Multi-Modal Transportation Master Plan

The City of Clarence-Rockland

Draft Final Report

June 2019

Stantec

Contributers

The best plans are rarely created alone. We would like to thank all the contributors and stakeholders who helped guide and create this Multi-Modal Transportation Master Plan.

City of Clarence-Rockland Advisors:

Richard Campeau - Manager, Capital Projects, Infrastructure and Planning

Marie-Eve Bélanger - Manager, Development

Jean-Luc Jubinville - Manager, Municipal and Recreational Facilities

Consulting Team:

Brandon Orr - Project Lead/Author - Stantec Consulting Ltd., Toronto, Canada

Rob Vastag - Senior Advisor - Stantec Consulting Ltd., Ottawa, Canada

Angelo Renon - Senior Advisor - Stantec Consulting Ltd., Ottawa, Canada

Irene Hauzar - Environmental Advisor - Stantec Consulting Ltd., Toronto, Canada

Brian Putre -Transit Advisor - Stantec Consulting Ltd., Toronto, Canada

Wilson Yip - Transportation Planner/Author - Stantec Consulting Ltd., Toronto, Canada

Martin Kaczmarek - Transportation Planner/Author - Stantec Consulting Ltd., Toronto, Canada

Bhargav Channa-Reddy - Transportation Planner/Author - Stantec Consulting Ltd., Toronto, Canada

Kristy Tu - Transportation Planner/Author - Stantec Consulting Ltd., Toronto, Canada

Andrew Larter - Co-op Student/Author - Stantec Consulting Ltd., Toronto, Canada

Jennie Cheung - Co-op Student/Researcher - Stantec Consulting Ltd., Toronto, Canada

Sadia Khan - Co-op Student/Researcher - Stantec Consulting Ltd., Toronto, Canada

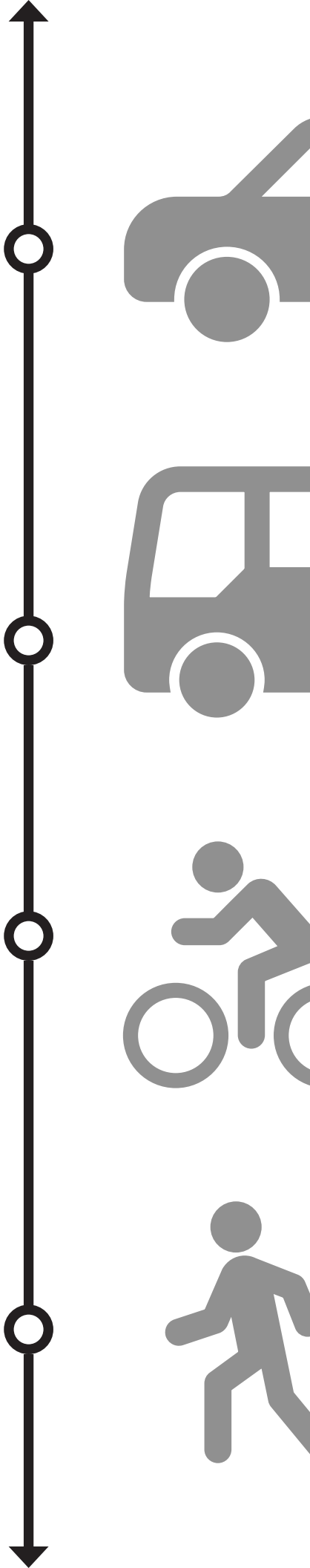
Alina Ahmad - Co-op Student/Researcher - Stantec Consulting Ltd., Toronto, Canada

External Stakeholders:

The United Counties of Prescott & Russell

The City of Ottawa

François Tomeo - Advisor




JC
Jean
Coutu

Contents

1.0 Introduction	**1**
1.1 Building an Interconnected Network	1
1.2 Purpose of the Plan	2
1.3 Using the MTMP	2
1.4 The Environmental Assessment Process	3
1.5 Engagement	4
1.6 Collaboration with other studies	4
2.0 Current Conditions	**7**
2.1 The Community	7
2.2 Multi-Modal Network	10
2.2.1 Road Classification	10
2.2.2 Commercial Vehicle Network	10
2.2.3 Transit Network	12
2.2.4 Active Transportation Network	14
2.3 Travel Characteristics	16
2.3.1 Trip Distribution	16
2.3.2 Trip Time	18
2.3.3 Trip Volumes	19
2.3.4 Intersection Operations	20
2.4 What we heard	21
3.0 Future Conditions	**23**
3.1 Historical and Future Growth	23
3.2 Traffic Forecasts & Operations	25
3.2.1 Methodology	25
3.2.2 Results	26
3.2.3 Planned Improvements	27
3.3 What we heard	30
3.4 Needs & Opportunities	32

Contents

4.0 Foundations 35

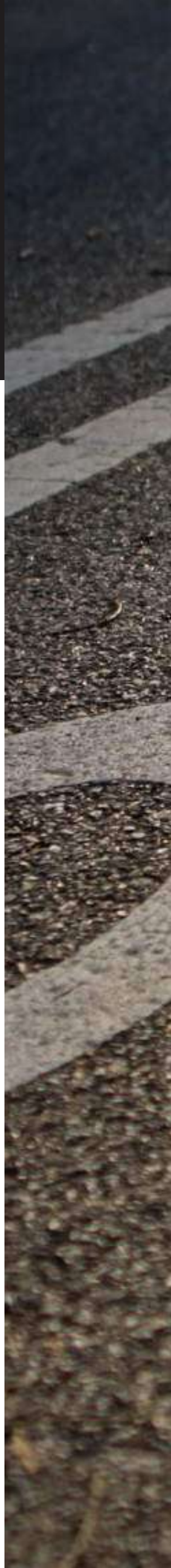
4.1 Planning Context 35
4.1.1 Provincial 35
4.1.2 County 35
4.1.3 Local 36
4.2 Guiding Themes 38
4.2.1 Smart Cities & Open Data 38
4.2.2 Mobility as a Service (Maas) 38
4.2.3 Complete Streets 39
4.2.4 Vision Zero 40
4.3 Strategic Priorities 40
4.4 Vision & Objectives 40

5.0 A Plan for the Future 43

5.1 Active Transportation Evaluation 43
5.1.1 Facility Selection 43
5.1.2 Network Evaluation Criteria 45
5.2 The Multi-Modal Network 48
5.2.1 Pedestrian Network 48
5.2.2 Cycling Network 50
5.2.3 Transit Network & Service Strategy 53
5.2.4 Vehicular Network 58
5.3 Policies & Service Strategy 61
5.3.1 Transportation Demand Management 61
5.3.2 Traffic Calming 65
5.3.3 Complete Streets & Road Classification 71
5.3.4 AT Winter Maintenance Strategy 75
5.3.5 Downtown Parking Management 78
5.4 Implementation & Costs 81
5.4.1 The Concept 81
5.4.2 Costs of the Plan 81
5.4.3 Funding Mechanisms for AT 82
6.0 Bibliography 83

Appendix

Appendix A - Online Survey Summary and PIC Boards
Appendix B - Recommended Improvement Costs and Scores
Appendix C - Future Travel Demand Matrices
Appendix D - Example RFI document for Transit



1.0 Introduction

1.0 Introduction

"Would LOVE to see some form of public transportation from the villages to Rockland so people could go to work (especially teens) by bus. or proper biking paths so they could safely ride their bikes."

- Annonymous survey respondent

1.1 Building an interconnected Network

Transportation networks are comprised of several layers that interact with each other to provide a network for moving around the community and accessing businesses, homes, parks and institutions. In its deepest form, transportation networks integrate with land use and urban design at street-level to balance the City's vision and objectives. These pieces of transportation infrastructure are just as much public spaces where the community meets and interacts, as well as essential networks that move people and goods safely and efficiently.

Today, there are several mobility options at our fingertips that allow us to pick and choose how to get around. The barriers between different transportation modes are increasingly blurred as they become more integrated. Streets are no longer just for automobiles, but rather, a mixture of mobility options comprising a Multi-Modal Transportation Network where different modes, such as active transportation, transit, or smart mobility (such as autonomous vehicles), can serve diverse needs. Although the automobile may present an enticing option for many trips, there are several residents who may be physically, economically and socially disadvantaged who cannot use or have access to an automobile. For instance, it would be inefficient if a lack continuous, safe, and maintained sidewalks or paths required that parents drive children to local destinations where they otherwise might walk or bike, or if inadequate mobility options forced urban commuters to drive although they would prefer to rideshare or use transit. Acknowledging the transportation network as a multi-modal network allows it to be planned more equitably, flexibly and efficiently to be served by a mixture of options that are not contingent on having access to an automobile.

1.2 Purpose of the plan

This Multi-Modal Transportation Master Plan (MTMP) is a long-range strategic plan for the entirety of Clarence-Rockland that identifies transportation infrastructure requirements to address existing challenges and support growth, along with policies to guide transportation and land use decisions. MTMPs are integrated with environmental planning and sustainability principles and provide the framework and "blueprint" for implementing coordinated improvements on an area-wide or city-wide basis. A MTMP avoids the pitfalls of piece-meal planning and "band-aid" solutions and provides a vision for the City to strive for. This plan also provides the unique opportunity for proactive thinking, anticipating community needs, and preparing for emerging trends in transportation solutions. The City of Clarence-Rockland outlined general requirements for the MTMP including the following components:

- Evaluate vehicular, truck, transit, and active transportation operations;
- Assess the city's multi-modal transportation planning needs for the next 5, 10 and 15 years;
- Develop a complete streets strategy, parking management strategy, and traffic calming policy; and
- Create an Implementation Plan and Financial Assessment.

This plan expands upon previous planning work conducted for the 2005 Strategic Transportation Plan for the Urban Area of Clarence-Rockland to re-evaluate previously planned improvements, as well as consider and respond to changes in growth, both within the City and in adjacent municipalities since that time. The purpose of this study is to create a city-wide transportation and active transportation plan that not only identifies improvements within the City's urban areas, but also considers opportunities to integrate the City's hamlets and rural areas within and beyond Clarence-Rockland in a manner that preserves the quality of life and character of the community.

1.3 Using the MTMP

The MTMP is meant to be used by several different transportation stakeholders either as both a reference and a guiding document for developing strategies and making investment decisions. It may also be used as a starting point for developing more detailed plans and analyses for transportation-related studies, projects and initiatives. This is all underpinned by the City's transportation vision, goals, strategy and initiatives to help Clarence-Rockland grow into the future.

More specific examples illustrating how the MTMP may be used include:

- The public may have an interest in following the development of transportation initiatives in the City and in gaining a better understanding of how mobility choices will improve in the future. The MTMP empowers the public to actively participate in the change.
- Elected Officials should us the MTMP to assist in decision making. They can also use it to educate

and engage their constituents about transportation-related changes that will impact their neighbourhoods and the City as a whole.
- City staff should use the MTMP as a guide to making clear, balanced and fiscally prudent decisions on transportation initiatives, infrastructure investments and program administration. In general, MTMPs can be used as the basis for implementing the City's Official Plan.
- City engineers, designers and capital delivery programs staff should scope transportation capital programs and plans to implement the MTMP.
- City transportation professionals, planners and health practitioners will be able to use the transportation system performance targets to achieve modal-split aspirations and improve the reliability of travel by balancing the transportation network for all users, regardless of age, ability or income.
- The MTMP can be used to position the City into a "state-of-readiness" for partner-funded transportation initiatives (e.g. Federal, Provincial, Public-Private-Partnerships) as funding becomes available and partners are engaged.
- Prospective investors in the City may use it to make development decisions based on transportation initiatives that result in new available transportation connections.

1.4 The Environmental Assessment (EA) Process

This MTMP study was developed according to the Municipal Class Environmental Assessment process (October 2000, as amended in 2007, 2011 & 2015) for Master Plans (Approach 1).

The Master Plan approach recognizes that there are benefits to using the EA process when comprehensive plans are undertaken for projects that have a relatively minor impact according to their environmental significance and the effects on the surrounding environment. The outputs of this MTMP includes road and active transportation projects, as well as recommendations relating to public transit.

