- Accommodation to the growth initiatives is preferred</li> <li>- Alignment with little to no pumping is preferred</li> </ul>	<ul style="list-style-type: none"> <li>- Provides sufficient capacity for current future projections.</li> <li>- Approx. 60% of CAA Lands development may require pumping; does not meet Region's policy on gravity infrastructure preferred over pumped infrastructure</li> </ul>	
	Disruption During Construction	Disruption to existing community during construction (traffic, noise, and air quality)	<ul style="list-style-type: none"> <li>- Alignment preferred to be in non-residential areas</li> <li>- Alignment preferred to result in least disruptions to key roadways</li> <li>- Alignment preferred if there is no long term odour or noise concerns</li> </ul>	<ul style="list-style-type: none"> <li>- Most alignment is valley land and industrial areas.</li> <li>- Minor sections under roads (i.e., Westcreek Blvd, Tomken Rd, Dixie Rd)</li> </ul>	
	Archaeological and Cultural Resources	Potential impacts to archaeological and cultural resources	<ul style="list-style-type: none"> <li>- Alignment preferred to have little to no future archaeological potential</li> <li>- Alignment preferred to pose little to no permanent and/or temporary impact to adjacent to sites/properties that are culturally significant</li> </ul>	<p><b>Archaeological Potential</b></p> <ul style="list-style-type: none"> <li>- Larger sections needing pedestrian survey and test pit survey (Stage 2) (more than CAA Lands alt)</li> </ul> <p><b>Cultural Heritage Resources</b></p> <ul style="list-style-type: none"> <li>- Potential impacts adjacent to Mount Charles House; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> <li>- Minor impacts to Benjamin Stewart Farm; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> <li>- Potential impacts adjacent to King's Cemetery; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> </ul>	

Evaluation Criteria				
Type	Comparative Criteria	Description	Main Consideration	Etobicoke Creek (EC) Alignment (Long List: Alt 1 - A1-B2-C2-D2-E1)
	Summary			<ul style="list-style-type: none"> <li>- Some impact to paved multiuse trail, Brampton Sports Park and King's Park</li> <li>- Greatest need for pumped infrastructure to meet future projected growth</li> <li>- Some disturbance (i.e., traffic impacts) as alignment crosses roadways</li> <li>- Most potential for impact to archaeological resources -Stage 2 assessment required</li> <li>- Potential for minor impact to cultural heritage resources in the area</li> </ul>
Economic Factors	Capital Cost	Estimated Capital Costs	<ul style="list-style-type: none"> <li>- Capital costs includes engineering, construction and commissioning. Construction cost includes: open-cut excavation, tunnelling, shaft construction, cost of pipe, site preparation and restoration. Also includes re-instatement, mobilization/ demobilization, traffic management, bonding, dewatering, etc.</li> <li>Lower capital cost alternative preferred</li> </ul>	\$32.3 M
	Operation and Maintenance	Estimated Operational and Maintenance Costs	<ul style="list-style-type: none"> <li>- Operational expenditure incurred throughout the life of the asset, including labour, power and consumables and asset monitoring. Lower operation and maintenance cost alternative preferred.</li> </ul>	Average
	Summary			<ul style="list-style-type: none"> <li>- Lowest capital cost</li> <li>- Average operation &amp; maintenance cost</li> </ul>






- Lowest scoring technical
- Most impact on natural environment
- Moderate socio-economic impact
- Lowest cost

Total Anticipated Impact and Rank

4

Evaluation Criteria			Alter		
Type	Comparative Criteria	Description	Main Consideration	CAA Lands (CAA) Alignment (Long List: Alt 1 - A2-B2-C2-D2-E1)	
Considerations	<b>Implementation Feasibility</b>	Feasibility of implementation in terms of: - construction accessibility - constructability (including water crossings) - easements - length of pipe - pipe slope - construction compounds	- Construction access from existing rights-of-way preferred as it allows for lower construction cost and shorter construction period - Fewer creek crossings are preferred to reduce complexity during construction - Routes with fewer property owners is preferred to prevent delays in easement/property acquisition - Shorter length of pipe is preferred as the subsequent capital cost, construction time and disturbance to the natural and social environments are lower - Slopes between 0.15-0.5% preferred to achieve self-scouring velocity while avoiding solid settlement, separation, odours, corrosion and maintenance issues	<b>Construction accessibility:</b> - good availability within CAA lands and future local road (dependent on when this road is constructed; collaboration with the developer needed) - limited in the valley - limited near Highway 410 due to elevation of the slopes leading up to Highway 410 - some availability in remaining areas outside the valley and along Dixie Rd's Right-of-Way - provides opportunity to use Old Brampton WWTP site for construction compound <b>Constructability:</b> 3 creek crossings (some challenges expected) - connection from existing invert on Kennedy Rd moving from north to south - north of CAA Lands moving from south to north to meet at Biscayne connection - crossing west to east from West-to-East connection to Dixie Rd <b>Easements:</b> Needed from 9 property owners - 4 private - 2 municipalities (Cities of Brampton and Mississauga) - 2 provincial agencies (MTO and IO) - 1 utility company <b>Length of pipe:</b> 4755m <b>Pipe slope:</b> 0.195% to 0.377%: within desired range <b>Compounds:</b> - 2 Major compounds at Old Brampton WWTP site and Khalsa Drive - Opportunity to locate compound on CAA lands during construction - 2 Compounds for tunneling under each of CAA Land tunnel and Highways 407 and 410.	
	<b>Permits and Approvals</b>	Ease of receiving permits and approvals, including the agency approvals necessary - number of key stakeholders to obtain permits/approvals from - extent of infrastructure within lands of concern to each of the key stakeholders	- Preferred to have the minimum number of key stakeholders (Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority) to obtain permits/approvals from - Minimum extent of infrastructure within lands of concern to each of the key stakeholders preferred	- <b>Key Permits and Approvals:</b> Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority - <b>Ministry of Transportation:</b> Highway 410 crossing approval - <b>407 ETR:</b> Highway 407 crossing approval and encroachment; cannot meet 407 ETR's requirements that crossing must be 90 degrees - <b>Hydro One:</b> crosses corridor diagonally south of Tomken - <b>Toronto and Region Conservation Authority:</b> majority of alignment located within regulated areas with exception of upper reach moved south of regulated area	
	<b>Reliability</b>	Ability to provide reliable/continuous service: - degree of reliance on EWD for conveyance, therefore reducing overall system diversion capability - ability to service future CAA Lands development by gravity	- Ability to flow to both west and east trunks is preferred to provide reliable service and system redundancy - Preference is to service CAA Lands development entirely by gravity to minimize new pumped infrastructure and its subsequent capital and O&M costs	- Can operate independently of EWD, but connection available at south end to allow for diversion - Location of upper reach within CAA lands allows for approximately 60% of the CAA Lands development to be serviced by gravity flow	

