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Section 7 Preferred Alternative: S7-3

Legend

- Railway
- Freeway
- 407 ETR
- Future Highway 427 Extension
- Highway
- Arterial Road
- Local Municipal Road
- Section Boundary
- Planned Municipal Improvements
- Municipal Boundary
- Route Planning Study Area
- Preferred Route Alternative
- Conceptual Interchange Footprint
- Short List of Route Alternatives

The Project Team identified the best route east and west of the hydro corridor and then compared them to select the overall preferred route for Section 7.
The preferred route west of the hydro corridor was **Alternative S7-3**. The preferred route east of the hydro corridor was Alternative S7-9. **Alternative S7-3** is preferred overall versus S7-9:

- Less impacts to groundwater sensitive ecosystems and wellhead protection areas
- Less noise impacts to existing and proposed residences to the east
- Moderate impacts to built heritage resources and cultural heritage landscapes
- Minor impacts to the hydro corridor, railway and TransCanada pipeline, all of which pose significant constructability challenges
- Accommodates a full moves interchange in the area of Coleraine Drive (realignment likely required to achieve an acceptable separation distance to the Highway 427 extension and optimize traffic operations to/from Coleraine Drive interchange)
- Constructability and connectivity were principle considerations in Section 7. S7-3 is considered the most constructible and it connects well to the Section 8 Humber River crossing, reducing overall environmental impacts

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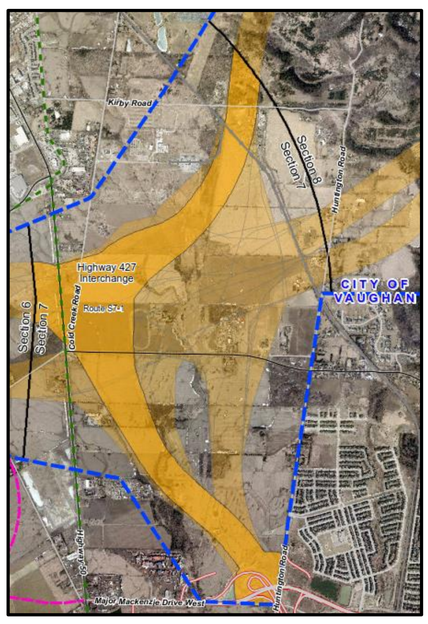
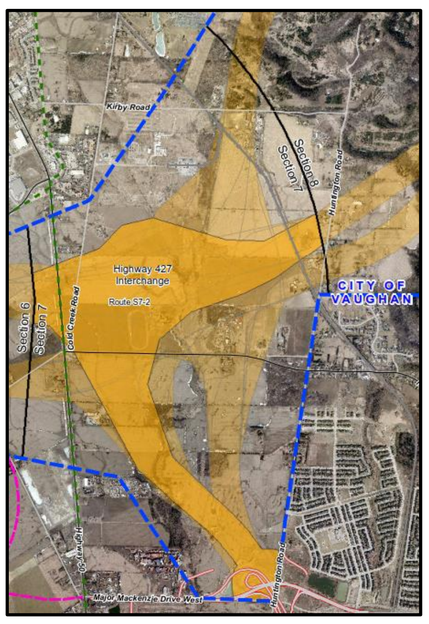
Section 7 Assessment and Evaluation