The Municipal Class EA process addresses Phases 1 and 2 of the EA process including the identification of problems & opportunities, as well as identifying and evaluating alternative solutions to address the problem and establish the preferred solution. Approach 1 for Master Plans involves the preparation of a Master Plan document at the conclusion of the first two phases of the Municipal Class EA. This document is made available for public comment prior to being approved by the municipality.

Master Plans are typically done at a broad level of assessment thereby requiring more detailed analysis or investigations at the project-specific level in order to fulfill the requirements for specific Schedule B and C projects identified within the Master Plan. Certain projects (Schedule A+ and A) can be implemented upon approval of the MTMP. Examples of transportation projects under each schedule of environmental assessment are summarised in **Table 1.1**.

Master Plans should be reviewed every five years to determine the need for a comprehensive formal review and/or update. Potential changes which may trigger the need for a detailed review include:

- Major changes in the original assumptions.
- Major changes to components of the master plan.
- Significant new environmental effects.
- Major changes in proposed timing of projects within the master plan.

Additionally, other changes including significant new health effects, funding opportunities, changes or updates to internal guiding documents (i.e. an Official Plan Update) and changes to external guiding documents should also be considered to trigger a review of this MTMP.

Table 1.1 Examples of transportation projects associated with different EA Schedules

EA Schedule	Types of Road Projects*
Schedule A	Normal and emergency operations and maintenance projects (e.g. re-paving, local road improvements, re-designation of an existing General Purpose Lane)
Schedule A+	Smaller capital projects with minimal environmental impacts (e.g. construction of sidewalks or bicycle paths or lanes within the right-of-way)
Schedule B	Improvements and minor expansions to existing roads such as reconstruction or widening that may have some adverse environmental impact requiring environmental screening and notification of those affected (less than $2.3M)
Schedule C	Construction of new facilities and major expansions requiring the full five-step EA process and public consultations
*Municipal transit projects follow the TPAP process	

1.5 Engagement

Stakeholder engagement is an important component of the EA process and there are requirements for notifications and consultation with public, agencies, and other stakeholders at key phases of the process. This allows stakeholder issues, ideas and priorities to be incorporated into the plan in a meaningful way. The following consultation sessions were conducted throughout the study:

- Notice of Commencement | June 22, 2018
- Online Engagement Survey | October 8 to November 8, 2018
- Public Information Centre #1 | February 12, 2019
- Public Information Centre #2 | February 28, 2019

The MTMP study was initiated in June 2018 through a Notice of Commencement published on the City's website and local newspaper. Two rounds of consultation were conducted including an online survey and two public information centres (PIC) along with stakeholder meetings culminating in approximately 950 people engaged throughout the study process as summarised in **Table 1.2**.

Table 1.2 People involved through various methods of engagement

Type of Engagement	People Engaged
Survey	889
Public Information Centres	25
Stakeholder Meetings	35
Total	**949**

The online survey was conducted at the onset of the study to inform and engage the public, as well as obtain key input to determine existing needs and opportunities. The online survey was posted on the City's website and was also available at a public computer where a city staff member was available to assist persons who could not fill the survey out themselves. The survey provided an engaging opportunity for respondents to provide input on existing issues & opportunities, as well as visionary feedback on what they would like to see in the future. An example of how the online survey looked is provided in **Figure 1.1**.

Figure 1.1 Example of the Online Survey between October 8 - November 8, 2018

Figure 1.2 Public Engaging during the Public Information Centre on February 28, 2019

Additional details on the input and results of the online survey are provided in the "What we heard" sections within Chapters 2 and 3 of this document.

Two public information centres were conducted during the development of alternative solutions due to adverse weather conditions during the first session and to allow for greater engagement with the public (see **Figure 1.2**). They were held on February 12, and February 28 of 2019 between 6pm and 9pm at Optimist Hall in Rockland. A notice of public consultation was released by the City 3-4 weeks prior to each PIC and public display boards were presented and posted to the City's website after the engagement meetings.

In addition, several stakeholder engagement meetings were held with key land use developers, community groups, local, county, and neighbouring community representatives.

Throughout the entire study process stakeholders were able to provide their email or contact information so that they could directly be informed of the study's progress or upcoming engagement sessions.

1.6 Collaboration with other studies

There are several City initiatives, strategies, and plans that are related to the MTMP that were considered in parallel to ongoing planning work conducted including:

- Clarence-Rockland Development Charges Background Study;
- City's Expansion Lands Secondary Plan; and
- Laurier Street Streetscape Revitalization

Beyond these studies there were several other strategies, plans, and studies at the Provincial, County and Municipal levels that were considered, and which are further described in Chapter 4 - Foundations of this document.

2.0 Current Conditions

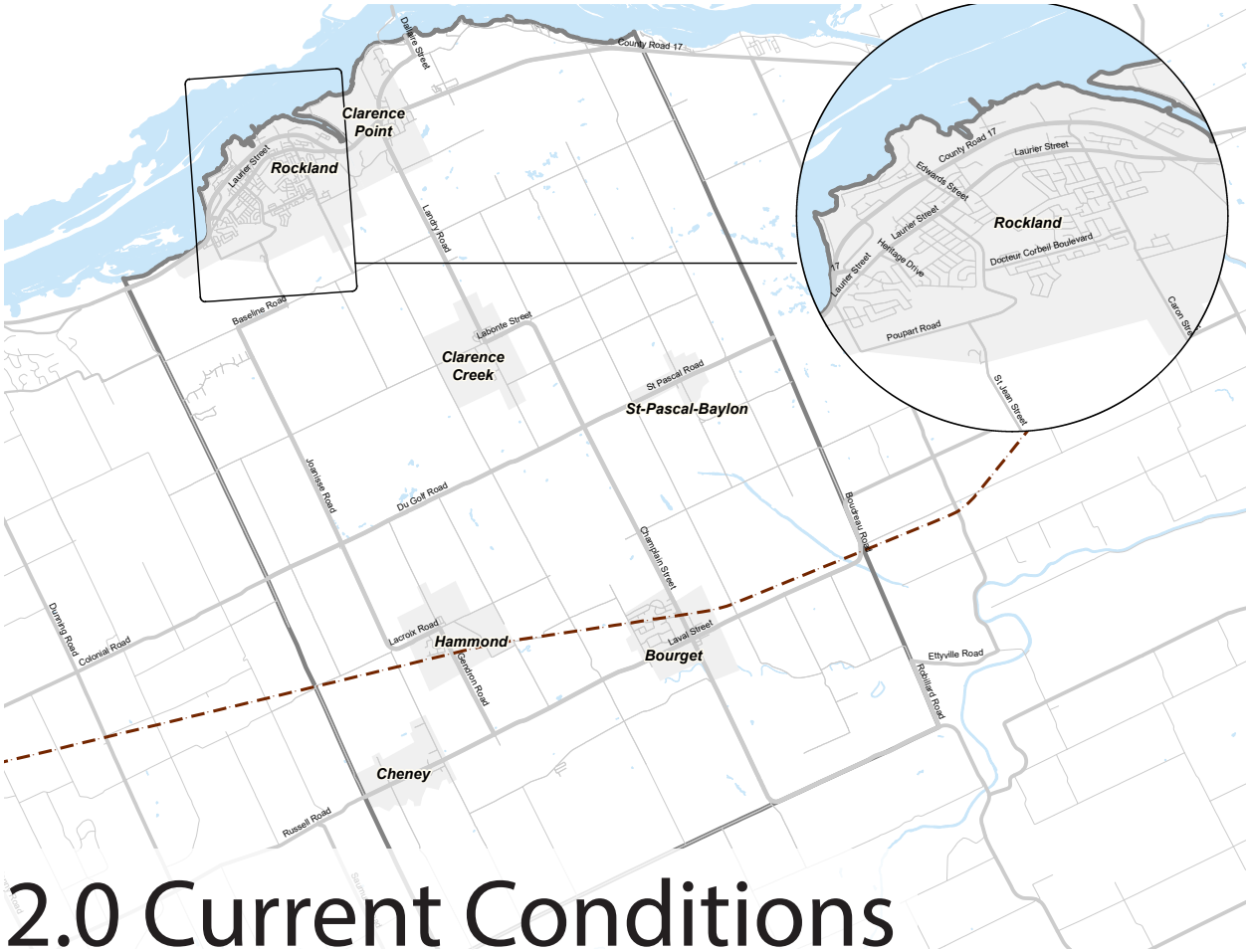


Figure 2.1
Existing Road network

2.0 Current Conditions

2.1 The Community

A multi-modal transportation network must be planned according to the local geography and demographics to best address and recommend solutions tailored for the local context. Understanding the correlation between shifting age groups or changing land uses is imperative in understanding why the city moves in a particular way as well as understanding where residents and businesses will need to go in the future.

The City of Clarence-Rockland is the largest majority francophone city in Canada outside of the province of Québec, with approximately 63% of its 24,510 inhabitants identifying as French-speaking. It is also part of the broader United Counties of Prescott and Russell (UCPR), which extends to the Ontario-Quebec border and has a total population of 89,333. Clarence-Rockland is also considered part of the Ottawa-Gatineau Census Metropolitan Area (CMA), which has a population of 1,323,783. Major urban developments in the City are concentrated in Rockland (population of 12,302); with minor urban developments in the communities of Bourget (population of 1,169), Clarence Point, Clarence Creek, Hammond, Cheney, and St-Pascal-Baylon. **Figure 2.1** shows the city's spatial distribution.

The fastest growing age groups in Clarence-Rockland are residents between 55 to 64 years of age and residents over 65 years of age; these two age groups grew by 22% and 38% respectively between 2011 and 2016 and now combine to account for approximately 30% of the population. The aging trend of the population is likely due to the large number of "Baby Boomers" that have entered these two age groups since 2011. The median age of Clarence-Rockland is 42.2 compared to the national median of 41.2. This trend is expected to change through the year 2036 as the larger younger cohort grow into the working-age bracket. **Figure 2.2** shows the population pyramid of Clarence-Rockland with a comparison of the existing and forecasted population.

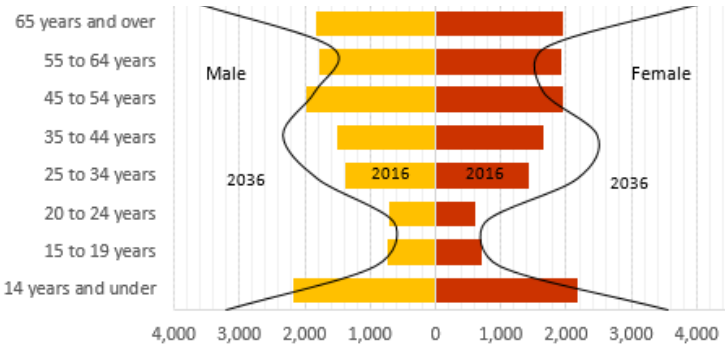


Figure 2.2 Population Pyramid | 2016 vs 2036
Source: City of Clarence-Rockland - Development Charges Background Study, 2014

Clarence-Rockland is bounded by the City of Ottawa to the west, the Township of Alfred and Plantagenet to the east, the Ottawa River to the north, and Township of The Nation to the south. The population centre of the City, Rockland, is located approximately 38 kilometres east of Downtown Ottawa.

The City's land use is diverse, with areas that are considered urban, rural, vacant, or undeveloped. The City is predominantly rural with over 10,000 hectares of land designated for agricultural activities (34.4% of the total land area). The overall population density is 82 people per square kilometre (based on the 2016 population of 24,500). The City's major population centre, Rockland, accounts for approximately 40% of the city's population and can be characterized as a low-rise residential community supporting a centralized commercial core area along Laurier Street, with other major commercial land uses along County Road 17. The overwhelming supply of residential and commercial development in the City's urban communities are low-rise with only approximately 16% of the current housing supply dedicated to higher-density housing types like row houses or apartments as shown in **Table 2.1**.

The development of Rockland initially centered along Laurier Street, however over the past 20 years Rockland has experienced rapid growth in population and has grown beyond this central area as shown in **Figure 2.3**. Newer residential developments have progressed southward away from Laurier Street, while newer retail developments have occurred at the western extent of Rockland around the intersection of Richelieu Street and Carmen Bergeron Street (e.g. Walmart, RONA), and along Chamberland Street around the intersection with County Road 17 (e.g. Canadian Tire, Food Basics, TSC). Laurier Street remains as the backbone of the community, with City Hall, Canada Post, government offices, and a mix of businesses, shops and services along the main strip. Simon Park and the City's recreational centre and public library are also in close proximity to Laurier Street. The City has made the revitalization of the commercial core area along Laurier Street a priority in its latest Community Improvement Plan (October 2016).

