BURNSIDE

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Appendix B Evaluation of Alternatives

BURNSIDE
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Appendix B1

Evaluation of Alternative Solutions

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (North of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
A	**Natural Environment**						
1	**Vegetation/Tree Removal (potential to impact or remove vegetation or trees)**	No impact over existing conditions.	Improvements within the existing right-of-way. Tree and vegetation clearing required within areas of potential LID. Vegetation maintenance completed as needed. Opportunity to include landscaping in boulevard areas.	Improvements within the existing right-of-way. Tree and vegetation clearing required within areas of potential LID. Vegetation maintenance completed as needed. Opportunity to include landscaping in median areas.	Tree and vegetation clearing required within areas of potential LID. Vegetation maintenance completed as needed.	Tree and vegetation clearing anticipated within areas of LID and property acquistion and other areas. Vegetation maintenance completed as needed. Opportunity to include landscaping in median areas.	Tree and vegetation clearing required within areas of potential LID and other areas. Vegetation maintenance completed as needed.
	Rating	○	◔	◔	◑	◑	◑
2	**Terrestrial Habitat (potential to impact breeding birds, general wildlife, habitat connectivity)**	No impact over existing conditions.	Potential impact to boulevard trees. Vegetation removal may impact breeding birds and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Potential impact to boulevard trees. Vegetation removal may impact breeding birds and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Potential impact to boulevard trees.Vegetation removal may impact breeding birds and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Potential impact to boulevard trees.Vegetation removal may impact breeding birds and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Potential impact to boulevard trees.Vegetation removal may impact breeding birds and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.
	Rating	○	◔	◔	◔	◔	◔
3	**Water Resources (potential to impact groundwater, drainage features)**	No impact over existing conditions. Culvert maintenance and replacement completed as needed.	Potential to improve drainage features and storm water run off with installation of curb and gutter. Potential for LID stormwater management north of North St.	Potential to improve drainage features and storm water run off with installation of curb and gutter. Potential for LID stormwater management north of North St.	Potential to improve drainage features and storm water run off with installation of curb and gutter. Potential for LID stormwater management north of North St.	Potential to improve drainage features and storm water run off with installation of curb and gutter. Potential for LID stormwater management north of North St.	Potential to improve drainage features and storm water run off with installation of curb and gutter. Potential for LID stormwater management north of North St.
	Rating	○	○	○	○	○	○
4	**Impact on Climate Change (potential for greenhouse gas emissions, impact to carbon sinks, resilience or vulnerability)**	Without improvements, increased traffic congestion may result in an increase in associated greenhouse gas emissions.	Vegetation maintenance/removal is not anticipated to significantly impact the availablility of carbon sinks over existing conditions.Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions.	Vegetation maintenance/removal is not anticipated to significantly impact the availablility of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Improvements are anticipated to reduce traffic congestion.	Vegetation removal and maintenance is not anticipated to significant impact the availablility of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Bus laybys and bike lanes encourage modes of transportation that reduce greenhouse gas emissions.	Vegetation removal and maintenance is not anticipated to significantly impact the availability of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Improvements are anticipated to reduce traffic congestion.	Vegetation removal and maintenance is not anticipated to significant impact the availablility of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions.Bus laybys and bike lanes encourage modes of transportation that reduce greenhouse gas emissions.
	Rating	◕	◕	◑	◑	◔	◑
	Summary Natural Environment	○	◔	◔	◔	◔	◔