West Alternatives

S7-1

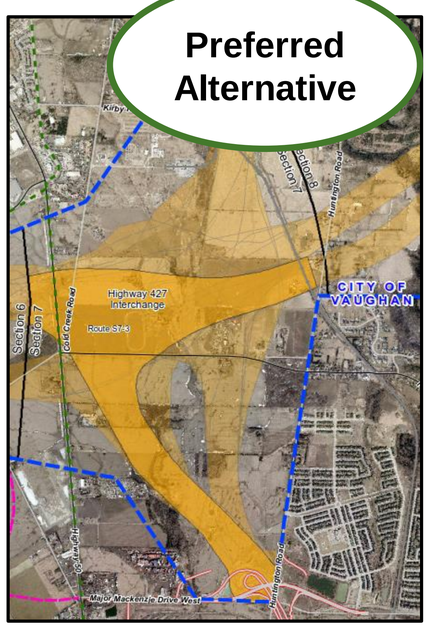


S7-2

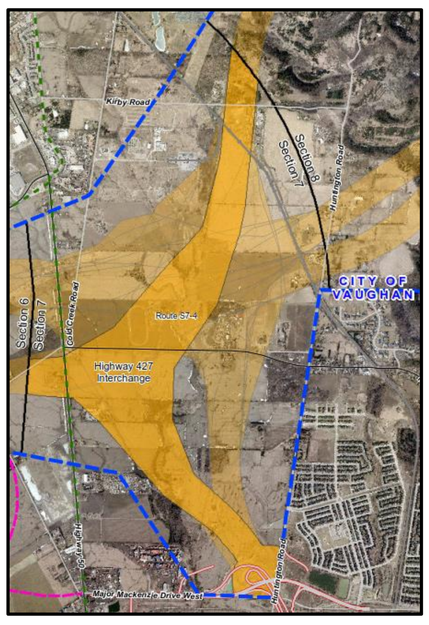


S7-3

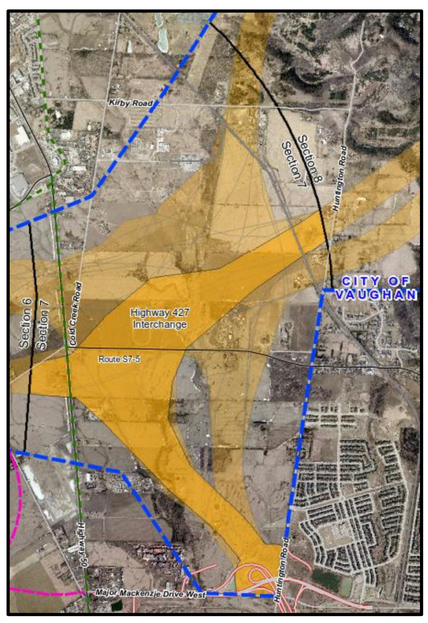
Preferred Alternative



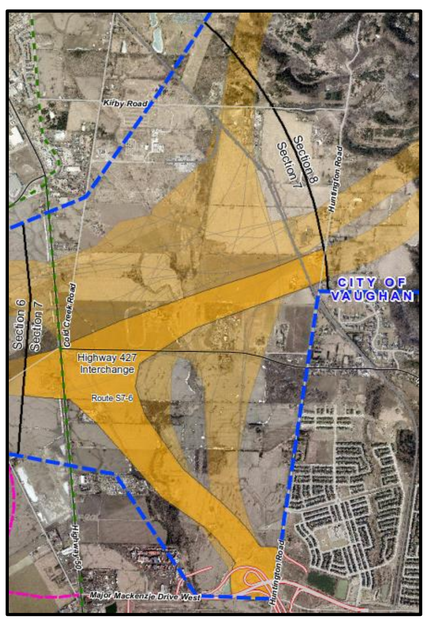
S7-4



S7-5



S7-6



Assessment

Natural Environment

- S7-2 and S7-4 have the greatest impacts to fish and fish habitat
- S7-1 and S7-4 have the greatest impacts to wildlife habitat and designated areas
- S7-4 has the highest impacts to woodlands and vegetation
- Low to moderate impacts to wetlands, groundwater, and air quality
- Moderate to high impacts to surface water

Land Use / Socio-Economic Environment

- West alternatives minimize noise impacts compared to the east alternatives
- S7-4 has high impacts on provincial and municipal land use planning, including employment and future urban lands
- Of alternatives S7-1 to S7-6, S7-5 impacts the least number of residences whereas S7-6 impacts the largest number of residences and commercial/industrial properties
- S7-5 avoids community facilities / institutions whereas S7-1 has the highest impacts to community facilities / institutions
- S7-3 and S7-6 have high impacts on agriculture

Cultural Environment

- Moderate impacts to built heritage resources
- S7-4 and S7-5 avoid impacts to cultural heritage landscapes
- Low to high impacts to archaeological resources

Transportation

- S7-2 and S7-3 are most preferred from a transportation perspective as they have low constructability issues and provide a greater opportunity to include an interchange in the Coleraine Drive area
- S7-2 and S7-3 provide more separation between the proposed interchange at Major Mackenzie Drive and the GTA West which improves operations and safety
- S7-5 and S7-6 are not preferred because they create a curvilinear alignment through the Highway 427 interchange area and require that Nashville Road be realigned