A significant percentage of the urban development in Clarence-Rockland, and Rockland in particular, serves as a bedroom community for the National Capital Region (NCR). This relationship is reflected in the employment distribution of the City's residents, as illustrated in **Table 2.2**. The distribution is similar to that of the NCR in general, with a high proportion of workers employed in office-oriented positions in the business, finance, education, government, and service sectors. A significant percentage of the population is also employed in the trades and the transportation sectors.

The City's second largest urban community, Bourget, centers around the intersection of County Road 2 (Russell Road) and County Road 8 (Champlain Street) as shown in **Figure 2.4**. Bourget has a healthy village core but is primarily a residential community with few commercial or employment clusters.

Table 2.1 Historical Household Construction by Period

Period	Singles & Semis	Rows	Apartments	Total
1945-2011	7,105	355	1,060	8,520
%	83%	4%	12%	100%

Source: City of Clarence-Rockland - Development Charges Background Study, 2014

Table 2.2 Municipal Occupation Split

Occupation	Employment	% Total
0 Management occupations	1,470	11%
1 Business, finance, and administration occupations	2,620	19%
2 Natural and applied sciences and related occupations	825	6%
3 Health occupations	655	5%
4 Education, Law and social, community and government services	1,935	14%
5 Art, culture, recreation, and sport	240	2%
6 Sales and service occupations	2,665	20%
7 Traces, transport and equipment operators and related occupations	2,440	18%
8 Natural resources, agriculture, and related production occupations	280	2%
9 Manufacturing and utilities	185	1%
Not Applicable	155	1%
Total	**13,470**	**100%**

Source: Statistics Canada - Commuter Flows, 2016

"C'est une projection pour voir où on veut nos artères principales dans dix ans, si le développement continue à un tel rythme."

- Richard Campeau - Manager, Capital Project, Infrastructure and Planning

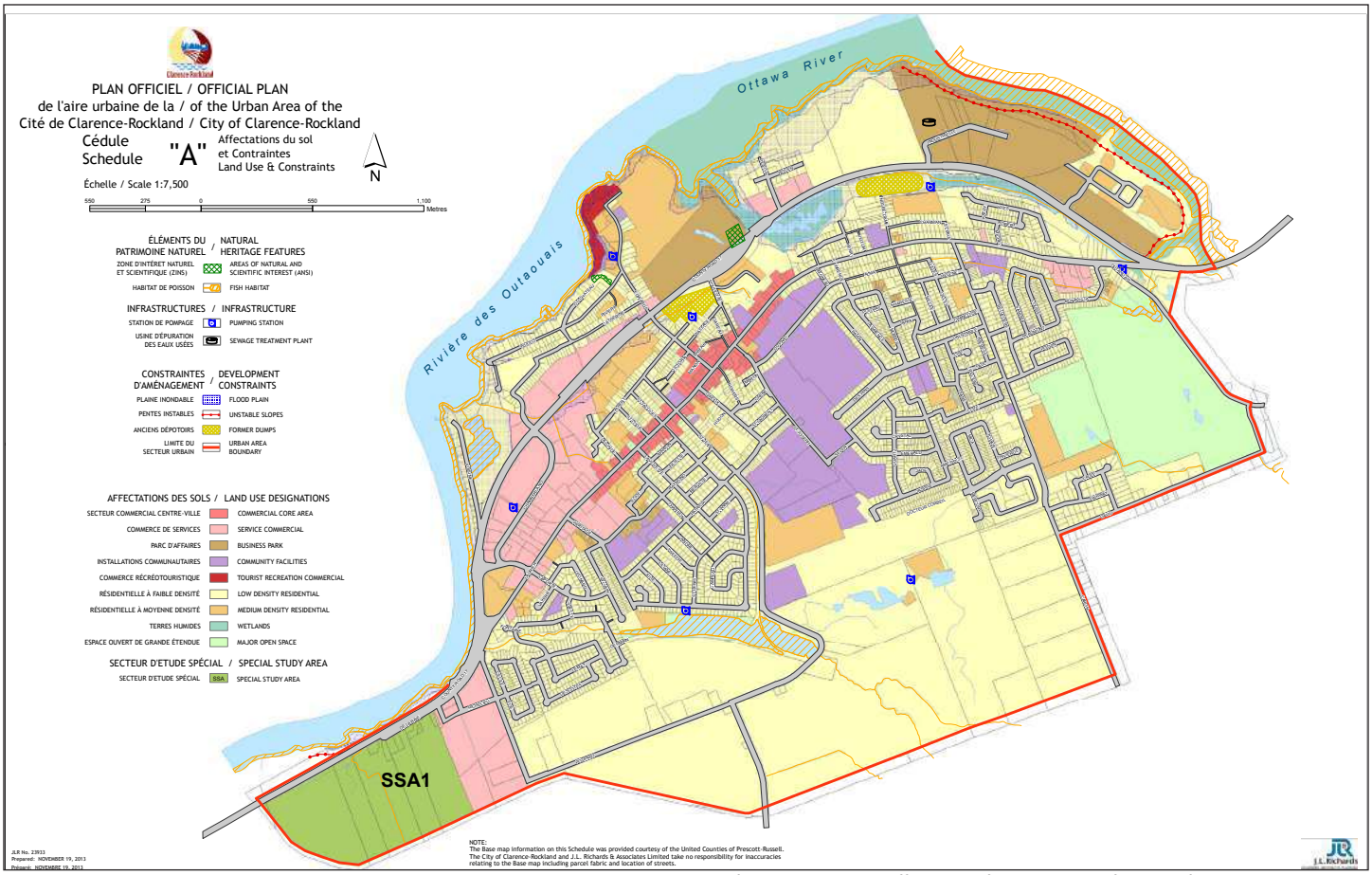


Figure 2.3 Existing Land Use in Rockland

Source: City of Clarence-Rockland - Official Plan of the Urban Area of the City of Clarence-Rockland, 2014

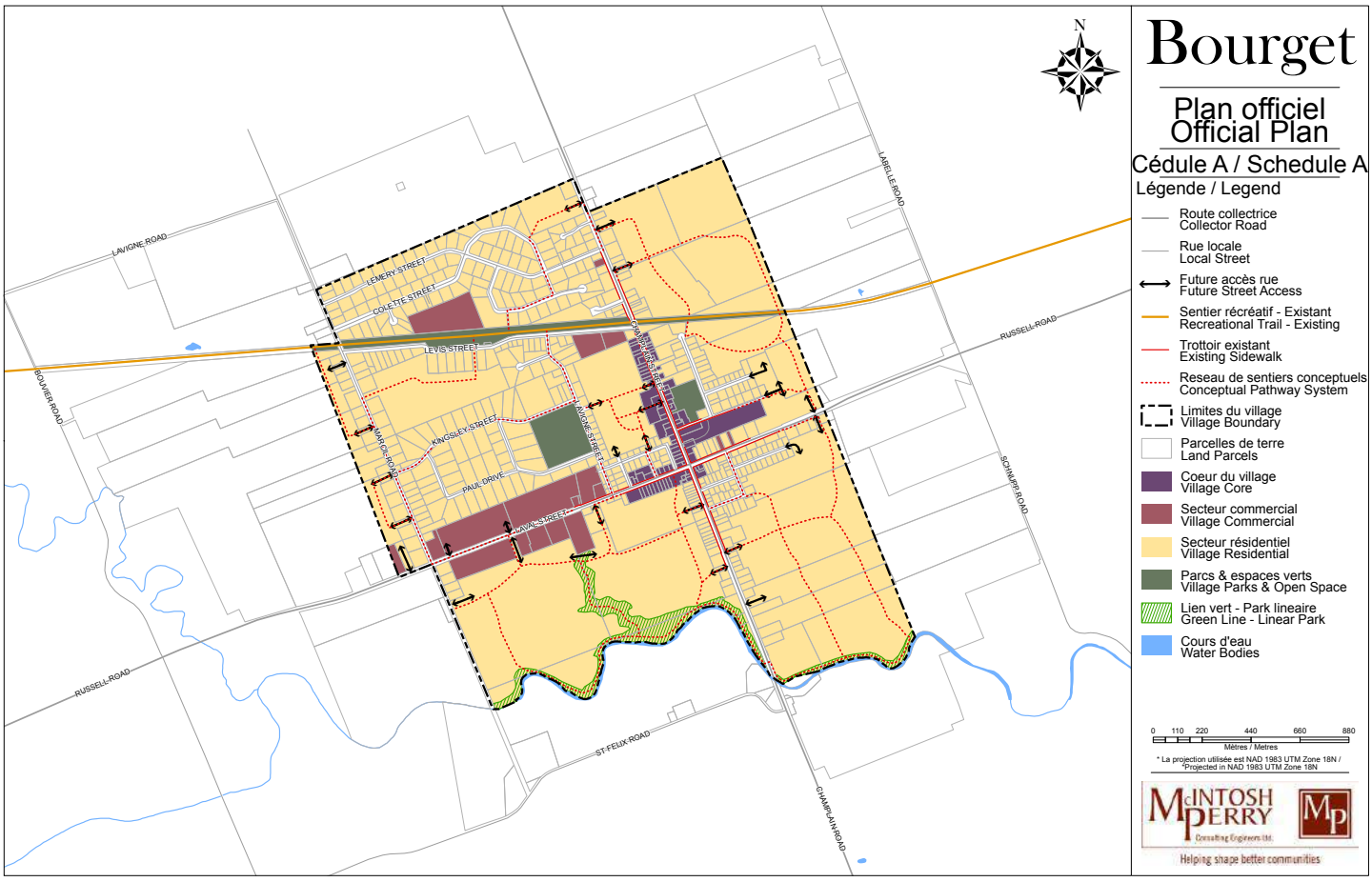


Figure 2.4 Existing Land Use in Bourget

Source: City of Clarence-Rockland - Bourget Official Plan, 2014

2.2 Multi-Modal Network

2.2.1 Road Classification

Per the City of Clarence-Rockland's Official Plan, the transportation infrastructure network consists of several different road types which are intended to serve and meet different objectives. The city's road classification system is visualized in **Figure 2.5** and consists of the following:

- **Arterial Roads:** Intended to carry high volumes of traffic at relatively high speeds and to connect major traffic generators. All Arterial Roads within Clarence-Rockland are under the jurisdiction of the United Counties of Prescott and Russell, including entrance permits, signage, building form and location and land use. Limited access control is provided to and from arterial roads for land service and access. Arterial roads within the City have been designed to accommodate approximately 20,000 vehicles per day, have uninterrupted flow, have a design speed between – 70 - 90 km/h, accommodate all vehicles including trucks, and connect with other arterials and collector roads. Parking restrictions include no on-street parking;
- **Collector Roads:** The City of Clarence-Rockland distinguishes between Major and Minor Collector Roads. Major Collector Roads are intended to distribute traffic from the interior of residential communities or areas of industrial and commercial development to the Arterial Road Network. A secondary function of Major Collectors would be the servicing of abutting properties, although, in some cases, it may be desirable to restrict access onto them. This access should be limited to commercial properties and medium density residential development (i.e., apartment buildings). Minor Collector Roads are intended to distribute traffic from the interior of residential neighbourhoods to a Major Collector Road or Arterial Road. An equal function is to serve abutting properties. Collector roads serving residential areas are designed to accommodate approximately 8,000 vehicles per day. Collector roads serving industrial and commercial areas have been designed to accommodate approximately 1,000 – 12,000 vehicles per day. Collector roads will have an "interrupted flow" characteristic, will have a design speed between 50 – 60 km/h, and will accommodate a wide range of vehicle types including: passenger, service, industrial and commercial vehicles.
- **Local Roads:** For roads classified as local within the City, traffic movements are considered secondary, and the primary function of these roads are to provide access to individual properties. Local roads servicing residential areas have been designed to accommodate approximately 1,000 vehicles per day, and local roads serving commercial areas have been designed to accommodate approximately 3,000 vehicles per day. Local roads have the flow characteristic of interrupted flow, have a design speed between 30 – 50 km/h, and accommodate passenger and service vehicles of all types. Local roads will connect with public lanes, other local roads, and collector roads. Transit services are generally avoided on local roads. There are typically no parking restrictions for local roads, but parking is typically limited to one side of the street and some roads are too narrow to permit parking. The minimum spacing of intersections on local roads is 60 metres.
- **Private Road and Public Lanes (Residential and Commercial):** The primary function of private roads and public laneways is to provide access to properties. In residential areas these roads will typically carry less than 500 vehicles per day. In a commercial area they may carry up to 1,000 vehicles a day. Private roads and public laneways have the flow characteristic of interrupted flow, have a design speed between 30 – 40 km/h, and accommodate most types of passenger and service vehicles. These roads will connect with only other public lanes and local roads. Transit services are not permitted on this road classification. There are some parking restrictions. The minimum spacing of intersections on private roads and public laneways is as needed.