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (North of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
B	**Socio-Cultural Environment**						
1	**Conformity to Municipal Policies and Development Planning (road network and connectivity)**	Does not conform to Mulit-modal Transportation Master Plan (MTMP) recommendation for Laclie St. reconstruction (3 lanes with Bike Lanes and new sidewalks with further study required)	Does not conform to MTMP recommendation for separated bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP recommendation of three lanes. Does not conform to recomendation of bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP with sidewalks and bike lanes Does not conform to recommendation for 3 lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Conforms to MTMP recommendation for 3 lanes and bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP with sidewalks and bike lanes. Does not conform to recommendation for 3 lanes (3 lanes with Bike Lanes and new sidewalks with further study required) . Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.
	Rating	●	◑	◔	◔	○	◔
2	**Heritage Resources (archaeological, cultural heritage features)**	No impact to potential archaeological resources.	Impact to cultural resources not anticipated. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg.potential areas for LID at golf course)	Potential impact to potential built heritage resource as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg.potential areas for LID at golf course and some areas of property aquisition).	Potential impact to potential built heritage resource as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg.potential areas for LID at golf course and some areas of property aquisition).	Potential impact to potential built heritage resource as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg.potential areas for LID at golf course and some areas of property aquisition).	Potential impact to potential built heritage resource as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg.potential areas for LID at golf course and some areas of property aquisition).
	Rating	○	◔	◑	◑	◑	◑
3	**Local Residents Nuisance Impacts (noise, traffic, visual impact)**	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time.	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time. Temporary impact due to construction activities.	Improved traffic flow with centre turn lane. Temporary impact due to construction activities. Opportunity for centre median plantings	Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes. Temporary impact due to construction activities.	Improved traffic flow with centre turn lane and bike lanes. Temporary impact due to construction activities.	Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes. Temporary impact due to construction activities.
	Rating	◑	◕	◔	◑	○	◑
4	**Municipal services (snow removal, garbage pick up, transit stops)**	Does not provide opportunity for additional bus layby. Boulevard provides area for garbage pick up and some snow storage for winter maintenance.	Opportunity to provide addition of 1 bus layby. Additional winter maintenance for sidewalks needed. Boulevard provides area for garbage pick up and some snow storage for winter maintenance. Temporary impact during construction.	Does not provide opportunity for addition of 1 bus layby. Additional winter maintenance for sidewalks needed. Boulevard provides area for garbage pick up and some snow storage for winter maintenance.Temporary impact during construction.	Opportunity to provide addition of 1 bus layby. Bike lanes will increase winter road maintenance. Additional winter maintenance for sidewalks needed. Boulevard provides area for garbage pick up and some snow storage for winter maintenance. Temporary impact during construction.	Does not provide opportunity for addition of 1 bus layby. Bike lanes will increase winter road maintenance. Additional winter maintenance for sidewalks needed. Boulevard provides area for garbage pick up and some snow storage for winter maintenance . Temporary impact during construction.	Opportunity to provide addition of 1 bus layby. Bike lanes will increase winter road maintenance. Additional winter maintenance for sidewalks needed. Boulevard provides area for garbage pick up and some snow storage for winter maintenance. Temporary impact during construction.
	Rating	◑	◔	◑	◔	◕	◔
5	**Level of Service (safety of traveled road, travel time)**	Increased future traffic congestion. Does not provide for complete sidewalks along both sides of the road.	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time.	Improved road condition. Reduced travel time with improved traffic flow. Improved safety of turning movements due to center turning lane.	Improved road condition. Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes.	Improved road condition. Reduced travel time with improved traffic flow. Improved safety of turning movements due to center turning lane.	Improved road condition. Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes.
	Rating	●	◕	○	◑	○	◑
6	**Active Transportation (connectivity to active transportation network)**	Limited to existing partial sidewalks.	No bike lanes. Connectivity with other Active Transportation facilities limited to sidewalks on both sides.	No bike lanes. Connectivity with other Active Transportation facilities limited to sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.
	Rating	●	◕	◑	○	○	○
7	**Active Transportation (pedestrian Safety)**	Portions of existing partial sidewalks in poor condition.	Improved safety with reconstructed/new sidewalks on both sides.	Improved safety with reconstructed/new sidewalks on both sides.	Improved safety with reconstructed/new sidewalks on both sides.	Improved safety with reconstructed/new sidewalks on both sides.	Improved safety with reconstructed/new sidewalks on both sides.
	Rating	●	○	○	○	○	○
8	**Active Transportation (cyclist Safety)**	Limited to shared road.	Limited to shared road.	Limited to shared road.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.
	Rating	◕	◕	◕	○	○	○
9	**Land Acquisition Requirements**	No land acquisition	Land acquisition not anticipated	Minor land acquisition anticipated	Some land acquisition for improvements	The most land acquisition for improvements	Some land acquisition for improvements
	Rating	○	○	◔	◑	◕	◑
	Summary Socio-Cultural Environment	◑	◔	◔	◔	○	◔

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (North of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
C	**Financial Factors**						
1	**Estimated Capital Costs**	No impact above existing conditions	Moderate costs for road and sidewalk improvements, stormwater improvements	Moderate to high costs for road and sidewalk improvements, stormwater improvements.	Moderate to high costs for road improvements, sidewalk, stormwater improvements.	Highest costs for road improvements, stormwater improvements.	Moderate costs for road improvements, stormwater improvements.
	Rating	○	◑	◕	◕	●	◑
2	**Estimated Operation and Maintenance Cost**	High costs for increased maintenance of road, sidewalk and underground infrastructure.	Moderate costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate costs for regular maintenance including snow removal.
	Rating	◕	◔	◑	◑	◑	◔
3	**Property Acquisition Cost**	No land acquisition anticipated	No land acquisition anticipated, road footprint located within existing ROW.	Some property acquisition may be needed for road footprint located outside ROW.	Some property acquisition may be needed for road footprint located outside ROW.	The most property acquisition needed for road footprint located outside ROW.	Some property acquisition may be needed for road footprint located outside ROW.
	Rating	○	○	◔	◔	◑	◔
	Summary Financial Factors	◔	◔	◑	◑	◑	◔

