Environmental Study Report

Wyecroft Road Improvements from Bronte Road to Kerr Street

Appendix L: Detailed Evaluation Tables for Design Alternatives

Submitted to Town of Oakville
by IBI Group
January 2020

West Segment

West Segment: Bronte Road to Third Line - Active Transportation		Option 1 MUT on south side, sidewalk on north side	Option 2 MUT on south side, sidewalk on north side, buffered bike lanes in both directions	Legend Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Transportation				
Traffic capacity	Provides appropriate capacity to move people and goods (all modes)	◕	●	Option 2 provides increased capacity for active transportation users.
Traffic network	Improves access to major roads	non-discriminatory		There is no improvement to major roadway access.
Transit service	Improves the quality, reliability and integration of transit with other modes	◕	●	Both options provide adequate quality, reliability, and integration of transit. Option 2 is slightly better in terms of cyclist access to transit facilities because bike lanes would be provided on both sides of the roadway.
Transit network	Improves the quality, reliability and service of Oakville Transit	non-discriminatory		There is no improvement to the transit network.
Active transportation	Supports active mobility choices such as walking and cycling that is universally accessible, direct, comfortable and convenient	◕	●	Option 2 accommodates both recreational and commuter cyclists.
Emergency management response	Improves access for emergency responders within the corridor	non-discriminatory		There are no emergency response facilities within this segment.
Roadway safety	Improves safety at intersections and crossing locations	non-discriminatory		Both options improve safety at intersections and crossing locations.
	Maintains sightlines between modes	◕	●	In Option 1 there are fewer active transportation facilities for drivers to be aware of. Option 2 requires drivers to be aware of both cyclists in the bike lanes and on the MUT, but the proximity of the bike lanes to drivers allows for better sightlines between modes.
	Easy-to-understand configuration to users "self-explaining roads"	◕	◑	Option 1 provides an easier to understand configuration, due to fewer active transportation facilities.
Summary		◕	◕	

West Segment: Bronte Road to Third Line - Active Transportation		Option 1 MUT on south side, sidewalk on north side	Option 2 MUT on south side, sidewalk on north side, buffered bike lanes in both directions	Legend Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Social Environment				
Supports appropriate intensification	Supports land use	◕	●	Option 2 provides facilities for both recreational and commuter cyclists. This will support the proposed Major Transit Station Area surrounding the Bronte GO station, and associated residential uses.
	Improves business access (post construction)	◕	●	Option 2 improves business access by providing active transportation facilities for both recreational and commuter cyclists.
Community building	Improves community cohesiveness	◕	●	Option 2 improves community cohesiveness by catering to both commuter and recreational cyclists.
	Improves quality of life and health and safety	◕	●	Option 2 improves quality of life and health and safety because it accommodates both commuter and recreational cyclists.
	Improves corridor aesthetics	non-discriminatory		Both options provide opportunity to improve corridor aesthetics.
	Reduces impact of heavy truck traffic	◕	●	Option 2 reduces impact of heavy truck traffic by creating a more complete street. The buffer and presence of commuter cyclists may cause truck drivers to reduce their speed through this area.
Construction phase Impacts	Minimal duration of construction	non-discriminatory		Both options have similar construction durations.
	Minimizes property requirements	non-discriminatory		Both options accomodated within 35 metre right-of-way, as specified in the Livable Oakville Plan.
Noise and vibration impacts	Reduces noise (post construction)	non-discriminatory		There is no difference in noise.
	Reduces vibrations (post construction)	non-discriminatory		There is no difference in vibration.
Travel time	Reduces travel time for all modes	◑	◕	Option 2 improves travel times for commuter cyclists with dedicated facilities. Travel times remain the same for vehicles and transit.
Cultural heritage impacts	Maintains existing built cultural heritage features and avoids impacts to archaeological resources	non-discriminatory		There are no cultural heritage features in this segment.
Emergency access	Maintains emergency access (post construction)	non-discriminatory		There is no difference in emergency access.
Summary		◕	●	

West Segment: Bronte Road to Third Line - Active Transportation		Option 1	Option 2	Legend
		MUT on south side, sidewalk on north side	MUT on south side, sidewalk on north side, buffered bike lanes in both directions	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Natural Environment				
Environmentally Sensitive Areas	Minimizes disturbances to ESAs	non-discriminatory		There are no ESAs in this segment.
Areas of Natural and Scientific Interest	Minimizes disturbances to ANSIs	non-discriminatory		There are no ANSIs in this segment.
Woodlots	Improves integrity of woodlot and woodlot function	non-discriminatory		There are no woodlots in this segment.
Treescape	Improves treescape	●	◕	Option 1 provides more opportunity to improve treescape as there is more boulevard available for plantings.
Creeks	Minimizes impacts to creeks, surface and groundwater features and their hydrological functions	non-discriminatory		There are no creeks in this segment.
Wetlands	Minimizes impacts to provincially and locally designated wetlands	non-discriminatory		There are no wetlands in this segment.
Wildlife and birds	Minimizes impacts to wildlife habitat, fish habitat, the habitat of endangered and threatened species, and significant wildlife habitat	non-discriminatory		Both options equally impact wildlife habitat.
Vegetation	Minimizes impacts to vegetation	non-discriminatory		Both options equally impact vegetation.
Floodplains	Avoids encroachment into the floodplain	non-discriminatory		There are no floodplains in this segment.
Resilience	Minimizes potential impacts to and risk from natural hazards (flooding, erosion, and unstable bedrock/soils)	non-discriminatory		There is no difference in natural hazards.
Summary		●	◕	

