Arthur Street Improvements & Elmira Bypass EA
Evaluation of Alternatives: Part B - Elmira Bypass

Region of Waterloo

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Evaluation Criteria			Alternative #B0 ("Do Nothing")		Alternative #B1		Alternative #B2		Alternative #B3		Alternative #B4	
No.	**Criteria**	**Indicator**	Maintain existing conditions, no road improvements. Planned intersection upgrades per TCP		West Bypass - Upgrade Existing Listowel Road, Floradale Road and Reid Woods Road to 35m wide ROW and Regional Road XS. Includes construction with live traffic, Canagagigue Creek bridge replacement, new intersections at Arthur Street, Floradale Road and Reid Woods Drive. Total length = 9.1 km		East Bypass - New Regional Road along east side of Elmira from Scotch Line Road to Reid Woods Drive, using 35m wide ROW and Regional Road XS. Includes new bridge crossing Canagagigue Creek, new rail crossing, new intersections at Arthur Street, South Field Drive, Church Street and Reid Woods Drive. Total length = 6.6 km		Hybrid Bypass - Upgrade Union St from Listowel Rd to Oriole Pkwy to 35m wide ROW and Regional Road XS. Add MUT on Union up to Erb St. Extend Union to Church St and upgrade to new "Martins Lane" extending to Arthur north of Kenning Place. Includes, intersection upgrades at Listowel Road and Reid Woods Drive, and new intersection at Church Street and Arthur (north of Kenning Pl). Total length = 6.0 km		Hybrid Bypass - Upgrade Union St from Listowel Rd to Howard Ave. Construct 3.2km of new Bypass Road using 35m wide ROW and Regional Road XS to Arthur north of Kenning Place, upgrade Arthur to Reid Woods Drive. Includes, new bridge crossing of Canagagigue Creek, upgraded rail crossing, intersection upgrades at Listowel Road and Reid Woods Drive, and new intersection at Church Street and Arthur Street (at Kenning Pl). Total length = 6.2 km	
			Comments	Score	Comments	Score	Comments	Score	Comments	Score	Comments	Score
1.0 Natural Environment												
1.1	**Ecology - Impacts to Aquatic Habitat (Watercourses, Wetlands)**	Area of impact on existing habitat features (ha)	No additional impacts beyond existing condtions. DOES NOT ADDRESS PROBLEM STATEMENT	◑	Construction Footprint impacts 4.8 ha of land within watercourse flooplains. Primary impacts and in-water works required at Canagagigue Creek at Reid Woods Drive for bridge widening, and at minor tributary crossings for culvert extensions/replacements.	◑	Construction Footprint impacts 2.1 ha of land within watercourse flooplains. Primary impacts including in-water works required at Canagagigue Creek for new bridge crossing. New culvert crossing of tributary south of Kenning Place	◑	Construction Footprint impacts 1.4 ha of land within watercourse flooplains. No new construction or in-water works required at existing Church Street bridge crossing Canagagigue Creek. New culvert crossing of tributary south of Kenning Place.	◕	Construction Footprint impacts 2.0 ha of land within watercourse flooplains. Primary impacts including in-water works required at Canagagigue Creek for new bridge crossing. New culvert crossing of tributary south of Kenning Place and floodplain encroachment for new intersection at Arthur and Kenning Place.	◑
1.2	**Ecology - Impacts to Terrestrial Habitats (Woodlots)**	Area of impact on existing habitat features (ha)	No additional impacts beyond existing condtions. DOES NOT ADDRESS PROBLEM STATEMENT	◑	Minor impacts (1.5 ha) to vegetation. Primary impact is to woodlot edge species at Listowel Road and Floradale Road.	◑	Minor impacts (0.7ha) to existing vegetation and/or habitat areas. Primary impacts near Canagagigue Creek crossing, Kissing Bridge Trail and tributary south of Kenning Place.	◑	Minor impacts (3.3 ha) to existing vegetation and/or habitat areas. Primary impacts near Kissing Bridge Trail and tributary south of Kenning Place.	◕	Minor impacts (2.9 ha) to existing vegetation and/or habitat areas. Primary impacts near Canagagigue Creek crossing, Kissing Bridge Trail and tributary south of Kenning Place.	◑
2.0 Social Environment												