2.2.2 Commercial Vehicle Network

Commercial vehicles comprise an important component of the multi-modal transportation network particularly with regards to employment and economic activity, however they also present several concerns regarding wear and tear on infrastructure and safety. Clarence-Rockland's road network generally allows trucks along arterial roadways with restrictions on collector and local roadways as shown in **Figure 2.6**. These restrictions generally allow for the movement of trucks through the city via high-volume corridors.

It is important to note that the United Counties of Prescott & Russell have a permit requirement for oversized loads that exceed the dimensions and/or weight prescribed in the Highway Traffic Act on County Roads. This permit costs $200 and requires a private escort to lead and follow vehicles. Oversize loads put physical strain on roadway infrastructure and require routes that can physically accommodate them. While the County has an oversize load permit system, the City of Clarence-Rockland currently does not.

Figure 2.5
Existing Road Classification according to the Official Plan

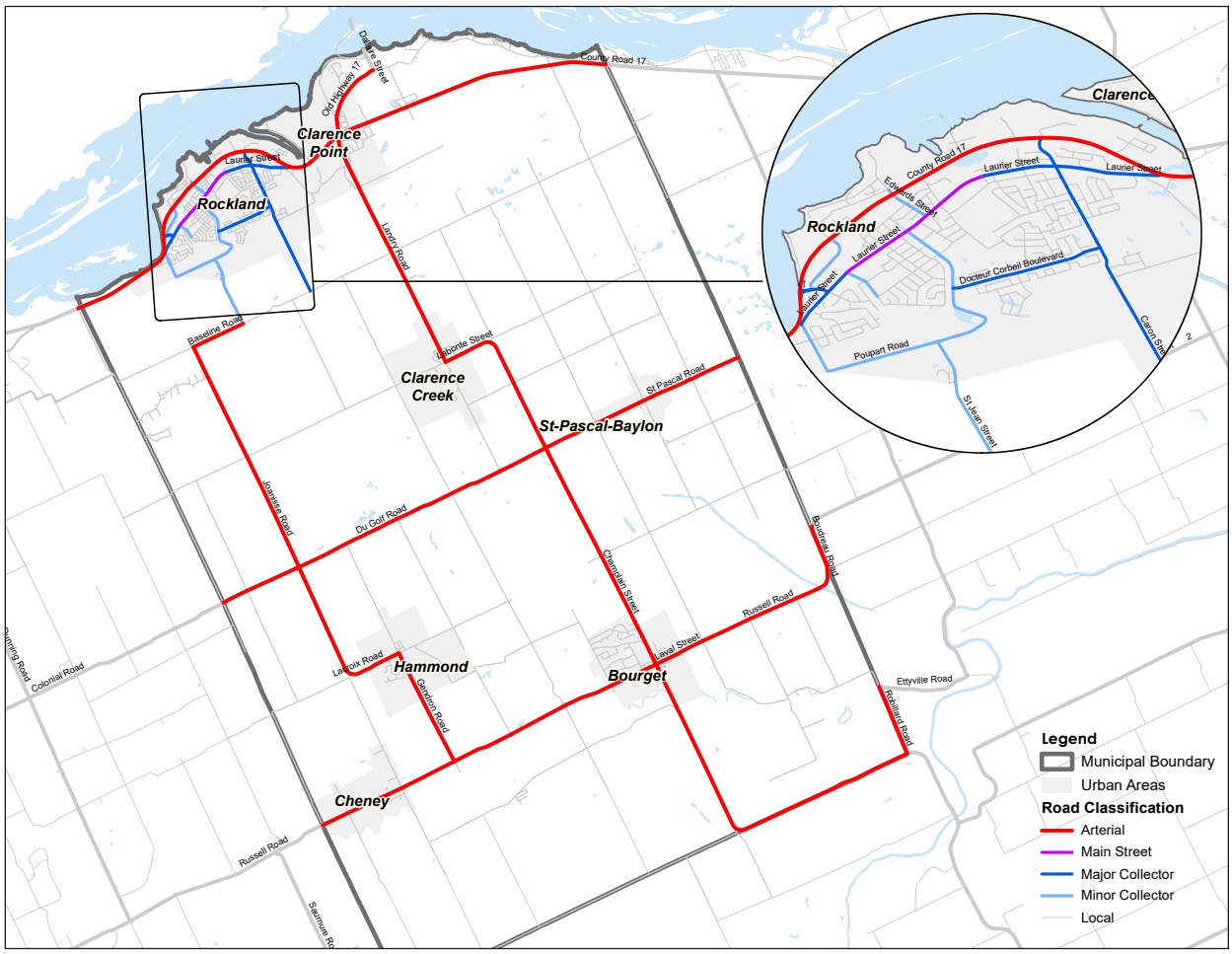
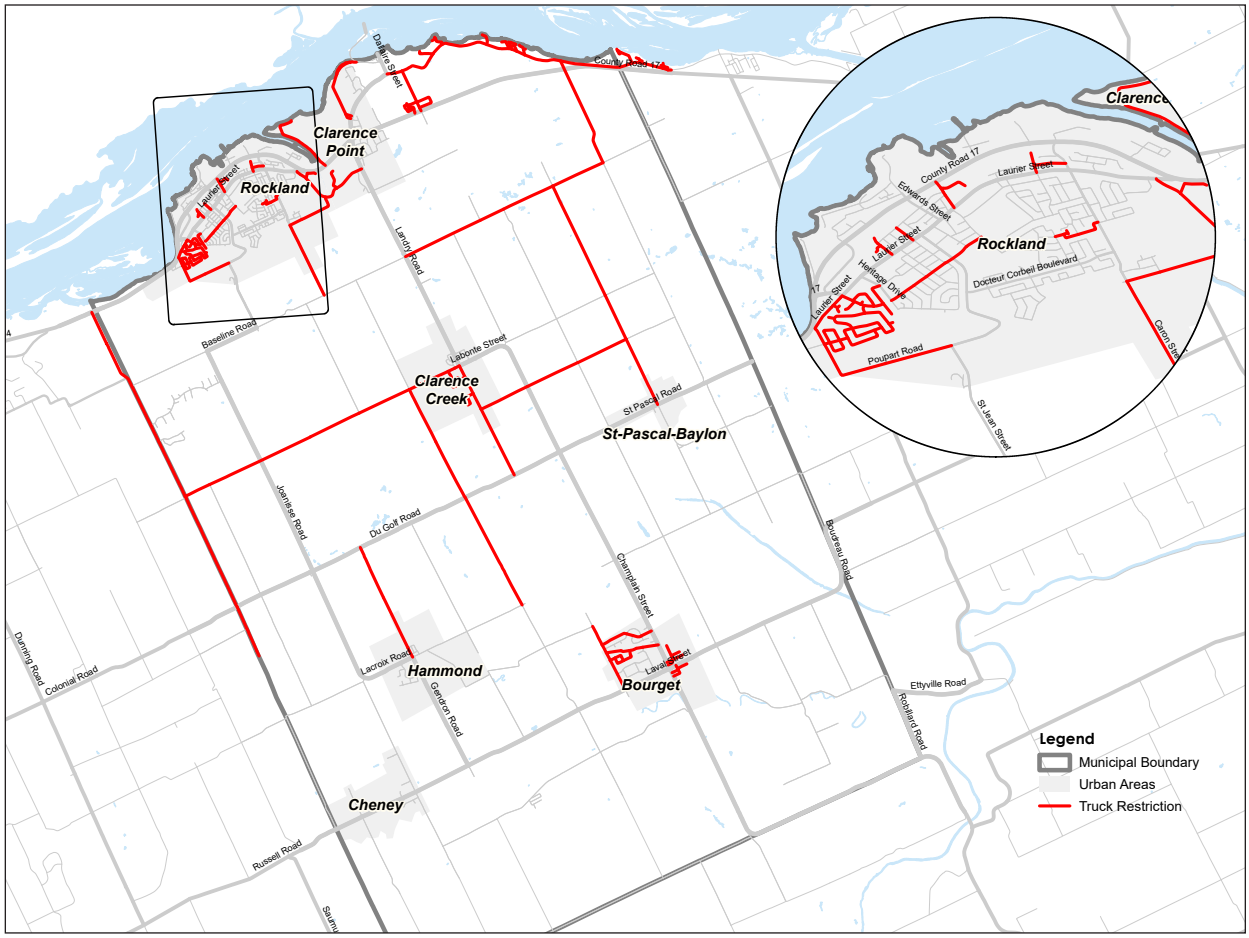


Figure 2.6
Existing Truck Restrictions



2.2.3 Transit Network

The City of Clarence-Rockland introduced a commuter transit service to the City of Ottawa for residents in 2003 with one route and then expanded to a second route. The CR Transpo service is partially subsidized by the City and is run by a private bus company, Leduc Bus Lines. Those who commute into Ottawa-Gatineau for work can take advantage of a total of 16 runs on two routes, each weekday, throughout most of the year (during the summer, service is decreased slightly) which presents challenges for residents who may not work a conventional 9-5 job in Ottawa.

Route 530 provides service from Clarence Creek, Clarence Point and Rockland to stops in Ottawa along Highway 174 and Downtown, as well as one stop in Gatineau running between 8 and 11 times per day, depending on the time of year (see **Figures 2.7** and **2.8** for routing). The second route, Route 535, serves the communities of St. Pascal-Baylon, Hammond, Cheney and Bourget providing commuter connections to Downtown Ottawa and one stop in Gatineau running two to three times per day depending upon the time of year. Neither route provides an internal connection between Rockland and the southern settlement areas of Bourget, Hammond, and Cheney which relegates the transit service to be most amenable toward external commuter travel between Ottawa-Gatineau and Clarence-Rockland.

Only 25% of Clarence-Rockland's urban areas are within 400m of a transit stop, as highlighted in **Table 2.3** and visualized in **Figure 2.7**. In light of the low coverage offered by the service, both routes service park-n-ride lots at several locations that provide an option for rural residents that live further away from a bus stop to utilize the service and mitigate the need for driving along County Road 17.

Both routes have been experiencing declining ridership over the past few years resulting in a 12% decline since 2015 as summarized in **Table 2.4**. The bulk of the system's ridership is based along Route 530 between the urban settlement areas of Clarence Creek, Clarence Point, and Rockland as highlighted by that route's higher ridership compared to Route 535.

The highest utilized transit stops are consistent with overall ridership trends and are found along Route 530 within Rockland, many of which are Park-N-Ride stops. **Table 2.5** summarises the top utilized transit stops highlighting a trend that ridership is generally higher in more populous centres like Rockland or Clarence Creek.

