York Region Teston Road Area Improvements IEA - Evaluation of Alternative Methods
Section 1 – Teston Road / Keele Street Intersection and Teston Road / GO Rail Crossing

February 2022

Per the MECP Code of Practice for undertaking Environmental Assessments, the principles to be followed to ensure good environmental planning are transparency, traceability, and replicability. Evaluations of Alternatives also need to consider consultation with stakeholders, including the public, and Indigenous Communities.

The evaluation considered the same factors, sub-factors and criteria that were used in the previous evaluation of Alternative Methods (Alignments); however, the criteria were screened for applicability to the Alternatives prior to the evaluation, eliminating some of the factors and sub-factors.

Alternatives evaluated in this table include the section of Teston Road from west of Keele Street to Rodinea Road (Section 1). This section includes the Keele Street intersection as well as the Teston Road / GO Rail Crossing. The following provides a description of each Alternative:

- Alternative 1: Existing Teston Road and Keele Street Alignments, GO Overpass
- Alternative 2: Existing Keele Street Alignment, Teston Road Shifted Northerly, GO Overpass
- Alternative 3: Existing Teston Road Alignment, Keele Street Shifted Westerly, GO Overpass
- Alternative 4: Teston Road Shifted Northerly, Keele Street Shifted Westerly, GO Overpass

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
1. NATURAL ENVIRONMENT							
1.1. Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat	• Degree of potential negative effect on fish habitat (e.g., size/scale/extent, duration, intensity/magnitude), considering sensitivity and relative quality and distribution of fish and fish habitat, e.g.: o direct presence of commercial, recreational or Aboriginal (CRA) fishery or relative contribution of fish or habitat to productivity of CRA fishery o species and/or habitat sensitivity to disturbance o species rarity, including species at risk (special concern, threatened or endangered fish species) o fish dependence on habitat and potential for effect to impact productivity (e.g. specialized / critical fish life stage processes like spawning, rearing,	Section 1 does not have any fish or fish habitat nor any water crossings. Therefore, none of the Alternatives will have impacts in this Factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		nursery, feeding) and fish movement/migration o fisheries/fish community management goals and objectives • Potential constraints/ issues/challenges to designing, constructing and mitigating crossing to avoid serious harm to fish (e.g., whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery).					
1.2 Terrestrial Ecosystems	1.2.1. Wildlife and Wildlife Habitat, including wildlife passage	• Potential for and significance of encroachment, fragmentation, removal, long- term alteration / disruption as applicable to the following, and considering potential for impacts to individuals, species groups and/or populations and impacts to their respective habitats and movement among them: o Habitat rarity (i.e., representation on the landscape) o Habitat sensitivity / resilience o Habitat diversity within feature and landscape o Habitat function within feature and landscape o Confirmed Significant Wildlife Habitat o Potential Significant Wildlife Habitat o Movement corridors and habitat connectivity o Potential or confirmed habitat for Species at Risk o Presence of Wildlife Species at Risk o Interference with critical wildlife life stage	**MORE PREFERRED** • Minor encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Encroach into and remove potential roosting trees for Species at Risk Bats (Endangered). • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat (SWH) • Wildlife movement already impaired by road and developed areas. No new impacts to wildlife movement. Alternative makes use of existing Teston Rd and Keele St.	**MORE PREFERRED** • Minor encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Encroach into and remove potential roosting trees for Species at Risk Bats (Endangered). • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat • Wildlife movement already impaired by road and developed areas. No new impacts to wildlife movement. Realignment of Teston Rd. Alternative makes use of existing Keele St.	**LESS PREFERRED** • Minor encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Encroach into and remove potential roosting trees for Species at Risk Bats (Endangered). Realignment of Keele St. will impact more potential SAR Bat habitat than Alternatives 1 and 2. • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat • Wildlife movement already impaired by road and developed areas. No new impacts to wildlife movement.	**LESS PREFERRED** • Minor encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Encroach into and remove potential roosting trees for Species at Risk Bats (Endangered). Realignment of Keele St. will impact more potential SAR Bat habitat than Alternatives 1 and 2 • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat • Wildlife movement already impaired by road and developed areas. No new impacts to wildlife movement.	**MOST PREFERRED** This Alternative will have no impact on wildlife, wildlife habitat, and/or wildlife passage at this location

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		processes (e.g., mating / rearing, etc.) Potential constraints and opportunities to design, construct, operate and mitigate the infrastructure to avoid or minimize impacts to wildlife and wildlife habitat.			Realignment of Keele St. Alternative makes use of existing Teston Rd.	Realignment of both Teston Rd and Keele St.	
	1.2.2. Wetlands	• Potential for and significance of encroachment, fragmentation, removal and/or long-term alteration / disruption on wetland features as applicable to the following: o Provincially Significant Wetlands o Non-provincially Significant Wetlands o Un-evaluated wetlands o Lands adjacent to wetland features required to maintain ecological features and functions o Rarity, feature sensitivity/ resilience (incl. hydrological functions/dependencies), feature diversity, size and representation on the landscape • Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to wetlands.	**MORE PREFERRED** Minor encroachment into unevaluated wetland west of Keele St.	**MORE PREFERRED** Minor encroachment into unevaluated wetland west of Keele St.	**LESS PREFERRED** Encroachment and removal of unevaluated wetlands west of Keele St. Alternatives 3 and 4 will impact a larger area than Alternatives 1 and 2.	**LESS PREFERRED** Encroachment and removal of unevaluated wetlands west of Keele St. Alternatives 3 and 4 will impact a larger area than Alternatives 1 and 2.	**MOST PREFERRED** This Alternative will have no impact to unevaluated wetlands.
	1.2.3. Woodlands and other Vegetation including genetic connectivity of plants	• Potential and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Significant woodlands Significant valleylands o Rarity, feature sensitivity/ resilience, feature diversity, size and representation on the	**MORE PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. No rare features, significant woodlands or valleylands, or SAR plants are likely to be impacted.	**MORE PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. No rare features, significant woodlands or valleylands, or SAR plants are likely to be impacted.	**MODERATELY PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. Alternatives 3 and 4 will impact a larger area than Alternative 1 and 2.	**MODERATELY PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. Alternatives 3 and 4 will impact a larger area than Alternative 1 and 2.	**MOST PREFERRED** This Alternative will have no impact on woodlands, vegetation, or significant floral species at this location.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		landscape o Individuals/populations or habitats for vegetation Species at Risk o Individuals/populations or significant representation of vegetation species of provincial or regional/local conservation concern o Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to woodlands and other vegetation.			No rare features, significant woodlands or valleylands, or SAR plants are likely to be impacted.	No rare features, significant woodlands or valleylands, or SAR plants are likely to be impacted.	
	1.2.4. Designated / Special Natural Areas	• Potential for and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Purpose / rationale for the original designation (i.e. relative potential to affect the core feature / function designated). o Impact to the designated feature and its function(s) o Impact to the overall designation (i.e., does the impact effect the purpose of the designation) • Designated natural areas include heritage rivers, Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), Natural Heritage System(s), conservation lands (e.g. management tracts, reserves, and conservation areas), etc.	**No Preference** Section 1 does not have any Designated or Significant Natural Areas. Therefore, none of the Alternatives will have impacts in this sub-factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
1.3 Groundwater	1.3.1. Areas of Groundwater Recharge or Discharge	• Evaluate the potential and significance of road construction to areas of groundwater recharge or discharge due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater and surface water base-flow and water quality.	**LEAST PREFERRED** These Alternatives have some potential to impact the known significant groundwater recharge area that encompasses this portion of the study area. However, potable water in the project area is municipally supplied and is not dependent on private well water. Potential impacts to the groundwater recharge area and source water quality are minimal. .				**MOST PREFFERED** This Alternative will have no impacts on the groundwater recharge or discharge area.
	1.3.2. Groundwater Source Areas and Wellhead Protection Areas	• Evaluate the potential and significance of road construction on groundwater/surface water flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, as they pertain to applicable Source Protection Area and Wellhead Protection Area policies.	**No Preference** None of the Alternatives have the potential to impact groundwater source areas or wellhead protection areas.				
	1.3.3. Large Volume Wells	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to these large volume wells. The purpose of the water takings from these large volume users must be taken into consideration.	**No Preference** Section 1 does not have any large volume wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
	1.3.4. Private Wells – Domestic and Commercial Groundwater Users	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to	**No Preference** Section 1 does not have any domestic or commercial wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		groundwater dependent domestic and commercial users.					
	1.3.5. Groundwater – Sensitive Ecosystems	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater dependent ecosystems, Environmentally Significant Areas and Areas of Natural and Scientific Interest.	**No Preference** Section 1 does not have any sensitive ecosystems. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
	1.3.6. Highly Vulnerable Aquifers	• Evaluate the potential and significance of road construction to areas of highly vulnerable aquifers to physical intrusion, interception, dewatering drawdown, soil impoundment and compaction, and the effects on aquifers water base-flow and water quality.	**LEAST PREFERRED** The entire study area is located within an area classified as Highly Vulnerable Aquifer, since the area is municipally serviced with potable water and the aquifer directly underlying the project area is not used as a potable water source, the anticipated impacts are considered insignificant. Based on the Source Protection Plan, several activities such as Application/Storage/Handing of Road Salt, Handling and Storage of a Dense Non-Aqueous Phase Liquid, Handling and Storage of an Organic Solvent are considered as moderate to low drinking water threats in Highly Vulnerable Aquifers. Some of the activities may occur during construction, salt application will occur during operation phase.				**MOST PREFFERED** This Alternative will have no impacts to the highly vulnerable aquifers.
	1.3.7. Contamination Concerns	• Evaluate the potential and significance of road construction on introducing contamination through road runoff and by intercepting contaminated groundwater plumes.	**No Preference** All Alternatives will have to address road runoff intercepting contaminated groundwater plumes. This will be addressed during Preliminary Design.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	1.3.8. Existing Landfills	• Evaluate the potential and significance of road construction adjacent to existing (closed) landfills (A private landfill) with known groundwater contamination issues.	**No Preference** The Alternatives do not have any identified impacts to existing landfills.				
	1.3.9. Flowing Artesian Conditions	• Evaluate the potential and significance of road construction to flowing artesian conditions due to physical intrusion.	**No Preference** Section 1 does not have any flowing artesian conditions. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
1.4 Surface Water	1.4.1. Watershed/ Subwatershed Drainage Features/Patterns	Potential and significance of: • Encroachment, severance, displacement • Long-term alteration / disruption as applicable to the following: o Watercourse crossings (permanent, intermittent, and ephemeral) o Flood plain o Riparian areas o Headwater areas o McGill ESAs and ANSI o Vegetative community o Oak Ridges Moraine – Natural Core Area (2017) o Watershed and subwatershed management plans. • The approach to the fluvial geomorphology assessment will be confirmed, reviewed and made acceptable to reviewing agencies. • Other concerns: o Proximity to landfill sites o Source water protection	**No Preference** Section 1 does not have watercourse crossings, and therefore no surface water impacts. Therefore, none of the Alternatives will have impacts in this sub-factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	1.4.2. Surface Water Quality and Quantity	• Potential and significance of effects on water quality through direct and indirect discharges of contaminated and sediment-laden runoff • Potential and significance of effects on stream hydrology due to changes in ground permeability, modifications to surface drainage patterns and volumes and alterations of water bodies	**No preference** Section 1 will result in similar potential water quality/quantity/erosion impacts for all Alternatives which are mitigable.				
NATURAL ENVIRONMENT SUMMARY (5 Criteria)			**MODERATELY PREFERRED (9/20)**	**MODERATELY PREFFERED (9/20)**	**LESS PREFERRED (4/20)**	**LESS PREFERRED (4/20)**	**MOST PREFERRED (20/20)**
2. LAND USE / SOCIO-ECONOMIC ENVIRONMENT							
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1. Indigenous Land Claims	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption to Indigenous Land Claims	**No Preference** All Alternatives are within the area known as the Toronto Purchase (a.k.a. Treaty No.13). In 2010 a settlement for these lands was reached between the Mississaugas and the Government of Canada. Therefore, no Alternative will have impact to land claims.				
	2.1.2. Provincial/ Federal Land Use Planning Policies/Goals/ Objectives	• How the development of Alternatives fits into the Provincial/Federal land use planning policies/goals/ objectives	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meet current and projected needs of the province. They also all address connectivity, reduction of emissions, and increased safety of the network.			**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current and projected needs of the province and therefore does not support the policies within the Provincial Policy Statement (Sections 1.1.1(g) and 1.6.1(b)) or the Growth Plan for the Greater Golden Horseshoe, (Section 3).	

