



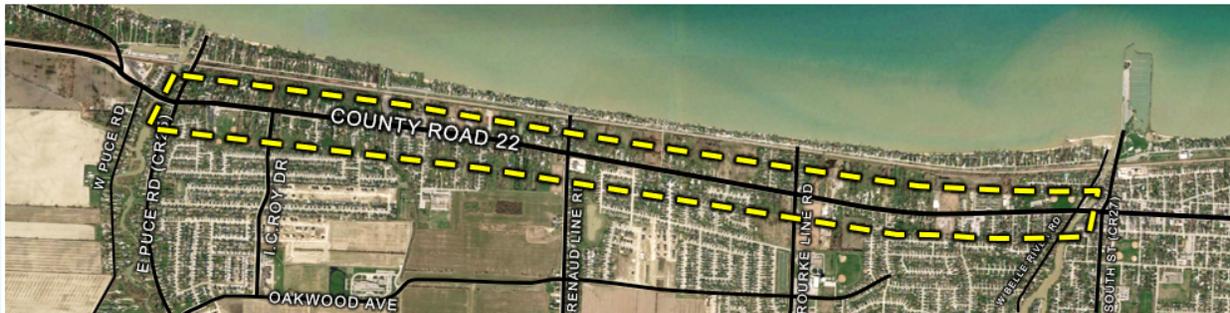
# COUNTY ROAD 22 CORRIDOR ALTERNATIVES AND STRATEGIES STUDY

## 1 INTRODUCTION

The County of Essex and the Municipality of Lakeshore have contracted WSP to conduct an Alternatives and Strategies Study for the County Road 22 corridor through the Municipality of Lakeshore.

County Road 22 is a controlled access **arterial road** featuring a mix of urban and rural cross sections along its length. The corridor serves as an important link between the City of Windsor and the Town of Tecumseh and Municipality of Lakeshore as well as providing connections to the communities of Puce, Emeryville and Belle River. The project is a corridor planning study to define and evaluate options meeting the needs of current and future users on County Road 22.

The study area for this Alternatives and Strategies Study includes an approximately 5.8 km section of County Road 22 from East Puce Road to First Street/South Street, as shown in **Figure 1**.



**Figure 1: County Road 22 Study Area**

### 1.1 STUDY PURPOSE

This corridor study aims to develop an alternative that best builds upon previously County adopted plans, such as the **2006 Class Environmental Assessment (EA) for Improvements to County Road 22 (2006 Class EA)**, and the **County Wide Active Transportation Systems (CWATS) Master Plan (2012)**.

The Municipality of Lakeshore identified this portion of County Road 22 as a ‘Special Planning Area’ and adopted a Corridor Transformational Strategy Special Planning Area Design Guidelines (2012).

County Road 22 faces similar challenges as other urban arterial road corridors which accommodate a diverse range of commercial and business uses which have historically existed and evolved over time.

The County of Essex and the Municipality identified a need to review the corridor to respond to the opportunity to improve roadway safety and capacity concerns with a **vision of an “Urban Avenue”** through this alternative solutions and strategy study.

The purpose of this study is to revisit the preferred design solution outlined in the 2006 Class EA and subsequent recommendation made in the 2012 CWATS Master Plan. Road design options will be reassessed in order to recommend a solution that is informed by current best practices and standards related to roadway design and complete streets, and to incorporate future development plans for this corridor. The study also includes a review of the internal local road network to determine options ‘off the corridor’ that could improve the conditions on County Road 22.



The 2006 Class EA addressed capacity and operating deficiencies that were identified in the 2005 Essex-Windsor Regional Transportation Master Plan (EWRTMP). The EWRTMP identified that widening of sections of County Road 22 were required at that time to meet existing traffic demands and that predicted traffic growth would create additional operational concerns along the corridor. Several design concepts were reviewed as part of the 2006 Class EA to address operational concerns and identify solutions that could accommodate east-west capacity for the future. Within this segment of the corridor, the preferred design solution included a five-lane cross-section from E Puce Road to I.C. Roy Drive (4 travel lanes plus a centre-two way left turn lane) and a three-lane cross-section from I.C. Roy Drive to Belle River Road (2 travel lanes plus one centre left turn lane).