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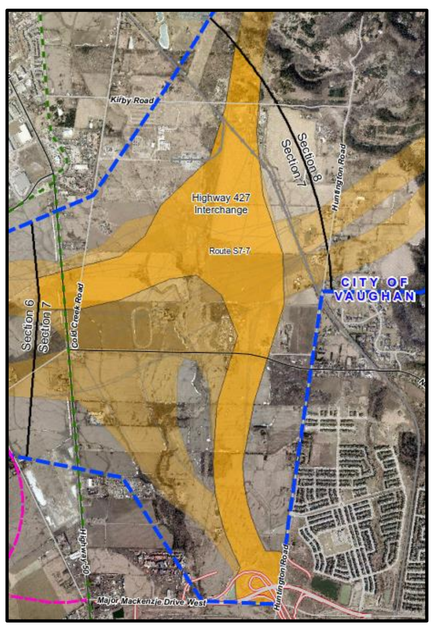
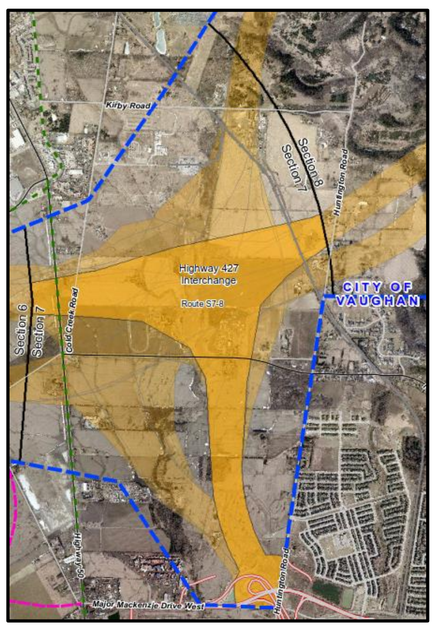
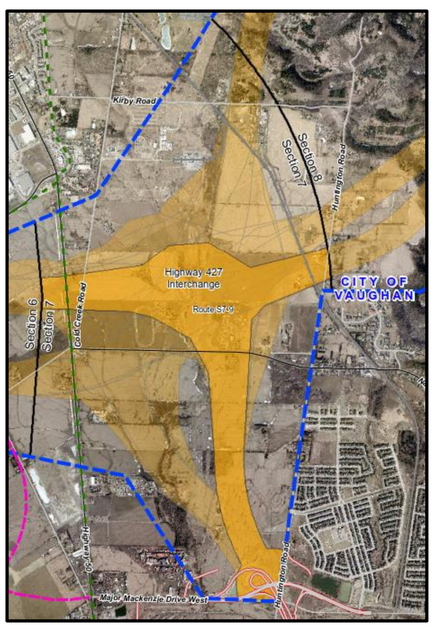
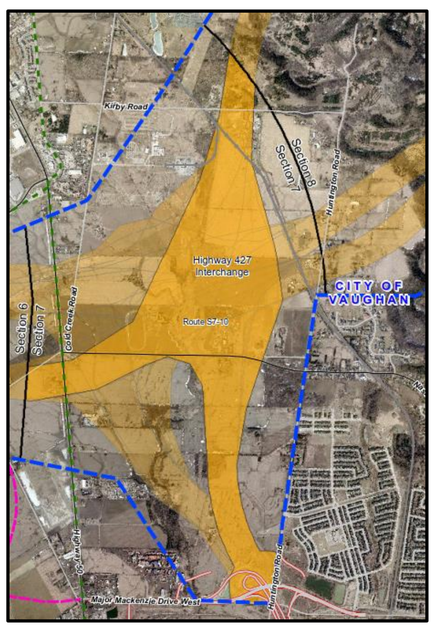
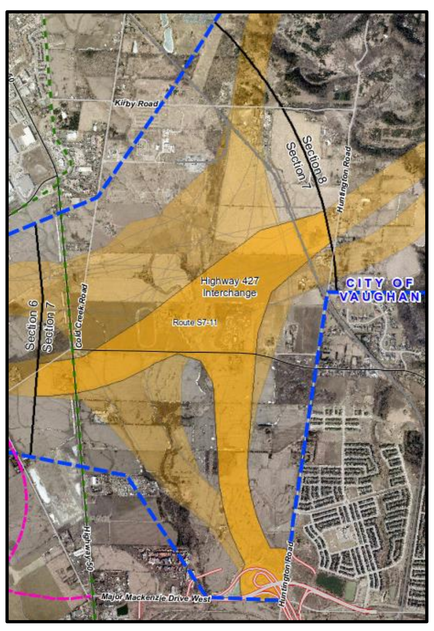
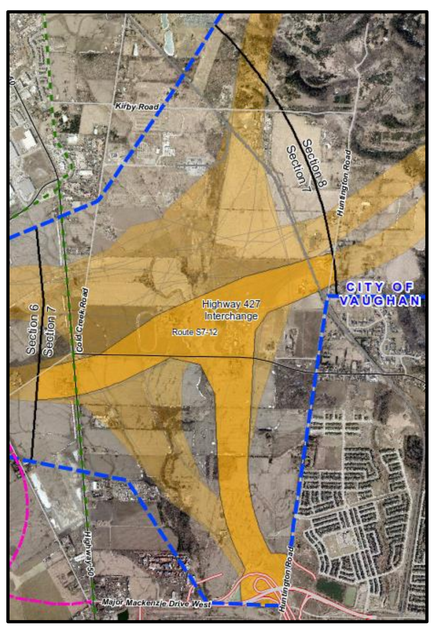
East Alternatives	Assessment
S7-7  **S7-8**  **S7-9**  **S7-10**  **S7-11**  **S7-12** 	**Natural Environment** • S7-9, S7-11 and S7-12 minimize impacts to fish and fish habitat • S7-7 and S7-10 are least preferred in terms of terrestrial ecosystems • Low to moderate impacts to groundwater • S7-8 to S7-10 least preferred from a surface water perspective • Low impacts to air quality **Land Use / Socio-Economic Environment** • The east alternatives have greater impacts to noise than the west alternatives • S7-8 is most preferred from an agricultural perspective • S7-7 to S7-9 have low impacts to employment lands and future urban areas • S7-9 and S7-12 have the highest impacts to residential properties • S7-7 and S7-10 have the highest impacts to commercial/industrial properties and community facilities/institutions **Cultural Environment** • S7-9 and S7-12 have the highest impacts to built heritage resources • S7-7 to S7-9 have high impacts to cultural heritage landscapes • Low impacts to archaeological resources **Transportation** • S7-7 to S7-12 have considerable constructability challenges related to the existing hydro corridor, TransCanada pipeline and railway • The east alternatives require more crossings of the TransCanada pipeline than the west alternatives • S7-10 to S7-12 have lower accessibility to population and employment centres and moderate network connectivity (farther from Bolton) • S7-8, S7-9, S7-11 and S7-12 have lower construction costs