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
D	**Technical Factors**						
1	**Addresses future traffic volumes and operation requirements (delay, queues, mobility)**	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accommodates future traffic volumes for southbound traffic. Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic. Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	3-lanes will accommodate future traffic volumes up to horizon year of 2041.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic.Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	3-lanes will accommodate future traffic volumes up to horizon year of 2041.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic.Drivers will experience delay for some turning movements at some intersections with two-lane roadway.
	Rating	◑	◑	○	◑	○	◑
3	**Accomodates access to adjacent properties and operational safety**	Maintains two-way access to properties.	Maintains two-way access to properties.	Maintains two-way access to properties except in areas of potential landscaped median. Safety of operations would be improved with left-turn lanes.	Maintains two-way access to properties.	Maintains two-way access to properties except in areas of potential landscaped median. Safety of operations would be improved with left-turn lanes.	Maintains two-way access to properties.
	Rating	◑	◑	○	◑	○	◑
4	**Integrates multi-modal travel (pedestrian, cyclist, transit)**	Partial sidewalks, no bike lanes, some bus laybys limits integration	Sidewalks both sides, bus laybys, no bike lanes,	Limited to sidewalks both sides.	Sidewalks both sides, bus laybys, bike lanes.	Sidewalks both sides, bike lanes, no bus laybys.	Sidewalks both sides, bus laybys, bike lanes,
	Rating	◕	◑	◕	○	◔	○
5	**Design constraints (hydro utilities, opportunity for LID stormwater management design)**	No impact to existing hydro utilities. No opportunity for LID stormwater management design	No impact to existing hydro utilities. Opportunity for LID stormwater management design	Some impact to existing hydro utilities. Opportunity for LID stormwater management design.	Some impact to existing hydro utilities with property aquisition. Opportunity for LID stormwater management design.	Significant impact to hydro utilities. Would require relocating all existing hydro utilities with property acquisition.Opportunity for LID stormwater management design.	Some impact to hydro utilities. Would require relocating most existing hydro utilities with property aquisition. Opportunity for LID stormwater management design.
	Rating	◑	○	◔	◔	◑	◔
	Summary Technical Factors	◔	◔	○	◔	○	◔

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
E	**Problem Statement**						
1	**Addresses Problem Statement**	No	Yes	Yes	Yes	Yes	Yes
	Summary Problem Statement	**Not Preferred**	**Preferred**	**Preferred**	**Preferred**	**Preferred**	**Preferred**

Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
Overall Summary	**Not Preferred**	**Somewhat Preferred**	**Somewhat Preferred**	**Least Preferred**	**Most Preferred**	**Somewhat Preferred**

Order of Preference

Most Preferred ○

More Preferred ◔

Somewhat Preferred ◑

Less Preferred ◕

Least Preferred ●

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (South of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
A	**Natural Environment**						
1	**Vegetation/Tree Removal (potential to impact or remove vegetation or trees)**	No impact over existing conditions. Does not include opportunity for landscaping in boulevard areas	Improvements within the existing right-of-way. No impact over existing conditions. Vegetation maintenance completed as needed. Opportunity to include landscaping in boulevard areas.	Improvements within the existing right-of-way. Some boulevard trees and vegetation clearing anticipated within the right-of-way . Opportunity to include landscaping in boulevard areas.	Tree and vegetation clearing anticipated within areas of property acquisition and right-of-way (boulevard). Vegetation maintenance completed as needed.	Tree and vegetation clearing anticipated within areas of property acquisition and boulevard trees. Vegetation maintenance completed as needed.	Tree and vegetation clearing anticipated within areas of property acquisition and boulevard trees. Vegetation maintenance completed as needed.
	Rating	◔	○	◔	◑	◕	◑
2	**Terrestrial Habitat (potential to impact breeding birds, general wildlife, habitat connectivity)**	No impact over existing conditions.	No impact over existing conditions.	Vegetation and tree removal within the right-of-way may impact breeding birds, candidate bat roosting habitat and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Vegetation and tree removal within areas of property acquisitionand right-of-way (boulevard) may impact breeding birds, candidate bat roosting habitat and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Vegetation and tree removal within areas of property acquisition and right-of-way (boulevard) may impact breeding birds, candidate bat roosting habitat and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.	Vegetation and tree removal within areas of property acquisition and right-of-way (boulevard) may impact breeding birds, candidate bat roosting habitat and general wildlife habitat.Vegetation removal will be subject to timing restriction to avoid direct impact to breeding birds.
	Rating	○	○	◔	◑	◕	◑
3	**Water Resources (potential to impact groundwater, drainage features)**	No impact over existing conditions. Storm sewer system maintenance and replacement completed as needed.Low potential to implement Low Impact Development (LID) Stormwater Management	Potential to improve drainage features and storm water run off with installation of new storm sewer system. No area for LID stormwater management south of North St.	Potential to improve drainage features and storm water run off with installation of new storm sewer system. No area for LID stormwater management south of North St.	Potential to improve drainage features and storm water run off with installation of new storm sewer system. No area for LID stormwater management south of North St.	Potential to improve drainage features and storm water run off with installation of new storm sewer system. No area for LID stormwater management south of North St.	Potential to improve drainage features and storm water run off with installation of new storm sewer system. No area for LID stormwater management south of North St.
	Rating	◑	◔	◔	◔	◔	◔
4	**Impact on Climate Change (potential for greenhouse gas emissions, impact to carbon sinks, resilience or vulnerability)**	Without improvemements, increased traffic congestion may result in an increase in associated greenhouse gas emissions.	Vegetation maintenance is not anticipated to significantly impact the availablility of carbon sinks over existing conditions.Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions.	Vegetation and tree removal and maintenance is not anticipated to significantly impact the availablility of carbon sinks over existing conditions. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Centre turn lane is anticipated to reduce traffic congestion.	Vegetation and tree removal and maintenance is not anticipated to significantly impact the availablility of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Bus laybys and bike lanes encourage modes of transportation that reduce greenhouse gas emissions.	Vegetation maintenance is not anticipated to significantly impact the availablility of carbon sinks over existing conditions.Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Centre turn lane are anticipated to reduce traffic congestion. Bike lanes encourage modes of transportation that reduce greenhouse gas emissions.	Vegetation removal and maintenance is not anticipated to significantly impact the availablility of carbon sinks. Increase in traffic over time may result in an increase in associated greenhouse gas emissions over existing conditions. Bus laybys and bike lanes encourage modes of transportation that reduce greenhouse gas emissions.
	Rating	◕	◕	◑	◑	◔	◑
	Summary Natural Environment	◔	◔	◔	◔	◑	◔