West Segment: Bronte Road to Third Line - Active Transportation		Option 1	Option 2	Legend
		MUT on south side, sidewalk on north side	MUT on south side, sidewalk on north side, buffered bike lanes in both directions	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Technical				
Stormwater management	Improves stormwater quality and reduces stormwater quantity	◕	◑	While permeable asphalt and porous concrete will be considered for the MUT and sidewalks, respectively, Option 1 has a smaller footprint, meaning less total impervious surface, which would slightly improve stormwater quality and reduce stormwater quantity.
Utilities	Minimizes the number of utility relocations required	◕	◑	Option 1 minimizes potential utility relocations due to the smaller footprint.
Structures	Provides opportunity to improve or rehabilitate existing structures	non-discriminatory		Both options provide opportunity to improve/rehabilitate existing structures.
Illumination	Minimizes illumination requirements	non-discriminatory		Both options have similar illumination requirements.
Policy framework	Supports existing municipal and provincial policy framework	◑	●	Option 2 goes above and beyond the existing municipal and provincial policy framework by providing facilties for both recreational and commuter cyclists.
Summary		◕	◕	
Cost				
Capital costs	Lower capital costs including infrastructure and construction	●	◕	Option 1 has a lower capital cost due to less infrastructure and construction requirements.
Operating and life-cycle costs	Lower operating costs based on the required labour, energy, and maintenance costs, and ability to reduce long-term costs	●	◕	Option 2 requires additional maintenance, especially if physical barrier is implemented.
	Infrastructure renewal and ability to reduce long-term costs	non-discriminatory		Both options allow for infrastructure renewal.
Summary		●	◕	

Middle Segment

Middle Segment: Third Line to 1146 South Service Road - Active Transportation and Roadway Drainage		Option 1		Option 2		Option 3		Legend
		Cycle track on both sides and sidewalk on south side		Buffered bike lanes on both sides and sidewalk on south side		MUT on south side, no on-road bike lanes or sidewalks.		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	
Criteria	**Metrics**							**Notes**
Transportation								
Traffic capacity	Provides appropriate capacity to move people and goods (all modes)	●	●	●	●	◕	◕	Options 1 and 2 (all scenarios) provide appropriate capacity for all modes. Option 3 (both scenarios) provides less capacity for cyclists and pedestrians with a shared two-way facility.
Traffic network	Improves access to major roads	non-discriminatory						All options provide the same access to major roads. An auxiliary left-turn lane is proposed for Progress Court for all options.
Transit service	Improves the quality, reliability and integration of transit with other modes	●	●	●	●	◕	◕	Options 1 and 2 (all scenarios) provide better integration between transit and active transportation, with facilities on both sides.
Transit network	Improves the quality, reliability and service of Oakville Transit	non-discriminatory						All options provide the same quality, reliability, and service of Oakville Transit.
Active transportation	Supports active mobility choices such as walking and cycling that is universally accessible, direct, comfortable and convenient	◕	●	◕	●	◑	◑	Options 1 and 2 (urban scenario) are most supportive of active transportation because they provide more comfortable facilities for cyclists and pedestrians. Option 1 and 2 (semi-rural) are supportive of active transportation, but are not as comfortable due to the rural nature of the south side. Option 3 is least supportive of active transportation, as it is not as direct as the two-way facilities proposed in Options 1 and 2.
Emergency management response	Improves access for emergency responders within the corridor	non-discriminatory						All options provide access for emergency responders within the corridor.
Roadway safety	Improves safety at intersections and crossing locations	●	●	●	●	◔	◔	Options 1 and 2 (all scenarios) improve safety at intersections and crossing locations. Option 3 (both scenarios) requires cyclists to cross Wyecroft Road to access the two-way multi-use trail on the south side leading to increased conflict points at intersections.
	Maintains sightlines between modes	◑	●	◕	◕	◑	◑	Option 1 (urban scenario) maintains sightlines between modes since the facilities are closer together and the cycle track and sidewalk are vertically separated from the roadway. Option 3 places cyclists and pedestrians furthest away from drivers since these facilities would be on the opposite side of the ditch, which decreases sightlines, particularly for turning vehicles.
	Easy-to-understand configuration to users "self-explaining roads"	●	●	●	●	◑	◑	Options 1 and 2 (both scenarios) provide easy-to-understand configuration for all road users since the facilities are located in an intuitive location. Option 3 is hardest to understand as it places the multi-use trail furthest away from the roadway.
Summary		●	●	●	●	◑	◑	

Middle Segment: Third Line to 1146 South Service Road - Active Transportation and Roadway Drainage		**Option 1**		**Option 2**		**Option 3**		**Legend**
		Cycle track on both sides and sidewalk on south side		Buffered bike lanes on both sides and sidewalk on south side		MUT on south side, no on-road bike lanes or sidewalks.		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	
Criteria	**Metrics**							**Notes**
Social Environment								
Supports appropriate intensification	Supports land use	non-discriminatory						All options support the excisting land use.
	Improves business access (post construction)	◕	◕	◕	◕	●	●	Option 3 (both scenarios) has the most potential to improve business access for pedestrians and recreational/commuter cyclists. Options 1 and 2 (all scenarios) have less potential to improve business access for recreational cyclists as the proposed cycling facilities would attract commuter cyclists.
Community building	Improves community cohesiveness	◕	◕	◕	◕	●	●	All options improve community cohesiveness through the addition of active transportation facilities. An urban corridor would foster a more complete street.
	Improves quality of life and health and safety	◕	◕	◕	◕	●	●	Option 3 (both scenarios) has the most potential for quality of life and heath and safety improvements due to the inclusion of two-way pedestrian and cycling facilities that are setback from the QEW.
	Improves corridor aesthetics	◑	◕	◑	◕	◑	●	Option 3 (urban scenario) would most improve corridor aesthetics as it allows more space for streetscape. Options 1, 2, and 3 (semi-rural scenarios) would be the least aesthetically pleasing due to the ditch.
	Reduces impact of heavy truck traffic	◕	●	●	●	◕	◕	Options 1 and 2 (urban scenario) and Option 2 (semi-rural scenario) have the most potential to reduce impact of heavy truck traffic since the proposed cycling facilities are closer to the roadway. The presence of cyclists and on-road cycling infrastructure might cause truck drivers to reduce their speed.
Construction phase Impacts	Minimal duration of construction	◕	◑	◕	◑	●	◕	Options 1, 2, and 3 (semi-rural scenarios) require less construction duration than the urban scenario.
	Minimizes property requirements	non-discriminatory						All options do not require property take.
Noise and vibration impacts	Reduces noise (post construction)	non-discriminatory						There is no difference in noise.
	Reduces vibrations (post construction)	non-discriminatory						There is no difference in vibration.
Travel time	Reduces travel time for all modes	◕	◕	◕	◕	◑	◑	Options 1 and 2 improve travel time for cyclists with dedicated facilities. Travel times remain the same for vehicles and transit.
Cultural heritage impacts	Maintains existing built cultural heritage features and avoids impacts to archaeological resources	non-discriminatory						There are no cultural heritage features in this segment.
Emergency access	Maintains emergency access (post construction)	non-discriminatory						All options provide access for emergency responders within the corridor as the pavement width minimum is maintained.
Summary		◕	◕	◕	◕	◕	◕	