In 2012, the County completed its first active transportation strategy – the CWATS Master Plan. The 2012 CWATS Master Plan was developed to link the seven local municipalities in the County with an approximately 800-kilometre active transportation network that would provide infrastructure for sustainable transportation and also promote healthy and active lifestyles. The preferred design concept identified in the 2012 CWATS Master Plan upgraded the sidewalk on the south to a Multi Use Trail.

The Corridor Transportation Study (approved by Lakeshore Council in 2012) envisions County Road 22 as a mixed-use corridor that supports a range of commercial, employment, residential and community uses. The intent is to create a corridor which accommodates the needs of pedestrians, transit users, cyclists and vehicles.

Since completion of the 2006 Class EA, the 2012 CWATS Master Plan and the 2012 Corridor Transformation Study, the planning and design of roadways has significantly evolved with a much greater focus on **complete streets, accessibility, vision zero and providing separated pedestrian and cycling facilities.**

The need for an EA addendum was reviewed for this project and it was identified that an addendum was not triggered as the preferred alternative aligns with the intent of the 2006 Class EA and the recommended design in the 2006 Class EA has been partially completed within the last 10 years.

The County Road 22 Alternatives and Strategies Study is meant to review alternative approaches to transportation and roadway design in order to plan, implement and maintain a safe, convenient and comfortable corridor for travel for all users of all ages and abilities. The ultimate goal of this study is to plan for future growth and transform the corridor's appearance by embracing the existing character and integrating all modes of transportation into a future vision for the corridor including vehicles, transit, cyclist and pedestrians.

The specific goals of the preferred alternative are to:

- Accommodate expected future growth, targeting the 2031 planning horizon;
- Improve traffic operations on the County Road 22 corridor;
- Accommodate vehicular (including provisions for future transit), pedestrian and cyclist traffic;
- Improve safety for all road users;
- Reduce the number of accesses to County Road 22 in order to improve efficiency and safety along the corridor and to support the desired “built form” envisioned by the Corridor Transformation Strategy; and
- Improve streetscaping to enhance the visual appeal, encourage active transportation and strengthen the sense of community.

The guiding principles for this study are:

- Establish guidelines for safe, convenient and comfortable movement of goods and people including access management;
- Utilize the adjacent local roads to maintain an acceptable level of service;
- Provide an integrated framework for operational (road) and urban design (boulevard) components that can adapt to a variety of condition; and
- Enhance, promote and integrate sustainable and active transportation.

## 2 EXISTING CONDITIONS

### 2.1 POLICIES, BY-LAWS AND LAND USE

County Road 22 is a critical transportation link between the City of Windsor and the Towns of Tecumseh and Lakeshore, characterized by a variety of land uses and built forms including low-density residences, businesses, community/institutional, and vacant land uses. Overall, the policy and background documents which have been reviewed support this transformation of County Road 22 as a more complete and vibrant street from a land use and urban design perspective, to support the growing needs of the adjacent neighbourhoods, the Municipality of Lakeshore, and County of Essex.

### 2.2 ROADWAY CROSS-SECTION AND INTERSECTION CONTROL TYPE

The study area currently has 2 signalized intersections (at East Puce Road and at I. C. Roy Drive), 20 stop-controlled intersections, 1 roundabout (at West Belle River Road), and approximately 250 commercial / residential driveways. The study area consists of a 2-lane cross-section (one eastbound and one westbound travel lane) to the east of I. C. Roy Drive and a 5-lane cross-section (two eastbound and two westbound travel lanes plus a centre two-way left-turn lane) to the west where a portion of the 2006 Class EA recommended design has already been implemented. Turning lanes or tapers exist in several locations along the corridor.

The existing intersection control types along County Road 22 are illustrated in **Figure 2**.

Oakwood Avenue, running parallel to County Road 22 in its south end, is a collector road that is not currently considered fully functional at its desired level of service and classification.

There are a number of collector and local streets which intersect County Road 22 and provide access to northerly and southerly properties. In addition, many of the commercial and residential properties that are situated along the road have private frontage.