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	2.1.3. Municipal (local and regional) Land Use Planning Policies/ Goals/ Objectives	• How the development of Alternatives fits into the local and regional land use planning policies/goals/ objectives (York Region Official Plan, Vaughan)	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meets current and projected needs of the Region and City of Vaughan.				**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current or projected needs of the Region, or the City of Vaughan given the anticipated population growth and development in the area (i.e., Block 27).
	2.1.4. Development Objectives of Private Property Owners	• Development objectives of private property owners should be in conjunction with land use policies and future land use	**MOST PREFERRED** This Alternative impacts the least amount of undeveloped private property.	**MORE PREFERRED** This Alternative impacts some undeveloped private property due to grading limits of shifting Teston Rd to the north, however, the impacts are minimal.	**LESS PREFERRED** This Alternative will impact the objectives of private property owners in northwest quadrant of Keele Street/Teston Road (Block 27) by passing through a planned development.	**LESS PREFERRED** This Alternative will impact the objectives of private property owners in northwest quadrant of Keele Street/Teston Road (Block 27) by passing through a planned development.	**MODERATELY PREFERRED** This Alternative will have no impacts on the objectives of private property owners. However, it does not provide for a safe and efficient transportation network for the development of communities based on future land uses
2.2 Land Use - Community	2.2.1. Indigenous Community Reserves	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects change to access / travel time to Indigenous Community Reserves.	Section 1 does not have any Indigenous Community Reserves. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
	2.2.2. Indigenous Sacred Grounds	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption • nuisance effects change to access/travel time to Indigenous Sacred Grounds.	There are no known Indigenous Sacred Grounds within Section 1. Stage 1 archaeological assessments determined there is potential for lands to contain an ossuary. The previous Stage 1 assessment recommended that burial avoidance strategies be implemented to mitigate any negative impacts to unknown ossuary locations. Whichever Alternative is recommended, it will be subject to additional Stage 2 Archaeological Assessments which will determine appropriate mitigation measures or need for additional assessments (Stage 3/4).				
	2.2.3. Urban and Rural Residential	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to urban and rural residential communities.	Section 1 does not have any existing Urban or Rural Residential lands. Therefore, none of the Alternatives will have impacts in this sub-factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	2.2.4. Commercial/ Industrial	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to commercial/industrial.	**LEAST PREFERRED** • Permanently removes 5 driveways • 1 Property has no access (Water Station)	**LEAST PREFERRED** • Permanently removes 5 driveways • 1 Property have no access (Water Station)	**MODERATELY PREFERRED** • 2175 Teston west entrance to be closed • Other accesses can potentially be maintained by reconstruction or construction of a new road under the rail structure for some accesses.	**MODERATELY PREFERRED** • 2175 Teston west entrance to be closed • Other accesses can potentially be maintained by reconstruction or construction of a new road under the rail structure for some accesses.	**MOST PREFERRED** No impacts to commercial or industrial land uses.
	2.2.5. Tourist Areas and Attractions	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to tourist areas and attractions.	**MOST PREFERRED** All Alternatives similarly provide reduced travel time to nearby tourist attractions (such as Canada's Wonderland) by providing additional routes for all traffic.				**LEAST PREFERRED** This Alternative limits the number of routes for travellers looking to access tourist areas/attractions.
	2.2.6. Community and Recreational Facilities / Institutions	The potential and significance of: encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to community facilities/institutions.	**MOST PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park	**MOST PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park	**LESS PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Impacts the Maple Reservoir Park, potentially impacting usability of soccer fields in existing configuration.	**LESS PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Impacts the Maple Reservoir Park, potentially impacting usability of soccer fields in existing configuration.	**LEAST PREFERRED** • Does not provide access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park.
	2.2.7. Municipal Infrastructure and Public Service Facilities	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time	**LEAST PREFERRED** Both of these Alternatives remove access to the City of Vaughan's water station in the northeast quadrant of the intersection. This would require relocation of the station or extensive reconstruction of the site access.		**MODERTELY PREFERRED** While this Alternative would maintain access to the water station it encroaches less on the building than Alternative 4.	**LESS PREFERRED** While this Alternative would maintain access to the water station it encroaches more on the building than Alternative 3.	**MOST PREFERRED** This Alternative does not impact the Vaughan Water Station.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		• changes to facilities / services to municipal infrastructure and public service facilities.					
2.3 Noise Sensitive Areas (NSA's)	2.3.1. Transportation Noise & Vibration	• Potential for significant traffic noise increases in Noise Sensitive Areas (NSAs) • Potential for vibration impacts (any sensitive equipment, or vibration impacts during construction)	**MORE PREFERRED** No NSAs would be impacted by this Alternative. Construction activities may cause disruptions to nearby NSAs.	**MORE PREFERRED** No NSAs would be impacted by this Alternative. Construction activities may cause disruptions to nearby NSAs.	**LEAST PREFERRED** Shifting the Keele Street alignment westerly moves the road closer to NSAs (residential properties 150m west of Keele). Construction activities may cause disruptions to nearby NSAs.	**LEAST PREFERRED** Shifting the Keele Street alignment westerly moves the road closer to NSAs (residential properties 150m west of Keele) Construction activities may cause disruptions to nearby NSAs.	**MOST PREFERRED** No NSAs would be impacted by this Alternative. No construction impacts.
2.4 Land Use - Resources	2.4.1. Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Treaty Rights and use of land and resources for traditional purposes.	Section 1 would not be used for Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes as it is already developed. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
	2.4.2. Agriculture	The potential and significance of: • Impacts to prime agricultural areas and agricultural infrastructure • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects to Agricultural Lands	**No preference** There may be minor impacts to existing agricultural lands in the northwest quadrant of Keele Street and Dufferin Street resulting from changes to the intersection that may be required to accommodate any of the Alternatives. However, this block is already planned for development. The area in the northwest quadrant is planned to be low-rise mixed use and low-rise residential developments. As such, no agricultural lands will be impacted.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	2.4.3. Recreational	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to recreational areas and facilities.	**MOST PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park	**MOST PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park	**LESS PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Impacts the Maple Reservoir Park, potentially impacting usability of soccer fields in existing configuration.	**LESS PREFERRED** • Provides access to future planned areas of the North Maple Regional Park. • Impacts the Maple Reservoir Park, potentially impacting usability of soccer fields in existing configuration.	**LEAST PREFERRED** • Does not provide access to future planned areas of the North Maple Regional Park. • Does not impact the Maple Reservoir Park.
	2.4.4. Aggregate and Mineral Resources	The potential and significance of: • Encroachment on or loss of aggregate and mineral resources	Section 1 does not have any Aggregate and Mineral Resources. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
2.5 Major Utility Transmission Corridors		Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access/ travel time; • Change to facilities / utilities / services to major utility transmission corridors (i.e. railroads, hydro, gas, oil).	Section 1 does not have any Major Utility Transmission Corridors. Therefore, none of the Alternatives will have impacts in this sub-factor group.				
2.6 Contaminated Property and Waste Management	2.6.1. Existing landfills under Provincial regulations and ECA requirements	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access / travel time; • Change to facilities / utilities /services to contaminated property and waste management (e.g., Landfills, Hazardous Waste Sites, “Brownfield” Areas, other known contaminated sites, and high-risk contamination areas); • Road salt impacts; • Collection system for landfill gas	Section 1 does not have any impacts to landfills. Therefore, none of the Alternatives will have impacts in this sub-factor group.				

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
	2.6.2. Contaminated Properties	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to facilities / utilities /services to contaminated property	**MODERATELY PREFERRED** There is potential for encroachment and long-term alteration/disruption to the following 'High Risk for Contamination' properties: • Fabco/Fabricated Plastics at 2175 Teston Road – PCA #43 Plastics (including Fibreglass) Manufacturing and Processing • Metrolinx Barrie Corridor – PCA #46 Rail Yards, Tracks and Spurs If property is acquired a Phase II Environmental Site Assessment (ESA) will be required.				**MOST PREFERRED** No properties would be encroached on as part of the Do Nothing Alternative.
2.7 Air Quality	2.7.1. Local and regional air quality impacts; greenhouse gas emissions	• Qualitative comparison of Alternatives for both local and regional air quality, and for GHG's, based on traffic volumes, speeds, intersection delays and proximity to sensitive receptors. • Quantitative assessment of local air quality for the preferred Alternative. • Consideration of sensitive receptors.	**MODERATELY PREFERRED** Traffic is not moved any closer to sensitive receptors, however, there will be increased lane capacity on Teston increasing traffic volumes/emissions east of Keele.	**MODERATELY PREFERRED** Traffic is not moved any closer to sensitive receptors, however, there will be increased lane capacity on Teston increasing traffic volumes/emissions east of Keele.	**LESS PREFERRED** This Alternative moves Keele Street closer to existing sensitive receptors west of Keele Street. Increased lane capacity on Teston increases traffic volumes/emissions east of Keele.	**LESS PREFERRED** This Alternative moves Keele Street closer to existing sensitive receptors west of Keele Street. Increased lane capacity on Teston increases traffic volumes/emissions east of Keele.	**MOST PREFERRED** No sensitive receptors would be impacted by this Alternative.
			MOST PREFERRED These Alternatives would result in alleviated traffic congestion, reducing GHG emissions as a result of reduced idling. GHG emissions resulting from construction equipment/materials, would be relatively similar for all options.				**LEAST PREFERRED** This Alternative would further increase the effects of climate change as it would further exacerbate traffic congestion and result in additional GHG emissions.
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY (11 Criteria)			**MOST PREFERRED (36/44)**	**MOST PREFERRED (35/44)**	**MODERATELY PREFERRED (26/44)**	**MODERATELY PREFERRED (25/44)**	**MODERATELY PREFERRED (22/44)**
3. CULTURAL ENVIRONMENT							
Section 1 does not have any cultural heritage resources. Therefore, none of the Alternatives will have impacts in this factor group. .							
4. TRANSPORTATION							
4.1 System Capacity & Efficiency	4.1.1. Movement of People and Goods	• Potential to support the efficient movement of people between communities based on Level of Service (LOS) and volume to capacity (v/c) on a network screenline and critical link basis.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. As part of the road widening, the existing intersections will be reconfigured to improve the level of service.				**LEAST PREFERRED** This Alternative does not improve existing or future transportation conditions of the corridor.
	4.1.2. System performance during peak periods	• Potential to reduce growth in peak hour travel demand	**MOST PREFERRED**				**LEAST PREFERRED** This Alternative provides less potential reduction in peak

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		through TDM and TSM strategies.	These Alternatives will allow Teston Road to reduce growth in peak hour travel demand through TDM and TSM strategies including providing active transportation infrastructure, optimizing intersections and traffic signal operations and supporting transit.				hour travel demand through TDM/TSM strategies.
4.2 System reliability / redundancy		• Potential to support system reliability and redundancy for travel between communities during adverse conditions.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve the transportation network's redundancy by providing 2 additional lanes of traffic and distributing existing and future traffic across the network to reduce congestion.				**LEAST PREFERRED** This Alternative does not improve the transportation network's redundancy.
4.3 Safety	4.3.1. Traffic Safety	• Potential to improve traffic safety based on opportunity to reduce traffic volumes and/or congestion in the study area.	**LESS PREFERRED** Widening Teston Road by adding 2 lanes will increase road capacity and reduce congestion throughout the road network. Meanwhile, safety improvements due to roadway geometry are not provided over existing conditions due to maintaining the existing tangent alignment for Keele Street and the existing Teston Road alignment including an undesirable reverse-curve with small radii.	**MOST PREFERRED** Widening Teston Road by adding 2 lanes will increase road capacity and reduce congestion throughout the road network. Meanwhile, safety improvements due to roadway geometry will be provided by maintaining the existing tangent alignment for Keele Street and flattening the existing reverse-curve on Teston Road east of Keele Street.	**LEAST PREFERRED** Widening Teston Road by adding 2 lanes will increase road capacity and reduce congestion throughout the road network. Meanwhile, safety improvements due to roadway geometry are not provided over existing conditions due to maintaining the existing Teston Road alignment including an undesirable reverse-curve with small radii while also Shifting Keele Street further west with a large horizontal curve is however less desirable than the existing tangent alignment	**MORE PREFERRED** Widening Teston Road by adding 2 lanes will increase road capacity and reduce congestion throughout the road network. Meanwhile, safety improvements due to roadway geometry will be provided by flattening the existing reverse-curve on Teston Road east of Keele Street. Shifting Keele Street further west with a large horizontal curve is however less desirable than the existing tangent alignment.	**LEAST PREFERRED** This Alternative does not improve the traffic safety of the corridor.
	4.3.2. Emergency Access	• Potential to provide and/or improve emergency access on existing and/or New York Region facilities.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve emergency access by providing 2 additional lanes of traffic.				**LEAST PREFERRED** This Alternative does not improve emergency access conditions.
4.4 Traffic Operations, Mobility & Accessibility	4.4.1. Modal integration, balance	• Potential to improve existing and future transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. Assess performance of proposed transportation improvement Alternatives, based on transportation analysis (e.g. screenline analysis and intersection operational analysis – identifying volume/capacity ratio, level of service, travel time	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. As part of the road widening, the existing Keele Street and Rodinea Road intersections will be reconfigured to improve the level of service.				**LEAST PREFERRED** This Alternative does not improve existing or future transportation conditions of the corridor.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
		/ delay, etc.); and potential to address congestion and opportunity to provide network improvements for various transportation modes.					
	4.4.2. Linkages to Population and Employment Centres	• Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve accessibility throughout Regional and local road network capacity by providing additional traffic lanes and redistributing traffic through the network.				**LEAST PREFERRED** This Alternative does not improve linkages within the Regional and local road network.
	4.4.3. Accommodation for pedestrian and cyclists	• Potential to accommodate pedestrians and cyclists within critical travel corridors. As well as preservation of existing and future planned pedestrian and cycling facilities including nature trails.	**MOST PREFERRED** The proposed cross-section Alternatives will urbanize Teston Road and provide sidewalks and additional active transportation facilities along both sides of Teston Road to accommodate pedestrians and cyclists.				**LEAST PREFERRED** This Alternative does not provide any improvements for pedestrians and cyclists.
4.5 Network Compatibility	4.5.1. Movement of People and Goods	• Potential to improve Regional and local network connectivity within, through and to/from the Preliminary Study Area.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve the Regional and local road network capacity by providing additional traffic lanes.				**LEAST PREFERRED** This Alternative does not improve Regional and local road network capacity.
	4.5.2. Flexibility for future expansion	• Potential to address future transportation needs beyond the forecasted planning horizons.	**MODERATELY PREFERRED** All Alternatives provide some flexibility for future expansion beyond the forecasted planning horizon.				**LEAST PREFERRED** This Alternative does not address future transportation needs even within the planning horizon year.
4.6 Engineering	4.6.1. Constructability	• Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	**LEAST PREFERRED** High construction complexity which will require reconstructing the existing Teston Road and Keele Street on the same alignment for a significant length of the area while maintaining existing traffic.	**LESS PREFERRED** Relatively high construction complexity which will require reconstructing the existing Keele Street and part of Teston Road on the same alignment for a significant length of the area while maintaining existing traffic. Teston Road construction east of Keele Street will be somewhat simpler as the shifted portion of the road can be built in the available right-of-way while maintaining traffic on the existing Teston Road	**MODERATELY PREFERRED** Moderate construction complexity with opportunity to build new Keele Street separate from existing alignment and use north side of Teston Road ROW east of Keele Street for detouring.	**MORE PREFERRED** Lower construction complexity with opportunity to build new Keele Street separate from existing alignment. Teston Road construction east of Keele Street will be somewhat simpler as the shifted portion of the road can be built in the available right-of-way while maintaining traffic on the existing Teston Road.	**MOST PREFERRED** This Alternative will not have any construction issues.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 1: Keele Street Intersection and GO Rail Overpass							
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 1 Alternative 1**	**Section 1 Alternative 2**	**Section 1 Alternative 3**	**Section 1 Alternative 4**	**Future Do Nothing***
				alignment for at least early stages of construction.			
	4.6.2. Compliance with design criteria	• Conformity to applicable York Region safety and design standards.	**LESS PREFERRED** This option maintains the less desirable Teston Road alignment including a reverse-curve.	**MOST PREFERRED** This option will improve the roadway geometry by flattening the existing reverse-curve on Teston Road east of Keele Street to meet York Region safety and design standards while maintain the tangent alignment along Keele Street.	**LEAST PREFERRED** This option maintains the less Teston Road alignment including a reverse-curve with small radii and introduces a less desirable curved alignment on Keele Street.	**MODERATELY PREFERRED** This option will improve the roadway geometry by flattening the existing reverse-curve on Teston Road east of Keele Street but introduces a less desirable curved alignment on Keele Street.	**LEAST PREFERRED** This Alternative would not improve the existing conditions to meet the current York Region safety and design standards
4.7 Construction Cost		• Relative road construction costs.	**LESS PREFERRED** Low relative construction costs due to the reconstruction of Teston Road on the existing road alignment adding increased complexity to the construction staging approach while limiting any construction on Keele Street to an intersection improvement since the existing alignment is maintained.	**LESS PREFERRED** Lowest relative construction costs due to the reconstruction of Teston Road on the north of the existing road simplifying the traffic management required during construction while limiting any construction on Keele Street to an intersection improvement since the existing alignment is maintained.	**LEAST PREFERRED** Highest relative construction costs due to the reconstruction of Teston Road on the existing road alignment adding increased complexity to the construction staging approach as well as the construction of a new road platform to shift Keele Street to the west.	**LESS PREFERRED** High relative construction costs due to the reconstruction of Teston Road as well as the construction of a new road platform to shift Keele Street to the west.	**MOST PREFERRED** This Alternative will not have any construction costs.
TRANSPORTATION SUMMARY (13 Criteria)			**MODERATELY PREFERRED (37/52)**	**MORE PREFERRED (40/52)**	**MODERATELY PREFERRED (37/52)**	**MOST PREFERRED (45/52)**	**LEAST PREFERRED (8/52)**

*Future Do Nothing refers to an Alternative where all other planned improvements within the study area are implemented, except a Teston Road connection.