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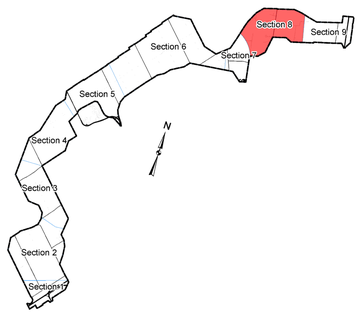
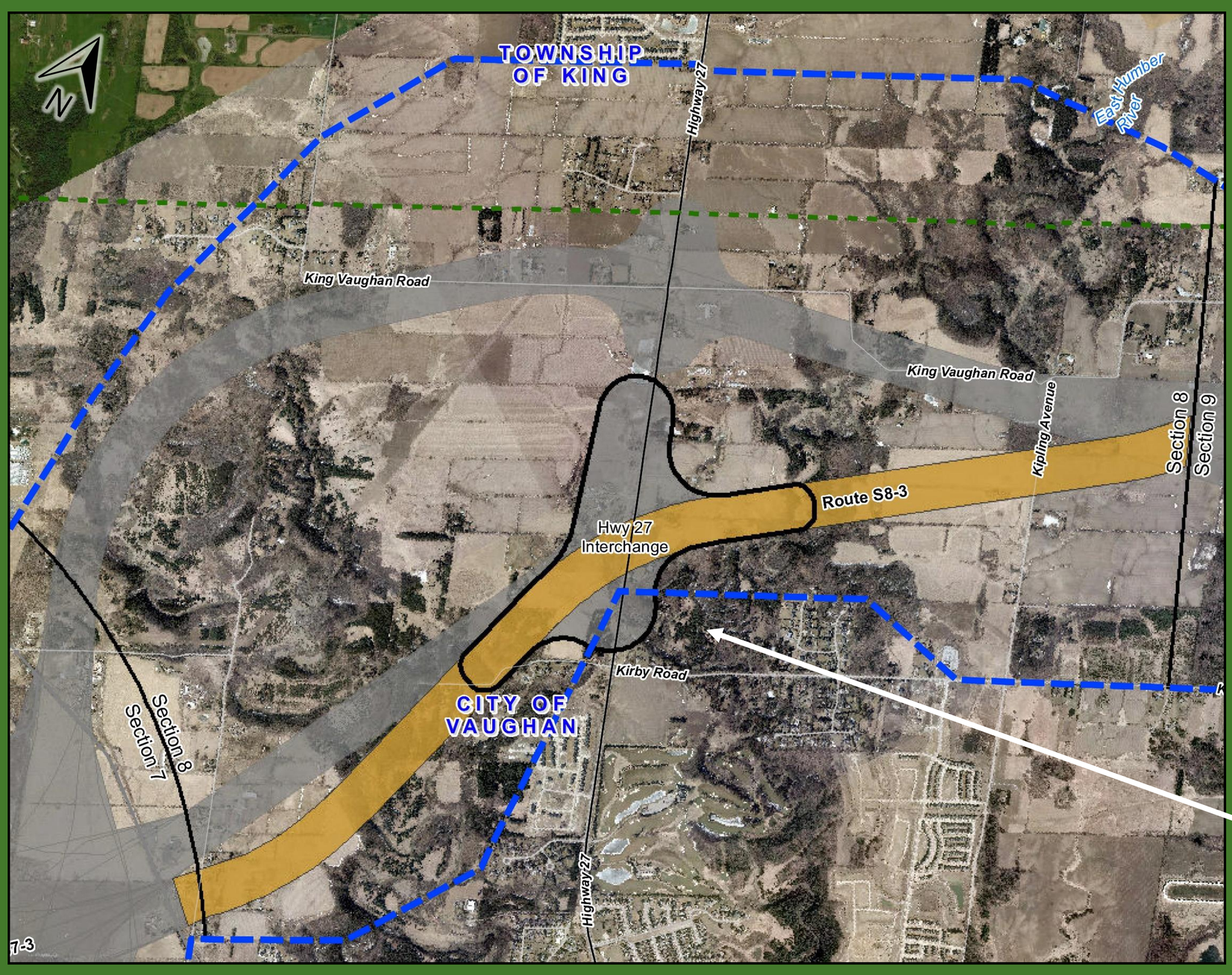