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (South of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
B	**Socio-Cultural Environment**						
1	**Conformity to Municipal Policies and Development Planning (road network and connectivity)**	Does not conform to Multi-modal Tranportation Master Plan (MTMP) recommendation for Laclie St. reconstruction (3 lanes with Bike Lanes and new sidewalks with further study required)	Does not conform to MTMP recommendation for separated bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP recommendation of three lanes. Does not conform to recomendation of bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP with sidewalks and bike lanes. Does not conform to recommendation for 3 lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Conforms to MTMP recommendation for 3 lanes and bike lanes (3 lanes with Bike Lanes and new sidewalks with further study required). Maintains functionality as an arterial road corridor. Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.	Partially conforms to MTMP with sidewalks and bike lanes. Does not conform to recommendation for 3 lanes (3 lanes with Bike Lanes and new sidewalks with further study required) . Replacing exisitng subtandard sidewalk with new sidewalk on both sides maintains functionality as an arterial road corridor.
	Rating	●	◑	◔	◔	○	◔
2	**Heritage Resources (archaeological, cultural heritage features)**	No impact to potential archaeological or cultural heritage resources	Impact to cultural and archaeological resources not anticipated	Impact to cultural and archaeological resources not anticipated	Potential impact to heritage property of interest and cultural heritage landscape as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg. property acquisition areas south of North St.).	Potential impact to heritage property of interest and cultural heritage landscape as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg. property acquisition areas south of North St.).	Potential impact to heritage property of interest and cultural heritage landscape as a result of property aquisition. Potential for archaeological resources. Area is partially disturbed. Further Archaeological assessment is required for areas of potential earth works in previously undisturbed areas (eg. property acquisition areas south of North St.).
	Rating	○	○	○	◑	◑	◑
3	**Local Residents Nuisance Impacts (noise, traffic, visual impact)**	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time.	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time. Temporary impact due to construction activities.	Improved traffic flow with centre turn lane. Temporary impact due to construction activities.	Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes. Temporary impact due to construction activities.	Improved traffic flow with centre turn lane and bike lanes. Temporary impact due to construction activities.	Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes. Temporary impact due to construction activities.
	Rating	●	◕	◔	◑	○	◑
4	**Municipal services (snow removal, garbage pick up, transit stops)**	No impact to exisitng conditions. No opportunity for improvements including bus laybys	Opportunity to provide additional bus layby at existing transit stop. Temporary impact during construction. Boulevard provides some space for garbage pick up and snow storage for winter maintenance.	Does not provide opportunity for additional bus layby at existing transit stop. Boulevard provides some space for garbage pick up and snow storage for winter maintenance. Temporary impact during construction.	Opportunity to provide additional bus layby at existing transit stop. Bike lanes will increase winter road maintenance. Reduced boulevard impacts space for garbage pick up and snow storage, will increase the need for frequent winter maintenance. Temporary impact during construction.	Does not provide opportunity for additional bus layby at existing transit stop. Bike lanes will increase winter road maintenance. Limited boulevard space for garbage pick up or snow storage for winter maintenance will increase the need for frequent winter maintenance. Temporary impact during construction.	Opportunity to provide additional bus layby at existing transit stop. Bike lanes will increase winter road maintenance. Reduced boulevard impacts space for garbage pick up and snow storage, will increase the need for frequent winter maintenance. Temporary impact during construction.
	Rating	◔	○	◑	◕	●	◕
5	**Level of Service (safety of traveled road, travel time)**	Increased future traffic congestion. Does not provide for standard sidewalks along both sides of the road.	No impact to existing conditions. Increased congestion with anticipated increase in traffic over time.	Improved road condition. Reduced travel time with improved traffic flow as a result of centre turn lane. Improved safety of turning movements due to center turning lane.	Improved road condition. Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes.	Improved road condition. Reduced travel time with improved traffic flow as a result of centre turn lane. Improved safety of turning movements due to center turning lane.	Improved road condition. Increased congestion with anticipated increase in traffic over time. Traffic flow somewhat improved with dedicated bike lanes.
	Rating	●	◕	○	◑	○	◑
6	**Active Transportation (connectivity to active transportation network)**	Limited to existing sidewalks. Local trails and bike routes in proximity.	No bike lanes. Connectivity with other Active Transportation facilities limited to sidewalks on both sides.	No bike lanes. Connectivity with other Active Transportation facilities limited to sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.	Increased cycling demand anticipated if cycling facilities are improved. Connectivity with other Active Transportation facilities. Sidewalks on both sides.
	Rating	◑	◑	◑	○	○	○
7	**Active Transportation (pedestrian Safety)**	Existing sidewalk on both sides of the road in poor condition.	Improved safety with reconstructed sidewalks on both sides.	Improved safety with reconstructed sidewalks on both sides.	Improved safety with reconstructed sidewalks on both sides.	Improved safety with reconstructed sidewalks on both sides.	Improved safety with reconstructed sidewalks on both sides.
	Rating	◕	○	○	○	○	○
8	**Active Transportation (cyclist Safety)**	Limited to shared road.	Limited to shared road.	Limited to shared road.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.	Increased cycling demand anticipated if cycling facilities are improved. Safety for active transportation is improved with 0.5m buffer between the bike lane and vehicle travel lanes.
	Rating	◕	◕	◕	○	○	○
9	**Land Acquisition Requirements**	No land acquisition	Land acquisition not anticipated	Land acquisition not anticipated	Some land acquisition for improvements.	Significant land acquisition for improvements	Some land acquisition for improvements.
	Rating	○	○	○	◑	●	◑
	Summary Socio-Cultural Environment	◑	◔	◔	◔	◔	◔