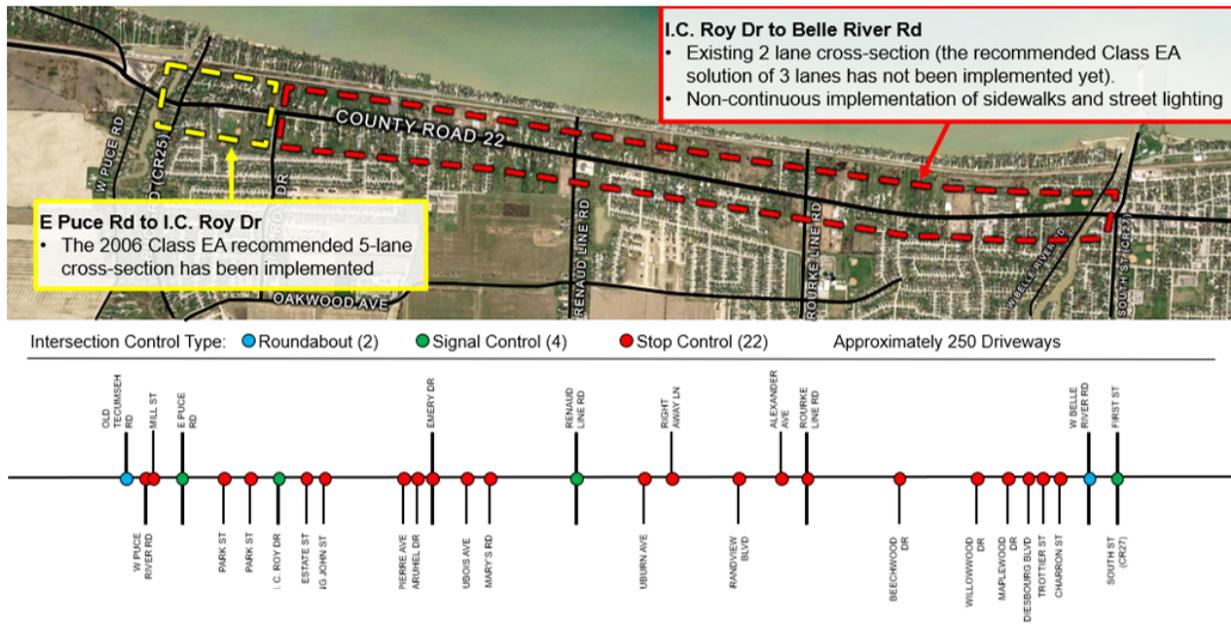
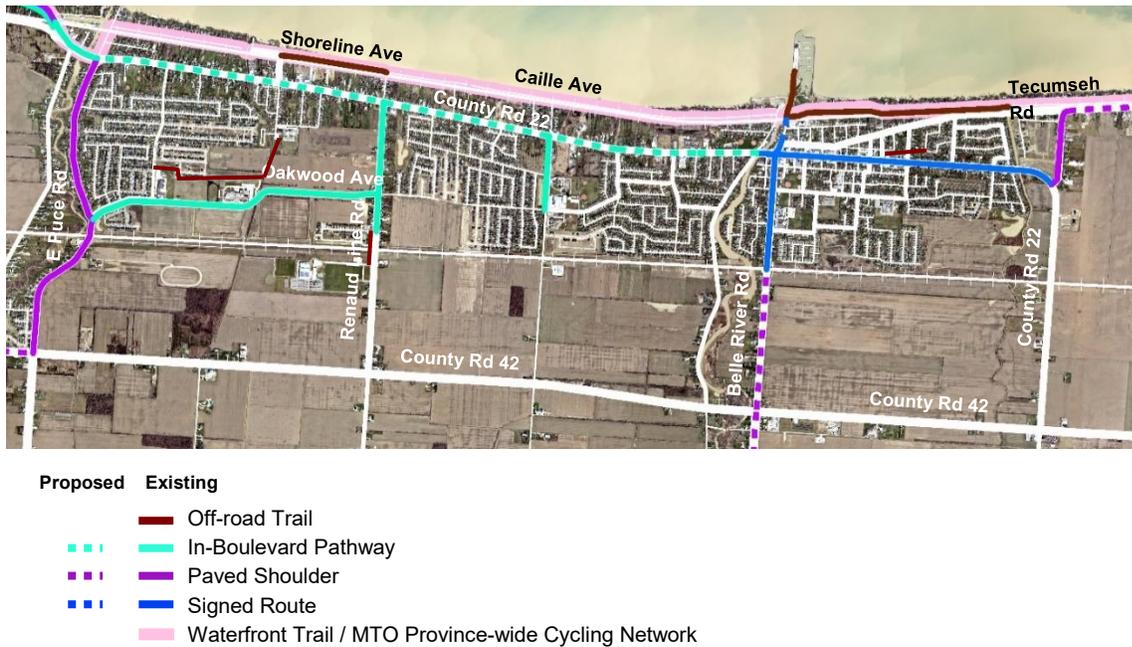