Evaluation Criteria				Alter	
Type	Comparative Criteria	Description	Main Consideration	CAA Lands (CAA) Alignment (Long List: Alt 1 - A2-B2-C2-D2-E1)	
Technical Cor	Effectiveness	Effectiveness at meeting current and future conveyance requirements (i.e., modelling results) - ability to conform to Region's Master Plan design parameter and be within 85% capacity - possibility of basement flooding issues indicated by freeboard < 1.8m	- Proposed and existing infrastructure preferred to be flowing below 85% capacity to minimize surcharge - Freeboard of 1.8m or higher in proposed and existing infrastructure preferred to minimize basement flooding potential	<b>Region's Sewer Design (&lt;=85% Capacity)</b> - 1 segment of proposed over 85% (87%) - 2 segments of north twin over 85% (86%, 86%) - No segment of south twin over 85% <b>Basement Flooding (If Freeboard &lt; 1.8m)</b> - No segment of proposed with FB <1.8m - 2 segments of north twin with FB <1.8m (1.6m, 1.5m); same two as EC Alt - 2 segments of south twin with FB <1.8m (1.1m, 1.5m); same two as EC Alt	
	Compatibility with Existing Infrastructure	Ease of connection with the existing sewer system Feasibility of connections: - Biscayne Connection - Westcreek Connection - West to East Connection - Khalsa Connection	- Preference to connect to as many existing connections as possible	Diversion Chambers required to proportion flow between the sewers at the following locations: - top end of the new trunk at Kennedy and Etobicoke Creek - at West to East connection (requires approx. 105m connection) - possible for Khalsa Connections available for Biscayne, Westcreek.	
	Maximize Lifecycle Investment	Continued use of existing infrastructure	- Connections to the existing Etobicoke Creek trunks are preferred to continue use of existing infrastructure for flow balancing	Flow balancing at north end of sewer allows for full capacity of infrastructure to be utilized	
	Flexibility	Flexibility: - with respect to routing and operating the system - in being able to meet future demands/expansion requirements; or future regulatory requirements	- Opportunities to use the existing Etobicoke Creek trunks for flow balancing is preferred for greater flexibility in operating the system - It is preferred that existing inverts and subsequent proposed infrastructure is deep to provide opportunities for flows beyond current future projection	- Flexibility through routing to one of three sewers ; allows for greater control in operating the system and diversion of flows into EWD - Matching existing inverts may impact ability to service future expanded service areas depending on service area elevations	
	Operational Accessibility	Right-of-Way accessibility for O&M needs	- Access to proposed infrastructure via right of way preferred to avoid permanent easements	Accessible from CAA, Tomken and Dixie Access to remaining length is challenged by location in valley	
	Summary			- Limitations in construction accessibility - More creek crossings - Most number of property owners to reach agreements with - Longest alignment - Medium effort on permitting and approvals - Reliable service available as flows can go to West and East trunks - Cannot service all of CAA Lands' growth via gravity- more than half can be serviced - Poses some risk to operating outside of design criteria - Most compatible in connecting to the existing system - Allows flow balancing - Offers operational flexibility but may be impacted in ability to service future expanded service areas - Better accessibility available for O&M	







Evaluation Criteria				Alter	
Type	Comparative Criteria	Description	Main Consideration	CAA Lands (CAA) Alignment (Long List: Alt 1 - A2-B2-C2-D2-E1)	
Natural Environment	<b>Terrestrial Systems</b>	Proximity to any sensitive features and regulated lands Potential impacts to the local vegetation, trees, wildlife and species at risk due to construction and crossings	- Preference is to have as little of the alignment within TRCA regulation limit as possible - Shortest length of open cut work in green area is preferred - Alignment with less impact to wildlife habitat is preferred - Lowest potential to impact species at risk is preferred	- Approximately 40% of alignment within TRCA regulation limit - Approximately 25% is open cut in green areas - Vegetation impacts and tree removals anticipated along open cut areas and shaft locations - Impacts to wildlife habitat from vegetation and tree removals - Potential to impact Eastern Wood-Pewee habitat (species at risk) - Potential to impact bat maternal roosting habitat (species at risk)	
	<b>Aquatic Systems</b>	Proximity to any sensitive features and regulated lands Potential impact to the local aquatic flora and fauna, and species at risk due to construction and crossings	- Alignment that is furthest away from watercourse is preferred - Fewer creek crossings is preferred	- Construction of short section close to creek - 3 crossings of Etobicoke Creek and 2 crossings of tributaries as well as approximately 600m of pipe installed along banks of Etobicoke Creek and 500m of pipe installed along banks of tributary	
	<b>Contamination</b>	Considerations regarding contaminated areas	- Fewest contaminated areas present adjacent to the alignment is preferred	6 areas of potential environmental concern	
	<b>Hydrogeology and Surface and Groundwater</b>	Hydrogeologic setting, description of groundwater in the area and impact to/on water table Potential impact to the quality of surface and groundwater	- Alignment with lowest potential to impact the water table is preferred - Alignment with smallest open-trench construction is preferred to minimize groundwater contamination - Alignment that entails of construction further away from water course is preferred to minimize impact to surface water	- Open-trench excavation will likely breach the water table; groundwater control needed during construction - Risk for surface run-off into Etobicoke Creek during precipitation events - Risk of surface run-off into trenches during precipitation events - Construction of an open trench near Etobicoke Creek may reduce groundwater discharge to nearby water features - Open-trench construction may have the potential to mobilize groundwater contamination if it is present - Construction close to Etobicoke Creek with creek crossings; construction activities may result in erosion of streambanks in the Etobicoke Creek which may generate turbidity.	
	<b>Soil, Bedrock and Geology</b>	Geology and geotechnical considerations	- Preference is to be within rock as much as possible	- Bedrock (Red Shale) at 1-11 mbgs and it may be encountered on 410 crossing - Some boulders expected to be encountered on overburden - Modern deposits (40% of alignment) and Till deposits (40% of alignment), Rock (5% of alignment), Mixed face condition (15% of alignment)	