Table 2.3 Percentage of Settlement Areas within walking distance to Transit

Community	Total Area (km^2)	Area within 400m (km^2)	%
Rockland	12.1	4.7	39.0%
Bourget	4.6	1.4	30.4%
Clarence Creek	4.7	0.7	15.2%
Clarence Point	5.7	0.5	9.1%
Cheney	3.2	1.0	32.4%
Hammond	4.7	0.5	11.0%
Saint Pascal Baylon	1.5	0.3	21.6%
Total	**36.5**	**9.2**	**25.2%**

Table 2.4 Historical Ridership | 2015-2017

Total Yearly Ridership					
Route	**Period**	**2015**	**2016**	**2017**	**%**
530	AM	66,043	62,153	58,256	-12%
	PM	62,906	58,868	53,729	-15%
535	AM	11,766	12,270	11,019	-6%
	PM	10,735	10,978	10,245	-5%
Total		**151,450**	**144,269**	**133,249**	**-12%**

Source: Leduc Bus Lines Ltée - Rapport périodique, 2018

Table 2.5 Existing Top 5 Ridership stops | AM Period

Rank	2017	
	Stop	**Ridership**
1	McDonald's	11,174
2	Eglise Ste-Trinite Church	9,856
3	687 Laurier Street	8,664
4	Arena Clarence Arena	5,854
5	Cercle Henrie Circle	2,889

Source: Leduc Bus Lines Ltée - Rapport périodique, 2018

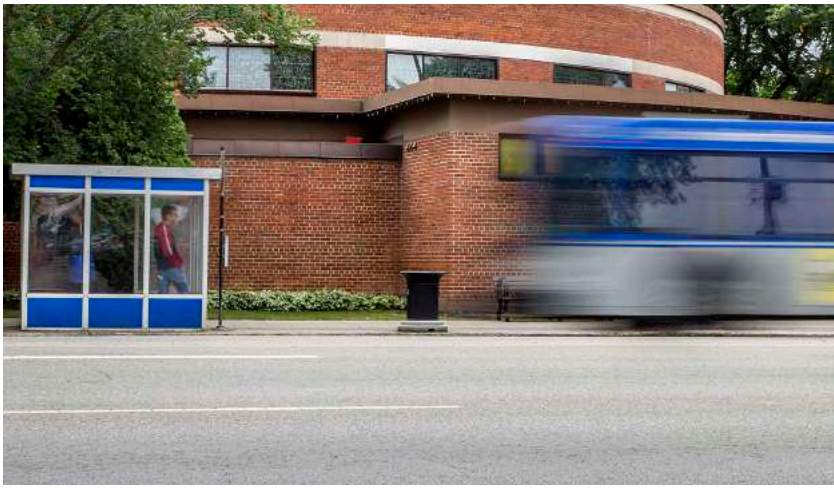


Figure 2.7
Existing CR Transpo Routes with stops and walking buffers

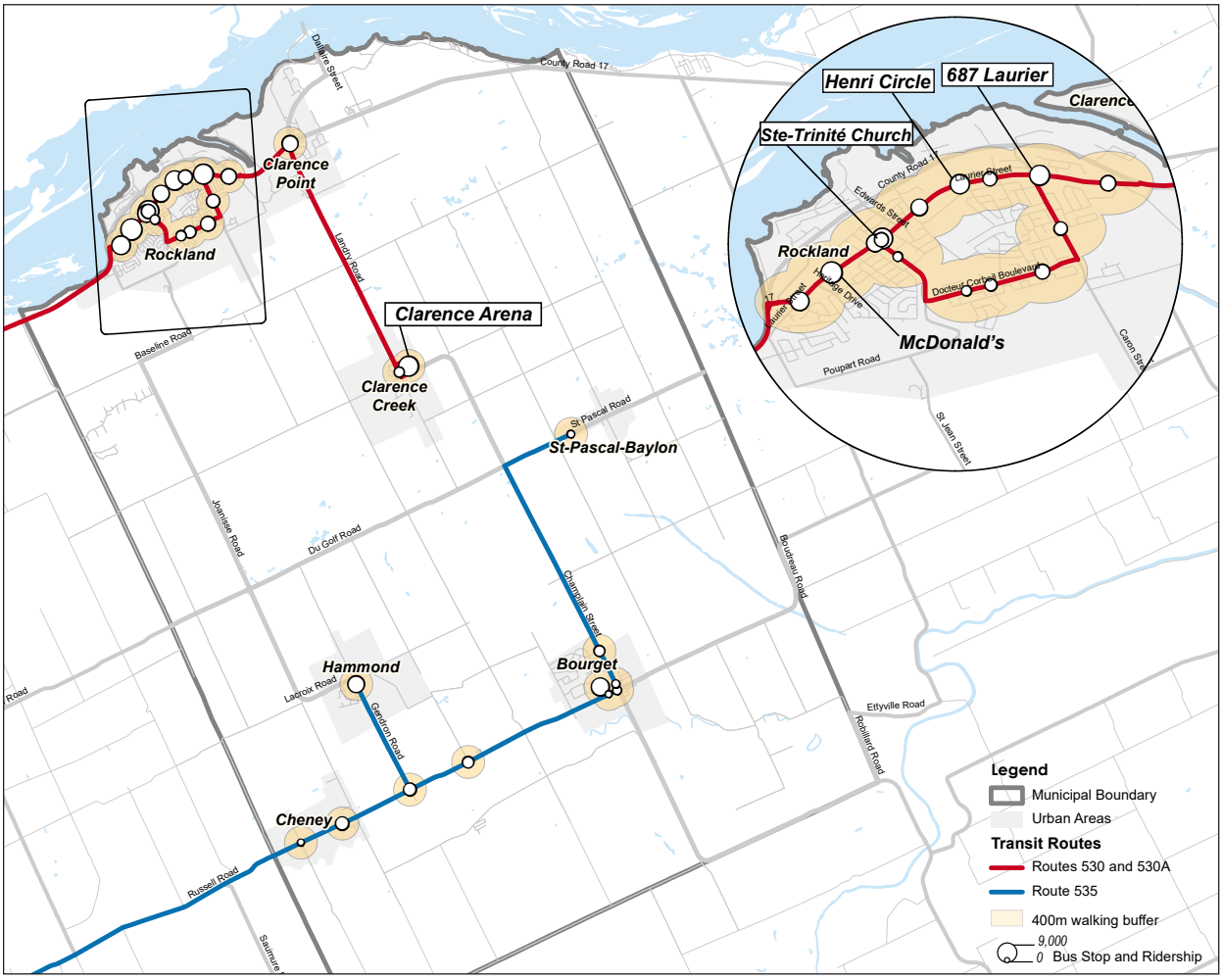
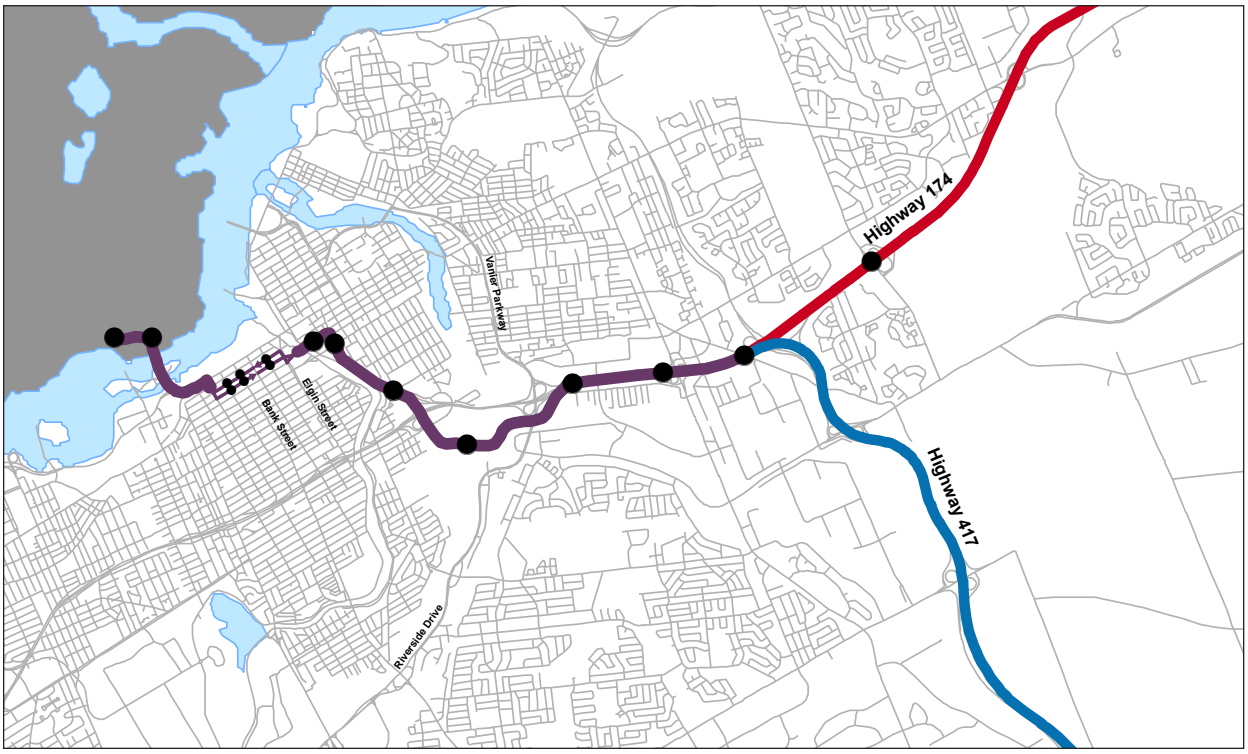


Figure 2.8
Existing Downtown routing for CR Transpo



2.2.4 Active Transportation

Clarence-Rockland's cycling network infrastructure is primarily comprised of Paved Shoulders and Multi-Use Trails with small sections of bike lanes along Docteur Corbeil Boulevard, St. Joseph Street, and Chamberland Street as shown in **Figure 2.10**. These facilities culminate in approximately 47km of cycling infrastructure throughout the City.

The existing pedestrian network is comprised of a mixture of sidewalks and multi-use trails primarily focused on providing links between schools and local residential neighbourhoods. Pedestrian sidewalks are only found within Clarence-Rockland's urban areas and comprise a combined total of 53 km of pathways, the majority of which are found within Rockland as shown in **Figure 2.11**.

Most sidewalk pathways create a connected network with crossing points via signalized intersections along Laurier Street and County Road 17, as well as crosswalks and all-way stops along county roadways outside of Rockland. While major roadways within the rural settlement areas provide some form of pedestrian infrastructure, there are few mid-block pedestrian crossings or sidewalks on local streets for easier and safer access to residential properties.

The urban form and layout of the road network within Rockland follows a suburban form with smaller pockets of a grid network, particularly closer to Laurier Street. The impacts of this form of road network creates large circuitous blocks that often require pedestrians to walk further to access collectors and activity centres. This can be seen in the wire diagram depicted in **Figure 2.9** that shows large blocks south of Laurier Street that are often a result of schools and their associated sport facilities and yards.

Figure 2.9 Rockland Road Network Wire Diagram

"Great reworking of St-Joseph road in front of école élémentaire catholique Sainte-Trinité. Love the cross walk and the speed bumps."