Middle Segment: Third Line to 1146 South Service Road - Active Transportation and Roadway Drainage		**Option 1**		**Option 2**		**Option 3**		**Legend**
		Cycle track on both sides and sidewalk on south side		Buffered bike lanes on both sides and sidewalk on south side		MUT on south side, no on-road bike lanes or sidewalks.		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	
Criteria	**Metrics**							**Notes**
Natural Environment								
Environmentally Sensitive Areas	Minimizes disturbances to ESA	non-discriminatory						There are no ESAs in this segment.
Areas of Natural and Scientific Interest	Minimizes disturbances to ANSIs	non-discriminatory						There are no ANSIs in this segment.
Woodlots	Improves integrity of woodlot and woodlot function	non-discriminatory						There are no woodlots in this segment.
Treescape	Improves treescape	non-discriminatory						All options allow for improvement to treescape.
Creeks	Minimizes impacts to creeks, surface and groundwater features and their hydrological functions	non-discriminatory						All options require road widening and impacts to the creeks. All options will increase impervious areas and the widths of roadways at creek locations.
Wetlands	Minimizes impacts to provincially and locally designated wetlands	non-discriminatory						All options include a new crossing of Fourteen Mile Creek.
Wildlife and birds	Minimizes impacts to wildlife habitat, fish habitat, the habitat of endangered and threatened species, and significant wildlife habitat	non-discriminatory						All options impact wildlife and wildlife habitat. Replacement of C1 with a bridge over Fourteen Mile Creek will disturb wildlife passage temporarily during construction, but will ultimately improve wildlife mobility once the bridge is complete. The C4 crossing will have a slightly lower OR than the existing structure and may limit or exclude mid-size mammal and herpetofauna crossing. However, the slight reduction in OR for the proposed crossing is not expected to have a significant impact on wildlife movement. The C4 crossing is also located in a highly manicured area that likely already has very limited wildlife assemblage present.
Vegetation	Minimizes impacts to vegetation	●	◕	●	◕	◑	◔	Option 1 (semi-rural) has the least impact on vegetation since the widening is minimize as the buffered bike lane uses the roadway shoulder area. Option 3 has most impact on vegetation since it requires a larger facility on the south side which contains more vegetation than the north side. All of the vegetation communities identified in the study area are considered widespread and common in Ontario and globally.
Floodplains	Avoids encroachment into the floodplain	non-discriminatory						All options encroach into the floodplain at Fourteen Mile Creek.
Resilience	Minimizes potential impacts to and risk from natural hazards (flooding, erosion, and unstable bedrock/soils)	non-discriminatory						All options require the replacement of the existing culvert at Fourteen Mile Creek with a bridge, therefore improving resilience to natural hazards.
Summary		●	◕	●	◕	◑	◔	

Middle Segment: Third Line to 1146 South Service Road - Active Transportation and Roadway Drainage		**Option 1** Cycle track on both sides and sidewalk on south side		**Option 2** Buffered bike lanes on both sides and sidewalk on south side		**Option 3** MUT on south side, no on-road bike lanes or sidewalks.		**Legend** Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	Rural south side, existing north side (urban/rural)	Urban both sides	
Criteria	**Metrics**							**Notes**
Technical								
Stormwater management	Improves stormwater quality and reduces stormwater quantity	◕	◑	◕	◑	●	◕	Options 1, 2, and 3 (semi-rural scenarios) improve stormwater quality and quantity as there is more potential for infiltration. Options 1, 2, and 3 (urban scenarios) require piping the stormwater and the use of oil grit separators or other solutions to meet quality requirements.
Utilities	Minimizes the number of utility relocations required	◔	○	◔	○	◔	○	Options 1, 2, and 3 (semi-rural scenarios) minimize the utility relocations required, as the proposed condition is similar to the existing condition. Options 1, 2, and 3 (urban scenarios) increase the utility relocations required since there would be underground storm sewer construction.
Structures	Provides opportunity to improve or rehabilitate existing structures	non-discriminatory						All options provide opportunities to improve or rehabilitate existing structures.
Illumination	Minimizes illumination requirements	non-discriminatory						All options have similar illumination requirements.
Policy framework	Supports existing municipal and provincial policy framework	◕	●	◕	●	◕	●	Options 1, 2, and 3 (urban scenarios) allow for the inclusion of street furniture to attract more active transportation users further supporting the goal of the Growth Plan, the Region of Halton Official Plan and the Livable Oakville plan.
Summary		◑	◑	◑	◑	◕	◑	
Cost								
Capital costs	Lower capital costs including infrastructure and construction	●	◕	●	◕	●	◕	Options 1, 2, and 3 (semi-rural scenarios) require less infrastructure (sewers, catch basins, etc.) and would therefore have lower capital cost.
Operating and life-cycle costs	Lower operating costs based on the required labour, energy, and maintenance costs, and ability to reduce long-term costs	◑	◔	●	◕	◕	◑	Option 2 has the lowest operating cost based on the required labour, energy, and maintenance cost since the buffered bike lane is not grade separated from the road. Option 3 has a low operating cost since the only additional maintenance is for snow clearing on the multi-use trail. Option 1 has the highest operating costs due to the presence of a grade separated bicycle facilities near the QEW. In all scenarios, semi-rural has lower maintenance requirements for stormwater management than urban.
	Infrastructure renewal and ability to reduce long-term costs	◕	●	◕	●	◕	●	Options 1, 2, and 3 (urban scenarios) allow for more infrastructure renewal due to the inclusion of underground works. Options 1, 2, and 3 (semi-rural scenarios) may not require intensive construction therefore there may be less opportunity for infrastructure renewal.
Summary		◕	◕	●	◕	◕	◕	