2.1	**Archaeological Impacts**	Area of impact on known or potential archaeoligical resources	No additional impacts beyond existing condtions. DOES NOT ADDRESS PROBLEM STATEMENT	◕	No registered archaeological sites have been identified within the alternative. Portions of the alternative have been assessed for archaeological potential. Stage 1 archaeological assessment is required for all areas that have not been assessed for archaeological potential.	●	Registered archaeological site AjHd-1 (Martin [Leander]) located within the alternative. Portions of the alternative have been assessed for archaeological potential. Stage 1 archaeological assessment is required for all areas that have not been assessed for archaeological potential.	◑	Registered archaeological sites AjHd-33 (Emmanuel Site) and AjHd-35 (Peter M. Martin Site) located within the alternative, but no registered archaeological assessments were identified. Stage 1 archaeological assessment is required for areas that have not been assessed for archaeological potential.	◑	Registered archaeological sites AjHd-33 (Emmanuel Site) and AjHd-35 (Peter M. Martin Site) located within the alternative and registered archaeological site AjHd-1 (Martin [Leander]) is located in close proximity but no registered archaeological assessments were identified. Stage 1 archaeological assessment is required for areas that have not been assessed for archaeological potential.	◔
2.2	**Cultural Heritage Impacts**	Area of impact on known or potential built heritage resources (BHRs) or cultural heritage landscapes (CHLs).	No additional impacts beyond existing condtions. DOES NOT ADDRESS PROBLEM STATEMENT	◕	41 properties containing structures 40 years or older along alignment indicating potential CHVI.	◔	22 properties containing structures 40 years or older and one burial site/cemetery along alignment indicating potential CHVI.	◑	60 properties containing structures 40 years or older and two burial sites/cemeteries along alignment indicating potential CHVI. Greatest footprint of impact on existing structures	○	17 properties containing structures 40 years or older along alignment indicating potential CHVI.	◑
2.3	**Ability to Divert Truck Traffic Away from the Downtown Core**	Relative effectiveness of the alternative in keeping trucks away from the downtown core. (Data shown = Daily Truck Traffic)	570 Trucks Daily from Arthur Street @ Reid Woods Drive 640 Trucks from from Church Street East of Elmira	○	340 Trucks from Arthur @ Reid Woods Drive would use B1 (60% Reduction) 0 Trucks from Church Street East of Elmira would use B1 (No Change)	◑	485 Trucks from Arthur @ Reid Woods Drive would use B2 (85% Reduction) 575 Trucks from Church St East of Elmira would use B2 (90% Reduction)	●	485 Trucks from Arthur @ Reid Woods Drive would use B3 (85% Reduction) 575 Trucks from Church St East of Elmira would use B3 (90% Reduction) Alignment gets close to the Downtown Core	◕	485 Trucks from Arthur @ Reid Woods Drive would use B3 (85% Reduction) 575 Trucks from Church St East of Elmira would use B3 (90% Reduction)	●
2.4	**Impacts on Private Property and/or Prime Agricultural Lands**	Area of direct impact on existing private property - amount of land acquistion needed to implement the alternative (ha)	No additional impacts to existing properties. Adverse existing conditions in the downtown core. DOES NOT ADDRESS PROBLEM STATEMENT	◕	Minor road widening required along 55 existing property frontages (12.8 ha). Minor property impacts to 29 farm/rural residential properties and 8 commercial properties.	◕	Property Acquisitions required from 24 properties for new road R.O.W. (17.1 ha). Significant impacts to 2 farmsteads, bisection of 11 farm properties. Acquisition and demolition of 1 residence	◑	Property Acquisitions required from 66 properties for new road R.O.W. (7.5 ha). Frontage impacts to 31 commercial properties. Bisection of 4 farm properties. Significant impacts to 16 residential properties with acquisition and demolition of 8 residences required.	○	Property Acquisitions required from 43 properties for new road R.O.W. (9.9 ha). Frontage impacts to 26 commercial properties. Bisection of 1 farm property (along existing laneway). No acquisition or demolition of residences required.	◕
2.5	**Impacts on Adjacent Land Uses**	Impact of new road on the existing use and/or charactoer of adjacent properties	No additional impacts to existing properties. Adverse existing conditions in the downtown core. DOES NOT ADDRESS PROBLEM STATEMENT	◕	Minor change to existing land use - less rural feel once upgraded to new XS	◕	Significant impact to existing agricultural land uses. Bisection of several farm properties.	◑	Major impacts to residential area near Church Street. Bisection of farm properties north of Church Street	○	Minor impacts to existing agricultural lands between Howard and Church Street (adjacent to planned development areas). Minor impacts to lands north of Church Street	◑