Municipal Class Environmental Assessment, Laclie Street Improvements
Evaluation of Alternatives
Laclie Street (South of North Street East)

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
C	**Financial Factors**						
1	**Estimated Capital Costs**	No impact above existing conditions	Lower costs for road and sidewalk improvements, stormwater improvements	Moderate to high costs for road and sidewalk improvements, stormwater improvements.	Moderate to high costs for road improvements, sidewalk, stormwater improvements.	Highest costs for road improvements, stormwater improvements.	Moderate costs for road improvements, stormwater improvements.
	Rating	○	◔	◕	◕	●	◑
2	**Estimated Operation and Maintenance Cost**	Moderate to high costs for increased maintenance of underground infrastructure, aged sidewalks and road	Moderate costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate to high costs for regular maintenance including snow removal.	Moderate costs for regular maintenance including snow removal.
	Rating	◕	◔	◕	◕	◕	◑
3	**Property Acquisition Cost**	No land acquisition anticipated	No land acquisition anticipated, road footprint located within existing ROW.	No land acquisition anticipated, road footprint located within existing ROW.	Some property acquisition needed for road footprint located outside ROW.	Significant land acquisition needed for road footprint located outside ROW	Some property acquisition needed for road footprint located outside ROW.
	Rating	○	○	○	◕	●	◕
	Summary Financial Factors	◔	○	◑	◕	◕	◑