- Annonymous survey respondent

Figure 2.10
Existing Cycling Network

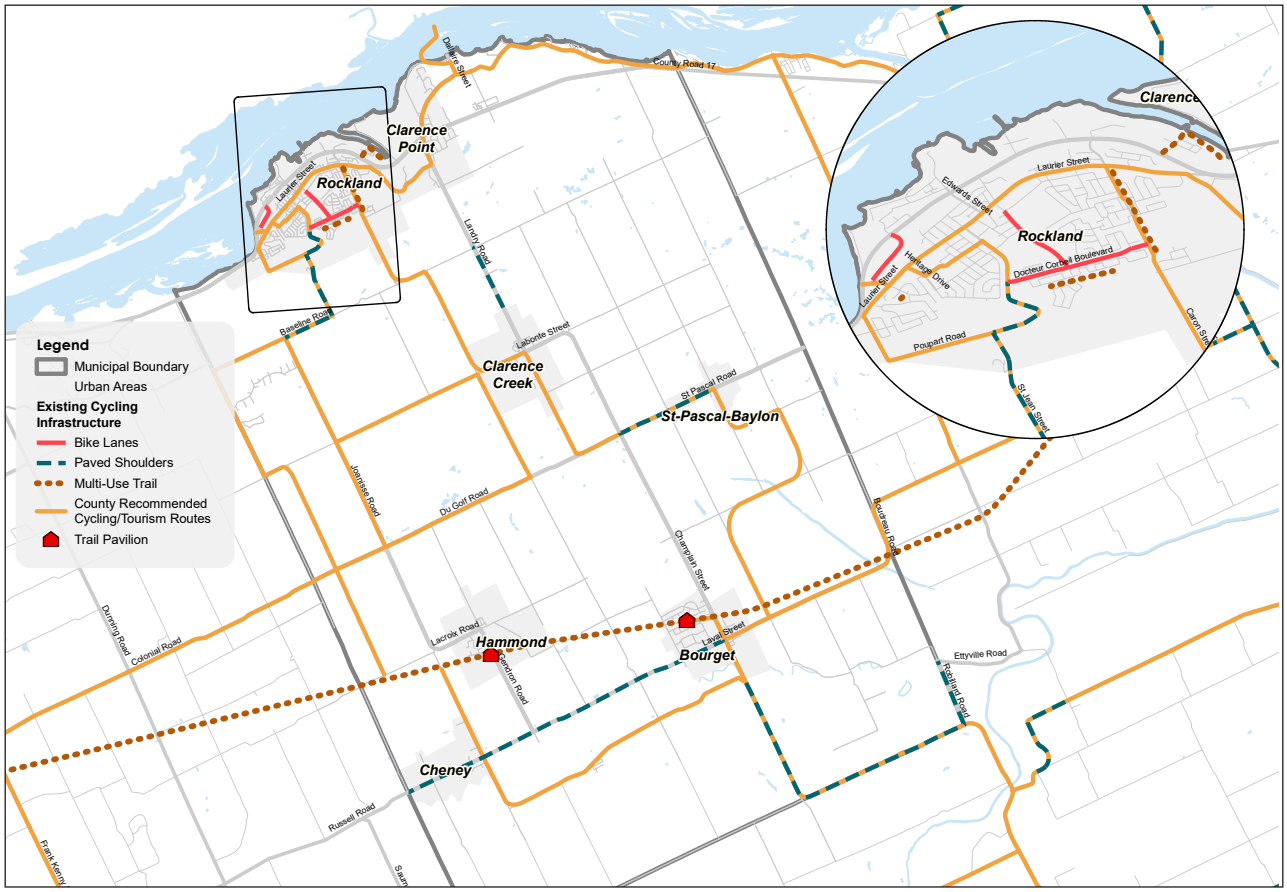
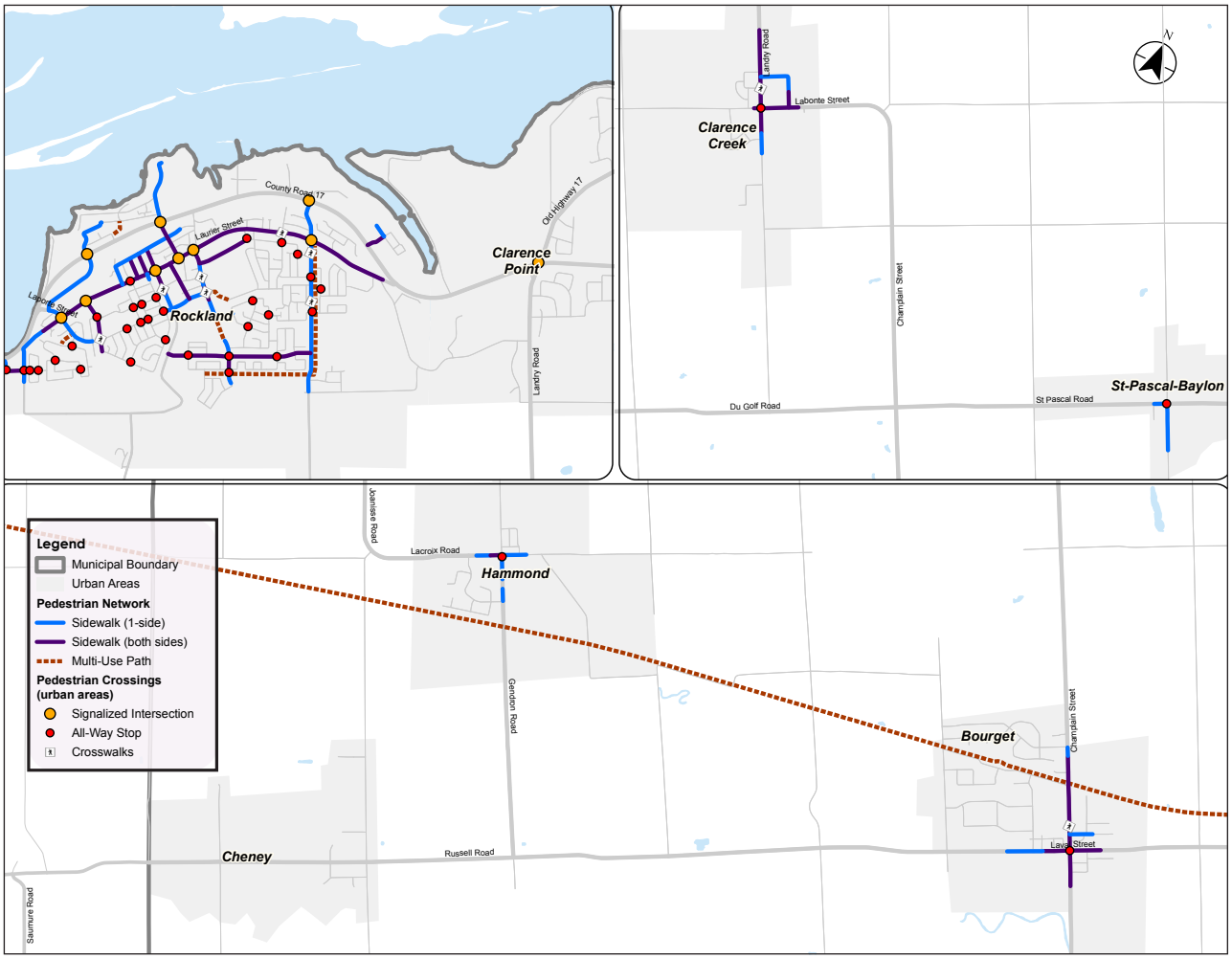


Figure 2.11
Existing Pedestrian Facilities in Settlement Areas



2.3 Travel Characteristics

2.3.1 Trip Distribution

Clarence-Rockland is part of the Ottawa-Gatineau CMA and the Ottawa Economic Region. As a result, a large percentage of the City's labour force commute to the National Capital Region for employment.

The majority of the City's population (64%) works in the City of Ottawa, and a quarter of the population (26%) live and work within Clarence-Rockland. The total number of commuters from the City has decreased by about 360 people, or 0.7% annually, between 2011 and 2016 – a trend that is similar to the overall labour market. Clarence-Rockland is a commuting destination for approximately 1,600 people who live in surrounding areas to work in the City. **Table 2.6** shows the geographic distribution of external population who work in Clarence-Rockland as well as the geographic distribution of where Clarence-Rockland residents work.

Table 2.6 Geographic Distribution of Census employment to/from Clarence-Rockland

Municipality	C-R Residents employed	%	Change (2011-2016)	External Residents employed in C-R	%	Change (2011-2016)
Internal	2,635	26%	(200)	2,635	62%	(200)
Ottawa	6,505	64%	(185)	620	15%	235
Gatineau	430	4%	90	85	2%	(20)
Alfred & Plantagenet	135	1%	(50)	645	15%	165
Russell	120	1%	(30)	35	1%	(30)
The Nation	95	1%	15	115	3%	(60)
Champlain	75	1%	10	45	1%	(40)
Hawkesbury	65	1%	5	50	1%	(35)
Other External East	30	0%	(5)	40	1%	(25)
Other External West	20	0%	(5)	0	0%	0
Other External South	105	1%	(5)	0	0%	0
Total	**10,215**	**100%**	**(360)**	**4,270**	**100%**	**(10)**

Source: Statistics Canada - Commuter Flows, 2016

Generally, Clarence-Rockland can be described as a bedroom community for Ottawa-Gatineau with 68% of residents in Clarence-Rockland working jobs in those two municipalities. Furthermore, local residents make up the majority of employees for local jobs with only a small portion of internal jobs being filled by external residents highlighting that there is a stronger employment pull out of Clarence-Rockland than into Clarence-Rockland.

The aggregated commuter flows, including the distribution of where local residents work, and the distribution of where external residents who work in Clarence-Rockland come from, identifies an overall commuting trend where 64% of work-related trips are going to/from Ottawa-Gatineau, 22% live and work within Clarence-Rockland, and 14% of work-related commuter flows are associated with other surrounding areas as visualized in **Figure 2.12**.

Census employment data was compared with travel demand data from the National Capital Region (NCR) External Travel Survey (ETS) prepared by the TRANS

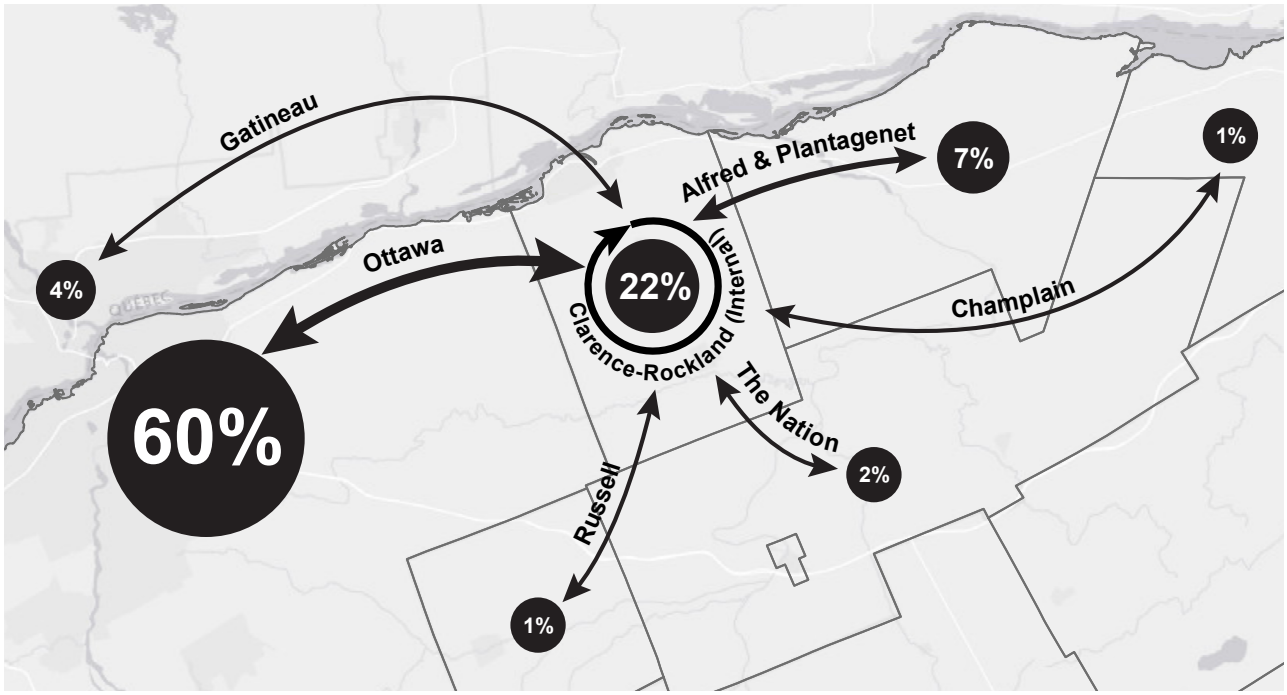


Figure 2.12 Existing (2016) Aggregated Census Commuter Flows to and from Clarence-Rockland

Committee. The committee is managed by six members at three levels of government in the National Capital Region including the National Capital Commission, the Ministère des Transports du Québec, the Ministry of Transportation of Ontario, la ville de Gatineau, the City of Ottawa, and the Société de transport de L'Outaouais.

The TRANS committee conducts transportation planning studies periodically in the NCR, as well as collects and manages transportation data that are integral to any transportation analysis work in the area. Although the main area of analysis for TRANS are in the NCR, the committee has also conducted studies that capture travel patterns to and from jurisdictions outside of the NCR, one of which is the National Capital Region External Travel Survey (ETS). The latest ETS was conducted in the spring/summer of 2009.