Figure 2: Existing Intersection Control Type

### 2.3 ACTIVE TRANSPORTATION FACILITIES

There is currently an existing in-boulevard pathway along the north side of County Road 22 west of East Puce Road on the approach to the traffic circle at County Road 2, and an existing signed route (shared roadway with CWATS route signage) to the east of Belle River Road. The adjoining segment of County Road 22 is identified as a proposed in-boulevard pathway in the 2012 CWATS Master Plan. There are a number of existing routes / facilities that connect pedestrians, cyclists and other multi-modal users to County Road 22 including a paved shoulder along East Puce Road, an in-boulevard pathway along Renaud Line Road, an in-boulevard pathway along Rourke Line Road, and a signed route along Belle River Road.

The existing and Council-approved proposed facility types (as per the 2012 CWATS Master Plan) along County Road 22 and the surrounding area are illustrated in **Figure 3**.



**Figure 3: Existing and Proposed Active Transportation Facilities along and surrounding County Road 22**

### 2.4 EXISTING TRAFFIC OPERATIONS

Traffic operations at the signalized and stop-controlled intersections were reviewed using the Synchro 10.0 software with Highway Capacity Manual (HCM) 2000 Methodology. The existing signalized intersections were shown to operate with overall LOS C or better (with a maximum delay of 28 seconds occurring at the intersection of County Road 22 at Patillo Road during the AM peak hour) and the majority of stop-controlled intersections operate with turning movements at LOS D or better. The two-way stop-controlled intersections of County Road 22 at Estate Street, Emery Drive, Dubois Avenue, Auburn Avenue, and Rourke Line Road each exhibited at least one turning movement operating at LOS E or F. Traffic operations at the roundabout intersections were reviewed using the Arcady 7.0 software and shown to operated at LOS A with minor delays.

### 2.5 SAFETY ASSESSMENT

The safety assessment of the existing roadway design and historical collision data identified four intersections (Emery Drive, Dubois Avenue, Renaud Line Road, and Rourke Line Road) and two mid-block locations (Emery Drive to Dubois Avenue and St. Mary’s Road to Renaud Line Road) exhibiting higher collision rates relative to



other intersections and segments of the corridor. Recommended mid-block safety improvement strategies include driveway consolidations and centre two-way left-turn lanes. Recommended intersection safety improvement strategies include prohibiting left turn movement to / from minor roads at problematic locations and providing protected left turn phases at signalized intersections.

## 2.6 DRAINAGE INVESTIGATION

An assessment of the existing drainage condition was conducted for the study area, including the identification of the subwatersheds, municipal drains, storm sewers, ditches and culverts, regulatory flood lines and regulated areas. A field investigation was also conducted in October 2020.

The existing drainage system consists of ditches and 15 municipal drains / storm sewer systems. Many areas along County Road 22 do not have adequate drainage systems in place and stormwater runoff is spilling onto neighbourhood private lands.

The next steps for the drainage investigation include a detailed hydrologic and hydraulic analysis to determine the adequacy of existing storm sewers, drains, ditches and centreline / entrance / sideroad culverts under both existing and proposed conditions and determine whether upsizing of infrastructure is required.