Section 8 Preferred Alternative: S8-3



Legend

- Railway
- Freeway
- 407 ETR
- Future Highway 427 Extension
- Highway
- Arterial Road
- Local Municipal Road
- Section Boundary
- Planned Municipal Improvements
- Municipal Boundary
- Route Planning Study Area
- Preferred Route Alternative
- Conceptual Interchange Footprint
- Short List of Route Alternatives

Geometric constraints resulting from the proximity of the Humber River and Highway 27 in this area may require the interchange footprint to extend beyond the limits of the Route Planning Study Area in order to accommodate a standard Parclo A-4 interchange

Alternative S8-3 is preferred from a Natural Environment, Land Use / Socio-Economic Environment and Transportation perspective:

- Lowest overall impacts to fish and fish habitat, wildlife and wildlife habitat, woodlands and vegetation, watersheds, and surface water
- Best location with most flexibility for the Humber River crossing due to its distance from the large meander (i.e. most perpendicular and stable crossing of the mainstem river)
- Impacts the least amount of Greenbelt and agricultural lands and is preferred from a provincial land use policy perspective
- Impacts more residential properties but minimizes impacts to commercial properties, avoids impacts to high-investment farming operations, and has a higher probability of avoiding a waste disposal site
- Low construction cost and is considered the most constructible

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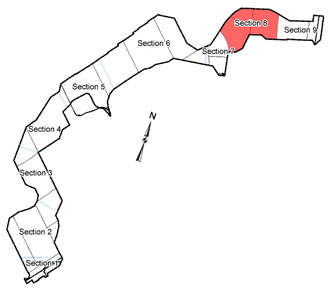
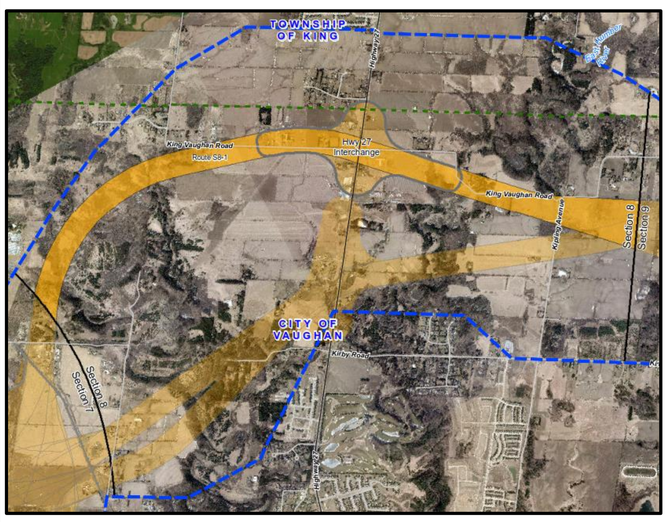
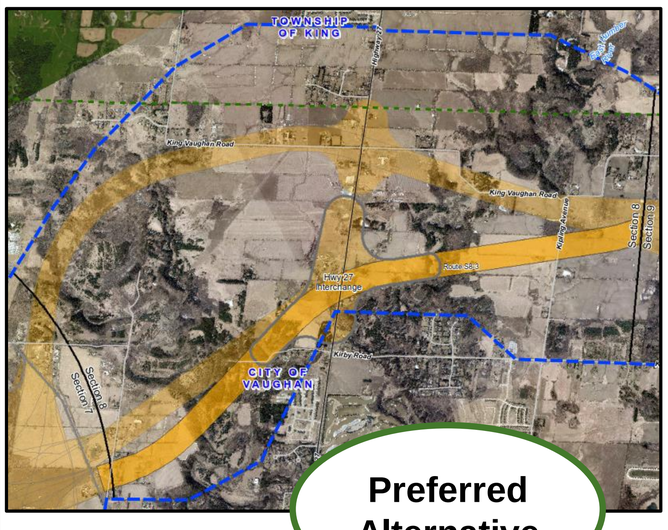