Evaluation Criteria				Alter	
Type	Comparative Criteria	Description	Main Consideration	CAA Lands (CAA) Alignment (Long List: Alt 1 - A2-B2-C2-D2-E1)	
	Summary			<ul style="list-style-type: none"> <li>- Some area within TRCA regulation limit</li> <li>- Significant open-cut area</li> <li>- Significant impact on vegetation and wildlife due to vegetation and tree removals (including SAR)</li> <li>- Significant potential for impact on aquatic systems due to proximity of construction to watercourse (small section)</li> <li>- Highest presence of potentially contaminated lands</li> <li>- Greatest impact to hydrogeology (i.e., reduction in groundwater discharge to nearby water features) due to large open cut sections</li> <li>- High potential for mobilization of groundwater contamination</li> <li>- Some impact on surface water due to higher potential for runoff close to water course</li> <li>- Some boulders expected to be encountered during construction</li> </ul>	
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., interference with views)	- Alignment with least impact to the spaces used by the community (i.e., least number of spaces and shortest duration of impact) are preferred	<ul style="list-style-type: none"> <li>- Impact on paved multiuse trail along Etobicoke Creek</li> <li>- Will impact Brampton Sports Park access if construction proceeds in advance of redevelopment of CAA Lands</li> <li>- Construction to impact access to King's Park (east of Dixie Rd and north of Derry Rd)</li> </ul>	
	Future Planning Policies/Initiatives	Compatibility with Region of Peel & municipal growth initiatives MP Strategies (pumped vs gravity)	<ul style="list-style-type: none"> <li>- Accommodation to the growth initiatives is preferred</li> <li>- Alignment with little to no pumping is preferred</li> </ul>	<ul style="list-style-type: none"> <li>- Provides sufficient capacity for current future projections.</li> <li>- Approx. 40% of CAA Lands development may require pumping; does not meet Region's policy on gravity infrastructure preferred over pumped infrastructure</li> </ul>	
	Disruption During Construction	Disruption to existing community during construction (traffic, noise, and air quality)	<ul style="list-style-type: none"> <li>- Alignment preferred to be in non-residential areas</li> <li>- Alignment preferred to result in least disruptions to key roadways</li> <li>- Alignment preferred if there is no long term odour or noise concerns</li> </ul>	<ul style="list-style-type: none"> <li>- Most alignment is valley land and industrial areas.</li> <li>- Minor sections under roads (i.e., Westcreek Blvd, Tomken Rd, Dixie Rd)</li> </ul>	
	Archaeological and Cultural Resources	Potential impacts to archaeological and cultural resources	<ul style="list-style-type: none"> <li>- Alignment preferred to have little to no future archaeological potential</li> <li>- Alignment preferred to pose little to no permanent and/or temporary impact to adjacent to sites/properties that are culturally significant</li> </ul>	<p><b>Archaeological Potential</b></p> <ul style="list-style-type: none"> <li>- Large sections needing pedestrian survey and test pit survey (Stage 2) (slightly less than EC alt)</li> </ul> <p><b>Cultural Heritage Resources</b></p> <ul style="list-style-type: none"> <li>- Potential impacts adjacent to Mount Charles House; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> <li>- Minor impacts to Benjamin Stewart Farm; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> <li>- Potential impacts adjacent to King's Cemetery; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> </ul>	

Evaluation Criteria				Alter	
Type	Comparative Criteria	Description	Main Consideration	CAA Lands (CAA) Alignment (Long List: Alt 1 - A2-B2-C2-D2-E1)	
	Summary			<ul style="list-style-type: none"> <li>- Most impact to existing sports field on CAA Lands, some impact to the paved multiuse trail and King's Park</li> <li>- Some need for pumped infrastructure to meet future projected growth</li> <li>- Some disturbance (i.e., traffic impacts) as alignment crosses roadways</li> <li>- More potential for impact to archaeological resources -Stage 2 assessment required</li> <li>- Potential for minor impact to cultural heritage resources in the area</li> </ul>	
Economic Factors	Capital Cost	Estimated Capital Costs	- Capital costs includes engineering, construction and commissioning. Construction cost includes: open-cut excavation, tunnelling, shaft construction, cost of pipe, site preparation and restoration. Also includes re-instatement, mobilization/ demobilization, traffic management, bonding, dewatering, etc. Lower capital cost alternative preferred	\$45.3 M	
	Operation and Maintenance	Estimated Operational and Maintenance Costs	- Operational expenditure incurred throughout the life of the asset, including labour, power and consumables and asset monitoring. Lower operation and maintenance cost alternative preferred.	Average	
	Summary			<ul style="list-style-type: none"> <li>- Moderate range on capital cost</li> <li>- Average operation &amp; maintenance cost</li> </ul>	
Total Anticipated Impact and Rank				<ul style="list-style-type: none"> <li>- Moderate scoring technical</li> <li>- Moderate impact on natural environment</li> <li>- Most socio-economic impact</li> <li>- Moderate cost</li> </ul>	3