## 3 LAND USE AND FUTURE GROWTH

The existing land use along the corridor is predominantly low-density residential with commercial / industrial land uses in areas near Emery Drive and Rourke Line Road. The Corridor Transformation Strategy report identifies guidelines for future intensification of commercial / retail and mixed-use growth at primary and secondary nodes along County Road 22. Together with population and employment growth projections from both the County of Essex and Municipality of Lakeshore Official Plans, the Ministry of Transportation's Transport and Regional Simulation of Ontario (TRESO) model was utilized to forecast future travel demand for the 2031 planning horizon.

## 4 PUBLIC ENGAGEMENT AND CONSULTATION – PHASE I (PRE-DESIGN)

The first opportunity for outreach and engagement was launched in December 2020 with the development and promotion of an online survey focused on gathering input from members of the public and key stakeholders. The purpose of the survey was to generate interest and collect feedback on corridor conditions, constraints, preferences for improvements along the corridor to inform the confirmation of the preferred design solution.

The survey was developed by the consultant team in partnership with County and Municipal staff and included twelve questions including nine core engagement focused questions and three questions for contact information and commentary.

The online survey was hosted from December 2020 to January 2021 and 514 responses were received. The most important improvements identified by respondents include:

- Improve roadway capacity, traffic operations and mobility.
- Strong support for access management along the corridor including the closure of several side roads should this improve efficiency and increase safety along County Road 22.
- Improvements to pedestrians, cycling and active transportation infrastructure.

Other key findings and general comments provided by respondents included:

- More opportunities for controlled crossing of the roadway.
- Desire for attractive and well-designed streetscape, improved streetlights and a higher density mixed-use corridor that will support transit.



- Enhance the active transportation experience by providing buffers between vehicle traffic and AT facilities, benches, bicycle parking and repair stations.

## 5 DESIGN STRATEGIES

### 5.1 INTERSECTION IMPROVEMENTS

Intersection improvement strategies explored in this study include:

- Signalizing the County Road 22 intersections at Rourke Line Road and Emery Drive;
- Addition of eastbound right-turn lanes at Emery Drive, Renaud Line Road, and Rourke Line Road (only applicable with a three-lane cross-section);
- Maintain the westbound right-turn lane at Tim Hortons / plaza driveway access through the improvements;
- Addition of northbound right-turn lanes at Renaud Line Road, Rourke Line Road, and Willowwood Drive; and
- Addition of southbound left-turn lane at Rourke Line Road.

### 5.2 ACCESS MANAGEMENT

The access management strategies explored in this study fall into two categories: access consolidation and road closures. Under first category, accesses to commercial properties from County Road 22 would be closed where access could be maintained via a sidestreet. Under the second category, local road access to County Road 22 would be closed at the following locations:

- Estate Street
- King John Street
- Pierre Avenue
- Caruhel Drive
- Dubois Avenue
- St. Mary's Road
- Auburn Avenue
- Beechwood Avenue

It should be noted that the local roadway closures would include providing a cul-de-sac at the end of the access roads where they currently connect to County Road 22.

The closure of these roads is contingent on the extension of Faith Drive from St. Mary's Road to Renaud Line Road.

## 6 DESIGN ALTERNATIVES

Three design alternatives were developed to address the objectives and goals identified for this project and are described as follows:

- Alternative 1:** Build the Planned Solution. This includes the 2006 Class EA design solution – a three-lane cross-section (one eastbound and one westbound travel lane plus a centre two-way left-turn lane)
- Alternative 2:** Planned Solution plus Intersection Improvements and Access Management. This includes Alternative 1 plus intersection improvements and access management
- Alternative 3:** ROW Widening LOS Enhancement Option. This includes a five-lane cross section (two eastbound and two westbound travel lanes plus a centre two-way left-turn lane) with intersection improvements and access management

## 7 EVALUATION OF ALTERNATIVES

### 7.1 FUTURE TRAFFIC OPERATIONS

Analysis of the future traffic operations showed that the signalized intersections operate at LOS C or better for all alternatives. Movements from side streets at stop-controlled intersections along County Road 22 operate at LOS E or better for all alternatives, except for the southbound left movement at Rourke Line Road in Alternative 1 and 2B,



which is projected to operate at LOS F during the PM peak hour. Where movement is LOS E or F, v/c ratio is well below 0.85.