For internal team reference (for now) relative preference points are assigned as follows: Least = 0, Less = 1, Moderately = 2, More = 3, Most = 4.

Evaluation Summary

	Section 1 Alternative 1	Section 1 Alternative 2	Section 1 Alternative 3	Section 1 Alternative 4	Future Do Nothing*
NATURAL ENVIRONMENT SUMMARY	MODERATELY PREFERRED (2)	MODERATELY PREFFERED (2)	LESS PREFERRED (1)	LESS PREFERRED (1)	MOST PREFERRED (4)
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY	MOST PREFERRED (4)	MOST PREFERRED (4)	MODERATELY PREFERRED (2)	MODERATELY PREFERRED (2)	MODERATELY PREFERRED (2)
TRANSPORTATION SUMMARY	MODERATELY PREFERRED (2)	MORE PREFERRED (3)	MODERATELY PREFERRED (2)	MOST PREFERRED (4)	LEAST PREFERRED (0)
EVALUATION RESULTS (3 Factor Groups)	Not Recommended (8/12)	RECOMMENDED (9/12)	Not Recommended (4/12)	Not Recommended (7/12)	Not Recommended (6/12)
RANKING	2	1	5	3	4

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

York Region Teston Road Area Improvements IEA - Evaluation of Alternative Methods
Section 2 – Rodinea Road to Don River East Tributary Valley (Landfill Section)

February 2022

Per the MECP Code of Practice for undertaking Environmental Assessments, the principles to be followed to ensure good environmental planning are transparency, traceability, and replicability. Evaluations of Alternatives also need to consider consultation with stakeholders, including the public, and Indigenous Communities.

The evaluation considered the same factors, sub-factors and criteria that were used in the previous evaluation of Alternative Methods (Alignments); however, the criteria were screened for applicability to the Alternatives prior to the evaluation, eliminating some of the factors and sub-factors.

Alternatives evaluated in this table include the section of Teston Road from Rodinea Road to the western edge of the Don River East Tributary Valley (Section 2). This section includes the area situated between the Keele Valley Landfill and the former Vaughan Township Landfill. The following provides a description of each Alternative:

- Alternative 1: Full Cross Section (36m)
- Alternative 2: Constrained Cross Section (18m)

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
1. NATURAL ENVIRONMENT					
1.1. Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat	• Degree of potential negative effect on fish habitat (e.g., size/scale/extent, duration, intensity/magnitude), considering sensitivity and relative quality and distribution of fish and fish habitat, e.g.: o direct presence of commercial, recreational or Aboriginal (CRA) fishery or relative contribution of fish or habitat to productivity of CRA fishery o species and/or habitat sensitivity to disturbance o species rarity, including species at risk (special concern, threatened or endangered fish species) o fish dependence on habitat and potential for effect to impact productivity (e.g. specialized / critical fish life stage processes like spawning, rearing, nursery, feeding) and fish movement/migration	Section 2 does not have any fish or fish habitat nor any water crossings. Therefore, none of the Alternatives will have impacts in this Factor group.		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
		o fisheries/fish community management goals and objectives • Potential constraints/ issues/challenges to designing, constructing and mitigating crossing to avoid serious harm to fish (e.g., whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery).			
1.2 Terrestrial Ecosystems	1.2.1. Wildlife and Wildlife Habitat, including wildlife passage	• Potential for and significance of encroachment, fragmentation, removal, long- term alteration / disruption as applicable to the following, and considering potential for impacts to individuals, species groups and/or populations and impacts to their respective habitats and movement among them: o Habitat rarity (i.e., representation on the landscape) o Habitat sensitivity / resilience o Habitat diversity within feature and landscape o Habitat function within feature and landscape o Confirmed Significant Wildlife Habitat o Potential Significant Wildlife Habitat o Movement corridors and habitat connectivity o Potential or confirmed habitat for Species at Risk o Presence of Wildlife Species at Risk o Interference with critical wildlife life stage processes (e.g., mating /	**LESS PREFERRED** • Encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat • May permanently impact/alter/impair wildlife movement (primarily for mammals), north to south, through the open grassland areas. Several fence lines already exist which may already impact wildlife movements through the area.	**MORE PREFERRED** • Minor encroachment into or removal of confirmed habitat for Grassland Species at Risk: Bobolink (Threatened) and Eastern Meadowlark (Threatened). This habitat is not rare at this location. • Minor encroachment into and/or removal of potential habitat for species of special concern: Monarch • Unlikely to affect Significant Wildlife Habitat (SWH) • May permanently impact/alter/impair wildlife movement (primarily for mammals), north to south, through the open grassland areas. Several fence lines already exist which may already impact wildlife movements through the area.	**MOST PREFERRED** This Alternative will have no impact on wildlife, wildlife habitat, and/or wildlife passage at this location

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
		rearing, etc.) Potential constraints and opportunities to design, construct, operate and mitigate the infrastructure to avoid or minimize impacts to wildlife and wildlife habitat.			
	1.2.2. Wetlands	• Potential for and significance of encroachment, fragmentation, removal and/or long-term alteration / disruption on wetland features as applicable to the following: o Provincially Significant Wetlands o Non-provincially Significant Wetlands o Un-evaluated wetlands o Lands adjacent to wetland features required to maintain ecological features and functions o Rarity, feature sensitivity/ resilience (incl. hydrological functions/dependencies), feature diversity, size and representation on the landscape • Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to wetlands.	There are no wetlands in Section 2. Therefore, none of the Alternatives will have impacts in this Factor group.		
	1.2.3. Woodlands and other Vegetation including genetic connectivity of plants	• Potential and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Significant woodlands Significant valleylands o Rarity, feature sensitivity/ resilience, feature diversity, size and	**MODERATELY PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. Alternative 1 will impact a larger area than Alternative 2.	**MORE PREFERRED** This Alternative will impact vegetation communities that are considered the least rare regionally and that are the most resilient. No rare features, significant woodlands or valleylands, or SAR plants are likely to be impacted.	**MOST PREFERRED** This Alternative will have no impact on woodlands, vegetation, or significant floral species at this location.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
		representation on the landscape o Individuals/populations or habitats for vegetation Species at Risk o Individuals/populations or significant representation of vegetation species of provincial or regional/local conservation concern o Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to woodlands and other vegetation.			
	1.2.4. Designated / Special Natural Areas	• Potential for and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Purpose / rationale for the original designation (i.e. relative potential to affect the core feature / function designated). o Impact to the designated feature and its function(s) o Impact to the overall designation (i.e., does the impact effect the purpose of the designation) • Designated natural areas include heritage rivers, Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), Natural Heritage System(s), conservation lands (e.g. management tracts, reserves, and conservation areas), etc.	**No Preference** Section 1 does not have any Designated or Significant Natural Areas. Therefore, none of the Alternatives will have impacts in this sub-factor group.		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
1.3 Groundwater	1.3.1. Areas of Groundwater Recharge or Discharge	• Evaluate the potential and significance of road construction to areas of groundwater recharge or discharge due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater and surface water base-flow and water quality.	**LEAST PREFERRED** These Alternatives have some potential to impact the known significant groundwater recharge area that encompasses this portion of the study area. However, potable water in the project area is municipally supplied and is not dependent on private well water. Potential impacts to the groundwater recharge area and source water quality are minimal.		**MOST PREFFERED** This Alternative will have no impacts on the groundwater recharge or discharge area.
	1.3.2. Groundwater Source Areas and Wellhead Protection Areas	• Evaluate the potential and significance of road construction on groundwater/surface water flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, as they pertain to applicable Source Protection Area and Wellhead Protection Area policies.	**No Preference** None of the Alternatives have the potential to impact groundwater source areas or wellhead protection areas.		
	1.3.3. Large Volume Wells	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to these large volume wells. The purpose of the water takings from these large volume users must be taken into consideration.	**No Preference** Section 2 does not impact any large volume wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	1.3.4. Private Wells – Domestic and Commercial Groundwater Users	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to	**No Preference** Section 2 does not have any domestic or commercial wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
		groundwater dependent domestic and commercial users.			
	1.3.5. Groundwater – Sensitive Ecosystems	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater dependent ecosystems, Environmentally Significant Areas and Areas of Natural and Scientific Interest.	**No Preference** Section 2 does not have any sensitive ecosystems. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	1.3.6. Highly Vulnerable Aquifers	• Evaluate the potential and significance of road construction to areas of highly vulnerable aquifers to physical intrusion, interception, dewatering drawdown, soil impoundment and compaction, and the effects on aquifers water base-flow and water quality.	**LEAST PREFERRED** The entire study area is located within an area classified as Highly Vulnerable Aquifer, since the area is municipally serviced with potable water and the aquifer directly underlying the project area is not used as a potable water source, the anticipated impacts are considered insignificant. Based on the Source Protection Plan, several activities such as Application/Storage/Handing of Road Salt, Handling and Storage of a Dense Non-Aqueous Phase Liquid, Handling and Storage of an Organic Solvent are considered as moderate to low drinking water threats in Highly Vulnerable Aquifers. Some of the activities may occur during construction, salt application will occur during operation phase.		**MOST PREFFERED** This Alternative will have no impacts to the highly vulnerable aquifers.
	1.3.7. Contamination Concerns	• Evaluate the potential and significance of road construction on introducing contamination through road runoff and by intercepting contaminated groundwater plumes.	**LEAST PREFERRED** All Alternatives will have to address road runoff intercepting contaminated groundwater plumes. This will be addressed during Preliminary Design.		**MOST PREFFERED** This alternative has no contamination concerns.
	1.3.8. Existing Landfills	• Evaluate the potential and significance of road construction adjacent to existing (closed) landfills with known groundwater contamination issues.	**LEAST PREFERRED** This alternative would conflict with groundwater monitoring and gas collection infrastructure. It would encroach on both the closed Keele Valley Landfill, closed former Vaughan Township Landfill and likely encroach on the private landfill near Rodinea Road.	**MORE PREFERRED** This alternative would pass between the landfills and avoid impacts to most or all of the landfill infrastructure in the area.	**MOST PREFFERED** This alternative would have no impact on the landfill or the associated infrastructure.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
	1.3.9. Flowing Artesian Conditions	• Evaluate the potential and significance of road construction to flowing artesian conditions due to physical intrusion.	**No Preference** Section 2 does not have any flowing artesian conditions. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
1.4 Surface Water	1.4.1. Watershed/ Subwatershed Drainage Features/Patterns	Potential and significance of: • Encroachment, severance, displacement • Long-term alteration / disruption as applicable to the following: o Watercourse crossings (permanent, intermittent, and ephemeral) o Flood plain o Riparian areas o Headwater areas o McGill ESAs and ANSI o Vegetative community o Oak Ridges Moraine – Natural Core Area (2017) o Watershed and subwatershed management plans. • The approach to the fluvial geomorphology assessment will be confirmed, reviewed and made acceptable to reviewing agencies. • Other concerns: o Proximity to landfill sites o Source water protection	**No Preference** Section 2 does not have watercourse crossings, and therefore no surface water impacts. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	1.4.2. Surface Water Quality and Quantity	• Potential and significance of effects on water quality through direct and indirect discharges of contaminated and sediment-laden runoff • Potential and significance of effects on stream hydrology due to changes in ground	**LEAST PREFERRED** Alternatives1 and 2 will result in similar potential water quality/quantity/erosion impacts for all Alternatives. These impacts are easily mitigable.		**MOST PREFFERED** This alternative has no surface water quality or quantity concerns.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
		permeability, modifications to surface drainage patterns and volumes and alterations of water bodies			
NATURAL ENVIRONMENT SUMMARY (7 Criteria)			**LESS PREFERRED (3/28)**	**MODERATELY PREFERRED (9/28)**	**MOST PREFERRED (28/28)**
2. LAND USE / SOCIO-ECONOMIC ENVIRONMENT					
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1. Indigenous Land Claims	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption to Indigenous Land Claims	**No Preference** All Alternatives are within the area known as the Toronto Purchase (a.k.a. Treaty No.13). In 2010 a settlement for these lands was reached between the Mississaugas and the Government of Canada. Therefore, no Alternative will have impact to land claims.		
	2.1.2. Provincial/ Federal Land Use Planning Policies/Goals/ Objectives	• How the development of Alternatives fits into the Provincial/Federal land use planning policies/goals/ objectives	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meet current and projected needs of the province. They also all address connectivity, reduction of emissions, and increased safety of the network.	**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current and projected needs of the province and therefore does not support the policies within the Provincial Policy Statement (Sections 1.1.1(g) and 1.6.1(b)) or the Growth Plan for the Greater Golden Horseshoe, (Section 3).	
	2.1.3. Municipal (local and regional) Land Use Planning Policies/ Goals/ Objectives	• How the development of Alternatives fits into the local and regional land use planning policies/goals/ objectives (York Region Official Plan, Vaughan)	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meets current and projected needs of the Region and City of Vaughan.	**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current or projected needs of the Region, or the City of Vaughan given the anticipated population growth and development in the area (i.e., Block 27).	