Evaluation Criteria			Alternative	
Type	Comparative Criteria	Description	Main Consideration	Kennedy Road Alignment (Long List: Alt 2)
Considerations	<b>Implementation Feasibility</b>	Feasibility of implementation in terms of: - construction accessibility - constructability (including water crossings) - easements - length of pipe - pipe slope - construction compounds	- Construction access from existing rights-of-way preferred as it allows for lower construction cost and shorter construction period - Fewer creek crossings are preferred to reduce complexity during construction - Routes with fewer property owners is preferred to prevent delays in easement/property acquisition - Shorter length of pipe is preferred as the subsequent capital cost, construction time and disturbance to the natural and social environments are lower - Slopes between 0.15-0.5% preferred to achieve self-scouring velocity while avoiding solid settlement, separation, odours, corrosion and maintenance issues	<b>Construction accessibility:</b> - good availability within Kennedy Rd's Right-of-Way - little benefit to use Old Brampton WWTP site for construction compound <b>Constructability:</b> 2 creek crossings - connection from existing invert on Kennedy Rd moving from north to south - Biscayne connection from north to south <b>Easements:</b> Needed from 4 property owners - 1 private - 1 municipalities (City of Brampton) - 1 provincial agencies (IO) - 1 utility company <b>Length of pipe:</b> 2473m <b>Pipe slope:</b> 0.350%: within desired range <b>Compounds:</b> - 2 Major tunneling compounds are needed potentially along Kennedy, north or south of Highway 407. Limited opportunity for compound on Derry. - 1 Compound for retrieval shaft at Kennedy and Etobicoke Creek with limited space - Two tunneling compounds for the Biscayne connection
	<b>Permits and Approvals</b>	Ease of receiving permits and approvals, including the agency approvals necessary - number of key stakeholders to obtain permits/approvals from - extent of infrastructure within lands of concern to each of the key stakeholders	- Preferred to have the minimum number of key stakeholders (Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority) to obtain permits/approvals from - Minimum extent of infrastructure within lands of concern to each of the key stakeholders preferred	- <b>Key Permits and Approvals:</b> 407 ETR, Hydro One, Toronto and Region Conservation Authority - <b>407 ETR:</b> crosses Highway 407 at west end of Highway 410 ramps - <b>Hydro One:</b> straight crossing of corridor - <b>Toronto and Region Conservation Authority:</b> least length of infrastructure within TRCA lands
	<b>Reliability</b>	Ability to provide reliable/continuous service: - degree of reliance on EWD for conveyance, therefore reducing overall system diversion capability - ability to service future CAA Lands development by gravity	- Ability to flow to both west and east trunks is preferred to provide reliable service and system redundancy - Preference is to service CAA Lands development entirely by gravity to minimize new pumped infrastructure and its subsequent capital and O&M costs	- All flows in excess of capacity of existing sewers to be routed to EWD, including CAA lands, impacting diversion capacity of EWD - Able to service 100% of CAA Lands development by gravity

Evaluation Criteria			Alternative		
Type	Comparative Criteria	Description	Main Consideration	Kennedy Road Alignment (Long List: Alt 2)	
Technical Cor	<b>Effectiveness</b>	Effectiveness at meeting current and future conveyance requirements (i.e., modelling results) - ability to conform to Region's Master Plan design parameter and be within 85% capacity - possibility of basement flooding issues indicated by freeboard < 1.8m	- Proposed and existing infrastructure preferred to be flowing below 85% capacity to minimize surcharge - Freeboard of 1.8m or higher in proposed and existing infrastructure preferred to minimize basement flooding potential	<b>Region's Sewer Design (&lt;=85% Capacity)</b> - No segment of proposed over 85% - No segment of north twin over 85% - No segment of south twin over 85% <b>Basement Flooding (If Freeboard &lt; 1.8m)</b> - No segment of proposed with FB <1.8m - 1 segment of north twin with FB <1.8m (1.7m); same as one of the ones from EC and CAA Alts - 1 segment of south twin with FB <1.8m (1.3m); same as one of the ones from EC and CAA Alts	
	<b>Compatibility with Existing Infrastructure</b>	Ease of connection with the existing sewer system Feasibility of connections: - Biscayne Connection - Westcreek Connection - West to East Connection - Khalsa Connection	- Preference to connect to as many existing connections as possible	Diversion Chambers required to proportion flow between the sewers at the following locations: - top end of the new trunk at Kennedy and Etobicoke Creek - approx. 800m connection from Biscayne to Kennedy Rd. Vortex chambers required at: - Kennedy and Etobicoke Creek - Kennedy and Derry Road <u>No connections available for Westcreek, West to East, Khalsa</u>	
	<b>Maximize Lifecycle Investment</b>	Continued use of existing infrastructure	- Connections to the existing Etobicoke Creek trunks are preferred to continue use of existing infrastructure for flow balancing	Flow constraints in existing sewers downstream of Biscayne require all future flows to route south to EWD STS, potential for full capacity of remaining segments in existing sewers to not be utilized	
	<b>Flexibility</b>	Flexibility: - with respect to routing and operating the system - in being able to meet future demands/expansion requirements; or future regulatory requirements	- Opportunities to use the existing Etobicoke Creek trunks for flow balancing is preferred for greater flexibility in operating the system - It is preferred that existing inverts and subsequent proposed infrastructure is deep to provide opportunities for flows beyond current future projection	- Flexibility in routing is limited; all flows routed in new sewer flows to West Trunk - Depth of connection at EWD STS allows for provision of additional capacity beyond current future projections	
	<b>Operational Accessibility</b>	Right-of-Way accessibility for O&M needs	- Access to proposed infrastructure via right of way preferred to avoid permanent easements	Full alignment accessible from Right-of-Way	
	<b>Summary</b>			- Most direct construction accessibility - Least number of creek crossings - Least number of property owners to reach agreements with - Shortest alignment - Least effort related to permits and approvals - Reduced reliability as capacity is heavily dependent on EWD STS - Can service all of CAA Lands' growth via gravity - Best meets Region's sewer design capacity/basement flooding prevention criteria - Least compatible in connecting to the existing system - Minimal opportunity for flow balancing - Allows for provision of additional capacity beyond current future projections but no operational flexibility - Most accessible for O&M	