The survey data was collected at major road entries between the NCR and the external municipalities. Three major road entries between the NCR and Clarence-Rockland were captured in the survey including: County Road 17, County Road 1 (Du Golf Road) and County Road 2 (Russell Road).

The results of the survey show that the majority of trips to the NCR from Clarence-Rockland in the AM Peak Period are work or work-related (88%) as summarised in **Table 2.7**. Orleans is the most common destination for these trips likely due to its close proximity to Clarence-Rockland and its relatively strong retail presence. Other major destinations for trips into the NCR are centred around major employment areas in Ottawa such as Ottawa Centre and Alta Vista. These three areas account for 50% of all trips into the NCR as summarised in **Table 2.8**.

This adds an additional layer of understanding behind census data that emphasizes Clarence-Rockland's bedroom community relationship with the neighbouring Ottawa-Gatineau area. The comparison shows an unbalanced relationship where flows out of Clarence-Rockland outnumber flows into the City at a ratio of 1:5 with a clear westward demand in the AM Peak Period and a reciprocal eastward demand in the PM Peak Period.

Table 2.7 ETS Trip Purpose for trips to/from Clarence-Rockland in the AM Peak Period

Trip Purpose	From Clarence-Rockland		To Clarence-Rockland	
	Volume	%	Volume	%
Work or Work Related	3,200	88%	390	53%
School	50	1%	0	0%
Leisure	60	2%	180	25%
Serve Passenger	80	2%	10	1%
Return Home	20	1%	90	12%
Shopping	100	3%	10	1%
Medical	90	2%	10	1%
Other	40	1%	50	7%
Total	**3,640**	**100%**	**730**	**100%**

Source: National Capital Region - External Travel Survey, 2009

Table 2.8 ETS distribution of trips from Clarence-Rockland in the AM Peak Period

District of Destination	Trips	%
Ottawa Centre	370	10%
Ottawa Inner Area	310	9%
Ottawa East	270	7%
Beacon Hill	300	8%
Alta Vista	700	19%
Hunt Club	140	4%
Merivale	170	5%
Ottawa West	120	3%
Bayshore / Cedarview	80	2%
Orleans	710	20%
Rural East	170	5%
Rural Southeast	20	1%
South Gloucester / Leitrim	40	1%
South Nepean	10	0%
Rural Southwest	10	0%
Kanata / Stittsville	50	1%
Rural West	0	0%
Ile de Hull	70	2%
Hull Périphérie	30	1%
Plateau	0	0%
Aylmer	0	0%
Rural Northwest	0	0%
Pointe Gatineau	40	1%
Gatineau Est	0	0%
Rural Northeast	0	0%
Buckingham Masson-Angers	20	1%
Total	**3,640**	**100%**

Source: National Capital Region - External Travel Survey, 2009

"Transit system that can bring students to universities and colleges in Ottawa so that they can stay in Rockland and save money on housing. My son goes to Algonquin and rents because there is no transport to bring him to Orleans to get on the OC Transpo bus."

- Annonymous survey respondent

2.3.2 Trip Time

A travel time analysis between Clarence-Rockland's settlement areas and major employment areas within the National Capital Region was conducted. This analysis leveraged proprietary data to calculate an average peak hour travel time for each trip pair. Average travel times in the AM Period range between 23 and 47 minutes depending on where trips begin and end their journey. In the PM period there is a wider variance with travel times ranging between 26 and 56 minutes. This is also reflected in average travel speeds which decrease 10-15 km/h between the AM and PM periods. It is important to note that when compared with the national average commute time across Canada which is 26.2 minutes residents in Clarence-Rockland who travel to Downtown Ottawa are experiencing a commute well above that.

Considering the proportion of residents within Clarence-Rockland who work in the National Capital Region (as identified in the previous section of this document), existing travel times to key employment centres beyond the City's borders are an important consideration, particularly with regards to looking at alternative modes of transportation and opportunities to shift demand to transit. Longer travel times are typically more amenable to car travel, however, well-defined corridors can also be served by express or regional transit.

Table 2.9 Existing (2018) Peak Period Peak Direction Trip Times and Average Speed

Origin	Destination	Distance (km)	AM		PM	
			Outbound Avg Travel Time (min)	Outbound Avg Speed (km/h)	Inbound Avg Travel Time (min)	Inbound Avg Speed (km/h)
Clarence-Creek	Rockland	10.2	11	55.1	10	60.1
Bourget		21.5	20	64.2	20	54.2
Cheney		17.7	18	59.9	18	59.7
Hammond		15.9	16	59.9	16	59.8
Rockland	Orleans		23	62.0	26	55.3
	Train Station		31	68.5	42	51.3
	U of Ottawa		32	68.7	48	48.4
	Carleton		37	66.0	53	46.2
	Parliament		37	61.5	51	45.7

The results of the external travel time analysis by period are summarised in **Table 2.9** and the PM Peak Period trip times are visualised in **Figure 2.13**.

A travel time analysis of internal trips between Clarence-Rockland's major communities, particularly Bourget, Cheney, Clarence-Creek, and Hammond to and from Rockland showed little variability between the AM and PM travel times, typically within the 20-minute range. This highlights that there is a fairly consistent travel experience for trips within the city while external trips are prone to requiring travellers to plan several minutes of contingency to account for the swings in travel time that are experienced.

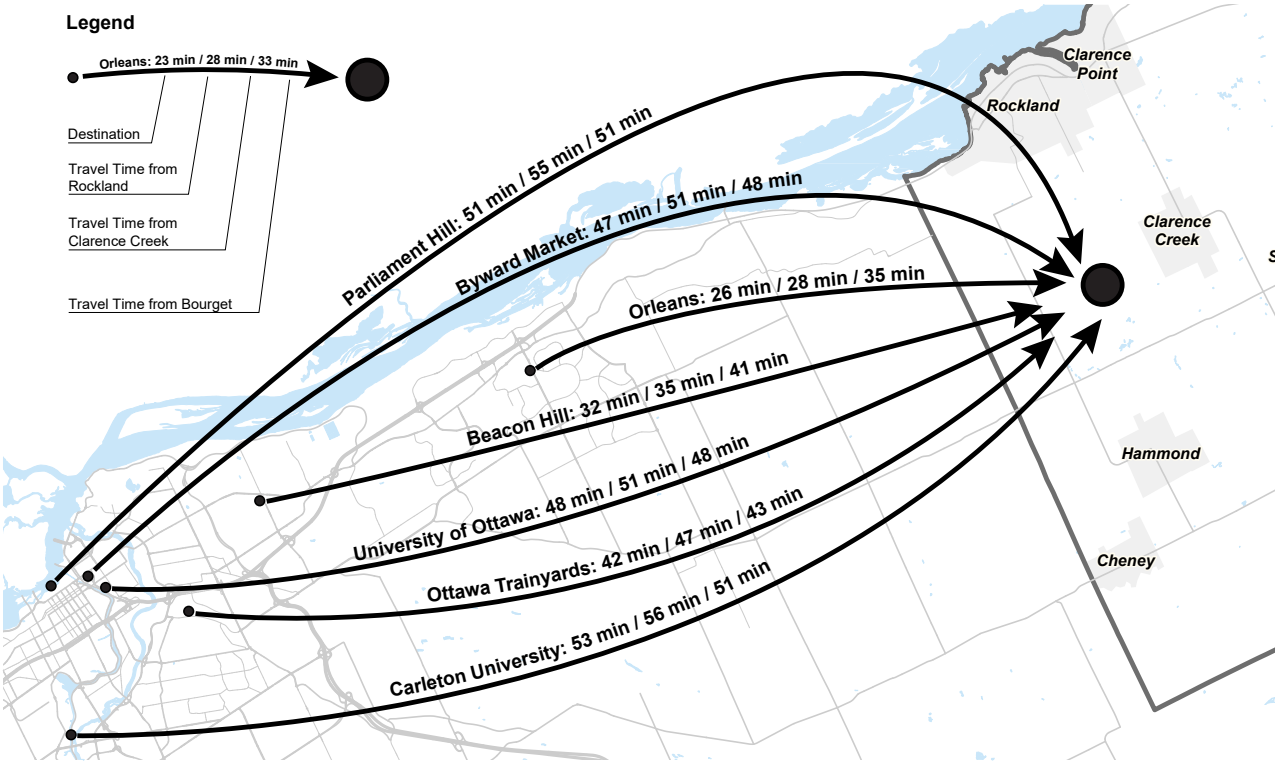


Figure 2.13 Existing (2018) PM Peak Period External Trip Times

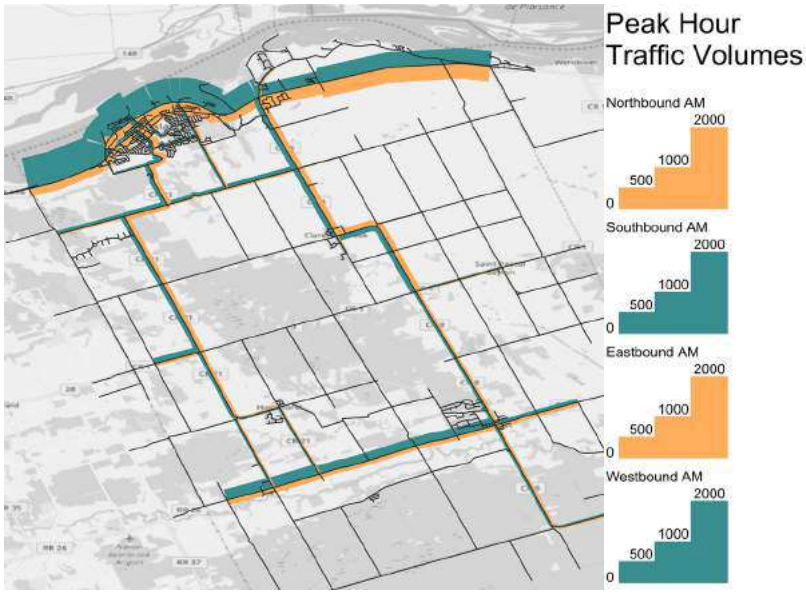


Figure 2.14 Existing AM Peak Hour Trip Volumes

Figure 2.15 Existing PM Peak Hour Trip Volumes

Table 2.10 Existing AM and PM Peak Hour Roadway Volumes by Direction

Location	Direction	Peak Hr Volume		Number of Lanes
		AM	PM	
County Road 17, west of Carmen Bergeron Street	Eastbound	471	1,167	1 Lane
	Westbound	854	643	1 Lane
County Road 17, west of Landry Street	Eastbound	273	692	1 Lane
	Westbound	653	575	1 Lane
County Road 17, west of Ramage Road	Eastbound	234	592	1 Lane
	Westbound	559	492	1 Lane
Joanisse Road, north of Vinette Road	Eastbound	177	178	1 Lane
	Westbound	162	258	1 Lane
Landry Street, south of Baseline Road	Eastbound	189	190	1 Lane
	Westbound	173	276	1 Lane
Russell Road, east of Indian Creek Road	Eastbound	183	531	1 Lane
	Westbound	366	177	1 Lane
Russell Road, east of Legault Road	Eastbound	144	418	1 Lane
	Westbound	288	139	1 Lane
Russell Road, east of Labell Road	Eastbound	26	108	1 Lane
	Westbound	215	203	1 Lane
Champlain Road, south of Saint Félex Road	Eastbound	91	92	1 Lane
	Westbound	83	133	1 Lane

2.3.3 Trip Volumes

Figures 2.14 and **2.15** show the 2018 peak hour volumes during the AM and PM for major corridors within Clarence-Rockland. Aligning with trip distribution data, large volumes of traffic use County Road 17 and Russell Road to travel between the National Capital Region and Clarence-Rockland, as well as service pass-through trip demand from places east of Clarence-Rockland, such as other municipalities within the United Counties of Prescott & Russell and Montreal. There is also some notable traffic volume that utilizes the north-south corridors of Joanisse Road and Champlain Road connecting the City's settlement areas.

Peak hour volumes on County Road 17 west of Carmen Bergeron Street are substantial with peak directional volumes fluctuating between 850-1,170 vehicles an hour between the morning and afternoon. Typically, when a roadway's peak volumes begin reaching between 800-1,000 vehicles an hour the roadway is monitored for the potential need for widening. This, however, is contingent on operations along the corridor. A summary of traffic volumes at key locations are summarised in **Table 2.10**.