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
	2.1.4. Development Objectives of Private Property Owners	• Development objectives of private property owners should be in conjunction with land use policies and future land use	**MOST PREFERRED** These Alternatives would have no impacts on the objectives of private property owners.		**MODERATELY PREFERRED** This Alternative will have no impacts on the objectives of private property owners. However, it does not provide for a safe and efficient transportation network for the development of communities based on future land uses
2.2 Land Use - Community	2.2.1. Indigenous Community Reserves	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects change to access / travel time to Indigenous Community Reserves.	**No Preference** Section 2 does not have any Indigenous Community Reserves. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	2.2.2. Indigenous Sacred Grounds	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption • nuisance effects change to access/travel time to Indigenous Sacred Grounds.	**No Preference** There are no known Indigenous Sacred Grounds within Section 2. Stage 1 archaeological assessments determined there is potential for lands to contain an ossuary. The previous Stage 1 assessment recommended that burial avoidance strategies be implemented to mitigate any negative impacts to unknown ossuary locations. Whichever Alternative is recommended, it will be subject to additional Stage 2 Archaeological Assessments which will determine appropriate mitigation measures or need for additional assessments (Stage 3/4).		
	2.2.3. Urban and Rural Residential	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to urban and rural residential communities.	**No Preference** Section 2 does not have any existing Urban or Rural Residential lands. Therefore, none of the Alternatives will have impacts in this sub-factor group.		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
	2.2.4. Commercial/ Industrial	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to commercial/industrial.	**No Preference** Section 2 only contains the lands associated with the existing closed landfills and therefore there will be no impacts to commercial or industrial land uses.		
	2.2.5. Tourist Areas and Attractions	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to tourist areas and attractions.	**MOST PREFERRED** All Alternatives similarly provide reduced travel time to nearby tourist attractions (such as Canada's Wonderland) by providing additional routes for all traffic.		**LEAST PREFERRED** This Alternative limits the number of routes for travellers looking to access tourist areas/attractions.
	2.2.6. Community and Recreational Facilities / Institutions	The potential and significance of: encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to community facilities/institutions.	**MOST PREFERRED** Provides access to future planned areas of the North Maple Regional Park.		**LEAST PREFERRED** Limits potential to provide access to the North Maple Regional Park, particularly from the east if no Teston Road connection is constructed.
	2.2.7. Municipal Infrastructure and Public Service Facilities	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to municipal infrastructure and public service facilities.	**MOST PREFERRED** Alternatives 1 and 2 both have the potential to provide new or continued accesses to the municipal and public service infrastructure in the area (i.e., the landfills and associated infrastructure for maintenance and monitoring of the landfills).		**LEAST PREFERRED** Limits potential to provide access municipal infrastructure and public service facilities.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
2.3 Noise Sensitive Areas (NSA's)	2.3.1. Transportation Noise & Vibration	• Potential for significant traffic noise increases in Noise Sensitive Areas (NSAs) • Potential for vibration impacts (any sensitive equipment, or vibration impacts during construction)	**No Preference** There are no NSAs within Section 2. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
2.4 Land Use - Resources	2.4.1. Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Treaty Rights and use of land and resources for traditional purposes.	**No Preference** Section 2 would not be used for Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes as it is private property actively managed as closed landfills. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	2.4.2. Agriculture	The potential and significance of: • Impacts to prime agricultural areas and agricultural infrastructure • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects to Agricultural Lands	**No Preference** Section 2 does not have any agricultural lands. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
	2.4.3. Recreational	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to recreational areas and facilities.	**MOST PREFERRED** Provides access to future planned areas of the North Maple Regional Park.		**LEAST PREFERRED** Does not provide access to future planned areas of the North Maple Regional Park.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
	2.4.4. Aggregate and Mineral Resources	The potential and significance of: • Encroachment on or loss of aggregate and mineral resources	**No Preference** Section 2 does not have any Aggregate and Mineral Resources. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
2.5 Major Utility Transmission Corridors		Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access/ travel time; • Change to facilities / utilities / services to major utility transmission corridors (i.e. railroads, hydro, gas, oil).	**No Preference** Section 2 does not have any Major Utility Transmission Corridors. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
2.6 Contaminated Property and Waste Management	2.6.1. Existing landfills under Provincial regulations and ECA requirements	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access / travel time; • Change to facilities / utilities /services to contaminated property and waste management (e.g., Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas); • Road salt impacts; • Collection system for landfill gas	**LEAST PREFERRED** This alternative would conflict with groundwater monitoring and gas collection infrastructure and would therefore likely require amendments/ revisions to existing ECAs. It would encroach on both the closed Keele Valley Landfill, closed former Vaughan Township Landfill and likely encroach on the private landfill near Rodinea Road.	**MORE PREFERRED** This alternative would pass between the landfills and avoid impacts to most or all of the landfill infrastructure in the area. It is anticipated that this alternative would not require amendments/ revisions to existing ECAs.	**MOST PREFFERED** This alternative would have no impact on the landfill or the associated infrastructure.
	2.6.2. Contaminated Properties	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to facilities / utilities /services to contaminated property	**MODERATELY PREFERRED** There is potential for encroachment and long-term alteration/disruption to the following 'High Risk for Contamination' properties: • Keele Valley Landfill • Former Vaughan Township Landfill If property is acquired a Phase II Environmental Site Assessment (ESA) will be required.		**MOST PREFERRED** No properties would be encroached on as part of the Do Nothing Alternative.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
2.7 Air Quality	2.7.1. Local and regional air quality impacts; greenhouse gas emissions	• Qualitative comparison of Alternatives for both local and regional air quality, and for GHG's, based on traffic volumes, speeds, intersection delays and proximity to sensitive receptors. • Quantitative assessment of local air quality for the preferred Alternative. • Consideration of sensitive receptors.	**No Preference** Section 2 does not have any sensitive receptors. Therefore, none of the Alternatives will have impacts in this sub-factor group.		
			MOST PREFERRED These Alternatives would result in alleviated traffic congestion, reducing GHG emissions as a result of reduced idling. GHG emissions resulting from construction equipment/materials, would be relatively similar for all options.		**LEAST PREFERRED** This Alternative would further increase the effects of climate change as it would further exacerbate traffic congestion and result in additional GHG emissions.
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY (10 Criteria)			**MORE PREFERRED (34/40)**	**MOST PREFERRED (37/40)**	**LESS PREFERRED (10/40)**
3. CULTURAL ENVIRONMENT					
Section 2 does not have any cultural heritage resources. Therefore, none of the Alternatives will have impacts in this factor group. .					
4. TRANSPORTATION					
4.1 System Capacity & Efficiency	4.1.1. Movement of People and Goods	• Potential to support the efficient movement of people between communities based on Level of Service (LOS) and volume to capacity (v/c) on a network screenline and critical link basis.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit.		**LEAST PREFERRED** This Alternative does not improve existing or future transportation conditions of the corridor.
	4.1.2. System performance during peak periods	• Potential to reduce growth in peak hour travel demand through TDM and TSM strategies.	**MOST PREFERRED** These Alternatives will allow Teston Road to reduce growth in peak hour travel demand through TDM and TSM strategies including providing active transportation infrastructure, optimizing intersections and traffic signal operations and supporting transit.		**LEAST PREFERRED** This Alternative provides less potential reduction in peak hour travel demand through TDM/TSM strategies.
4.2 System reliability / redundancy		• Potential to support system reliability and redundancy for travel between communities during adverse conditions.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve the transportation network's redundancy by providing 2 additional lanes of traffic per direction and distributing existing and future traffic across the network to reduce congestion.		**LEAST PREFERRED** This Alternative does not improve the transportation network's redundancy.
4.3 Safety	4.3.1. Traffic Safety	• Potential to improve traffic safety based on opportunity to reduce traffic volumes and/or congestion in the study area.	**MORE PREFERRED** Extending Teston Road and adding 2 additional lanes per direction will increase road capacity and reduce congestion throughout the road network. Alternative 1 provides a buffer (i.e., a boulevard)	**MODERATELY PREFERRED** Widening Teston Road by adding 2 lanes will increase road capacity and reduce congestion throughout the road network. However, the Alternative 2 only provides a narrow buffer (i.e., a	**LEAST PREFERRED** This Alternative does not improve the traffic safety of the corridor.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
			between the vehicle lanes and active transportation facilities.	boulevard) between the vehicle lanes and active transportation facilities.	
	4.3.2. Emergency Access	• Potential to provide and/or improve emergency access on existing and/or New York Region facilities.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve emergency access by providing 2 additional lanes of traffic per direction.		**LEAST PREFERRED** This Alternative does not improve emergency access conditions.
4.4 Traffic Operations, Mobility & Accessibility	4.4.1. Modal integration, balance	• Potential to improve existing and future transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. Assess performance of proposed transportation improvement Alternatives, based on transportation analysis (e.g. screenline analysis and intersection operational analysis – identifying volume/capacity ratio, level of service, travel time / delay, etc.); and potential to address congestion and opportunity to provide network improvements for various transportation modes.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit.		**LEAST PREFERRED** This Alternative does not improve existing or future transportation conditions of the corridor.
	4.4.2. Linkages to Population and Employment Centres	• Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve accessibility throughout Regional and local road network capacity by providing additional traffic lanes and redistributing traffic through the network.		**LEAST PREFERRED** This Alternative does not improve linkages within the Regional and local road network.
	4.4.3. Accommodation for pedestrian and cyclists	• Potential to accommodate pedestrians and cyclists within critical travel corridors. As well as preservation of existing and future planned pedestrian and cycling facilities including nature trails.	**MOST PREFERRED** The proposed cross-section Alternatives will urbanize Teston Road and provide sidewalks and additional active transportation facilities along both sides of Teston Road to accommodate pedestrians and cyclists.		**LEAST PREFERRED** This Alternative does not provide any improvements for pedestrians and cyclists.
4.5 Network Compatibility	4.5.1. Movement of People and Goods	• Potential to improve Regional and local network connectivity within, through and to/from the Preliminary Study Area.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve the Regional and local road network capacity by providing additional traffic lanes.		**LEAST PREFERRED** This Alternative does not improve Regional and local road network capacity.
	4.5.2. Flexibility for future expansion	• Potential to address future transportation needs beyond the forecasted planning horizons.	**MODERATELY PREFERRED** All Alternatives provide some flexibility for future expansion beyond the forecasted planning horizon.		**LEAST PREFERRED**

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Summary of Evaluation Factors and Criteria for Alternative Designs – Section 2: Rodinea Road to Don River Valley					
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 2 Alternative 1 (Full Cross Section (36m))**	**Section 2 Alternative 2 (Constrained Cross Section (18m))**	**Future Do Nothing***
					This Alternative does not address future transportation needs even within the planning horizon year.
4.6 Engineering	4.6.1. Constructability	• Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	**LEAST PREFERRED** This Alternative is more complex to construct as it conflicts with landfill utilities and infrastructure would need to be addressed.	**MORE PREFERRED** Easier to construct as there are fewer conflicts with the utilities and infrastructure associated with the Landfills.	**MOST PREFERRED** This Alternative will not have any construction issues.
	4.6.2. Compliance with design criteria	• Conformity to applicable York Region safety and design standards.	**MORE PREFERRED** This Alternative is inline with the standard cross-section for regional roads.	**MODERATELY PREFERRED** This alternative is a deviation from the standard regional road cross-section.	**LEAST PREFERRED** This Alternative would not improve the existing conditions to meet the current York Region safety and design standards
4.7 Construction Cost		• Relative road construction costs.	**LEAST PREFERRED** Highest relative construction costs due grading and fill requirements as well as the need to relocate a number of utilities/infrastructure associated with the landfills.	**MODERATELY PREFERRED** Lower relative construction costs due to a reduction in grading and fill requirements and less impact/relocation of landfill utilities/infrastructure.	**MOST PREFERRED** This Alternative will not have any construction costs.
TRANSPORTATION SUMMARY (13 Criteria)			**MORE PREFERRED (40/52)**	**MOST PREFERRED (43/52)**	**LEAST PREFERRED (8/52)**

*Future Do Nothing refers to an Alternative where all other planned improvements within the study area are implemented, except a Teston Road connection.

For internal team reference (for now) relative preference points are assigned as follows: Least = 0, Less = 1, Moderately = 2, More = 3, Most = 4.

Evaluation Summary

	Section 2 Alternative 1	Section 1 Alternative 2	Future Do Nothing*
NATURAL ENVIRONMENT SUMMARY	**LESS PREFERRED (1)**	**MODERATELY PREFERRED (2)**	**MOST PREFERRED (4)**
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY	**MORE PREFERRED (3)**	**MOST PREFERRED (4)**	**LESS PREFERRED (1)**
TRANSPORTATION SUMMARY	**MORE PREFERRED (3)**	**MOST PREFERRED (4)**	**LEAST PREFERRED (0)**
EVALUATION RESULTS (3 Factor Groups)	**Not Recommended (7/12)**	**RECOMMENDED (10/12)**	**Not Recommended (5/12)**
RANKING	**2**	**1**	**3**

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

York Region Teston Road Area Improvements IEA - Evaluation of Alternative Methods
Section 3 – Teston Road / Don River Valley Crossing

February 2022

Per the MECP Code of Practice for undertaking Environmental Assessments, the principles to be followed to ensure good environmental planning are transparency, traceability, and replicability. Evaluations of Alternatives also need to consider consultation with stakeholders, including the public, and Indigenous Communities.

The evaluation considered the same factors, sub-factors and criteria that were used in the evaluation of Alternative Methods (Alignments); however, the criteria were screened for applicability to the Alternatives prior to the evaluation, eliminating some of the factors and sub-factors.

Alternatives evaluated in this table include the Teston Road crossing of the Don Valley (Section 3). The following provides a description of each Alternative:

- Alternative 3-1: Medium Span (80m+)
- Alternative 3-2: Medium-Long Span (2x80m)
- Alternative 3-3: Long Span (3x80m)