Evaluation Criteria		Alternative			
Type	Comparative Criteria	Description	Main Consideration		
Natural Environment	<b>Terrestrial Systems</b>	Proximity to any sensitive features and regulated lands Potential impacts to the local vegetation, trees, wildlife and species at risk due to construction and crossings	- Preference is to have as little of the alignment within TRCA regulation limit as possible - Shortest length of open cut work in green area is preferred - Alignment with less impact to wildlife habitat is preferred - Lowest potential to impact species at risk is preferred	- Very minor segments within TRCA regulation limit - Shafts will be mainly within Right-of-Way - Potential for impacts to or removal of some street trees at shaft locations - Impacts to wildlife habitat from tree removals at shaft locations - Potential to impact bat maternal roosting habitat (species at risk)	
	<b>Aquatic Systems</b>	Proximity to any sensitive features and regulated lands Potential impact to the local aquatic flora and fauna, and species at risk due to construction and crossings	- Alignment that is furthest away from watercourse is preferred - Fewer creek crossings is preferred	- 2 crossings of Etobicoke Creek and 2 crossings of tributaries via deep tunnel	
	<b>Contamination</b>	Considerations regarding contaminated areas	- Fewest contaminated areas present adjacent to the alignment is preferred	5 areas of potential environmental concern	
	<b>Hydrogeology and Surface and Groundwater</b>	Hydrogeologic setting, description of groundwater in the area and impact to/on water table Potential impact to the quality of surface and groundwater	- Alignment with lowest potential to impact the water table is preferred - Alignment with smallest open-trench construction is preferred to minimize groundwater contamination - Alignment that entails of construction further away from water course is preferred to minimize impact to surface water	- Vertical shafts will likely breach the water table; groundwater control needed during construction - Risk of surface run-off into shafts during precipitation events - Construction of vertical shafts may cause a localized depression of the water table, which may potentially impact nearby surface water features. - Lower possibility than other alternatives to encounter erosion of streambanks and subsequent turbidity issues due to construction activities	
	<b>Soil, Bedrock and Geology</b>	Geology and geotechnical considerations	- Preference is to be within rock as much as possible	- Bedrock (Queenston at north changes to Georgian Bay Shale at south) at 2-20 mbgs. The project alignment will be in the Bedrock. - Rock (100% of alignment)	






Evaluation Criteria			Alternative		
Type	Comparative Criteria	Description	Main Consideration	Kennedy Road Alignment (Long List: Alt 2)	
	Summary			<ul style="list-style-type: none"> <li>- Least area within TRCA regulation limit</li> <li>- Very little open-cut work area</li> <li>- Shafts within Right-of-Way</li> <li>- Least impact on vegetation and wildlife (some potential for SAR impacts)</li> <li>- Least impact on aquatic system due to tunnel within ROW</li> <li>- Significant presence of potentially contaminated lands</li> <li>- Some impact to hydrogeology (i.e., reduction in groundwater discharge to nearby water features) due to shafts only</li> <li>- Little to no potential for groundwater contamination</li> <li>- No impact expected to surface water</li> <li>- Tunnel expected to be entirely within rock</li> </ul>	
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., interference with views)	- Alignment with least impact to the spaces used by the community (i.e., least number of spaces and shortest duration of impact) are preferred	- Could impact Brampton Sports Park access, depending on shaft locations	
	Future Planning Policies/Initiatives	Compatibility with Region of Peel & municipal growth initiatives MP Strategies (pumped vs gravity)	- Accommodation to the growth initiatives is preferred - Alignment with little to no pumping is preferred	- Provides sufficient capacity for current future projections. - No pumping required; meets Region's policy on gravity infrastructure preferred over pumped infrastructure. - Impacts Region diversion strategy	
	Disruption During Construction	Disruption to existing community during construction (traffic, noise, and air quality)	- Alignment preferred to be in non-residential areas - Alignment preferred to result in least disruptions to key roadways - Alignment preferred if there is no long term odour or noise concerns	- Alignment under Kennedy Road. Location of construction shafts may result in traffic disruption on Kennedy Road. - Requirement for vortex chamber may result in long term noise and odour concerns	
	Archaeological and Cultural Resources	Potential impacts to archaeological and cultural resources	- Alignment preferred to have little to no future archaeological potential '- Alignment preferred to pose little to no permanent and/or temporary impact to adjacent to sites/properties that are culturally significant	<b>Archaeological Potential</b> - Small slivers of space along the alignment needing to test pit survey (Stage 2) <b>Cultural Heritage Resources</b> - Not anticipated to have any impacts to any identified cultural heritage resources	