Section 8 Assessment and Evaluation

Alternative	Assessment
S8-1 	**Natural Environment** • Moderate to high impacts to fish habitat, high impacts to wildlife and wildlife habitat, woodlands and vegetation, designated areas, and watersheds. • No to low impacts on groundwater resources **Land Use / Socio-Economic Environment** • Avoids impacts to employment lands, Nashville and North Kleinburg Nashville Secondary Plans • Impacts the greatest area of Class 1-3 soils and impacts a high-investment farming operation • Impacts the fewest residential properties but second largest number of commercial / industrial properties **Cultural Environmental** • No distinct difference between alternatives **Transportation** • Highest construction cost • Significant constructability issues related to the crossing of the Humber and East Humber valleys, and has the longest combined structure length
S8-2 	**Natural Environment** • Moderate to high impacts to fish and fish habitat, high impact to wildlife and wildlife habitat, woodlands and vegetation, designated areas, and watersheds. • No to moderate impacts to groundwater resources **Land Use / Socio-Economic Environment** • Minimizes impacts to Class 1-3 soils and avoids high-investment farming operations • Impacts the highest amount of commercial / industrial properties • Moderate impacts to employment lands, Nashville and North Kleinburg Nashville Secondary Plans **Cultural Environmental** • No distinct difference between alternatives **Transportation** • Lowest construction cost • Significant constructability issues related to the crossing of the Humber and East Humber valleys. Has the shortest combined structure length but meander poses foundation and erosion issues
S8-3  **Preferred Alternative**	**Natural Environment** • Moderate impacts to fish and fish habitat, wildlife and wildlife habitat, woodlands and vegetation, and high impacts to watersheds and designated areas. • No to moderate impacts to groundwater resources **Land Use / Socio-Economic Environment** • Impacts the least amount of Class 1-3 soils and avoids high-investment farming operations • Highest impacts to employment lands, Nashville and North Kleinburg Nashville Secondary Plans • Impacts the largest number of residential properties but the fewest commercial / industrial properties **Cultural Environmental** • No distinct difference between alternatives **Transportation** • Low construction cost • Significant constructability issues related to the crossing of the Humber and East Humber valleys but has the second shortest combined structure length and the best location to cross the river