Evaluation Factors and Criteria for Alternative Designs

FACTORS	SUB-FACTORS	CRITERIA	Section 3 Alternative 3-1	Section 3 Alternative 3-2	Section 3 Alternative 3-3	Future Do Nothing*
1. NATURAL ENVIRONMENT						
1.1. Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat	• Degree of potential negative effect on fish habitat (e.g., size/scale/extent, duration, intensity/magnitude), considering sensitivity and relative quality and distribution of fish and fish habitat, e.g.: o direct presence of commercial, recreational or Aboriginal (CRA) fishery or relative contribution of fish or habitat to productivity of CRA fishery o species and/or habitat sensitivity to disturbance o species rarity, including species at risk (special concern, threatened or endangered fish species) o fish dependence on habitat and potential for effect to impact productivity (e.g. specialized / critical fish life stage processes like spawning, rearing, nursery, feeding) and fish movement/migration o fisheries/fish community management goals and	**LESS PREFERRED** This Alternative has a smaller bridge length which would require grading and the placement of fill within or directly adjacent to the existing watercourse and may permanently impact the existing fish and fish habitat. These impacts may not be readily mitigated through design and implementation of mitigation measures.	**MODERATELY PREFERRED** This Alternative would require less grading and the placement of fill within or directly adjacent to the existing watercourse than Alternative 1 but may still permanently impact the existing fish and fish habitat. These impacts may not be readily mitigated through design and implementation of mitigation measures.	**MORE PREFERRED** Alternative 3-3 has the largest total bridge length and smallest footprint within the valley and would have less of an impact on fish and fish habitat. Impacts to fish and fish habitat are still expected to occur with this Alternative and impacts will need to be mitigated through design and implementation of mitigation measures.	**MOST PREFERRED** This Alternative will have no impact on the Don River East tributary.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
		objectives • Potential constraints/ issues/challenges to designing, constructing and mitigating crossing to avoid serious harm to fish (e.g., whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery).				
1.2 Terrestrial Ecosystems	1.2.1. Wildlife and Wildlife Habitat, including wildlife passage	• Potential for and significance of encroachment, fragmentation, removal, long- term alteration / disruption as applicable to the following, and considering potential for impacts to individuals, species groups and/or populations and impacts to their respective habitats and movement among them: o Habitat rarity (i.e., representation on the landscape) o Habitat sensitivity / resilience o Habitat diversity within feature and landscape o Habitat function within feature and landscape o Confirmed Significant Wildlife Habitat o Potential Significant Wildlife Habitat o Movement corridors and habitat connectivity o Potential or confirmed habitat for Species at Risk o Presence of Wildlife Species at Risk o Interference with critical wildlife life stage processes (e.g., mating / rearing, etc.) Potential constraints and opportunities to design, construct, operate and mitigate	**LESS PREFERRED** Alternative 3-1 has the shortest bridge length and results in the most grading, therefore it would have the most impact on wildlife movement, SAR, or significant habitat.	**MODERATELY PREFERRED** Alternative 3-2 has a total bridge length between Alternative 1 and 3 and results in a moderate amount of grading, therefore it would have a moderate amount of impact on wildlife movement, SAR, or significant habitat.	**MORE PREFERRED** Alternative 3-3 has the largest total bridge length and results in the least grading, therefore it would have less of an impact on wildlife movement, SAR, or significant habitat.	**MOST PREFERRED** This Alternative will have no impact on wildlife, wildlife habitat, and/or wildlife passage at this location.
			All Alternatives will: • Encroach into, fragment, and remove potential roosting trees/forest habitat for Species at Risk Bats (Endangered); roost trees may also constitute Significant Wildlife Habitat. • Encroach into, fragment, and/or remove potential and confirmed habitat for several Special Concern Species at Risk (Wood Thrush, Eastern Wood-pewee, Monarch, and Snapping Turtle) as well as for numerous birds, mammals, and herptiles ranked as regionally rare (L2-L4) by the TRCA. • May permanently impact/alter/impair wildlife movement (primarily for mammals, amphibians, and reptiles), north to south, through forest and wetland habitats. • May impact /impair /remove /fragment several potential Significant Wildlife Habitats, including: ▫ Waterfowl Stopover and Staging Areas (Aquatic), Waterfowl Nesting Areas, and Shorebird Migratory Stopover Areas ▫ Raptor Wintering Areas and Woodland Raptor Nesting Areas ▫ Bat Maternity Colonies ▫ Turtle Wintering Areas and Turtle Nesting Areas ▫ Colonially Nesting Bird Breeding Habitat (Tree/Shrub), and Area-Sensitive Bird Breeding Habitat ▫ Rare Vegetation Communities ▫ Amphibian Breeding Habitat (Wetlands and Woodlands)		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
		the infrastructure to avoid or minimize impacts to wildlife and wildlife habitat.				
	1.2.2. Wetlands	• Potential for and significance of encroachment, fragmentation, removal and/or long-term alteration / disruption on wetland features as applicable to the following: o Provincially Significant Wetlands o Non-provincially Significant Wetlands o Un-evaluated wetlands o Lands adjacent to wetland features required to maintain ecological features and functions o Rarity, feature sensitivity/ resilience (incl. hydrological functions/dependencies), feature diversity, size and representation on the landscape	**LESS PREFERRED** This Alternative will result in direct/permanent impacts within Provincially Significant and regionally rare wetland communities, as well as proximal impacts to, and fragmentation of, these wetlands. Alternative 3-1 would result in the greatest long-term impairment of wetland features and functions overall..	**MODERATELY PREFERRED** This Alternative will result in direct/permanent impacts within Provincially Significant and regionally rare wetland communities, as well as proximal impacts to, and fragmentation of, these wetlands. Alternative 3-2 would result in some long-term impairment of wetland features and functions overall (though less so than Alternative 3-1).	**MORE PREFERRED** This Alternative avoids most permanent and proximal impacts to Provincially Significant and regionally rare wetland communities, and would result in reduced fragmentation of these wetlands. The larger total bridge length allows for greater connectivity and hydrological function of these features to be maintained long-term.	**MOST PREFERRED** This Alternative will have no impacts on wetlands.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
		• Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to wetlands.				
	1.2.3. Woodlands and other Vegetation including genetic connectivity of plans	• Potential and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Significant woodlands Significant valleylands o Rarity, feature sensitivity/ resilience, feature diversity, size and representation on the landscape o Individuals/populations or habitats for vegetation Species at Risk o Individuals/populations or significant representation of vegetation species of provincial or regional/local conservation concern o Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to woodlands and other vegetation.	**LESS PREFERRED** Alternative 3-1 has the shortest bridge length and results in the most grading, therefore it would have a higher impact on woodlands, valleylands, and vegetation as well as on connectivity between plants.	**MODERATELY PREFERRED** Alternative 3-2 results in a moderate amount of grading, therefore it would have a moderate impact on woodlands, valleylands, and vegetation as well as on connectivity between plants.	**MORE PREFERRED** Alternative 3-3 has the largest total bridge length and results in the least grading, therefore it would have less of an impact on woodlands, valleylands, and vegetation as well as on connectivity between plants.	**MOST PREFERRED** This Alternative will have no impact on woodlands, vegetation, or significant floral species at this location.
			All Alternatives will impact vegetation communities of conservation concern that are considered rare regionally and that are the least resilient to disturbance and impacts. All Alternatives will encroach into, fragment, and remove Significant Woodlands and valleylands, as well as potential and confirmed habitat for Species at Risk Butternut trees (Endangered).			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	1.2.4. Designated / Special Natural Areas	• Potential for and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Purpose / rationale for the original designation (i.e. relative potential to affect the core feature / function designated). o Impact to the designated feature and its function(s) o Impact to the overall designation (i.e., does the impact effect the purpose of the designation) • Designated natural areas include heritage rivers, Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), Natural Heritage System(s), conservation lands (e.g. management tracts, reserves, and conservation areas), etc.	**LESS PREFERRED** Alternative 3-1 has the shortest bridge length and results in the most grading, therefore it would have more of an impact on designated areas as well as on connectivity between designated areas.	**MODERATELY PREFERRED** Alternative 3-2 results in a moderate amount of grading, therefore it would have a moderate impact on designated areas as well as on connectivity between designated areas.	**MORE PREFERRED** Alternative 3-3 has the largest total bridge length and results in the least grading, therefore it would have less of an impact on designated areas (m^2/ha) as well as on connectivity between designated areas.	**MOST PREFERRED** This Alternative will have no impact on designated or special natural areas at this location.
			All Alternatives will encroach into, impact the function of, or remove and fragment parts of several designated and significant natural areas, including: • The East Don River Headwater Wetland Complex PSW • The Maple Spur Channel Earth Science ANSI • The Maple Uplands and Kettles Candidate Life Science ANSI • The McGill Area ESA • Regionally Significant Forests • Regional Natural Heritage System Areas • Oak Ridge Moraine Conservation Plan Natural Core Areas • Greenbelt Plan Protection Areas			
1.3 Groundwater	1.3.1. Areas of Groundwater Recharge or Discharge	• Evaluate the potential and significance of road construction to areas of groundwater recharge or discharge due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater and surface water base-flow and water quality.	**LEAST PREFERRED** Potable water in the project area is municipally supplied and is not dependent on private well water. Potential impacts to the groundwater recharge area and source water quality are minimal. Portions of the study area include a Significant Groundwater Recharge Area; however, the area is outside of Section 3.			**MOST PREFFERED** This Alternative will have no impacts on the groundwater recharge or discharge area.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	1.3.2. Groundwater Source Areas and Wellhead Protection Areas	• Evaluate the potential and significance of road construction on groundwater/surface water flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, as they pertain to applicable Source Protection Area and Wellhead Protection Area policies.	**No Preference** None of the Alternatives have the potential to impact groundwater source areas or wellhead protection areas.			
	1.3.3. Large Volume Wells	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to these large volume wells. The purpose of the water takings from these large volume users must be taken into consideration.	**No Preference** Section 3 does not have any large volume wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	1.3.4. Private Wells – Domestic and Commercial Groundwater Users	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to groundwater dependent domestic and commercial users.	**No Preference** Section 3 does not have any domestic or commercial wells. Therefore, none of the Alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	1.3.5. Groundwater – Sensitive Ecosystems	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater dependent ecosystems, Environmentally Significant Areas and Areas of Natural and Scientific Interest.	**LEAST PREFERRED** These Alternatives have the potential to impact the Area of Natural and Scientific Interest (ANSI) - Maple Spur Channel that is located east of the two (2) landfills.			**MOST PREFFERED** This Alternative will have no impacts on the groundwater recharge or discharge area.
	1.3.6. Highly Vulnerable Aquifers	• Evaluate the potential and significance of road construction to areas of highly vulnerable aquifers to physical intrusion, interception, dewatering drawdown, soil impoundment and compaction, and the effects on aquifers water base-flow and water quality.	**LEAST PREFERRED** The entire study area is located within an area classified as Highly Vulnerable Aquifer, since the area is municipally serviced with potable water and the aquifer directly underlying the project area is not used as a potable water source, the anticipated impacts are considered insignificant. Based on the Source Protection Plan, several activities such as Application/Storage/Handing of Road Salt, Handling and Storage of a Dense Non-Aqueous Phase Liquid, Handling and Storage of an Organic Solvent are considered as moderate to low drinking water threats in Highly Vulnerable Aquifers. Some of the activities may occur during construction, salt application will occur during the operational phase.			**MOST PREFFERED** This Alternative will have no impacts to the highly vulnerable aquifers.
	1.3.7. Contamination Concerns	• Evaluate the potential and significance of road construction on introducing contamination through road runoff and by intercepting contaminated groundwater plumes.	**LEAST PREFERRED** All Alternatives will have to address road runoff intercepting contaminated groundwater plumes. This will be addressed during Preliminary Design.			**MOST PREFFERED** This Alternative will have no impacts to contaminated groundwater plumes
	1.3.8. Existing Landfills	• Evaluate the potential and significance of road construction adjacent to three closed landfills (A private landfill and the Vaughan Landfill to the north, and the Keele Valley Landfill to the south) with known groundwater contamination issues.	Section 3 does not have any landfills. Therefore, none of the Alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	1.3.9. Flowing Artesian Conditions	• Evaluate the potential and significance of road construction to flowing artesian conditions due to physical intrusion.	**No Preference** Section 3 does not have any identified flowing artesian conditions. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
1.4 Surface Water	1.4.1. Watershed/ Subwatershed Drainage Features/Patterns	Potential and significance of: • Encroachment, severance, displacement • Long-term alteration / disruption as applicable to the following: o Watercourse crossings (permanent, intermittent, and ephemeral) o Flood plain o Riparian areas o Headwater areas o McGill ESAs and ANSI o Vegetative community o Oak Ridges Moraine – Natural Core Area (2017) o Watershed and subwatershed management plans. • The approach to the fluvial geomorphology assessment will be confirmed, reviewed and made acceptable to reviewing agencies. • Other concerns: o Proximity to landfill sites o Source water protection	**No Preference** Section 3 Alternatives for bridge spans clear the Regulatory Floodplain limits and therefore would not have impacts to surface water. Fluvial geomorphological considerations will be given to the placement and design of the selected structure.			
	1.4.2. Surface Water Quality and Quantity	• Potential and significance of effects on water quality through direct and indirect discharges of contaminated and sediment-laden runoff	**LEAST PREFERRED** All Alternatives will have to address road runoff intercepting contaminated groundwater plumes. This will be addressed during Preliminary Design.			**MOST PREFFERED** This Alternative will have no impacts to contaminated groundwater plumes

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
		• Potential and significance of effects on stream hydrology due to changes in ground permeability, modifications to surface drainage patterns and volumes and alterations of water bodies				
NATURAL ENVIRONMENT SUMMARY (10 Criteria)			**LESS PREFERRED 5/40**	**MODERATELY PREFERRED 10/40**	**MORE PREFERRED 15/40**	**MOST PREFERRED 40/40**
2. LAND USE / SOCIO-ECONOMIC ENVIRONMENT						
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1. Indigenous Land Claims	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption to Indigenous Land Claims	**No Preference** All Alternatives are within the area known as the Toronto Purchase (a.k.a. Treaty No.13). In 2010 a settlement for these lands was reached between the Mississaugas and the Government of Canada. Therefore, no Alternative will have impact to land claims.			
	2.1.2. Provincial/ Federal Land Use Planning Policies/Goals/ Objectives	How the development of Alternatives fits into the Provincial/Federal land use planning policies/goals/ objectives	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meets current and projected needs of the province. It also addresses connectivity, reduction of emissions, and increased safety of the network.			**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current and projected needs of the province and therefore does not support the policies within the Provincial Policy Statement (Sections 1.1.1(g) and 1.6.1(b)) or the Growth Plan for the Greater Golden Horseshoe, (Section 3).
	2.1.3. Municipal (local and regional) Land Use Planning Policies/ Goals/ Objectives	How the development of Alternatives fits into the local and regional land use planning policies/goals/objectives (York Region Official Plan, Vaughan)	**MOST PREFERRED** These Alternatives would result in improvements to the transportation network that meets current and projected needs of the Region and City of Vaughan.			**LEAST PREFERRED** This Alternative would result in a transportation network that does not meet the current or projected needs of the Region, or the City of Vaughan given the anticipated population growth and development in the area (i.e., Block 27).