Middle Segment: South Service Road West Realignment		Option 1	Option 2	Legend
		Maintain existing curves	Realign roadway to straighten out curve. Existing road to remain.	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Transportation				
Traffic capacity	Provides appropriate capacity to move people and goods (all modes)	non-discriminatory	non-discriminatory	There is no impact to traffic capacity.
Traffic network	Improves access to major roads	◑	●	Option 2 improves westbound approach and sightlines to Third Line.
Transit service	Improves the quality, reliability and integration of transit with other modes	non-discriminatory		There is no improvement in transit service.
Transit network	Improves the quality, reliability and service of Oakville Transit	◑	●	Option 2 increases the horizontal radius which will be easier to navigate for buses.
Active transportation	Supports active mobility choices such as walking and cycling that is universally accessible, direct, comfortable and convenient	◕	●	Option 2 provides a more direct path of travel for active transportation users.
Emergency management response	Improves access for emergency responders within the corridor	non-discriminatory		There are no emergency response facilities within this segment.
Roadway safety	Improves safety at intersections and crossing locations	○	●	Option 2 increases the horizontal radius, improving sightlines to the back of queue, and addresses existing safety concerns at both horizontal curves.
	Maintains sightlines between modes	○	●	Option 2 improves sightlines by meeting design standards for superelevated roadways at a 60 km/h design speed.
	Easy-to-understand configuration to users "self-explaining roads"	◔	●	Option 2 better matches driver expectation of a safe operating speed through the curves.
Summary		◔	●	

Middle Segment: South Service Road West Realignment		Option 1	Option 2	Legend
		Maintain existing curves	Realign roadway to straighten out curve. Existing road to remain.	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Social Environment				
Supports appropriate intensification	Supports land use	◑	◔	Option 1 supports industrial land uses. Option 2 requires the acquisition of property which would segment an existing parcel with high visibility adjacent to the QEW. However, the majority of the realignment would be located within the floodplain and valleyland, meaning that the construction of the road would not preclude future development on the remaining parcel that is not in the floodplain or valleyland.
	Improves business access (post construction)	◑	●	Option 2 has the potential to improve business access by adding a driveway for 731 Third Line (Dufferin construction) off of South Service Road West.
Community building	Improves community cohesiveness	non-discriminatory		There is no impact to community cohesiveness.
	Improves quality of life and health and safety	non-discriminatory		Both options improve quality of life and health and safety.
	Improves corridor aesthetics	non-discriminatory		Both options improve corridor aesthetics.
	Reduces impact of heavy truck traffic	non-discriminatory		There are no impacts to heavy truck traffic.
Construction phase Impacts	Minimal duration of construction	◕	◑	Option 1 requires less extensive construction, but has more impacts to traffic during construction due to the structure over Fourteen Mile Creek. Option 2 would allow the existing roadway to remain open to general traffic while the realignment and new structure is constructed.
	Minimizes property requirements	◑	○	Option 2 requires significant property acquisition to accommodate the realignment. Option 1 requires minimal property take to accommodate widening.
Noise and vibration impacts	Reduces noise (post construction)	non-discriminatory		There is no impact to noise (post construction).
	Reduces vibrations (post construction)	non-discriminatory		There is no impact to vibrations (post-construction).
Travel time	Reduces travel time for all modes	non-discriminatory		There is little to no reduction in travel time.
Cultural heritage impacts	Maintains existing built cultural heritage features and avoids impacts to archaeological resources	●	◑	Fourteen Mile Creek has archaeological potential. Both options require Stage 2 Archaeological Assessment.
Emergency access	Maintains emergency access (post construction)	non-discriminatory		Both options maintain emergency access.
Summary		◕	◑	

Middle Segment: South Service Road West Realignment		Option 1	Option 2	Legend
		Maintain existing curves	Realign roadway to straighten out curve. Existing road to remain.	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Natural Environment				
Environmentally Sensitive Areas	Minimizes disturbances to ESA	non-discriminatory		There are no ESAs in this segment.
Areas of Natural and Scientific Interest	Minimizes disturbances to ANSIs	non-discriminatory		There are no ANSIs in this segment.
Woodlots	Improves integrity of woodlot and woodlot function	◕	◔	Option 1 includes widening which will impact the treed area to the east. Option 2 would have a larger area of impact due to the roadway realignment which can be mitigated.
Treescape	Improves treescape	non-discriminatory		Both options provide opportunity to improve treescape.
Creeks	Minimizes impacts to creeks, surface and groundwater features and their hydrological functions	◑	◔	Both options require widening at Fourteen Mile Creek and a new 20 m clear span bridge and therefore impact the creek during construction. Option 2 would require a new creek crossing. However, the bridge design that would span larger than bankfull and aim to re-connect the floodplain. The bridge design is approximately 2.5 m shorter than the existing culvert, therefore, the bridge will enclose less stream length, which is an improvement over existing conditions.
Wetlands	Minimizes impacts to provincially and locally designated wetlands	non-discriminatory		There are no impacts to the locally significant wetland around Fourteen Mile Creek.
Wildlife and birds	Minimizes impacts to wildlife habitat, fish habitat, the habitat of endangered and threatened species, and significant wildlife habitat	◑	◔	Both options impact wildlife habitat, including Redside Dace habitat, a Species-at-Risk, due to the construction work around Fourteen Mile Creek, however opportunities exist to improve the aquatic habitats and communities and to improve wildlife movement passages. Option 2 will impact wildlife using the cultural meadow/thicket, cultural thicket/woodland and forest communities due to fragmentation of the communities.
Vegetation	Minimizes impacts to vegetation	◕	◔	Both options require the construction of a new bridge which will impact vegetation. Option 2 will result in a total loss of 9.88 ha of vegetation communities, however the largest area of impact will be to lands that have been anthropogenically influenced, including manicured or planted areas and cultural meadows. All of the vegetation communities identified in the study area are considered widespread and common in Ontario and globally.
Floodplains	Avoids encroachment into the floodplain	◑	◔	Both options require the construction of a bridge which will encroach onto the floodplain. Option 2 would encroach further into the floodplain area. Option 2 would reduce the floodplain upstream.
Resilience	Minimizes potential impacts to and risk from natural hazards (flooding, erosion, and unstable bedrock/soils)	◕	◑	Both options will require the construction of a bridge over Fourteen Mile Creek which would improve the resilience of the crossing. Option 2 encroaches further into the floodplains and valleylands.
Summary		◕	◔	