## 7.2 FUTURE SAFETY ANALYSIS

Analysis of the three design alternatives showed only small relative differences in their predicted safety performances; however, Alternative 2 as been identified as the preferred design, followed by Alternative 1 and Alternative 3, based on the expected frequency of fatal and injury related collisions. Consolidation of driveways and select local road accesses reduced the frequency of turning and angle-related collisions which are typically associated with higher collision severity. Alternative 3 exhibited an increased expected annual collision frequency due to the additional through lanes and resulting increased potential for sideswipe collisions.

## 7.3 PROPERTY IMPACTS

WSP prepared conceptual drawings showing the ROW lines required for each alternative and the impacts it would have on properties. This also includes the cul-de-sacs for Alternatives 2A, 2B and 3. For this exercise the existing centreline of the roadway was maintained. Optimizing the centreline of the roadway is a complex undertaking that could be explored in the detailed design stage.

This analysis shows that Alternative 3 would impact the most amount of properties followed by Alternatives 2B, 2A and 1.

## 7.4 PREFERRED ALTERNATIVE AND ENHANCEMENT OPTION

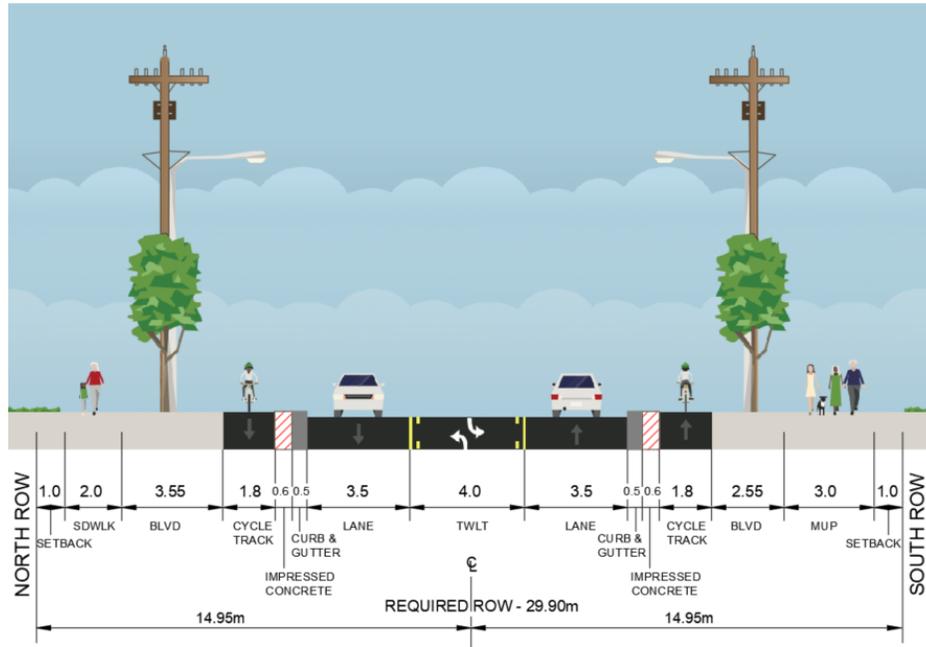
Alternative 2 was carried forward as the preferred alternative based on its evaluation in relation to six categories:

- Roadway capacity, traffic operations & mobility
- Roadway safety
- Active Transportation
- Streetscaping
- Built Form
- Mixed-use corridor supportive of future transit

An enhancement option was then investigated to improve upon the design of Alternative 2 with respect to active transportation. This option, **Alternative 2B** included cycle tracks and a wider sidewalk.

## 7.5 RECOMMENDED DESIGN SOLUTION

The recommended design solution for County Road 22 is Alternative 2B, shown in **Figure 4**. This alternative includes an MUP on the south side as well as separated cycle tracks to support active transportation within the corridor. Alternative 2B also features wide boulevards to allow for enhanced streetscaping.