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	2.1.4. Development Objectives of Private Property Owners	Development objectives of private property owners should be in conjunction with land use policies and future land use	**MODERATELY PREFERRED** Impacts the largest portion of private property, however, does still provide access to a proposed development in the area. Preliminary Design will determine if grading impacts can be mitigated through the use of steeper slopes or retaining walls.	**MOST PREFERRED** Impacts a small portion of private property, however, does still provide access to a proposed development in the area. Preliminary Design will determine if grading impacts can be mitigated through the use of steeper slopes or retaining walls.	**MOST PREFERRED** Impacts a small portion of private property, however, does still provide access to a proposed development in the area. Preliminary Design will determine if grading impacts can be mitigated through the use of steeper slopes or retaining walls.	**MODERATELY PREFERRED** This Alternative will have no impacts on the objectives of private property owners. However, it does not provide for a safe and efficient transportation network for the development of communities and does not provide access to the planned development in the area.
2.2 Land Use – Community	2.2.1. Indigenous Community Reserves	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Community Reserves.	Section 3 does not have any Indigenous Community Reserves. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	2.2.2. Indigenous Sacred Grounds	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption • nuisance effects • change to access/travel time to Indigenous Sacred Grounds.	There are no known Indigenous Sacred Grounds within Section 3. Stage 1 archaeological assessments determined there is potential for lands to contain an ossuary. The previous Stage 1 assessment recommended that burial avoidance strategies be implemented to attempt to mitigate any negative impacts to unknown ossuary locations. Whichever Alternative is recommended, it will be subject to additional Stage 2 Archaeological Assessments which will determine appropriate mitigation measures or need for additional assessments (Stage 3/4).			
	2.2.3. Urban and Rural Residential	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to urban and rural residential communities.	**MODERATELY PREFERRED** None of the bridge Alternatives will encroach, sever or displace residential properties, however, the existing properties near the Teston Road and Dufferin Street intersections may experience new nuisance effects as a result of the roadway being constructed. All Alternatives would provide a decrease in travel times.			**MOST PREFERRED** There would be no impacts to residential properties, however, this Alternatives does not provide a decrease in travel times.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	2.2.4. Commercial/ Industrial	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to commercial/industrial.	Section 3 does not have any existing Commercial/Industrial lands. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	2.2.5. Tourist Areas and Attractions	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to tourist areas and attractions.	**MOST PREFERRED** All Alternatives similarly provide reduced travel time to nearby tourist attractions (such as Canada's Wonderland) by providing additional routes for all traffic.			**LEAST PREFERRED** This Alternative limits the number of routes for travellers looking to access tourist areas/attractions.
	2.2.6. Community and Recreational Facilities / Institutions	The potential and significance of: encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to community facilities/institutions.	**MODERATELY PREFERRED** This Alternative has opportunities for trail development under the structure or under the embankments via culverts. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**MORE PREFERRED** This Alternative has somewhat greater opportunities for trail development under the structure or embankments. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**MORE PREFERRED** This Alternative has greater opportunities for trail development under the structure and embankments. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**LESS PREFERRED** This Alternative would not limit any trail development within the valley, however, it would not provide an east-west connection to the North Maple Regional Park and has no opportunity to connect trails to AT infrastructure on the roadway.
	2.2.7. Municipal Infrastructure and Public Service Facilities	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to municipal infrastructure and public service facilities.	Section 3 does not have any existing Municipal Infrastructure and Public Service Facilities. Therefore, none of the Alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
2.3 Noise Sensitive Areas (NSA's)	2.3.1. Transportation Noise & Vibration	• Potential for significant traffic noise increases in Noise Sensitive Areas (NSAs) • Potential for vibration impacts (any sensitive equipment, or vibration impacts during construction)	**LEAST PREFERRED** As there is no existing roadway in this area, all Alternatives would increase traffic noise for nearby NSAs.			**MOST PREFERRED** This Alternative would not impact any NSAs.
2.4 Land Use – Resources	2.4.1. Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Treaty Rights and use of land and resources for traditional purposes.	Section 3 would not likely be used for Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes as it is a relatively small area of natural environment that is surrounded by areas of extensive development. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	2.4.2. Agriculture	The potential and significance of: • Impacts to prime agricultural areas and agricultural infrastructure • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects to Agricultural Lands	Section 3 does not have any existing Agriculture lands. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	2.4.3. Recreational	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to recreational areas and facilities.	**MODERATELY PREFERRED** This Alternative has opportunities for trail development under the structure or under the embankments via culverts. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**MORE PREFERRED** This Alternative has somewhat greater opportunities for trail development under the structure or embankments. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**MORE PREFERRED** This Alternative has greater opportunities for trail development under the structure or embankments. It does provide access to the planned areas of the North Maple Regional Park and has the opportunity to connect trails to AT infrastructure on the roadway.	**LESS PREFERRED** This Alternative would not limit any trail development within the valley, however, it would not provide east-west connection to the North Maple Regional Park and has no opportunity to connect trails to AT infrastructure on the roadway.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	2.4.4. Aggregate and Mineral Resources	The potential and significance of: Encroachment on or loss of aggregate and mineral resources	Section 3 does not have any Aggregate and Mineral Resources. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
2.5 Major Utility Transmission Corridors		Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access/ travel time; • Change to facilities / utilities / services to major utility transmission corridors (i.e. railroads, hydro, gas, oil).	Section 3 does not have any Major Utility Transmission Corridors. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
2.6 Contaminated Property and Waste Management	2.6.1. Existing landfills under Provincial regulations and ECA requirements	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access / travel time; • Change to facilities / utilities /services to contaminated property and waste management (e.g., Landfills, Hazardous Waste Sites, “Brownfield” Areas, other known contaminated sites, and high-risk contamination areas); • Road salt impacts; • Collection system for landfill gas	Section 3 does not have any landfills. Therefore, none of the Alternatives will have impacts in this sub-factor group.			
	2.6.2. Contaminated Properties	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption;	Section 3 does not have any contaminated properties. Therefore, none of the Alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
		• Change to facilities / utilities /services to contaminated property				
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY (8 Criteria)			**MORE PREFERRED 20/32**	**MOST PREFERRED 24/32**	**MOST PREFERRED 24/32**	**LESS PREFERRED 12/32**
3. CULTURAL ENVIRONMENT						
All Alternatives would result in the same impacts to the Cultural Heritage Environment.						
4. TRANSPORTATION						
4.1 System Capacity & Efficiency	4.1.1. Movement of People and Goods	• Potential to support the efficient movement of people between communities based on Level of Service (LOS) and volume to capacity (v/c) on a network screenline and critical link basis.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit by providing a new link connecting Keele Street to Dufferin Street.			**LEAST PREFERRED** This Alternative does not support the efficient movement of people as it maintains a discontinuity in the transportation network forcing traffic to navigate to other corridors to get around.
	4.1.2. System performance during peak periods	• Potential to reduce growth in peak hour travel demand through TDM and TSM strategies.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions and reduce peak hour travel demand on other corridors in the transportation network by providing a new link connecting Keele Street to Dufferin Street.			**LEAST PREFERRED** This Alternative does not reduce peak hour travel demand as it maintains a discontinuity in the transportation network forcing traffic to navigate to other corridors to get around.
4.2 System reliability / redundancy		• Potential to support system reliability and redundancy for travel between communities during adverse conditions.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve the reliability and redundancy of the transportation network by providing a new link connecting Keele Street to Dufferin Street.			**LEAST PREFERRED** This Alternative does improve system redundancy as it maintains a discontinuity in the transportation

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
						network forcing traffic to navigate to other corridors to get around.
4.3 Safety	4.3.1. Traffic Safety	• Potential to improve traffic safety based on opportunity to reduce traffic volumes and/or congestion in the study area.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve traffic safety by providing a new link connecting Keele Street to Dufferin Street which will reduce congestion across the transportation network.			**LEAST PREFERRED** This Alternative does not improve the traffic safety of the corridor as maintaining the existing discontinuity in the transportation congestion on other corridors to get around
	4.3.2. Emergency Access	• Potential to provide and/or improve emergency access on existing and/or New York Region facilities.	**MOST PREFERRED** These Alternatives improve the emergency access within the transportation network as it eliminates the existing discontinuity in the network and provides a shorter route for emergency services.			**LEAST PREFERRED** This Alternative does improve emergency access as it maintains a discontinuity in the transportation network forcing emergency services to navigate to other corridors to get around.
4.4 Traffic Operations, Mobility & Accessibility	4.4.1. Modal integration, balance	• Potential to improve existing and future transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. Assess performance of proposed transportation improvement Alternatives, based on transportation analysis (e.g. screenline analysis and intersection operational analysis – identifying volume/capacity ratio, level of service, travel time / delay, etc.); and potential to address congestion and opportunity to provide network improvements for various transportation modes.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit across the new valley crossing.			**LEAST PREFERRED** This Alternative does not provide any existing or future transportation corridor in the area.
	4.4.2. Linkages to Population and Employment Centres	• Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity.	**MOST PREFERRED** These Alternatives improve the linkages within the transportation network as it eliminates the existing discontinuity in the network by providing the new valley crossing.			**LEAST PREFERRED** This Alternative does not provide any existing or future transportation corridor in the area.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
	4.4.3. Accommodation for pedestrian and cyclists	• Potential to accommodate pedestrians and cyclists within critical travel corridors. As well as preservation of existing and future planned pedestrian and cycling facilities including nature trails.	**MOST PREFERRED** These Alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit across the new valley crossing.			**LEAST PREFERRED** This Alternative does not provide any existing or future transportation corridor in the area.
4.5 Network Compatibility	4.5.1. Movement of People and Goods	• Potential to improve Regional and local network connectivity within, through and to/from the Preliminary Study Area.	**MOST PREFERRED** These Alternatives improve the linkages within the transportation network as it eliminates the existing discontinuity in the network by providing the new valley crossing.			**LEAST PREFERRED** This Alternative does not provide any existing or future transportation corridor in the area.
	4.5.2. Flexibility for future expansion	• Potential to address future transportation needs beyond the forecasted planning horizons.	**MOST PREFERRED** These Alternatives will allow Teston Road valley crossing structure to be widened in the future to accommodate future traffic needs.			**LEAST PREFERRED** This Alternative does not address future transportation needs even within the planning horizon year.
4.6 Engineering	4.6.1. Constructability	• Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	**MORE PREFERRED** Lowest construction complexity to construct the necessary roadway embankment in the valley and a single-span structure crossing.	**MODERATELY PREFERRED** Moderate construction complexity to construct the necessary roadway embankment in the valley and a two-span structure crossing including pier.	**LEAST PREFERRED** Highest construction complexity to construct the necessary roadway embankment in the valley and a three-span structure crossing including piers.	**MOST PREFERRED** This Alternative will not have any construction issues.
	4.6.2. Compliance with design criteria	• Conformity to applicable York Region safety and design standards.	**MOST PREFERRED** These Alternatives will allow Teston Road to be reconstructed to current York Region safety and design standards.			**LEAST PREFERRED** This Alternative would not improve the existing conditions to meet the currents York Region safety and design standards
4.7 Construction Cost	• Relative road construction costs.		**MORE PREFERRED** Lowest relative construction costs to construct a single-span structure crossing and associated road embankments on the west and east limits.	**MODERATELY PREFERRED** Moderate relative construction costs to construct a two-span structure crossing and associated road embankments on the west and east limits.	**LEAST PREFERRED** Highest relative construction costs to construct a three-span structure crossing and associated road embankments on the west and east limits.	**MOST PREFERRED** This Alternative will not have any construction costs.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 3 Alternative 3-1**	**Section 3 Alternative 3-2**	**Section 3 Alternative 3-3**	**Future Do Nothing***
TRANSPORTATION SUMMARY (13 Criteria)			**MOST PREFERRED** (50/52)**	**MODERATELY PREFERRED** (48/52)**	**LESS PREFERRED** (44/52)**	**LEAST PREFERRED (8/52)**

*Future Do Nothing refers to an Alternative where all other planned improvements within the study area are implemented, except a Teston Road connection.

** While these alternatives rank similarly, due to the high costs associated with multi-span structures (Alts 3-2 and 3-3), their rankings were reduced to reflect the significant difference in cost.

For internal team reference (for now) relative preference points are assigned as follows: Least = 0, Less = 1, Moderately = 2, More = 3, Most = 4.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Summary

	Section 3 Alternative 3-1	Section 3 Alternative 3-2	Section 3 Alternative 3-3	Future Do Nothing*
NATURAL ENVIRONMENT SUMMARY	LESS PREFERRED (1)	MODERATELY PREFERRED (2)	MORE PREFERRED (3)	MOST PREFERRED (4)
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY	MORE PREFERRED (3)	MOST PREFERRED (4)	MOST PREFERRED (4)	LESS PREFERRED (1)
TRANSPORTATION SUMMARY	MOST PREFERRED (4)	MODERATELY PREFERRED (2)	LESS PREFERRED (1)	LEAST PREFERRED (0)
EVALUATION RESULTS (3 Factor Groups)	RECOMMENDED (8/12)	Not Recommended (8/12)***	Not Recommended (8/12)***	Not Recommended (5/12)
RANKING	1	2	3	4

*** Even though the results of the evaluation indicated that any of the alternatives could be recommended, due to the significant differences in anticipated costs, Alternative 3-1 is recommended.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

York Region Teston Road Area Improvements IEA - Evaluation of Alternative Methods
Section 4 – Teston Road - Dufferin Street to Bathurst Street

February 2022

Per the MECP Code of Practice for undertaking Environmental Assessments, the principles to be followed to ensure good environmental planning are transparency, traceability, and replicability. Evaluations of Alternatives also need to consider consultation with stakeholders, including the public, and Indigenous communities.

The evaluation considered the same factors, sub-factors and criteria that were used in the evaluation of Alternative Methods (Alignments); however, the criteria were screened for applicability to the Alternatives prior to the evaluation, eliminating some of the factors and sub-factors.

Alternatives evaluated in this table include the section of Teston Road from Dufferin Street to Bathurst Street (Section 4). This section involved widening the roadway platform to accommodate 2 lanes of traffic in each direction. The following provides a description of each alternative:

- Alternative 4-1: Widen equally on both sides
- Alternative 4-2: Widen to the south only
- Alternative 4-3: Widen to the north only

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
1. NATURAL ENVIRONMENT						
1.1. Fisheries and Aquatic Ecosystems	1.1.1 Fish and Fish Habitat	• Degree of potential negative effect on fish habitat (e.g., size/scale/extent, duration, intensity/magnitude), considering sensitivity and relative quality and distribution of fish and fish habitat, e.g.: o direct presence of commercial, recreational or Aboriginal (CRA) fishery or relative contribution of fish or habitat to productivity of CRA fishery o species and/or habitat sensitivity to disturbance o species rarity, including species at risk (special concern, threatened or endangered fish species) o fish dependence on habitat and potential for effect to impact productivity (e.g. specialized / critical fish life stage processes like spawning, rearing,	**LEAST PREFERRED** Work in the area of the existing watercourse crossing located west of Saul Street could potentially impact direct fish habitat, specifically including occupied Redside Dace (a provincial and federal endangered Species at Risk) habitat or individuals of the species. In order to mitigate the impact to Species at Risk, work should avoid any alteration to the existing watercourse crossing and the surrounding Regulated Habitat comprised of the watercourse's meander belt, plus an additional 30 m. As these alternatives may require alteration to the existing watercourse crossing or at minimum work within the species' Regulated Habitat, and due to the high sensitivity to disturbance of the habitat, the dependence of the species on the habitat and rarity of the presence of Redside Dace, impacts to fish and fish habitat along this section of Teston Road may not be readily mitigated through design and implementation of mitigation measures.			**MOST PREFERRED** This alternative will have no impact on Redside Dace and the Don River East tributaries.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		nursery, feeding) and fish movement/migration o fisheries/fish community management goals and objectives • Potential constraints/ issues/challenges to designing, constructing and mitigating crossing to avoid serious harm to fish (e.g., whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery).				
1.2 Terrestrial Ecosystems	1.2.1. Wildlife and Wildlife Habitat, including wildlife passage	• Potential for and significance of encroachment, fragmentation, removal, long- term alteration / disruption as applicable to the following, and considering potential for impacts to individuals, species groups and/or populations and impacts to their respective habitats and movement among them: o Habitat rarity (i.e., representation on the landscape) o Habitat sensitivity / resilience o Habitat diversity within feature and landscape o Habitat function within feature and landscape o Confirmed Significant Wildlife Habitat o Potential Significant Wildlife Habitat o Movement corridors and habitat connectivity o Potential or confirmed habitat for Species at Risk o Presence of Wildlife Species at Risk o Interference with critical wildlife life stage processes (e.g., mating / rearing, etc.) Potential constraints and opportunities to design, construct, operate and mitigate	**MORE PREFERRED** Expansion on either side of Teston Rd is expected to encroach or remove the least amount potential woodland habitat for species at risk and significant wildlife habitat. Widening on both sides may result in removal of none of this habitat.	**MODERATELY PREFERRED** Alternatives 4.2 and 4.3 are expected to encroach or remove more potential woodland habitat for species at risk and significant wildlife habitat than Alternative 4.1. South of the existing road is already substantially developed except near the Dufferin Street intersection and therefore this alternative is less likely to result in impacts versus Alternative 4.3.	**LESS PREFERRED** Alternatives 4.2 and 4.3 are expected to encroach or remove more potential woodland habitat for species at risk and significant wildlife habitat than Alternative 4.1. More area north of the existing road is undisturbed and therefore more likely to result in impacts versus Alternative 4.2.	**MOST PREFERRED** This alternative will have no impact on wildlife, wildlife habitat, and/or wildlife passage at this location.
			All three alternatives: • May encroach into or remove potential roosting trees/forest habitat for Species at Risk Bats (Endangered); roost trees may constitute Significant Wildlife Habitat • May encroach into or remove potential habitat for several Species of Special Concern (at risk): Eastern Wood-pewee, Red-headed Woodpecker Wood Thrush, Monarch, Snapping Turtle as well as for numerous birds, mammals, and herptiles ranked as regionally rare (L2-L4) by the TRCA. • Result in increased road traffic which may further impair movement of wildlife north to south including mammals, amphibians, and reptiles. • May impact/impair/remove potential Significant Wildlife Areas including: o Raptor Wintering Area o Bat Maternity Colonies o Reptile Hibernaculum o Rare Vegetation Communities o Special Concern and Rare Wildlife Species		