Middle Segment: South Service Road West Realignment		Option 1	Option 2	Legend
		Maintain existing curves	Realign roadway to straighten out curve. Existing road to remain.	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**			**Notes**
Technical				
Stormwater management	Improves stormwater quality and reduces stormwater quantity	◑	◔	Option 1 reduces stormwater quantity compared to Option 2. Option 2 requires the construction of a new road in addition to the existing road, therefore there would be a minimal net increase in impermeable surface, increasing stormwater quantity.
Utilities	Minimizes the number of utility relocations required	non-discriminatory		Neither option impacts the number of utility relocations required. Halton Region plans to reconstruct the watermain in 2026, which could be coordinated with construction of the realignment.
Structures	Provides opportunity to improve or rehabilitate existing structures	non-discriminatory		Both options require the construction of a new bridge.
Illumination	Minimizes illumination requirements	non-discriminatory		Both options have similar illumination requirements.
Policy framework	Supports existing municipal and provincial policy framework	non-discriminatory		Both options neither support or discourage the provincial or municipal policy framework.
Summary		◑	◔	
Cost				
Capital costs	Lower capital costs including infrastructure and construction	◕	◔	Option 1 requires some road widening and therefore has some infrastructure and construction costs. Option 2 requires the construction of a new road which increases the total capital cost.
Operating and life-cycle costs	Lower operating costs based on the required labour, energy, and maintenance costs, and ability to reduce long-term costs	non-discriminatory		Both options have similar operating costs.
	Infrastructure renewal and ability to reduce long-term costs	○	●	Option 2 provides the greatest opportunity to renew infrastructure through the construction of a new roadway. The Region of Halton has a watermain in this area which is scheduled to be replaced in 2026, and there is an opportunity to coordinate works.
Summary		◑	◕	

East Segment

East Segment: 1146 South Service Road to Kerr Street. Active transportation and Roadway Drainage		Option 1		Option 2		Legend
		Raised cycle track and sidewalks on both sides		Buffered bike lanes and sidewalk on both sides		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural	Urban	Rural	Urban	
Criteria	**Metrics**					**Notes**
Transportation						
Traffic capacity	Provides appropriate capacity to move people and goods (all modes)	non-discriminatory				All options provide appropriate traffic capacity.
Traffic network	Improves access to major roads	non-discriminatory				All options provide adequate access to major roads.
Transit service	Improves the quality, reliability and integration of transit with other modes	non-discriminatory				All options provide adequate quality, reliability, and integration of transit with other modes.
Transit network	Improves the quality, reliability and service of Oakville Transit	non-discriminatory				All options provide adequate quality, reliability and service connections to Oakville Transit.
Active transportation	Supports active mobility choices such as walking and cycling that is universally accessible, direct, comfortable and convenient	◕	●	◑	◕	Option 1 is more comfortable for cyclists of varying abilities. Option 2 is not considered an 'all ages and abilities' cycling facility for speeds above 40 km/h since buffered bike lanes do not provide vertical separation. However, physical barriers may be installed in the buffer to provide protection for cyclists. For Option 2, the rural section is less preferred as cyclists are adjacent to both general traffic and a ditch.
Emergency management response	Improves access for emergency responders within the corridor	non-discriminatory				All options provide adequate access for emergency responders.
Roadway safety	Improves safety at intersections and crossing locations	non-discriminatory				All options improve safety at intersections and crossing locations.
	Maintains sightlines between modes	◑	●	◕	◕	The horizontal separation of cyclists in Option 1, urban scenario, to road users provides the best sightlines between modes. The larger horizontal separation in Option 1, rural scenario, would decrease driver awareness of active transportation modes.
	Easy-to-understand configuration to users "self-explaining roads"	non-discriminatory				All options provide dedicated cycling facilities, in an easy-to-understand configuration for both drivers and cyclists.
Summary		◕	●	◕	◕	

East Segment: 1146 South Service Road to Kerr Street. Active transportation and Roadway Drainage		Option 1		Option 2		Legend
		Raised cycle track and sidewalks on both sides		Buffered bike lanes and sidewalk on both sides		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural	Urban	Rural	Urban	
Social Environment						
Supports appropriate intensification	Supports land use	non-discriminatory				All options support the existing employment and industrial land uses.
	Improves business access (post construction)	non-discriminatory				All options allow commuter cyclists to access businesses.
Community building	Improves community cohesiveness	non-discriminatory				All options allow for better cohesiveness through active transportation.
	Improves quality of life and health and safety	◕	●	◑	◕	All options allow for better quality of life and health through active transportation. Dedicated infrastructure is expected to increase safety. Cycle tracks provide a greater separation and encourage a broader spectrum of users because it promotes active transportation. A rural section with ditches may reduce cyclist comfort.
	Improves corridor aesthetics	◑	◕	◑	◕	Cycle tracks are generally considered more aesthetically pleasing than buffered bike lanes. Rural cross-sections are generally considered less aesthetically pleasing than urban cross-sections.
	Reduces impact of heavy truck traffic	◔	◑	◑	◑	The presence of cyclists and on-road cycling infrastructure might cause truck drivers to reduce their speed. Option 1, rural scenario, would have least impact on heavy truck traffic due to the horizontal separation between the modes.
Construction phase Impacts	Minimal duration of construction	●	◕	●	◕	Rural cross-sections have shorter duration of construction than urban cross-sections.
	Minimizes property requirements	◔	◑	◑	◑	Option 1, rural scenario, would require more property as it requires a shoulder on the roadway, a ditch and a cycle track located off-road, on the other side of the ditch. Option 2, rural scenario, the shoulder would double as the buffered bike lane, resulting in the same right-of-way as the urban options.
Noise and vibration impacts	Reduces noise (post construction)	non-discriminatory				There is no difference in noise.
	Reduces vibrations (post construction)	non-discriminatory				There is no difference in vibrations.
Travel time	Reduces travel time for all modes	non-discriminatory				All options improve travel times for pedestrians and cyclists and may slightly increase travel time for vehicles.
Cultural heritage impacts	Maintains existing built cultural heritage features and avoids impacts to archaeological resources	non-discriminatory				There are no cultural heritage features in this segment.
Emergency access	Maintains emergency access (post construction)	non-discriminatory				There is no difference in emergency access.
Summary		◑	◕	◑	◕	