Evaluation Criteria			Alternative		
Type	Comparative Criteria	Description	Main Consideration	Kennedy Road Alignment (Long List: Alt 2)	
	Summary			<ul style="list-style-type: none"> <li>- No impact on recreational land use or visual landscape</li> <li>- Future projected growth capable of being serviced entirely via gravity but impacts the intended East-to-West diversion strategy</li> <li>- Most disturbance (i.e., traffic impact and potential for future odour issues) as alignment is along major road</li> <li>- Least archaeological potential</li> <li>- Least impact on cultural heritage</li> </ul>	
Economic Factors	Capital Cost	Estimated Capital Costs	- Capital costs includes engineering, construction and commissioning. Construction cost includes: open-cut excavation, tunnelling, shaft construction, cost of pipe, site preparation and restoration. Also includes re-instatement, mobilization/ demobilization, traffic management, bonding, dewatering, etc. Lower capital cost alternative preferred	\$64.1 M	
	Operation and Maintenance	Estimated Operational and Maintenance Costs	- Operational expenditure incurred throughout the life of the asset, including labour, power and consumables and asset monitoring. Lower operation and maintenance cost alternative preferred.	High due to vortex	
	Summary			<ul style="list-style-type: none"> <li>- Highest capital cost</li> <li>- Highest operation &amp; maintenance cost</li> </ul>	
Total Anticipated Impact and Rank				<ul style="list-style-type: none"> <li>- Moderate scoring technical</li> <li>- Least impact on natural environment</li> <li>- Moderate socio-economic impact</li> <li>- Highest cost</li> </ul>	2

Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Deep Trunk Alignment (Long List: Alt 3)	
Considerations	<b>Implementation Feasibility</b>	Feasibility of implementation in terms of: <ul style="list-style-type: none"> <li>- construction accessibility</li> <li>- constructability (including water crossings)</li> <li>- easements</li> <li>- length of pipe</li> <li>- pipe slope</li> <li>- construction compounds</li> </ul>	<ul style="list-style-type: none"> <li>- Construction access from existing rights-of-way preferred as it allows for lower construction cost and shorter construction period</li> <li>- Fewer creek crossings are preferred to reduce complexity during construction</li> <li>- Routes with fewer property owners is preferred to prevent delays in easement/property acquisition</li> <li>- Shorter length of pipe is preferred as the subsequent capital cost, construction time and disturbance to the natural and social environments are lower</li> <li>- Slopes between 0.15-0.5% preferred to achieve self-scouring velocity while avoiding solid settlement, separation, odours, corrosion and maintenance issues</li> </ul>	<b>Construction accessibility:</b> <ul style="list-style-type: none"> <li>- limited within the valley (not as limited as EC or CAA alignments within the valley)</li> <li>- provides opportunity to use Old Brampton WWTP site for construction compound</li> </ul> <b>Constructability:</b> <ul style="list-style-type: none"> <li>7 creek crossings</li> <li>- connection from existing invert on Kennedy Rd moving from northwest to southeast</li> <li>- 2 north of CAA Lands</li> <li>- Biscayne connection from north to south</li> <li>- west of Highway 410 from northwest to southeast</li> <li>- south of Highway 407 from northwest to southeast</li> <li>- west of Dixie Rd</li> </ul> <b>Easements:</b> <ul style="list-style-type: none"> <li>Needed from 6 property owners</li> <li>- 1 private</li> <li>- 2 municipalities (Cities of Brampton and Mississauga)</li> <li>- 2 provincial agencies (MTO and IO)</li> <li>- 1 utility company</li> </ul> <b>Length of pipe:</b> <ul style="list-style-type: none"> <li>3678m</li> </ul> <b>Pipe slope:</b> <ul style="list-style-type: none"> <li>0.299% to 0.350%: within desired range</li> </ul> <b>Compounds:</b> <ul style="list-style-type: none"> <li>- Major tunneling compound on the Old Brampton WWTP site .</li> <li>- Tunnel launching or Retrieval compound Between Tomken and Dixie.</li> <li>- Potential Major compound on Khalsa and Dixie.</li> </ul>	
	<b>Permits and Approvals</b>	Ease of receiving permits and approvals, including the agency approvals necessary <ul style="list-style-type: none"> <li>- number of key stakeholders to obtain permits/approvals from</li> <li>- extent of infrastructure within lands of concern to each of the key stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>- Preferred to have the minimum number of key stakeholders (Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority) to obtain permits/approvals from</li> <li>- Minimum extent of infrastructure within lands of concern to each of the key stakeholders preferred</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Key Permits and Approvals:</b> Ministry of Transportation, 407 ETR, Hydro One, Toronto and Region Conservation Authority</li> <li>- <b>Ministry of Transportation:</b> Highway 410 crossing approval</li> <li>- <b>407 ETR:</b> Highway 407 crossing approval and encroachment</li> <li>- <b>Hydro One:</b> crosses corridor diagonally south of Tomken</li> <li>- <b>Toronto and Region Conservation Authority:</b> majority of alignment located within regulated areas, however, tunneling will mitigate impacts</li> </ul>	
	<b>Reliability</b>	Ability to provide reliable/continuous service: <ul style="list-style-type: none"> <li>- degree of reliance on EWD for conveyance, therefore reducing overall system diversion capability</li> <li>- ability to service future CAA Lands development by gravity</li> </ul>	<ul style="list-style-type: none"> <li>- Ability to flow to both west and east trunks is preferred to provide reliable service and system redundancy</li> <li>- Preference is to service CAA Lands development entirely by gravity to minimize new pumped infrastructure and its subsequent capital and O&amp;M costs</li> </ul>	<ul style="list-style-type: none"> <li>- Can operate independently of EWD, but connection available at south end to allow for diversion</li> <li>- Able to service 100% of CAA Lands development by gravity through construction of local sewer flowing north on Kennedy</li> </ul>	



Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Deep Trunk Alignment (Long List: Alt 3)	
Technical Cor	Effectiveness	Effectiveness at meeting current and future conveyance requirements (i.e., modelling results) - ability to conform to Region's Master Plan design parameter and be within 85% capacity - possibility of basement flooding issues indicated by freeboard < 1.8m	- Proposed and existing infrastructure preferred to be flowing below 85% capacity to minimize surcharge - Freeboard of 1.8m or higher in proposed and existing infrastructure preferred to minimize basement flooding potential	<b>Region's Sewer Design (&lt;=85% Capacity)</b> - No segment of proposed over 85% - No segment of north twin over 85% - No segment of south twin over 85% <b>Basement Flooding (If Freeboard &lt; 1.8m)</b> - No segment of proposed with FB <1.8m - 1 segment of north twin with FB <1.8m (1.7m); same as one of the ones from EC and CAA Alts - 1 segment of south twin with FB <1.8m (1.2m); same as one of the ones from EC and CAA Alts	
	Compatibility with Existing Infrastructure	Ease of connection with the existing sewer system Feasibility of connections: - Biscayne Connection - Westcreek Connection - West to East Connection - Khalsa Connection	- Preference to connect to as many existing connections as possible	Diversion Chamber required to proportion flow between the sewers at the following locations: - top end of the new trunk at Kennedy and Etobicoke Creek - at West to East connection - possible for Khalsa Vortex chamber and approximately 135m connection required for Biscayne. Connection to Westcreek is through existing trunk section.	
	Maximize Lifecycle Investment	Continued use of existing infrastructure	- Connections to the existing Etobicoke Creek trunks are preferred to continue use of existing infrastructure for flow balancing	Flow balancing at north end of sewer allows for full capacity of infrastructure to be utilized	
	Flexibility	Flexibility: - with respect to routing and operating the system - in being able to meet future demands/expansion requirements; or future regulatory requirements	- Opportunities to use the existing Etobicoke Creek trunks for flow balancing is preferred for greater flexibility in operating the system - It is preferred that existing inverts and subsequent proposed infrastructure is deep to provide opportunities for flows beyond current future projection	- Flexibility through routing to one of three sewers ; allows for greater control in operating the system and diversion of flows into EWD - Upstream end deepened to allow for gravity servicing of CAA Lands, which also provides opportunity for future connections - Downstream connection of new sewer is constrained by matching existing inverts of Etobicoke Creek Trunk Sewer south of Derry Road, in order to maintain ability for conveyance to GE Booth (may impact ability to service future expanded service areas depending on service area elevations)	
	Operational Accessibility	Right-of-Way accessibility for O&M needs	- Access to proposed infrastructure via right of way preferred to avoid permanent easements	Accessible from Tomken only Access to remaining length is challenged by location in valley	
	Summary			- Some limitations in construction accessibility - Most creek crossings; however crossings are deep via tunnel - Mid-range need for property agreements - Second shortest alignment - Medium effort on permitting and approvals - Reliable service available as flows can go to West and East trunks - Can service all of CAA Lands' growth via gravity - Best meets Region's sewer design capacity/basement flooding prevention criteria - Compatible in connecting to the existing system - Allows flow balancing - Offers operational flexibility and provision for future connections - Limited accessibility for O&M	

Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Deep Trunk Alignment (Long List: Alt 3)	
Natural Environment	<b>Terrestrial Systems</b>	Proximity to any sensitive features and regulated lands Potential impacts to the local vegetation, trees, wildlife and species at risk due to construction and crossings	<ul style="list-style-type: none"> <li>- Preference is to have as little of the alignment within TRCA regulation limit as possible</li> <li>- Shortest length of open cut work in green area is preferred</li> <li>- Alignment with less impact to wildlife habitat is preferred</li> <li>- Lowest potential to impact species at risk is preferred</li> </ul>	<ul style="list-style-type: none"> <li>- Nearly entirely within TRCA regulation limit, but tunneling would mitigate impact</li> <li>- Approximately 20% is open cut in green areas</li> <li>- Potential for impacts to or removal of some street trees at shaft locations</li> <li>- Impacts to wildlife habitat from vegetation and tree removals at shaft locations</li> <li>- Potential to impact Eastern Wood-Pewee habitat (species at risk)</li> <li>- Potential to impact bat maternal roosting habitat (species at risk)</li> </ul>	
	<b>Aquatic Systems</b>	Proximity to any sensitive features and regulated lands Potential impact to the local aquatic flora and fauna, and species at risk due to construction and crossings	<ul style="list-style-type: none"> <li>- Alignment that is furthest away from watercourse is preferred</li> <li>- Fewer creek crossings is preferred</li> </ul>	<ul style="list-style-type: none"> <li>- Construction of minor segment close to Creek</li> <li>- 7 crossings of Etobicoke Creek and 2 crossings of tributaries via tunnel as well as approximately 600m of pipe installed along banks of Etobicoke Creek</li> </ul>	
	<b>Contamination</b>	Considerations regarding contaminated areas	<ul style="list-style-type: none"> <li>- Fewest contaminated areas present adjacent to the alignment is preferred</li> </ul>	5 areas of potential environmental concern	
	<b>Hydrogeology and Surface and Groundwater</b>	Hydrogeologic setting, description of groundwater in the area and impact to/on water table Potential impact to the quality of surface and groundwater	<ul style="list-style-type: none"> <li>- Alignment with lowest potential to impact the water table is preferred</li> <li>- Alignment with smallest open-trench construction is preferred to minimize groundwater contamination</li> <li>- Alignment that entails of construction further</li> </ul>	<ul style="list-style-type: none"> <li>- Open-trench excavation will likely breach the water table requiring dewatering</li> <li>- Vertical shafts will likely breach the water table; groundwater control needed during construction</li> <li>- Tunnel into Georgian Bay Formation (shale) bedrock could be fractured and water-bearing near bedrock surface.</li> <li>- Risk of surface run-off into shafts and trenches during precipitation events</li> <li>- Construction of vertical shafts may cause a localized depression of the water table, which may potentially impact nearby surface water features.</li> <li>- Construction of an open trench near Etobicoke Creek may reduce groundwater discharge to nearby water features</li> <li>- Reduced open-trench construction but some potential to mobilize groundwater contamination if it is present</li> <li>- Construction close to Etobicoke Creek with creek crossings; construction activities may result in erosion of streambanks in the Etobicoke Creek features, which may generate turbidity.</li> </ul>	
	<b>Soil, Bedrock and Geology</b>	Geology and geotechnical considerations	<ul style="list-style-type: none"> <li>- Preference is to be within rock as much as possible</li> </ul>	<ul style="list-style-type: none"> <li>- Bedrock (Queenston at north change to Georgian Bay Shale at south) at 1-11 mbgs</li> <li>- Some boulders expected to be encountered on overburden</li> <li>- Rock (40% of alignment) and mix face condition (45% of alignment), Modern deposits (15% of alignment)</li> </ul>	