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		the infrastructure to avoid or minimize impacts to wildlife and wildlife habitat.				
	1.2.2. Wetlands	• Potential for and significance of encroachment, fragmentation, removal and/or long-term alteration / disruption on wetland features as applicable to the following: o Provincially Significant Wetlands o Non-provincially Significant Wetlands o Un-evaluated wetlands o Lands adjacent to wetland features required to maintain ecological features and functions o Rarity, feature sensitivity/ resilience (incl. hydrological functions/dependencies), feature diversity, size and representation on the landscape • Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to wetlands.	**MORE PREFERRED** Minor encroachment into/removal of unevaluated wetland north of Teston Rd. is possible, but likely to be avoided by remaining within the existing ROW. Alternatives 4.1 and 4.2 are expected to have a lesser impact in terms of area on the unevaluated wetland than alternative 4.3.	**MODERATELY PREFERRED** Minor encroachment into/removal of unevaluated wetland north of Teston Rd. is possible, but likely to be avoided by remaining within the existing ROW on the north side and expanding only to the south. Alternatives 4.1 and 4.2 are expected to have a lesser impact, in terms of area, on the unevaluated wetland than alternative 4.3.	**LESS PREFERRED** Minor encroachment into/removal of unevaluated wetland north of Teston Rd. Alternative 3 is expected to have a greater impact, in terms of area, on the unevaluated wetland than alternatives 4.1 and 4.2.	**MOST PREFERRED** This alternative will have no impact to potential unevaluated wetlands.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
	1.2.3. Woodlands and other Vegetation including genetic connectivity of plans	• Potential and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Significant woodlands Significant valleylands o Rarity, feature sensitivity/ resilience, feature diversity, size and representation on the landscape o Individuals/populations or habitats for vegetation Species at Risk o Individuals/populations or significant representation of vegetation species of provincial or regional/local conservation concern o Opportunities to design, construct, operate and mitigate the alignment to avoid or minimize impacts to woodlands and other vegetation.	**MORE PREFERRED** • May encroach into or remove potential habitat for Species at Risk Butternut (Endangered). Potential habitat was identified during background screening. Butternuts surveys have not been undertaken in this section. This alternative will have a lesser impact in terms of area on woodlands and vegetation communities than alternatives 4.2 and 4.3. The rarity and sensitivity of communities and the presence of rare species has not been surveyed.	**LESS PREFERRED** • May encroach into or remove potential habitat for Species at Risk Butternut (Endangered). Potential habitat was identified during background screening. Butternuts surveys have not been undertaken in this section. This alternative will have a greater impact in terms of area on woodlands and vegetation communities than alternative 4.1. The rarity and sensitivity of communities and the presence of rare species has not been surveyed.	**LESS PREFERRED** • May encroach into or remove potential habitat for Species at Risk Butternut (Endangered). Potential habitat was identified during background screening. Butternuts surveys have not been undertaken in this section. This alternative will have a greater impact in terms of area on woodlands and vegetation communities than alternative 4.1. The rarity and sensitivity of communities and the presence of rare species has not been surveyed.	**MOST PREFERRED** This alternative will have no impact on woodlands, vegetation, or significant floral species at this location.
	1.2.4. Designated / Special Natural Areas	• Potential for and significance of encroachment, fragmentation, removal and the long-term alteration / disruption as applicable to the following: o Purpose / rationale for the original designation (i.e. relative potential to affect the core feature / function designated). o Impact to the designated feature and its function(s) o Impact to the overall designation (i.e., does the impact effect the purpose of the	**MODERATELY PREFERRED** All alternatives have the potential to encroach into, impact the function of, remove, or otherwise disturb designated natural areas including: • Oak Ridges Moraine Conservation Plan o Natural Core Areas o Natural Linkage Areas o Settlement Areas o Countryside Areas • Regionally Significant Forests However, given the width of the existing ROW, it is likely that these areas can be avoided completely.			**MOST PREFERRED** This alternative will have no impact on designated or special natural areas at this location.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		designation) • Designated natural areas include heritage rivers, Environmentally Sensitive Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs), Natural Heritage System(s), conservation lands (e.g. management tracts, reserves, and conservation areas), etc.				
1.3 Groundwater	1.3.1. Areas of Groundwater Recharge or Discharge	• Evaluate the potential and significance of road construction to areas of groundwater recharge or discharge due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater and surface water base-flow and water quality.	**LEAST PREFERRED** Potable water in the project area is municipally supplied and is not dependent on private well water. Potential impacts to the groundwater recharge area and source water quality are minimal. Portions of the study area include a Significant Groundwater Recharge Area; however, the area is outside of Section 4.			**MOST PREFFERED** This alternative will have no impacts on the groundwater recharge or discharge area.
	1.3.2. Groundwater Source Areas and Wellhead Protection Areas	• Evaluate the potential and significance of road construction on groundwater/surface water flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, as they pertain to applicable Source Protection Area and Wellhead Protection Area policies.	**No Preference** None of the alternatives have the potential to impact groundwater source areas or wellhead protection areas.			
	1.3.3. Large Volume Wells	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to these large volume wells. The purpose of the water takings from these large volume users	Section 4 does not have any large volume wells. Therefore, none of the alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		must be taken into consideration.				
	1.3.4. Private Wells – Domestic and Commercial Groundwater Users	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the quantity and quality effects to groundwater dependent domestic and commercial users.	**LEAST PREFERRED** These alternatives have the potential to impact private wells associated with the agricultural properties located within Section 4.			**MOST PREFFERED** This alternative will have no impacts on the private wells in the area.
	1.3.5. Groundwater – Sensitive Ecosystems	• Evaluate the potential and significance of road construction on groundwater flow regimes and quality due to physical intrusion, groundwater interception, dewatering drawdown, soil impoundment and compaction, and the effects on groundwater dependent ecosystems, Environmentally Significant Areas and Areas of Natural and Scientific Interest.	Section 4 does not have any identified sensitive ecosystems associated with groundwater. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	1.3.6. Highly Vulnerable Aquifers	• Evaluate the potential and significance of road construction to areas of highly vulnerable aquifers to physical intrusion, interception, dewatering drawdown, soil impoundment and compaction, and the effects on aquifers water base-flow and water quality.	**LEAST PREFERRED** The entire study area is located within an area classified as Highly Vulnerable Aquifer, since the area is municipally serviced with potable water and the aquifer directly underlying the project area is not used as a potable water source, the anticipated impacts are considered insignificant. Based on the Source Protection Plan, several activities such as Application/Storage/Handing of Road Salt, Handling and Storage of a Dense Non-Aqueous Phase Liquid, Handling and Storage of an Organic Solvent are considered as moderate to low drinking water threats in Highly Vulnerable Aquifers. Some of the activities may occur during construction, salt application will occur during the operational phase.			**MOST PREFFERED** This alternative will have no impacts to the highly vulnerable aquifers.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
	1.3.7. Contamination Concerns	• Evaluate the potential and significance of road construction on introducing contamination through road runoff and by intercepting contaminated groundwater plumes.	Section 4 does not have known contaminated groundwater plumes. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	1.3.8. Existing Landfills	• Evaluate the potential and significance of road construction adjacent to three closed landfills (A private landfill and the Vaughan Landfill to the north, and the Keele Valley Landfill to the south) with known groundwater contamination issues.	**No Preference** Section 4 does not have any landfills. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	1.3.9. Flowing Artesian Conditions	• Evaluate the potential and significance of road construction to flowing artesian conditions due to physical intrusion.	**No Preference** Section 4 does not have any flowing artesian conditions. Therefore, none of the alternatives will have impacts in this sub-factor group.			
1.4 Surface Water	1.4.1. Watershed/ Subwatershed Drainage Features/Patterns	Potential and significance of: • Encroachment, severance, displacement • Long-term alteration / disruption as applicable to the following: o Watercourse crossings (permanent, intermittent, and ephemeral) o Flood plain o Riparian areas o Headwater areas o McGill ESAs and ANSI o Vegetative community o Oak Ridges Moraine – Natural Core Area (2017) o Watershed and subwatershed management plans. • The approach to the fluvial geomorphology assessment will be confirmed, reviewed and made acceptable to reviewing agencies.	**MORE PREFERRED** This alternative would be constructed using the existing culvert for the tributary crossing. Changes may not be required to the watercourse, however, minor grading may have impacts but they would be lesser impacts to the other alternatives.	**LESS PREFERRED** This alternative would require lengthening or replacement of the exiting culvert to facilitate widening which would be an alteration of the existing watercourse crossing.	**LESS PREFERRED** This alternative would require lengthening or replacement of the exiting culvert to facilitate widening which would be an alteration of the existing watercourse crossing	**MOST PREFERRED** This alternative would have no impacts on the existing tributary.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		• Other concerns: o Proximity to landfill sites o Source water protection				
	1.4.2. Surface Water Quality and Quantity	• Potential and significance of effects on water quality through direct and indirect discharges of contaminated and sediment-laden runoff • Potential and significance of effects on stream hydrology due to changes in ground permeability, modifications to surface drainage patterns and volumes and alterations of water bodies	**LEAST PREFERRED** All alternatives will result in similar water quality/quantity/erosion impacts.			**MOST PREFERRED** This alternative would have no impacts on the surface water quality/quantity.
NATURAL ENVIRONMENT SUMMARY (9 Criteria)			**MODERATELY PREFERRED** **14/36**	**LESS PREFERRED** **7/36**	**LESS PREFERRED** **6/36**	**MOST PREFERRED** **36/36**
2. LAND USE / SOCIO-ECONOMIC ENVIRONMENT						
2.1 Land Use Planning Policies, Goals, Objectives	2.1.1. Indigenous Land Claims	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption to Indigenous Land Claims	**No Preference** All alternatives are within the area known as the Toronto Purchase (a.k.a. Treaty No.13). In 2010 a settlement for these lands was reached between the Mississaugas and the Government of Canada. Therefore, no alternative will have impact to land claims.			
	2.1.2. Provincial/ Federal Land Use Planning Policies/Goals/ Objectives	How the development of alternatives fits into the Provincial/Federal land use planning policies/goals/ objectives	**MOST PREFERRED** These alternatives would result in improvements to the transportation network that meets current and projected needs of the province. It also addresses connectivity, reduction of emissions, and increased safety of the network.			**LEAST PREFERRED** This alternative would result in a transportation network that does not meet the current and projected needs of the province and therefore does not support the policies within the Provincial Policy Statement (Sections 1.1.1(g) and 1.6.1(b)) or the Growth Plan for the Greater Golden Horseshoe, (Section 3).
	2.1.3. Municipal (local and regional) Land Use Planning Policies/ Goals/ Objectives	How the development of alternatives fits into the local and regional land use planning policies/goals/objectives (York Region Official Plan, Vaughan)	**MOST PREFERRED** These alternatives would result in improvements to the transportation network that meets current and projected needs of the Region and City of Vaughan.			**LEAST PREFERRED** This alternative would result in a transportation network that does not meet the current or projected needs of the Region, or the City of Vaughan given the anticipated population