East Segment: 1146 South Service Road to Kerr Street. Active transportation and Roadway Drainage		Option 1		Option 2		Legend
		Raised cycle track and sidewalks on both sides		Buffered bike lanes and sidewalk on both sides		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural	Urban	Rural	Urban	
Natural Environment						
Environmentally Sensitive Areas	Minimizes disturbances to ESAs	non-discriminatory				There are no ESAs in this segment.
Areas of Natural and Scientific Interest	Minimizes disturbances to ANSIs	non-discriminatory				There are no ANSIs in this segment.
Woodlots	Improves integrity of woodlot and woodlot function	non-discriminatory				There are no woodlots in this segment.
Treescape	Improves treescape	◑	◕	◕	●	Option 1 rural scenario has less space for trees than Option 2, rural scenario. Both urban options allow for improvement in treescape along the boulevard, Option 2, urban, provides the most space.
Creeks	Minimizes impacts to creeks, surface and groundwater features and their hydrological functions	◑	◕	●	◕	Option 2, rural scenario, requires the least amount of widening and therefore has the least impact on the creeks. The urban scenarios require widening and would have more impacts on the creeks. Option 1, rural scenario requires the most widening to accommodate the shoulder and cycle track.
Wetlands	Minimizes impacts to provincially and locally designated wetlands	non-discriminatory				There are no wetlands in this segment.
Wildlife and birds	Minimizes impacts to wildlife habitat, fish habitat, the habitat of endangered and threatened species, and significant wildlife habitat	◑	◕	●	◕	Option 2, rural scenario, requires the least amount of widening and therefore has the least impact on wildlife and wildlife habitat at culvert locations. The urban scenarios require widening and would have more impacts on wildlife and wildlife habitat at culvert locations. Option 1, rural scenario, requires the most widening to accommodate the ditch. Rehabilitation and replacement of culvert crossings C6 and C7 will have little to no impact on wildlife movement as the openness ratio (OR) will change only a minor degree and does not change the types of wildlife expected to use those crossings. Rehabilitation of the C5 crossing will significantly increase the OR and allow greater wildlife mobility for small to medium size wildlife.
Vegetation	Minimizes impacts to vegetation	◑	◕	●	◕	Option 2, rural scenario, requires the least amount of widening and therefore has the least impact to vegetation at culvert locations. The urban scenarios require widening and would have more impacts on vegetation at culvert locations. Option 1, rural scenario, requires the most widening to accommodate the ditch. All of the vegetation communities identified in the study area are considered widespread and common in Ontario and globally.
Floodplains	Avoids encroachment into the floodplain	◑	◕	●	◕	Option 2, rural scenario, requires the least amount of widening and therefore has the least amount of impact to the floodplain. The urban scenarios require widening and would have more impacts on the floodplain. Option 1, rural scenario requires the most widening to accommodate the ditch.
Resilience	Minimizes potential impacts to and risk from natural hazards (flooding, erosion, and unstable bedrock/soils)	non-discriminatory				There is no difference in natural hazards.
Summary		◑	◕	●	◕	

East Segment: 1146 South Service Road to Kerr Street. Active transportation and Roadway Drainage		Option 1		Option 2		Legend
		Raised cycle track and sidewalks on both sides		Buffered bike lanes and sidewalk on both sides		Least preferred ○ ◔ ◑ ◕ ● Most preferred
		Rural	Urban	Rural	Urban	
Technical						
Stormwater management	Improves stormwater quality and reduces stormwater quantity	◕	◔	●	◔	The rural scenarios reduce stormwater runoff and improve runoff quality as there is more potential for infiltration. Permeable asphalt and porous concrete will be considered for the MUT and sidewalks, respectively, to help improve ifniiltration. Option 2, rural scenario has less impervious area than Option 1, rural scenario. Both urban scenarios would require piping the stormwater and using oil grit separators or other solutions to meet quality requirements.
Utilities	Minimizes the number of utility relocations required	◕	●	◕	●	The urban scenarios may require underground storm sewer construction, which might require additional utility relocations. All scenarios require widening and are expected to impact above-ground utilities, such as hydro poles and fire hydrants.
Structures	Provides opportunity to improve or rehabilitate existing structures	non-discriminatory				All options provide opportunities to improve or rehabilitate existing structures.
Illumination	Minimizes illumination requirements	non-discriminatory				All options have similar illumination requirements.
Policy framework	Supports existing municipal and provincial policy framework	◑	●	◑	●	Urbanizing the corridor would allow for the inclusion of street furniture to attract more active transportation users and support the Livable Oakville Plan, the Region of Halton Official Plan and the Growth Plan.
Summary		◕	◕	◕	◕	
Cost						
Capital costs	Lower capital costs including infrastructure and construction	●	◕	●	◕	Rural scenarios require less infrastructure (sewers, catch basins, etc.) and would therefore have lower capital cost.
Operating and life-cycle costs	Lower operating costs based on the required labour, energy, and maintenance costs, and ability to reduce long-term costs	◔	◑	◕	●	Option 2 is easier to maintain in the winter than Option 1. Urban scenarios require less maintenance for stormwater management infrastructure than in rural scenarios.
	Infrastructure renewal and ability to reduce long-term costs	◑	●	◑	●	Urban scenarios allow for more infrastructure renewal due to the inclusion of underground works.
Summary		◑	◕	◕	●	