Evaluation Criteria					
Type	Comparative Criteria	Description	Main Consideration	Deep Trunk Alignment (Long List: Alt 3)	
	Summary			<ul style="list-style-type: none"> <li>- Largest area within TRCA regulation limit</li> <li>- Some open-cut work</li> <li>- Some impact on vegetation and wildlife due to vegetation and tree removals (including SAR)</li> <li>- Some potential for impact on aquatic systems due to proximity of construction to watercourse (minor section)</li> <li>- Significant presence of potentially contaminated lands</li> <li>- Some impact to hydrogeology (i.e., reduction in groundwater discharge to nearby water features) due to both shafts and trenches</li> <li>- High potential for mobilization of groundwater contamination</li> <li>- Some impact on surface water due to higher potential for runoff close to water course</li> <li>- Some boulders expected to be encountered during construction</li> </ul>	
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., interference with views)	- Alignment with least impact to the spaces used by the community (i.e., least number of spaces and shortest duration of impact) are preferred	<ul style="list-style-type: none"> <li>- Potential for some minor impact on paved multiuse trail along Etobicoke Creek</li> <li>- Will impact Brampton Sports Park access if construction proceeds in advance of redevelopment of CAA Lands; however tunneling is anticipated here so impact can be mitigated</li> <li>- Construction to impact access to King's Park (east of Dixie Rd and north of Derry Rd)</li> </ul>	
	Future Planning Policies/Initiatives	Compatibility with Region of Peel & municipal growth initiatives MP Strategies (pumped vs gravity)	<ul style="list-style-type: none"> <li>- Accommodation to the growth initiatives is preferred</li> <li>- Alignment with little to no pumping is preferred</li> </ul>	<ul style="list-style-type: none"> <li>- Provides sufficient capacity for current future projections.</li> <li>- No pumping required; meets Region's policy on gravity infrastructure preferred over pumped infrastructure</li> </ul>	
	Disruption During Construction	Disruption to existing community during construction (traffic, noise, and air quality)	<ul style="list-style-type: none"> <li>- Alignment preferred to be in non-residential areas</li> <li>- Alignment preferred to result in least disruptions to key roadways</li> <li>- Alignment preferred if there is no long term odour or noise concerns</li> </ul>	<ul style="list-style-type: none"> <li>- Most alignment is valley land and industrial areas.</li> <li>- Major Shaft can be located at Old Brampton WWTP with minimal impact on traffic.</li> <li>- No significant traffic impact for alignment on local roads as construction would be tunneled</li> </ul>	
	Archaeological and Cultural Resources	Potential impacts to archaeological and cultural resources	<ul style="list-style-type: none"> <li>- Alignment preferred to have little to no future archaeological potential</li> <li>- Alignment preferred to pose little to no permanent and/or temporary impact to adjacent to sites/properties that are culturally significant</li> </ul>	<p><b>Archaeological Potential</b></p> <ul style="list-style-type: none"> <li>- Small sections mainly needing test pit survey with small slivers needing pedestrian survey (Stage 2)</li> </ul> <p><b>Cultural Heritage Resources</b></p> <ul style="list-style-type: none"> <li>- Minor impacts to Mount Charles House through soil disturbance and vegetation removal in the Etobicoke Creek floodplain in the north of the property (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> <li>- Potential direct, permanent, and negative impacts to the farmscape (red brick well and water tower ruins adjacent to the north bank of Etobicoke Creek) of Benjamin Stewart Farm (will need a Heritage Impact Assessment)</li> <li>- Potential impacts adjacent to King's Cemetery; impacts are minor, temporary and far from heritage features (Heritage Impact Assessment may be needed but recommendation is to waive this for acceptable mitigative measures)</li> </ul>	

Evaluation Criteria				
Type	Comparative Criteria	Description	Main Consideration	Deep Trunk Alignment (Long List: Alt 3)
	Summary			<ul style="list-style-type: none"> <li>- Some impact to paved multiuse trail, Brampton Sports Park and King's Park</li> <li>- Future projected growth capable of being serviced entirely via gravity</li> <li>- Least disturbance (i.e., traffic impact, noise, air quality) as alignment is within industrial and valley lands</li> <li>- Some potential for impact to archaeological resources -Stage 2 assessment required</li> <li>- Potential for minor impact to cultural heritage resources in the area and need for an HIA</li> </ul>
Economic Factors	Capital Cost	Estimated Capital Costs	- Capital costs includes engineering, construction and commissioning. Construction cost includes: open-cut excavation, tunnelling, shaft construction, cost of pipe, site preparation and restoration. Also includes re-instatement, mobilization/ demobilization, traffic management, bonding, dewatering, etc. Lower capital cost alternative preferred	\$61.3 M
	Operation and Maintenance	Estimated Operational and Maintenance Costs	- Operational expenditure incurred throughout the life of the asset, including labour, power and consumables and asset monitoring. Lower operation and maintenance cost alternative preferred.	Average
	Summary			<ul style="list-style-type: none"> <li>- High capital cost</li> <li>- Average operation &amp; maintenance cost</li> </ul>
Total Anticipated Impact and Rank				<ul style="list-style-type: none"> <li>- Highest scoring technical</li> <li>- Moderate impact on natural environment</li> <li>- Least socio-economic impact</li> <li>- Moderate cost</li> </ul>