**Figure 4: Recommended Design Cross-Section – Alternative 2B**

Alternative 2B has a 29.90 m cross-section which does not fit within the existing available right-of-way for the entire length of the study area – some property acquisition would be required to accommodate this design.

## 8 PUBLIC ENGAGEMENT AND CONSULTATION – PHASE II (PREFERRED ALTERNATIVE)

Upon completion of the first phase of the project, a series of design alternatives were prepared and evaluated against the objectives of the County Road 22 corridor from both previous planning documents, discussions with County and Municipal Staff and the results of the online survey. These design alternatives were presented to the Municipal Council in Lakeshore, County of Essex Council and at a Public Information Centre in June 2021. The PIC was attended by 61 people, and was subsequently posted to the project website, where it was viewed an additional 123 times

During consultations for this phase of the project, members of the public were provided multiple avenues to provide feedback on the preferred design alternative. These avenues included:

- An Online Public Information Centre;
- An Online survey posted to the PlaceSpeak page shared by Essex County and the Municipality of Lakeshore;
- Letters delivered to residents along the affected corridors; and
- Emails to the project team.

The primary concerns expressed during the latter phase of the County Road 22 project revolve around an increase in traffic in residential areas and a commensurate increase in speeds along those corridors. As a result, the Municipality of Lakeshore should consider undertaking data collection to verify the concerns being expressed by



residents in advance of roadway closures and should install traffic calming measures if warranted in advance of the closures. This would be completed at the detail design stage of the project.

PlaceSpeak Survey results indicate that most of the respondents think positively of the preferred alternative with respect to safety for all road users, vehicle movement and traffic flow, walking, and cycling.

When taken together, the results from rounds 1 and 2 of engagement for this project show that most of the community supports the proposed measures contained in the preferred design alternative to increase safety and capacity along County Road 22.

## 9 IMPLEMENTATION PLAN AND NEXT STEPS

### 9.1 PROPOSED IMPLEMENTATION PLAN

**Table 1** provides an itemized list of steps to implement the proposed design for County Road 22.

**Table 1: Implementation Plan**

	Item	Year
<b>1</b>	Corridor Detailed Design	
	a 30%, 60%, 90%, and 100% Design reviews	2022
	b Utility conflict and relocation design reviews	
<b>2</b>	Signals at Emery Drive, access consolidation and cul-de-sacs	2022
<b>3</b>	Property acquisition, existing dry utility relocation, underground wet utilities – storm, sanitary sewer and watermain, environmental approvals	2023-2024
<b>4</b>	Phase 1 construction from I.C. Roy Drive to Renaud Line Road including Faith Drive extension	2025
<b>5</b>	Phase 2 construction from Renaud Line Road to Rourke Line Road	2026
<b>6</b>	Phase 3 construction from Rourke Line Road to Belle River Road	2027

### 9.2 NEXT STEPS

The following steps are recommended and/or required before the implementation of the recommended design:

- Municipality of Lakeshore should consider undertaking data collection to verify traffic volumes and speeds on roadways where traffic volumes are anticipated to increase in advance of roadway closures, and should install traffic calming measures if warranted in advance of the closures;
- A detailed hydrologic and hydraulic analysis of the study area to determine whether the existing stormwater management systems are sufficient in the collection and conveyance of flows under both existing and proposed conditions, and identify what, if any, improvements are required; and
- A detailed design assignment for the preferred solution shall be conducted to further refine and finalize the recommended design solution and to develop appropriate staging plans for its construction.

After signals at Emery Drive, accesses are consolidated and cull-de-sacs (i.e., roadway closures) are implemented the Municipality of Lakeshore should consider undertaking the second round of data collection to verify traffic volumes and speeds on roadways where traffic volumes are anticipated to increase as a result of roadway closures and should install traffic calming measures if warranted. This commitment would ensure that the potential impacts of roadway closures on local roadway traffic volumes and speeds can be evaluated and mitigation measures implemented if warranted.