East Segment: South Service Road #4 Intersection, west of Dorval Drive.		Option 1	Option 2	Option 3	Option 4	Option 5	Legend
		Right-in Right-out by extending median on Wyecroft Rd	Realign SSR to align with Weller Crt. with cul-de-sac	New north south road between Fourth Line and Dorval Dr., west of Weller Court. Cul-de-sac at SSR #4	Right-in Right-out and Roundabout at Oakville Transit (assumed 40m ICD for single lane roundabout)	Cul-de-Sac (assumed radius of 21m)	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**						**Notes**
Transportation							
Traffic capacity	Provides appropriate capacity to move people and goods (all modes)	◑	●	◕	◕	○	Options 2 and 3 provide new north-south infrastructure, which would provide a minor increase in traffic capacity.
Traffic network	Improves access to major roads	◔	●	◕	◑	○	Option 4 provides full movements for traffic while improving network connectivity at Weller Crt. Option 5 provides full movements, but does not connect to an existing road. Option 2 provides indirect left-turns. Option 1 provides restricted movement at SSR #4 while Option 5 provides the least access.
Transit service	Improves the quality, reliability and integration of transit with other modes	Non-discriminatory					All options do not impact quality, reliability, and integration of transit with other modes.
Transit network	Improves the quality, reliability and service of Oakville Transit	◑	◑	◑	●	◔	Option 4 improves the quality, reliability, and service of Oakville Transit, as the roundabout allows transit vehicles to access Wyecroft Road through yield control. Option 5 prevents future transit connections.
Active transportation	Supports active mobility choices such as walking and cycling that is universally accessible, direct, comfortable and convenient	◑	●	●	◔	◑	Options 2 and 3 provide opportunity to include sidewalks and cycling infrastructure which would support active mobility. Options 1 and 5 have no effect on the proposed improved active transportation network on Wyecroft Rd. In Option 4, the roundabout requires cyclists to merge with traffic, while cyclists' dedicated space is maintained through traditional intersections.
Emergency management response	Improves access for emergency responders within the corridor	◑	◑	◑	●	◑	Option 4 best improves the access to the Oakville Transit Facility by making the entrance yield control (roundabout). All other options do not improve access for emergency responders.
Roadway safety	Improves safety at intersections and crossing locations	◑	◕	◕	◕	◔	Option 3 moves the access point, from directly adjacent to Dorval Drive, to the west to improve safety. Option 1 would divert all traffic from SSR #4 to SSR #3 which may reduce the safety performance of SSR #3.
	Maintains sightlines between modes	●	◕	◕	◔	●	Option 1 and 5 provide best sightlines by removing conflict points between modes close to Dorval Dr. Options 2 and 3 move the connection to SSR #4 away from the Dorval Dr intersection which should improve sightlines. The roundabout in Option 4 makes it more difficult to see all modes.
	Easy-to-understand configuration to users "self-explaining roads"	◑	◕	◕	◑	◔	Option 5, the cul-de-sac, is the biggest change compared to today's operation. Options 2 and 3 provide a grid network. Option 4 allows for the left-turn onto Wyecroft Road by directing vehicles to do a U-turn.
Summary		◑	◕	◕	◕	◑	

East Segment: South Service Road #4 Intersection, west of Dorval Drive.		Option 1 Right-in Right-out by extending median on Wyecroft Rd	Option 2 Realign SSR to align with Weller Crt. with cul-de-sac	Option 3 New north south road between Fourth Line and Dorval Dr., west of Weller Court. Cul-de-sac at SSR #4	Option 4 Right-in Right-out and Roundabout at Oakville Transit (assumed 40m ICD for single lane roundabout)	Option 5 Cul-de-Sac (assumed radius of 21m)	Legend Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**						**Notes**
Social Environment							
Supports appropriate intensification	Supports land use	●	○	○	◑	◕	Option 2 impacts two buildings, Option 3 impacts one building, Option 4 requires property take to accommodate the roundabout, Option 5 takes up more space than Option 1.
	Improves business access (post construction)	◔	●	◕	◑	○	By providing new north-south road connections, business access is improved in Options 2 and 3. All other options eliminate turning movements, reducing business access.
Community building	Improves community cohesiveness	◔	◔	◕	◑	◔	Option 2 impacts the current Community Living Oakville building, a community asset. Option 3 improves connectivity for active transportation users and vehicles. Option 4 provides a mid-block connection. Option 1 is better than Option 5 because Option 5 removes an existing connection.
	Improves quality of life and health and safety	◑	◔	●	◑	◑	Option 2 impacts the current Community Living Oakville building, a community asset. Option 3 improves the quality of life and health and safety as it allows for more active transportation connections to Wyecroft Rd. Option 4 and 5 improve safety by implementing traffic calming measures and/or elimination of traffic due to the cul-de-sac. Option 1 does not improve health and safety.
	Improves corridor aesthetics	◑	●	●	◑	◕	Options 2 and 3 allow for more streetscape along the new ROW. Option 5 allows for more plantings along the north boulevard of Wyecroft Rd. Option 4 could improve aesthetics within the roundabout. Options 1 and 4 have no impact on aesthetics.
	Reduces impact of heavy truck traffic	◑	●	●	◑	◑	Options 2 and 3 would increase the network connectivity which would help the flow of truck traffic and minimize potential impacts. Option 5 eliminates the connection to Wyecroft Road. Options 1 and 4 might have some reduction due to avoidance of the roundabout by through trucks, but does provide a U-turn movement.
Construction phase Impacts	Minimal duration of construction	●	○	○	◔	◕	Options 2 and 3 would take the longest to build a new roadway connection. Option 4 is second longest as the roundabout would require more time to construct. Option 5 is second fastest as it only requires some removals while Option 1 only requires signage and extension of the median island.
	Minimizes property requirements	●	○	○	◑	●	Options 2 and 3 require the most property and impact buildings. Option 4 requires additional property for the roundabout. Options 1 and 5 do not require property.
Noise and vibration impacts	Reduces noise (post construction)	◑	●	●	◕	◔	Option 5 increases noise because vehicles have to drive farther to SSR #3 along SSRW. Option 1 would remove left-turn movement which will reduce noise. Option 4 provides traffic calming via the roundabout which will reduce vehicle speeding and noise, but due to the footprint, will bring traffic closer to the buildings. Options 2 and 3 will reduce noise by improving the flow of traffic.
	Reduces vibrations (post construction)	◑	●	●	◕	◔	Option 5 increases vibrations because vehicles have to drive farther to exit onto Wyecroft Road. Option 1 would remove left-turn movements, which will reduce vibration. Option 4 provides traffic calming via the roundabout which will make people slow down (reduction in noise) but due to the footprint, will bring traffic closer to the buildings. Options 2 and 3 will reduce noise by improving the flow of traffic.
Travel time	Reduces travel time for all modes	◑	●	●	◕	○	Options 2 and 3 provide more connection to the network which will reduce travel times. Option 4 provides indirect full movements. Option 1 provides some access while Option 5 has no connection and therefore increases travel times.
Cultural heritage impacts	Maintains existing built cultural heritage features and avoids impacts to archaeological resources	Non-discriminatory					There are no cultural heritage resources or archaeological potential in this segment.
Emergency access	Maintains emergency access (post construction)	◑	●	●	◕	○	Option 2 and 3 allow for best emergency access due to network connectivity. Option 4 allows emergency responders to easily turn around. Option 1 restricts left-turn access while Option 5 restricts all access at SSR #4.
Summary		◑	◕	◕	◑	◑	