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
D	**Technical Factors**						
1	**Addresses future traffic volumes and operation requirements (delay, queues, mobility)**	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accommodates future traffic volumes for southbound traffic. Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic. Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	3-lanes will accommodate future traffic volumes up to horizon year of 2041.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic.Drivers will experience delay for some turning movements at some intersections with two-lane roadway.	3-lanes will accommodate future traffic volumes up to horizon year of 2041.	Currently operates within lane capacity. Does not accommodate future traffic volumes up to horizon year of 2031/2041 for northbound traffic. Accomodates future traffic volumes for southbound traffic.Drivers will experience delay for some turning movements at some intersections with two-lane roadway.
	Rating	◑	◑	○	◑	○	◑
3	**Accomodates access to adjacent properties and operational safety**	Maintains two-way access to properties.	Maintains two-way access to properties. Left-turn lanes not warranted south of North St. E.	Maintains two-way access to properties. Left-turn lane warrants are not met, however safety of operations would be improved if left-turn lanes were available.	Maintains two-way access to properties. Left-turn lanes not warranted south of North St. E.	Maintains two-way access to properties. Left-turn lane warrants are not met, however safety of operations would be improved if left-turn lanes were available.	Maintains two-way access to properties. Left-turn lanes not warranted south of North St. E.
	Rating	◔	○	○	○	○	○
4	**Integrates multi-modal travel (pedestrian, cyclist, transit)**	Substandard sidewalks on both sides, no bike lanes, some bus laybys limits integration.	Sidewalks both sides, bus laybys, no bike lanes.	Limited to sidewalks both sides.	Sidewalks both sides, bus laybys, bike lanes.	Sidewalks both sides, bike lanes, no bus laybys.	Sidewalks both sides, bus laybys, bike lanes.
	Rating	◑	◔	◕	○	◔	○
5	**Design constraints (hydro utilities, opportunity for LID stormwater management design)**	No impact to existing hydro utilities. No opportunity for LID stormwater management design.	No impact to existing hydro utilities. Limited opportunity for LID stormwater management design.	Some impact to existing hydro utilities. Limited opportunity for LID stormwater management design.	Some impact to existing hydro utilities with property aquisition. Limited opportunity for LID stormwater management design.	Significant impact to hydro utilities. Would require relocating all existing hydro utilities with property aquisition. Limited opportunity for LID stormwater management design.	Significant impact to hydro utilities. Would require relocating most existing hydro utilities with property aquisition. Limited opportunity for LID stormwater management design.
	Rating	◑	◔	◑	◑	●	◕
	Summary Technical Factors	◔	○	◔	○	◔	◔

	Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
E	**Problem Statement**						
1	**Addresses Problem Statement**	No	Yes	Yes	Yes	Yes	Yes
	Summary Problem Statement	**Not Preferred**	**Preferred**	**Preferred**	**Preferred**	**Preferred**	**Preferred**

Criteria for Evaluating Alternatives	1) Do Nothing	2) Reconstruct 2 Lane Road with Bus Laybys (No Bike Lanes)	3) Widen to 3 Lanes (No Bus Laybys, No Bike Lanes)	4) Reconstruct 2 Lane Road with Bus Laybys and Bike Lanes	5) Widen to 3 Lanes with Bike Lanes	6)Narrow 2 Lane Road with Bus Laybys and Bike Lanes
Overall Summary	**Not Preferred**	**Most Preferred**	**Somewhat Preferred**	**Somewhat Preferred**	**#REF!**	**Somewhat Preferred**

Order of Preference

Most Preferred ○
More Preferred ◔
Somewhat Preferred ◑
Less Preferred ◕
Least Preferred ●

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Appendix B2

Technical Memorandum – Design Option Evaluation

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Technical Memorandum

Date: November 3, 2022 **Project No.:** 300052403.0000

Project Name: Laclie Street Reconstruction - Neywash Street to Murray Street

Client Name: City of Orillia

Submitted To: Stan Martinello, P.Eng.

Submitted By: Drew Davidge, P.Eng.

The City of Orillia (City) has initiated a Municipal Class Environmental Assessment (EA) to consider options for the reconstruction of Laclie Street from Neywash Street to Murray Street to an urban cross section. The Study is evaluating solutions that consider active transportation, including bike lanes. Reconstruction also provides the opportunity to review Low Impact Development (LID) Stormwater Management strategies, Transit Infrastructure, replace existing underground infrastructure and extend it where necessary.

The planning of the road improvements is being carried out in accordance with the Schedule 'C' requirements (Phases 1 to 4) of the Municipal Engineers Association Municipal Class Environmental Assessment document (October 2000, as amended in 2007, 2011 and 2015), which is approved under the Ontario Environmental Assessment Act.

The EA is currently in Phase 3 and a virtual Public Information Centre No. 2 (PIC) was held on the City's website from August 25, 2022 to September 26, 2022. The PIC summary report (November 1, 2022) outlines the notification process, the information presented, and the comments received during the PIC No. 2 comment period.

Design options considered in Phase 3 of the Municipal Class EA process and presented during PIC No. 2 included options for bus layby locations, options for the configuration of North Street East Intersection, as well as the intersection of St. Jean Street.

Other improvements presented included cross-section improvements and road realignment in select locations along the study corridor.

1.0 Design Option Evaluation

The following memorandum outlines the design options considered, summarizes the evaluation of each option, and identifies the preliminary preferred alternative for each.