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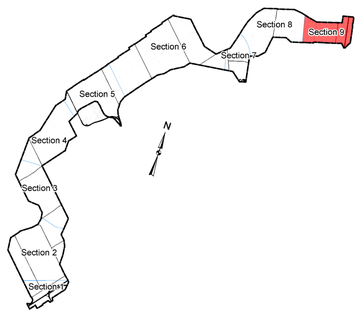
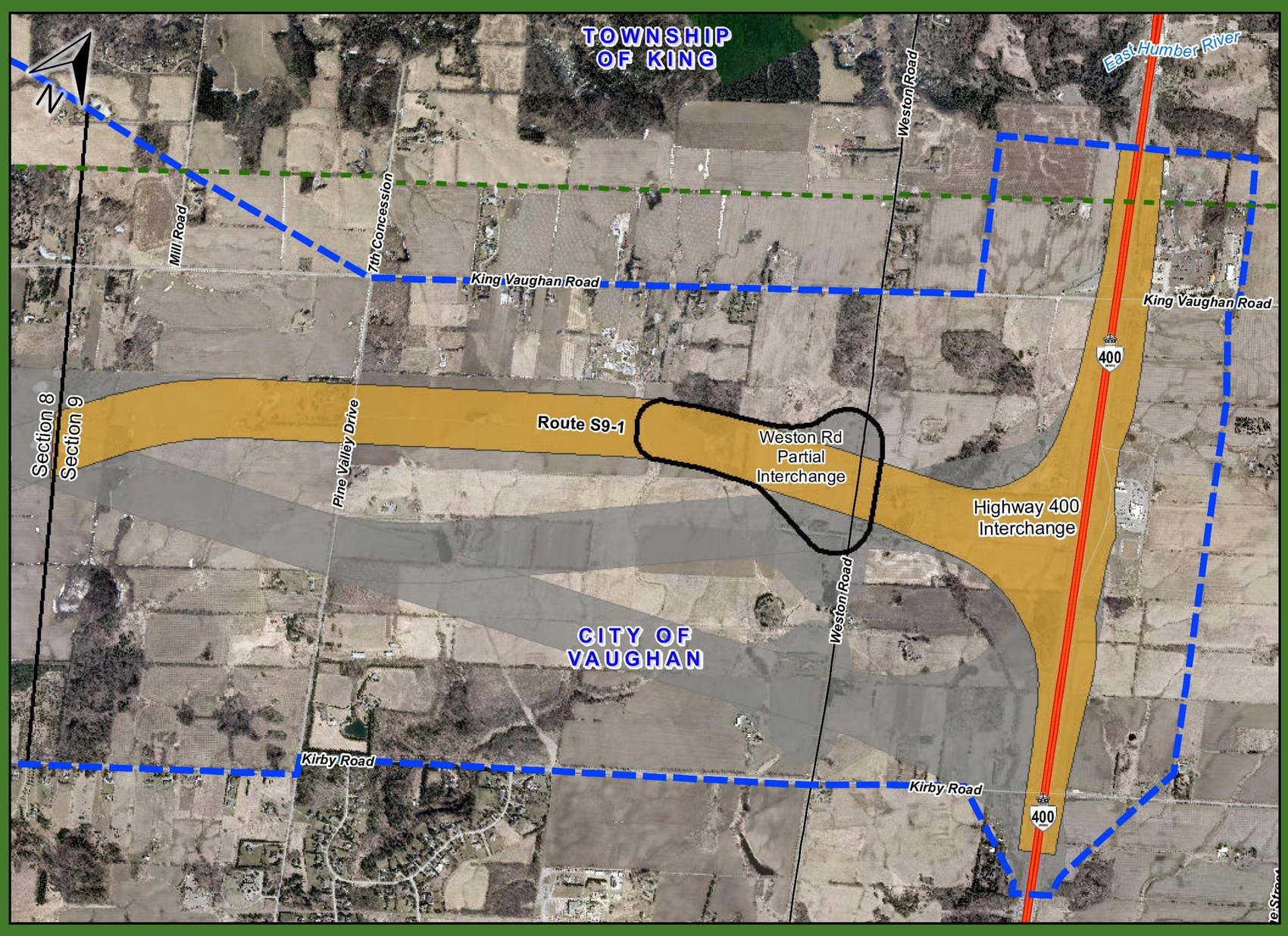


Section 9 Preferred Alternative: S9-1



Alternative S9-1 is preferred from a Natural Environment, Cultural Environment and Transportation perspective:

- Minimizes impacts to fish and fish habitat, designated areas and ecosystem services, with relatively simple and perpendicular watercourse crossings
- Least impact on Greenbelt lands
- Minimizes impacts to employment and future urban area lands
- Low residential property impacts
- Low potential for constructability issues
- Better angle of approach for the Highway 400 interchange