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
						growth and development in the area (i.e., Block 27).
	2.1.4. Development Objectives of Private Property Owners	Development objectives of private property owners should be in conjunction with land use policies and future land use	Section 4 does not have any private property impacts. Therefore, none of the alternatives will have impacts in this sub-factor group.			
2.2 Land Use - Community	2.2.1. Indigenous Community Reserves	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Community Reserves.	Section 4 does not have any Indigenous Community Reserves. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	2.2.2. Indigenous Sacred Grounds	The potential and significance of: • encroachment, severance, displacement • long-term alteration/disruption • nuisance effects • change to access/travel time to Indigenous Sacred Grounds.	There are no known Indigenous Sacred Grounds within Section 4. Stage 1 archaeological assessments determined there is potential for lands to contain an ossuary. The previous Stage 1 assessment recommended that burial avoidance strategies be implemented to attempt to mitigate any negative impacts to unknown ossuary locations. Whichever alternative is recommended, it will be subject to additional Stage 2 Archaeological Assessments which will determine appropriate mitigation measures or need for additional assessments (Stage 3/4).			
	2.2.3. Urban and Rural Residential	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to urban and rural residential communities.	**MORE PREFERRED** Residential land uses are present on both sides of the road. Widening equally on both sides would bring the road closer to these residential uses; therefore, increasing nuisance effects. Travel times and access for these land uses would be reduced (all alternatives, except Do Nothing, have the same impact on travel times).	**LESS PREFERRED** The majority of the residential land uses are on the south side of the road; therefore, this alternative would bring the most nuisance effects to those properties. Travel times and access for these land uses would be reduced (all alternatives, except Do Nothing, have the same impact on travel times).	**MOST PREFERRED** There are only a small number of residential land uses north of the existing roadway so nuisance effects would be limited. Travel times and access for these land uses would be reduced (all alternatives, except Do Nothing, have the same impact on travel times).	**MODERATELY PREFERRED** This alternative would not result in any nuisance effects associated with road widening. This alternative would not reduce travel time or access for these land uses.
			All alternatives are anticipated to be constructed within the existing right-of-way, therefore there is no encroachment, displacement or severance required.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
	2.2.4. Commercial/ Industrial	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time to commercial/industrial.	**MOST PREFERRED** All alternatives similarly provide reduced travel time to nearby Commercial/Industrial land uses by providing additional routes for all traffic. None of the alternatives will have any impacts to these land uses.			**LEAST PREFERRED** This alternative limits the number of routes for travellers looking to access Commercial/Industrial areas.
	2.2.5. Tourist Areas and Attractions	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to tourist areas and attractions.	**MOST PREFERRED** All alternatives similarly provide reduced travel time to nearby tourist attractions (such as Canada's Wonderland) by providing additional routes for all traffic. None of the alternatives will have any impacts to these land uses.			**LEAST PREFERRED** This alternative limits the number of routes for travellers looking to access tourist areas/attractions.
	2.2.6. Community and Recreational Facilities / Institutions	The potential and significance of: encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to community facilities/institutions.	**MOST PREFERRED** All alternatives similarly provide reduced travel time to nearby Community and Recreational Facilities/Institutions by providing additional routes for all traffic. None of the alternatives will have any impacts to these land uses.			**LEAST PREFERRED** This alternative limits the number of routes for travellers looking to access Community and Recreational Facilities/Institutions.
	2.2.7. Municipal Infrastructure and Public Service Facilities	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to municipal infrastructure and public service facilities.	**MOST PREFERRED** All alternatives similarly provide reduced travel time to nearby Municipal Infrastructure and Public Service Facilities by providing additional routes for all traffic. None of the alternatives will have any impacts to these land uses.			**LEAST PREFERRED** This alternative limits the number of routes for travellers looking to access Municipal Infrastructure and Public Service Facilities.
2.3 Noise Sensitive Areas (NSA's)	2.3.1. Transportation Noise & Vibration	• Potential for significant traffic noise increases in Noise Sensitive Areas (NSAs) • Potential for vibration impacts (any sensitive equipment, or vibration impacts during construction)	**LEAST PREFERRED** All alternatives would increase traffic noise by providing additional lane capacity. Construction activities from all alternatives would have similar impacts.			**MOST PREFERRED** This alternative would not increase traffic noise and would have no construction impacts.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
2.4 Land Use - Resources	2.4.1. Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes	The potential and significance of: • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects • change to access / travel time to Indigenous Treaty Rights and use of land and resources for traditional purposes.	Section 4 would not be used for Indigenous Treaty Rights and Use of Land and Resources for Traditional Purposes as it is already developed. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	2.4.2. Agriculture	The potential and significance of: • Impacts to prime agricultural areas and agricultural infrastructure • encroachment, severance, displacement, • long-term alteration/disruption • nuisance effects to Agricultural Lands	**MORE PREFERRED** Minor encroachment into/removal of agricultural lands north of Teston Rd. is possible, but likely to be avoided by remaining within the existing ROW. Alternatives 4.1 and 4.2 are expected to have a lesser impact in terms of agricultural impacts than Alternative 4.3.	**MODERATELY PREFERRED** Minor encroachment into/removal of agricultural lands north of Teston Rd. is possible, but likely to be avoided by remaining within the existing ROW on the north side and expanding only to the south. Alternatives 4.1 and 4.2 are expected to have a lesser impact, in terms of agricultural impacts than Alternative 4.3.	**LESS PREFERRED** Minor encroachment into/removal of unevaluated wetland north of Teston Rd. Alternative 3 is expected to have a greater impact, in terms of area, on the unevaluated wetland than Alternatives 4.1 and 4.2.	**MOST PREFERRED** This alternative will have no impact to Agriculture.
	2.4.3. Recreational	The potential and significance of: • encroachment, severance, displacement • long term alteration/disruption • nuisance effects • change to access/travel time • changes to facilities / services to recreational areas and facilities.	**MOST PREFERRED** All alternatives will provide greater access to recreational facilities by constructing active transportation facilities through the corridor where there are currently none. None of the alternatives will have any impacts to these land uses.			**LEAST PREFERRED** This alternative limits the number of routes for travellers looking to access Recreational land uses. It also does not address the lack of active transportation facilities along the corridor.
	2.4.4. Aggregate and Mineral Resources	The potential and significance of: Encroachment on or loss of aggregate and mineral resources	Section 4 does not have any Aggregate and Mineral Resources. Therefore, none of the alternatives will have impacts in this sub-factor group.			

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
2.5 Major Utility Transmission Corridors		Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access/ travel time; • Change to facilities / utilities / services to major utility transmission corridors (i.e. railroads, hydro, gas, oil).	Section 4 does not have any Major Utility Transmission Corridors. Therefore, none of the alternatives will have impacts in this sub-factor group.			
2.6 Contaminated Property and Waste Management	2.6.1. Existing landfills under Provincial regulations and ECA requirements	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to access / travel time; • Change to facilities / utilities /services to contaminated property and waste management (e.g., Landfills, Hazardous Waste Sites, "Brownfield" Areas, other known contaminated sites, and high-risk contamination areas); • Road salt impacts; • Collection system for landfill gas	Section 4 does not have any landfills. Therefore, none of the alternatives will have impacts in this sub-factor group.			
	2.6.2. Contaminated Properties	Potential and significance of: • Encroachment, severance, displacement; • Long-term alteration / disruption; • Change to facilities / utilities /services to contaminated property	**MOST PREFERRED** This alternative will not have impacts to contaminated properties.	**MORE PREFERRED** There is potential for encroachment and long-term alteration/disruption to the following 'High Risk for Contamination' properties: • Shell at 10700 Bathurst Street – PCA #28 Gasoline and Associated Products Storage in Fixed Tanks • Petro-Canada at 10749 Bathurst Street – PCA #28 Gasoline and Associated Products Storage in Fixed Tanks It is anticipated that all widening can occur within the existing right-of-way, as such these properties would not be impacted. If property is required a	**MORE PREFERRED** There is potential for encroachment and long-term alteration/disruption to the following 'High Risk for Contamination' properties: • Woodland Dry Cleaners at 10815 Bathurst Street – PCA #37 Operation of Dry Cleaning Equipment (where chemicals are used) It is anticipated that all widening can occur within the existing right-of-way, as such this property would not be impacted. If property is required a Phase II Environmental Site Assessment (ESA) will be required.	**MOST PREFERRED** This alternative will not have impacts to contaminated properties.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
				Phase II Environmental Site Assessment (ESA) will be required.		
Air Quality	2.7.1. Local and regional air quality impacts; greenhouse gas emissions	• Qualitative comparison of alternatives for both local and regional air quality, and for GHG's, based on traffic volumes, speeds, intersection delays and proximity to sensitive receptors. • Quantitative assessment of local air quality for the preferred alternative. Consideration of sensitive receptors.	**MORE PREFERRED** All alternative increase traffic capacity along Teston Road, however, this alternative keeps the roadway as close to its current distance from sensitive receptors as possible.	**LESS PREFERRED** All alternative increase traffic capacity along Teston Road, however, this alternative moves the roadway closer to the most sensitive receptors.	**MODERATELY PREFERRED** All alternative increase traffic capacity along Teston Road, however, this alternative moves the roadway closer to a smaller number of sensitive receptors.	**MOST PREFERRED** No sensitive receptors would be impacted by this alternative.
			MOST PREFERRED These alternatives would result in alleviated traffic congestion, reducing GHG emissions as a result of reduced idling. GHG emissions resulting from construction equipment/materials, would be relatively similar for all options.			**LEAST PREFERRED** This alternative would further increase the effects of climate change as it would further exacerbate traffic congestion and result in additional GHG emissions.
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY (11 Criteria)			**MOST PREFERRED (42/44)**	**MORE PREFERRED (37/44)**	**MOST PREFERRED (41/44)**	**LESS PREFERRED (14/44)**
3. CULTURAL ENVIRONMENT						
Section 4 does not have any cultural heritage resources. Therefore, none of the alternatives will have impacts in this factor group. .						
4. TRANSPORTATION						
4.1 System Capacity & Efficiency	4.1.1. Movement of People and Goods	• Potential to support the efficient movement of people between communities based on Level of Service (LOS) and volume to capacity (v/c) on a network screenline and critical link basis.	**MOST PREFERRED** These alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. As part of the road widening, the existing intersections will be reconfigured to improve the level of service.			**LEAST PREFERRED** This alternative does not improve existing or future transportation conditions of the corridor.
	4.1.2. System performance during peak periods	• Potential to reduce growth in peak hour travel demand through TDM and TSM strategies.	**MOST PREFERRED** These alternatives will allow Teston Road to reduce growth in peak hour travel demand through TDM and TSM strategies including providing active transportation infrastructure, optimizing intersections and traffic signal operations and supporting transit.			**LEAST PREFERRED** This alternative does not provide any potential reduction in peak hour travel demand.
4.2 System reliability / redundancy		• Potential to support system reliability and redundancy for	**MOST PREFERRED**			**LEAST PREFERRED**

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
		travel between communities during adverse conditions.	These alternatives will allow Teston Road to improve the transportation network's redundancy by providing 2 additional lanes of traffic and distributing existing and future traffic across the network to reduce congestion.			This alternative does not improve the transportation network's redundancy.
4.3 Safety	4.3.1. Traffic Safety	• Potential to improve traffic safety based on opportunity to reduce traffic volumes and/or congestion in the study area.	**MOST PREFERRED** These alternatives will allow Teston Road to improve traffic safety by providing 2 additional lanes of traffic which will reduce congestion per lane. The reconstruction of Teston Road will also provide the opportunity to improve the roadside safety conditions by bringing them up to the current design standards.			**LEAST PREFERRED** This alternative does not improve the traffic safety of the corridor.
	4.3.2. Emergency Access	• Potential to provide and/or improve emergency access on existing and/or New York Region facilities.	**MOST PREFERRED** These alternatives will allow Teston Road to improve emergency access by providing 2 additional lanes of traffic.			**LEAST PREFERRED** This alternative does not improve emergency access conditions.
4.4 Traffic Operations, Mobility & Accessibility	4.4.1. Modal integration, balance	• Potential to improve existing and future transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. Assess performance of proposed transportation improvement alternatives, based on transportation analysis (e.g. screenline analysis and intersection operational analysis – identifying volume/capacity ratio, level of service, travel time / delay, etc.); and potential to address congestion and opportunity to provide network improvements for various transportation modes.	**MOST PREFERRED** These alternatives will allow Teston Road to improve transportation conditions for all the transportation modes including auto, cyclist, pedestrian and transit. As part of the road widening, the existing intersections will be reconfigured to improve the level of service.			**LEAST PREFERRED** This alternative does not improve existing or future transportation conditions of the corridor.
	4.4.2. Linkages to Population and Employment Centres	• Potential to improve accessibility to urban growth centres for people and goods movement based on higher order network continuity and connectivity.	**MOST PREFERRED** These alternatives will allow Teston Road to improve accessibility throughout Regional and local road network capacity by providing additional traffic lanes and redistributing traffic through the network.			**LEAST PREFERRED** This alternative does not improve linkages within the Regional and local road network.
	4.4.3. Accommodation for pedestrian and cyclists	• Potential to accommodate pedestrians and cyclists within critical travel corridors. As well as preservation of existing and future planned pedestrian and cycling facilities including nature trails.	**MOST PREFERRED** The proposed cross-section alternatives will urbanize Teston Road and provide sidewalks and additional active transportation facilities along both sides of Teston Road to accommodate pedestrians and cyclists.			**LEAST PREFERRED** This alternative does not provide any improvements for pedestrians and cyclists.
4.5 Network Compatibility	4.5.1. Movement of People and Goods	• Potential to improve Regional and local network connectivity within, through and to/from the Preliminary Study Area.	**MOST PREFERRED** These alternatives will allow Teston Road to improve the Regional and local road network capacity by providing additional traffic lanes.			**LEAST PREFERRED** This alternative does not improve Regional and local road network capacity.

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.

Evaluation Factors and Criteria for Alternative Designs						
FACTORS	**SUB-FACTORS**	**CRITERIA**	**Section 4 Alternative 4-1 (Equal Widening)**	**Section 4 Alternative 4-2 (South Widening)**	**Section 4 Alternative 4-3 (North Widening)**	**Future Do Nothing***
	4.5.2. Flexibility for future expansion	• Potential to address future transportation needs beyond the forecasted planning horizons.	**MOST PREFERRED** These alternatives will allow Teston Road to expand the road platform to add further traffic capacity in the future.			**LEAST PREFERRED** This alternative does not address future transportation needs even within the planning horizon year.
4.6 Engineering	4.6.1. Constructability	• Potential ease of implementation considering feasibility/difficulty of physical, property or environmental constraints.	**MORE PREFERRED** Moderate construction complexity due to requiring additional construction stages to accommodate widening along both the north and south sides. This option will however avoid the need to relocate the existing hydro line along the south side of Teston Road. This option can maintain the existing Don River East tributary culvert length.	**LESS PREFERRED** Increased construction complexity to widen Teston Road fully along the south due to relocating the existing hydro line along the south side of Teston Road and will require extending the existing Don River East tributary culvert to the south.	**MODERATELY PREFERRED** Reduced construction complexity to widen Teston Road fully along the north allows existing traffic to be maintained during construction and also avoids relocating the existing hydro line along the south side of Teston Road. This option will also require extending the existing Don River East tributary culvert to the north.	**MOST PREFERRED** This alternative will not have any construction issues.
	4.6.2. Compliance with design criteria	• Conformity to applicable York Region safety and design standards.	**MOST PREFERRED** These alternatives will allow Teston Road to be reconstructed to current York Region safety and design standards.			**LEAST PREFERRED** This alternative would not improve the existing conditions to meet the current York Region safety and design standards
4.7 Construction Cost	Relative road construction costs.		**MORE PREFERRED** Moderate relative construction costs to widen Teston Road along both sides including increased complexities for additional construction staging and traffic management requirements to maintain existing traffic during construction.	**LEAST PREFERRED** High relative construction costs due relocating the existing hydro line along the south of Teston Road as well as extending the existing Don River East tributary culvert to the north.	**MODERATELY PREFERRED** Moderate relative construction costs due to extending the existing Don River East tributary culvert to the north.	**MOST PREFERRED** This alternative will not have any construction costs.
TRANSPORTATION SUMMARY (13 Criteria)			**MOST PREFERRED (50/52)**	**MOST PREFERRED (45/52)**	**MOST PREFERRED (48/52)**	**LEAST PREFERRED (8/52)**

*Future Do Nothing refers to an alternative where all other planned improvements within the study area are implemented, except a Teston Road connection.

For internal team reference (for now) relative preference points are assigned as follows: Least = 0, Less = 1, Moderately = 2, More = 3, Most = 4.

Evaluation Summary

	Section 4 Alternative 4-1 (Equal Widening)	Section 4 Alternative 4-2 (South Widening)	Section 4 Alternative 4-3 (North Widening)	Future Do Nothing*
NATURAL ENVIRONMENT SUMMARY	**MODERATELY PREFERRED (2)**	**LESS PREFERRED (1)**	**LESS PREFERRED (1)**	**MOST PREFERRED (4)**
LAND USE / SOCIO-ECONOMIC ENVIRONMENT SUMMARY	**MOST PREFERRED (4)**	**MORE PREFERRED (3)**	**MOST PREFERRED (4)**	**LESS PREFERRED (1)**
TRANSPORTATION SUMMARY	**MOST PREFERRED (4)**	**MOST PREFERRED (4)**	**MOST PREFERRED (4)**	**LEAST PREFERRED (0)**
EVALUATION RESULTS (3 Factor Groups)	**RECOMMENDED (10/12)**	**Not Recommended (8/12)**	**Not Recommended (9/12)**	**Not Recommended (5/12)**
RANKING	**1**	**2**	**3**	**4**

The assessment within this table accounts for the implementation of appropriate mitigation measures and then evaluates the Alternatives based on remaining impacts.