East Segment: South Service Road #4 Intersection, west of Dorval Drive.		Option 1	Option 2	Option 3	Option 4	Option 5	Legend
		Right-in Right-out by extending median on Wyecroft Rd	Realign SSR to align with Weller Crt. with cul-de-sac	New north south road between Fourth Line and Dorval Dr., west of Weller Court. Cul-de-sac at SSR #4	Right-in Right-out and Roundabout at Oakville Transit (assumed 40m ICD for single lane roundabout)	Cul-de-Sac (assumed radius of 21m)	Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**						**Notes**
Natural Environment							
Environmentally Sensitive Areas	Minimizes disturbances to ESAs	Non-discriminatory					There are no ESAs within these limits.
Areas of Natural and Scientific Interest	Minimizes disturbances to ANSIs	Non-discriminatory					There are no ANSIs within these limits.
Woodlots	Improves integrity of woodlot and woodlot function	Non-discriminatory					There are no woodlots within these limits.
Treescape	Improves treescape	◑	●	●	◔	◕	Options 2 and 3 remove some trees but the additional boulevard could increase treescape. Additionally, the cul-de-sac area could be planted with trees. Option 4 would minimize treescape as the roundabout takes up more property and it's unlikely to plant trees within the central island.
Creeks	Minimizes impacts to creeks, surface and groundwater features and their hydrological functions	Non-discriminatory					All options are to be located outside the Glen Oak Creek area.
Wetlands	Minimizes impacts to provincially and locally designated wetlands	Non-discriminatory					There are no wetlands in this section.
Wildlife and birds	Minimizes impacts to wildlife habitat, fish habitat, the habitat of endangered and threatened species, and significant wildlife habitat	Non-discriminatory					All options avoid impacts to core wildlife habitats.
Vegetation	Minimizes impacts to vegetation	●	○	○	◕	◑	Option 1 has the least impact to vegetation as no infrastructure works would be proposed. Option 4 requires a roundabout which would impact some trees located across from the Oakville transit facility. Option 2, 3, and 5 would require a cul-de-sac at SSR #4 which would impact all the trees on the east side of that street. Option 2 and 3 would have the most impact as it requires the removal of the most vegetation. All of the vegetation communities identified in the study area are considered widespread and common in Ontario and globally.
Floodplains	Avoids encroachment into the floodplain	Non-discriminatory					All options avoid the floodplain near Glen Oak Creek.
Resilience	Minimizes potential impacts to and risk from natural hazards (flooding, erosion, and unstable bedrock/soils)	Non-discriminatory					All options minimize potential impacts to and risk from natural hazards.
Summary		◕	◑	◑	◑	◕	

East Segment: South Service Road #4 Intersection, west of Dorval Drive.		Option 1 Right-in Right-out by extending median on Wyecroft Rd	Option 2 Realign SSR to align with Weller Crt. with cul-de-sac	Option 3 New north south road between Fourth Line and Dorval Dr., west of Weller Court. Cul-de-sac at SSR #4	Option 4 Right-in Right-out and Roundabout at Oakville Transit (assumed 40m ICD for single lane roundabout)	Option 5 Cul-de-Sac (assumed radius of 21m)	Legend Least preferred ○ ◔ ◑ ◕ ● Most preferred
Criteria	**Metrics**						**Notes**
Technical							
Stormwater management	Improves stormwater quality and reduces stormwater quantity	●	◔	◔	◕	◑	Option 1 has the least impact to SWM as there is no added hard surface. Option 4 has the potential to include LID treatment within the central island. Options 2 and 3 would remove existing buildings/parking lots and replace with a roadway with some boulevard. These options increase the amount of hard surface and have the potential to include additional LID features within the new right-of-way.
Utilities	Minimizes the number of utility relocations required	●	◔	◔	◑	◕	Option 1 has the least impact to utilities. Option 5 appears to have the second least impact as there are minimal utilities at that location of SSR #4. Option 4 would impact utilities due to the footprint of the roundabout. Options 2 and 3 would require new utility lines to be placed to service the remaining parcels that will be developed.
Structures	Provides opportunity to improve or rehabilitate existing structures	Non-discriminatory					There are no structures within these options.
Illumination	Minimizes illumination requirements	●	○	○	◑	◕	Options 2 and 3 would increase illumination requirements with a new roadway while Option 1 would have no additional illumination requirements. Option 4 would have additional illumination for the roundabout. Option 5 would also have additional illumination but it is anticipated to be less than the roundabout.
Policy framework	Supports existing municipal and provincial policy framework	◑	●	◕	◑	○	Option 2 and 3 both improve connectivity with Option 2 closer to a grid network than Option 3. Option 1 and 4 maintains the current road network. Option 5 provides the least support to policy framework since it reduces network connectivity over the existing condition.
Summary		●	◑	◔	◑	◑	
Cost							
Capital costs	Lower capital costs including infrastructure and construction	●	○	○	◔	◕	Options 2 and 3 require property take and higher construction costs. Option 4 also requires property take but less than Options 2 and 3. Option 5 requires construction of the cul-de-sac while Option 1 requires minimal construction cost.
Operating and life-cycle costs	Lower operating costs based on the required labour, energy, and maintenance costs, and ability to reduce long-term costs	●	○	○	◑	◕	Options 2 and 3 have the highest operating cost due to the new infrastructure constructed. Option 1 has the lowest operating cost as no new infrastructure is proposed. Option 5 has some maintenance cost but is an area of low traffic volume while Option 4 is along the main roadway and therefore would need to be thoroughly maintained.
	Infrastructure Renewal	○	●	●	◔	○	Options 2 and 3 have the most potential for infrastructure renewal. Option 1 and 5 have the least opportunity as they have very little infrastructure construction. Option 4 has some potential for infrastructure renewal as the roundabout has a larger footprint.
Summary		◕	◔	◔	◔	◑	