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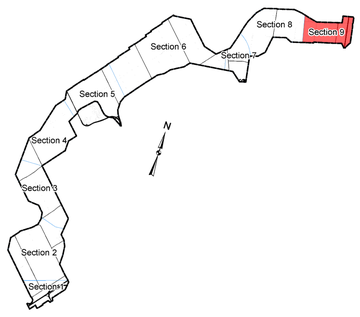
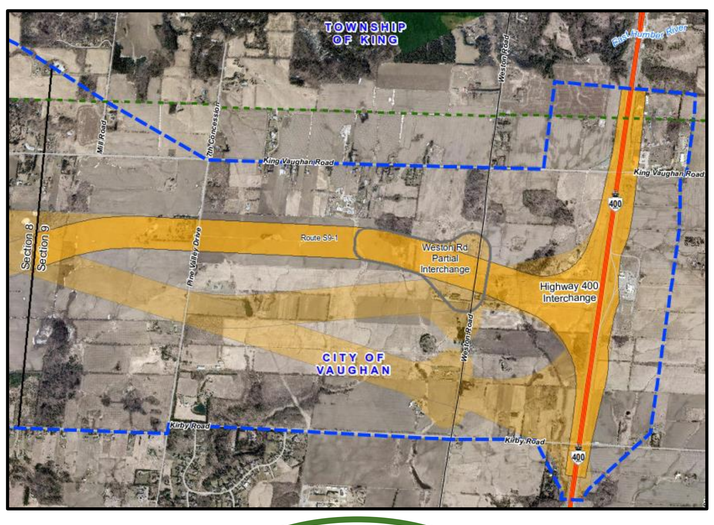
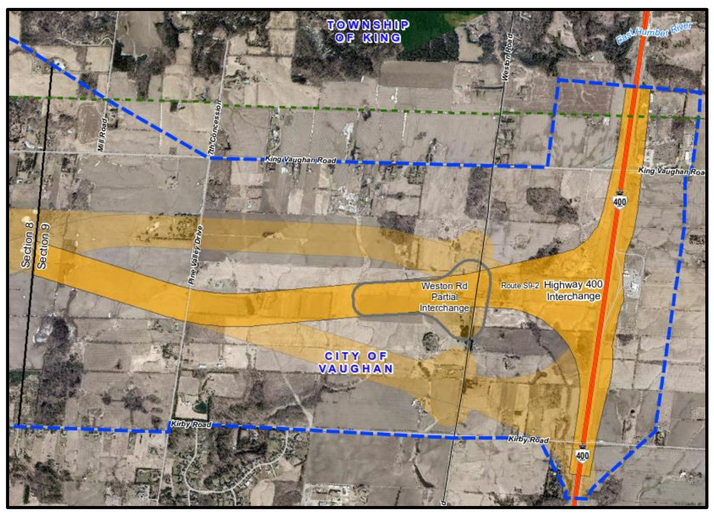
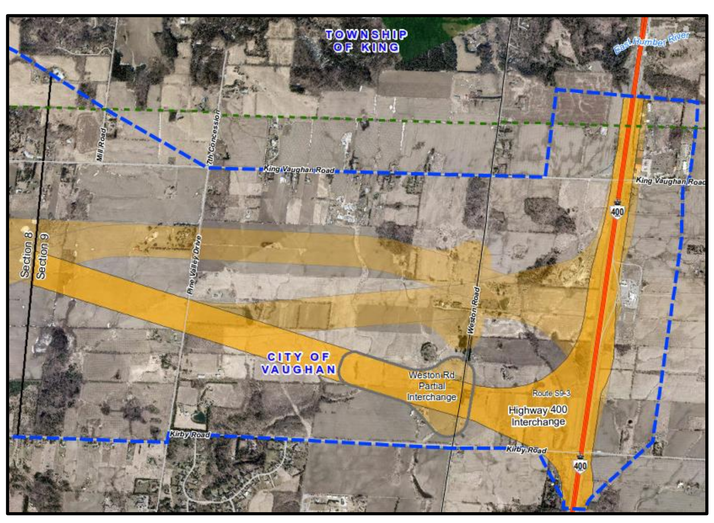


Section 9 Assessment and Evaluation

Alternative	Assessment
S9-1  **Preferred Alternative**	**Natural Environment** • Lowest impact to fish and fish habitat due to simple, perpendicular watercourse crossings • Low to moderate impacts to terrestrial ecosystems, low impacts to groundwater **Land Use / Socio-Economic Environment** • Minimizes impacts to Greenbelt lands • Minimizes impacts to future urban and employment areas • Low impacts to residential and moderate impacts to commercial / industrial properties • Moderate noise impacts for residences • High impacts to agriculture, including loss of two high investment operations **Cultural Environmental** • Moderate impact to built heritage resources **Transportation** • Low potential for constructability issues • High construction cost • Better angle of approach for the Highway 400 interchange
S9-2  	**Natural Environment** • Low impacts to fish and fish habitat with 1 large and complex tributary crossing • Low to moderate impacts to terrestrial ecosystems, low impacts to groundwater **Land Use / Socio-Economic Environment** • Moderate impacts to Greenbelt lands • High impacts to future urban and employment areas • Fewest impacts to residential properties, moderate impacts to commercial / industrial properties • Low noise impacts for residences • High impacts to agriculture, including loss of two high investment operations **Cultural Environmental** • Moderate impact to built heritage resources **Transportation** • Low potential for constructability issues and high construction cost
S9-3  	**Natural Environment** • Low to moderate impacts to fish and fish habitat, requiring a potential channel realignment • Low to moderate impacts to terrestrial ecosystems, low impacts to groundwater **Land Use / Socio-Economic Environment** • Moderate impacts to Greenbelt lands • Moderate impacts to future employment lands and high impacts to future urban areas • Moderate impacts to residential properties and lowest impacts to commercial/industrial properties • Low noise impacts for residences • Moderate impacts to agricultural, avoids the loss of high investment operations buildings **Cultural Environmental** • High impact to built heritage resources **Transportation** • Highest potential for constructability issues and moderate construction cost