2.6	**Support of Planned Development Areas**	Ability to provide access to new development lands	Does not change / improve existing access to planned development areas.	◑	Does not change / improve existing access to planned development areas.	◑	Provides direct access to commercial development areas on east side of Elmira. Provides access to agricultural lands outside the Countryside Line (north and south of plannned development areas)	●	Does not change existing access to planned development areas. Provides access to agricultural lands outside the Countryside Line north of plannned development areas	◕	Provides direct access to commercial development areas on east side of Elmira. Provides access to agricultural lands outside the Countryside Line north of plannned development areas	◕
3.0 Technical Environment												
3.1	**Traffic operations**	Transportation Level of Service (LOS) at Listowel Road and Church Street Intersections (Using 2051 traffic projections and based on existing signalized configuration)	Listowel Rd: **LOS E** (WB & NB LT) Church St: LOS D (WB LT)	◑	Listowel Rd: **LOS E** (WB & NB LT) Church St: LOS C (WB LT)	◑	Listowel Rd: LOS D (WB & NB LT) Church St: LOS C (WB LT)	◕	Listowel Rd: **LOS E** (WB & NB LT) Church St: LOS C (WB LT)	◑	Listowel Rd: **LOS E** (WB & NB LT) Church St: LOS C (WB LT)	◑
3.2	**Travel Time**	Measured from the Arthur Street / Scotch Line Intersection to the Reid Woods Drive / Arthur Street intersection	10 minutes (typ. 7-12minutes per Google Maps)	◑	10 minutes (assuming average travel speeds and combinations of stops at intersections)	◑	8 minutes	◕	9 minutes	◑	10 minutes	◑
3.3	**Multi-Modal Accommodation**	Level of Service for all modes, with focus on pedestrians, cycling, transit and Horse-&-Buggy	Limited or missing existing pedestrian or cycling facilities along Arthur Street Corridor	◔	Addition of Multi-Use-Trail provides improved MMLOS but along the west outskirts of Elmira, would need to be connected to broader AT network outlined in the ATMP.	◑	Addition of Multi-Use-Trail provides improved MMLOS but along the east outskirts of Elmira, would need to be connectedto broader AT network outlined in the ATMP.	◑	Addition of Multi-Use-Trail provides improved MMLOS within the Elmira east side and can be connected to broader AT network outlined in the ATMP. Gap of dedicated AT facilities on existing Union Street North of Oriole Parkway.	◕	Addition of Multi-Use-Trail provides improved MMLOS within the Elmira east side and can be more easily connected to broader AT network outlined in the ATMP.	◑
3.4	**Safety**	Conformance with Municipal Policy Objectives (Traffic, Transit, Active Transportation)	Safety concerns for non-motorized vehicles DOES NOT ADDRESS PROBLEM STATEMENT	◑	New road to be built to TAC / Region standards. Low traffic volumes. Improves conditions along existing road corridors. Addresses sight line issues on Reid Woods Drive. Increases traffic volume on existing roads.	◕	New road to be built to TAC / Region standards. Low traffic volumes.	◕	New road to be built to TAC / Region standards. Low traffic volumes. Access densities are higher with more intersections and existing commercial and Residential driveways along Union Street.	◑	New road to be built to TAC / Region standards. Low traffic volumes. Access densities are higher with more intersections and existing commercial driveways along Union Street.	◑
4.0 Economic Environment												
4.1	**Capital Cost**	Estimated capital cost (incl. property acquistion) ***Average = $64,383,400***	$37,667,000 Based on planned TCP projects in the Part B Study Area	●	**$78,150,000** Major costs based on extended length of roadworks, roundabouts and replacement of Canagagigue Creek Bridge	○	**$75,450,000** Major costs based on property acquisitions, roadworks, intersection improvements, and new Canagagigue Creek Bridge	○	**$66,970,000** Major costs based on significant property acquisitions, roadworks and intersection improvements.	◑	**$63,680,000** Major costs based on property acquisitions, roadworks, intersection improvements, and new Canagagigue Creek Bridge	◑

Impact Ranking Scale				
●	◕	◑	◔	○
Most Preferred	More Preferred	Neutral	Less Preferred	Least Preferred