1.1 Bus Layby Options

Laclie Street currently has existing bus laybys at select locations between Neywash Street and North Street East. The following four design options were evaluated:

1. Retain all existing bus laybys even if bus stop no longer exists.
2. Retain existing bus laybys only where there is an active bus stop.
3. Add new bus layby at the existing bus stop north of Cedar Street.
4. A combination of the above options.

Figure 1: Bus Layby Options – Neywash Street to Cedar Street

The following table summarizes the benefits and disadvantages of each option.

Table 1: Bus Layby Options

	Benefits	Disadvantages
Option One: Retain all existing bus laybys	• Maintains existing conditions.	• Potential for using the bus layby for improper passing on the right. • Potential for using the bus layby for improper roadside parking. • Moderate cost to reconstruct.
Option Two: Retain existing bus laybys only where there is an active bus stop	• Increase in grassed boulevard area for snow storage and waste collection. • Low to moderate cost to reconstruct.	• Construction nuisance impacts.

	Benefits	Disadvantages
Option Three: Add new bus layby at the existing bus stop north of Cedar Street	• Opportunity to improve accessibility with a new bus layby.	• Loss of boulevard space and area for snow storage. • Impacts to adjacent driveway. • Possible impacts to adjacent trees. • Moderate cost to construct.
Option Four: A combination	• Choose the optimal solution based on the needs of specific locations.	

Based on the evaluation, the preliminary preferred design option was determined to be Option Four, a combination of Options Two and Three. This option retains all Laybys at all active bus stop locations and adds a new bus layby at the active bus stop north of Cedar Street. This option was selected to increase boulevard area where possible while also maintaining and improving traffic flow and accessibility at Cedar Street.

1.2 North Street East Intersection

The preferred alternative selected during Phase 2 of the EA was a two-lane road without bike lanes from Neywash Street to North Street and a two or three-lane road with bike lanes between North Street and St. Jean Street. Three design options were evaluated to accommodate the transition from a two-lane to a three-lane road while introducing bike lanes.

1. Two wide lanes shared with bike lanes.
2. Three lanes (full left-turning lane) with buffered bike lanes.
3. Three lanes (limited left-turning lane) with bike lanes, no buffer.

The design Considerations include, but are not limited to:

- Minimizing impacts to existing driveways;
- Estimated costs;
- Avoid or minimize impact to trees and heritage resources;
- Maintaining adequate boulevard space for waste collection and snow storage;
- Safety and Accessibility of cyclists and pedestrians;
- Available public right-of-way width;
- Properties with limited space available for parking;
- Minimize impacts to utility poles; and
- Other input received from the public.

The following tables summarize the benefits and disadvantages of each option.

Table 2: Option One – Two Wide Lanes Shared with Cyclists

Benefits	Disadvantages
• Less impacts to driveways. • Maintains some west boulevard area for snow storage. • Moderate cost to construct.	• Shared traffic lane and Cycling Facility. • No east boulevard for snow storage. • Short left-turn lane (Less space for waiting vehicles). • Impacts to trees in the right-of-way.

Figure 2: Option One – Two Wide Lanes Shared with Cyclists

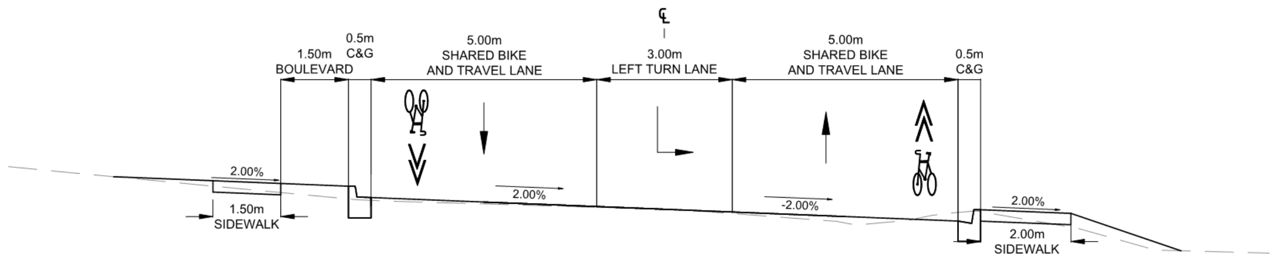


Table 3: Option Two – Three-Lane Standard with Bike Lanes

Benefits	Disadvantages
• Designated bike lane with buffer. • Maintains some west boulevard area for snow storage. • Continuous left-turn lane (Increased traffic flow and improved driveway access).	• Most impacts to driveways and parking. • Grading on private property. • No east boulevard for snow storage. • Impacts to utility poles. • Impacts to trees in the right-of-way. • High cost to construct.

Figure 3: Option Two – Three-Lane Standard with Bike Lanes

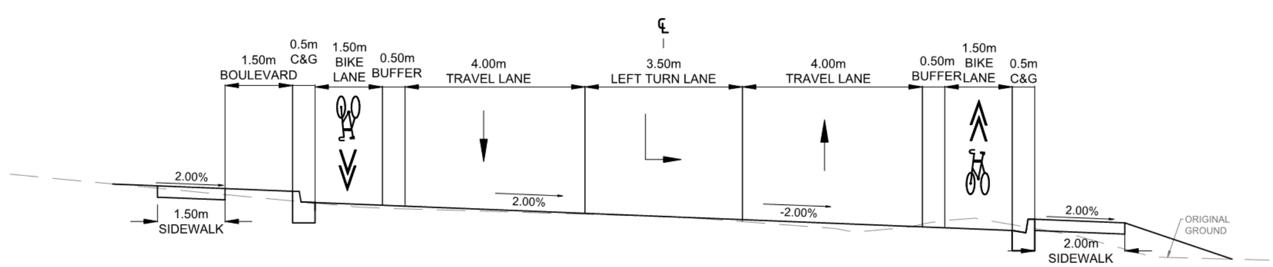
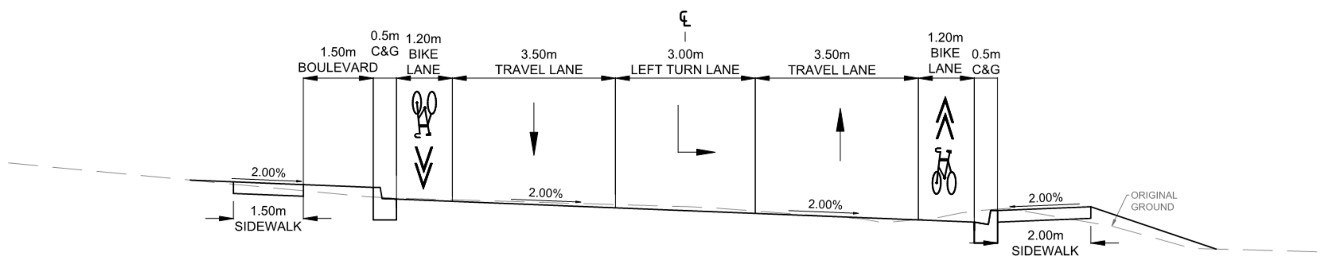


Table 4: Option Three – Three-Lane Standard with Bike Lanes, No Buffer. Limited Left Turn Lane

Benefits	Disadvantages
• Designated bike lane. • Less impacts to driveways. • Moderate cost to construct. • Maintains some west boulevard area for snow storage.	• No buffer for bike lanes. • No east boulevard for snow storage. • Short left-turn lane (Less space for waiting vehicles). • Impacts to trees in the right-of-way.

Figure 4: Option Three – Three-Lane Standard with Bike Lanes, No Buffer. Limited Left Turn Lane



All of the options include:

- New sidewalk on west side of Laclie Street;
- Traffic Signal and Pedestrian Crossing upgrades; and
- Road alignment of the curve between North Street East and St. Jean Street.

Based on the evaluation the preliminary preferred design option was determined to be Option Three, a three-lane standard with bike lanes, no buffer. This option balances the impact to the adjacent residents, snow storage area and the needs of cyclists. The intention of this option is for cyclists traveling south of North Street East to use the existing signed bike route on North Street and Matchedash Street North.

1.3 St. Jean Street Intersection

St. Jean Street currently intersects Laclie Street at an angle which is lesser than the desired range of 70-110°. Two design options were evaluated at the intersection:

1. Do Nothing.
2. Realign St. Jean Street.

The design considerations include, but are not limited to:

- Minimizing impact to business parking lot;
- Estimated costs;
- Avoid or minimize impact to trees and heritage resources;

- Improving driver sightlines;
- Safety of motorists, cyclists, and pedestrians;
- Available Public Right-Of-Way width; and
- Other input received from the public.

The following table summarizes the benefits and disadvantages of both options.

Table 5: St. Jean Street Intersection Options

	Benefits	**Disadvantages**
Option One: Do Nothing	• Maintain existing conditions. • Maintain existing driveway and parking lot limits. • No additional cost.	• Intersection angle does not meet design standards. • Drivers less likely to make a complete stop. • Drivers looking south when turning onto Laclie Street from need to turn their head over 90 deg.
Option Two: Realign St. Jean Street	• Increase in grassed boulevard area for snow storage and waste collection. • Low to moderate cost to reconstruct.	• Impacts to parking at Hasty Tasty Diner (380 Laclie Street, a potential built heritage resource). • Realigned No. 386 Laclie Street driveway. • Moderate cost to construct.

Based on the evaluation the preliminary preferred design option was determined to be Option One, with some minor pavement markings improvements. This option balances the impact to the adjacent business and residents, and also considers that there is no known accident history at this location.

R.J. Burnside & Associates Limited

Drew Davidge, P.Eng.
Project Engineer
DCD:sm