The initial data source for these volumes were the County's traffic counts on County roads. To determine directional volumes in both peak hours, factors to convert from daily volumes to peak hour volumes were derived from County counts, while directionality factors were derived from the City of Clarence-Rockland's turning movement count program.

2.3.4 Intersection Operations

The quality of intersection operations at signalised and unsignalised intersections is evaluated in terms of level of service (LOS) and volume to capacity (v/c) as defined by the Highway Capacity Manual (HCM). LOS is evaluated on the basis of average control delay per vehicle and includes deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Capacity is evaluated in terms of ratio of demand flow to capacity with an at-capacity condition represented by a v/c ratio of 1.00 (i.e. volume demand equals theoretical capacity).

Under existing peak hour traffic conditions most intersections operate at acceptable levels of service meaning motorists experience few delays (LOS 'A'-'C') when moving through an intersection. Only two intersections operate at a LOS 'D' or worse which indicates that motorists may begin to experience noticeable delays (LOS 'D' or greater) as shown in **Figure 2.16**. The two intersections are: County Road 17 / Caron Street, and County Road 17 / Laurier Street.

Through movements at the County Road 17 / Caron Street intersection operate at their theoretical capacity during the peak direction as vehicles are going into Ottawa/ Clarence-Rockland from the east in the morning and leaving in the afternoon. It is important to note that although demand operates at capacity, the observed movement delays do not exceed the intersection's cycle length, which signifies that all traffic at the approach moves through the intersection within one signal cycle.

County Road 17 / Laurier Street is also impacted by high volumes of east-west traffic which impacts northbound movements, however overall movement delays and queues at the northbound movement and the westbound left-turn are within acceptable levels of service with 95th percentiles queues observed to be smaller than 5 metres and delays lower than 30 seconds in both peak hours. A detailed summary of intersection operations for these two intersections is provided in **Table 2.11**.

Table 2.11 Existing Peak Hour Level of Service Analysis at Constrained Intersections

Intersection	Direction/ Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
			LOS	V/C	Delay	Q	LOS	V/C	Delay	Q
County Road 17 / Caron Street Signalized	E	Left	E	0.28	57	1	E	0.26	59	1
		Through	C	0.59	29	8	F	>1.00	80	30
		Right	C	0.11	21	1	C	0.29	21	3
	W	Left	D	0.26	54	1	E	0.28	62	1
		Through	F	>1.00	81	25	C	0.55	26	8
		Right	B	0.02	19	<1	B	0.00	17	<1
	N	Left	C	0.28	23	3	C	0.22	27	2
		Thru/Right	C	0.05	27	1	C	0.11	32	1
	S	Left	B	0.01	20	<1	C	0.03	25	<1
		Thru/Right	C	0.04	26	<1	C	0.07	32	1
	Overall Intersection		E	0.63	55	-	D	0.68	53	-
County Road 17 / Laurier Street Unsignalized	E	Through	Unopposed Movement							
		Right	Unopposed Movement							
	W	Left	A	0.13	9	1	B	0.12	11	1
		Through	Unopposed Movement							
	N	Left/Right	B	0.15	14	1	D	0.53	29	3
	Overall Intersection		D	-	28	-	E	-	47	-

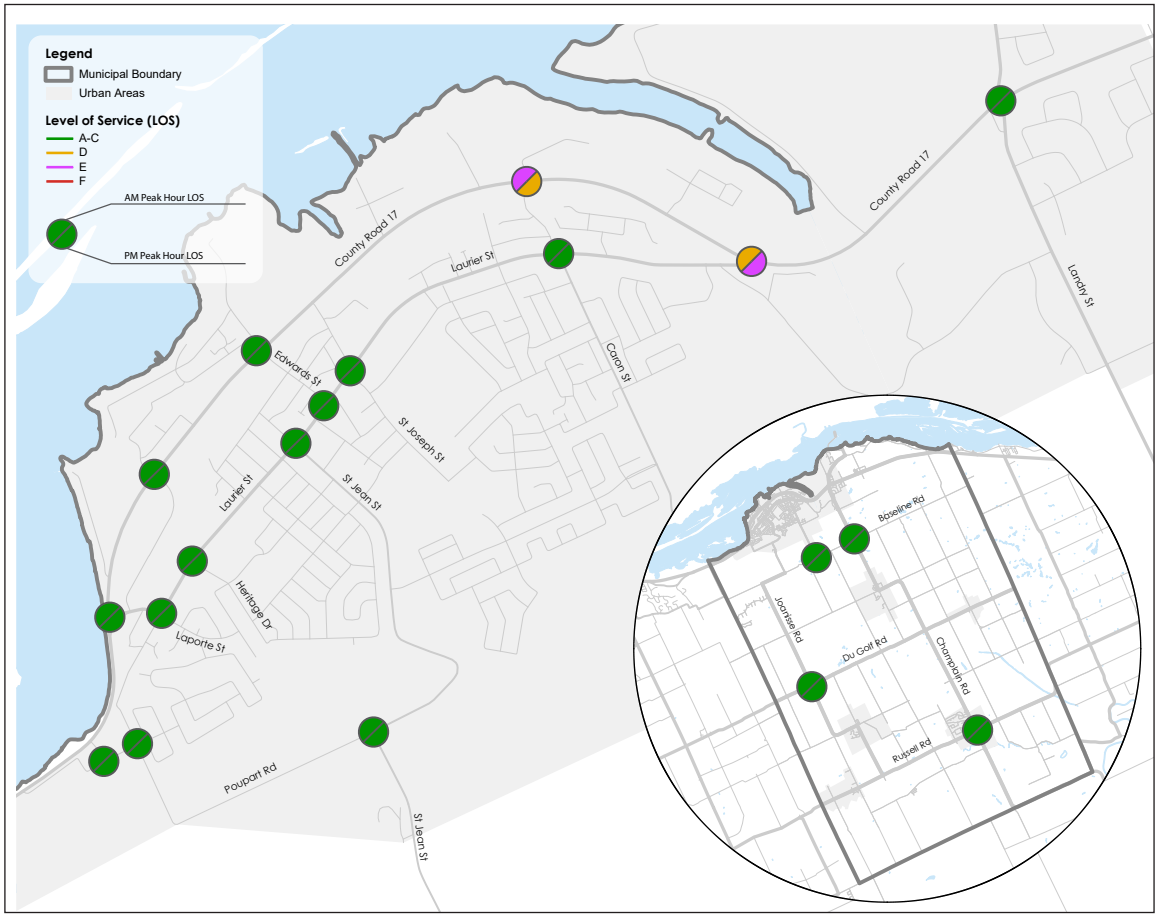


Figure 2.16 Existing Peak Hour Intersection Operations in Clarence-Rockland

2.4 What we heard

Survey respondents identified travel time as having the most influence on their transport mode choice followed by cost and reliability while health benefits and environmental impacts were identified as having the least influence as shown in **Figure 2.18**.

Trip distribution and census data show that a significant portion of residents work in Downtown Ottawa-Gatineau and these trips experience a longer commute time than the national average. This impacts travel time reliability as residents look for more stable and predictable commute times on their way to work, along with getting to work quicker. This has led to most residents using their automobile to get to and from work in the National Capital Region based on expanded online survey results as visualized in **Figure 2.19**. Despite automobiles having a clear advantage, transit accounted for 12% of external trips which confirms trip distribution data from the NCR External Transport Survey which showed most trips from Clarence-Rockland going to a few specific high-employment nodes in Ottawa, most of which are directly served by CR Transpo presenting an option for those trips.

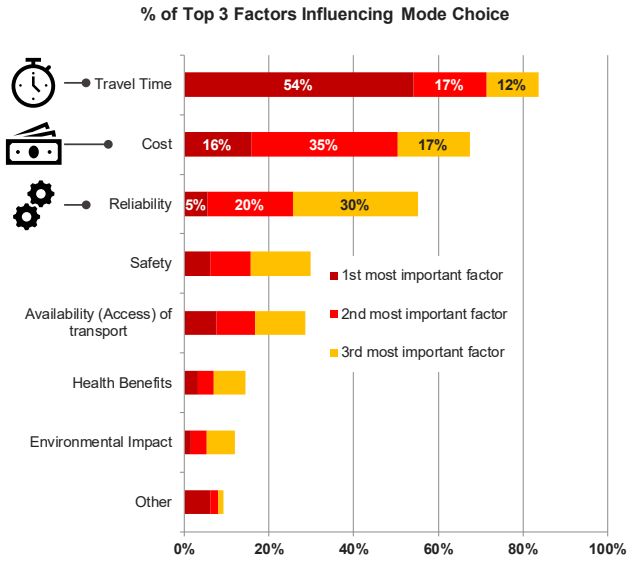


Figure 2.18 Top factors influencing mode choice from the MTMP online survey

Issues

Residents identified traffic congestion as the biggest mobility issue in the city, particularly on east-west corridors like County Road 17/ Highway 174, Laurier Street, Russell Road, and Poupart / St. Jean Street accounting for 52% of the transportation issues mapped by survey respondents. Dangerous conditions like speeding, or unsafe conditions for vulnerable road users like cyclists and pedestrians accounted for 26% of issues identified by respondents. Much of this focused along high-volume corridors that had fewer crossing opportunities for active transportation road users creating network barriers along County Road 17 and St. Jean Street.

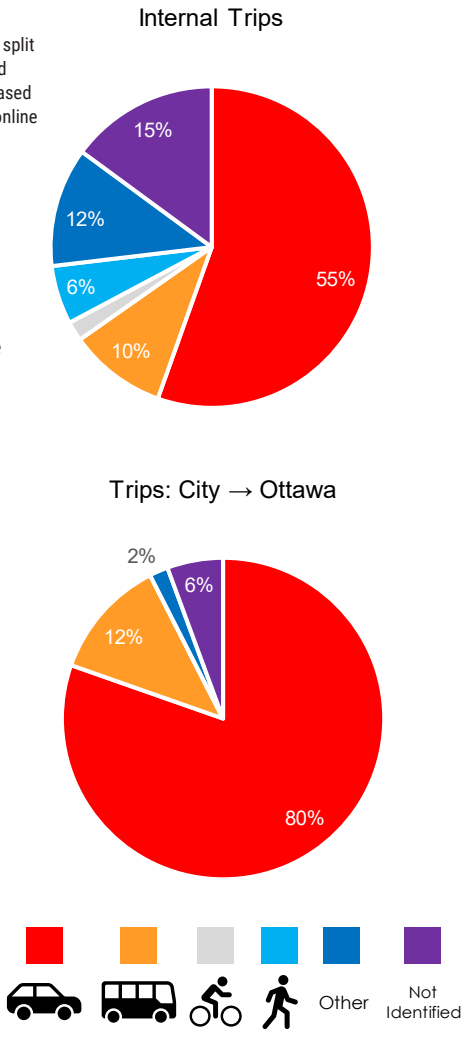


Figure 2.19 Existing mode split for internal and external trip based on expanded online survey results

While 12% of survey respondents identified as taking transit for work in Ottawa, there were several residents who pointed out several areas around Clarence-Rockland that were under-served by transit like rural and emerging Rockland neighbourhoods preventing them from using transit, while others highlighted that transit buses were often unreliable leading to occasions where they would arrive at stops with little space onboard.

High-volume areas in Rockland such as along Laurier Street in the commercial area near Carmen Bergeron Street were hotspots of issues as respondents identified several issues associated with the interaction between motorists, pedestrians and cyclists, particularly at intersections. Conversely, successful transportation areas were identified on several high-volume corridors, particularly because of the associated pedestrian infrastructure and signalized intersections that are present on those corridors.

Successes

Segments of infrastructure that overcame barriers or connected areas within Rockland were identified as successful areas on the transportation network. Signalized crossings along County Road 17 present a safe connection between the north and south side, while the new bike lanes along Docteur Corbeil Boulevard provide an east-west connection between new emerging neighbourhoods in the south-west areas of Rockland and more established neighbourhoods and commercial areas to the west. The Online Survey summary document can be found in **Appendix A** which provides the full survey results.

3.0 Future Conditions

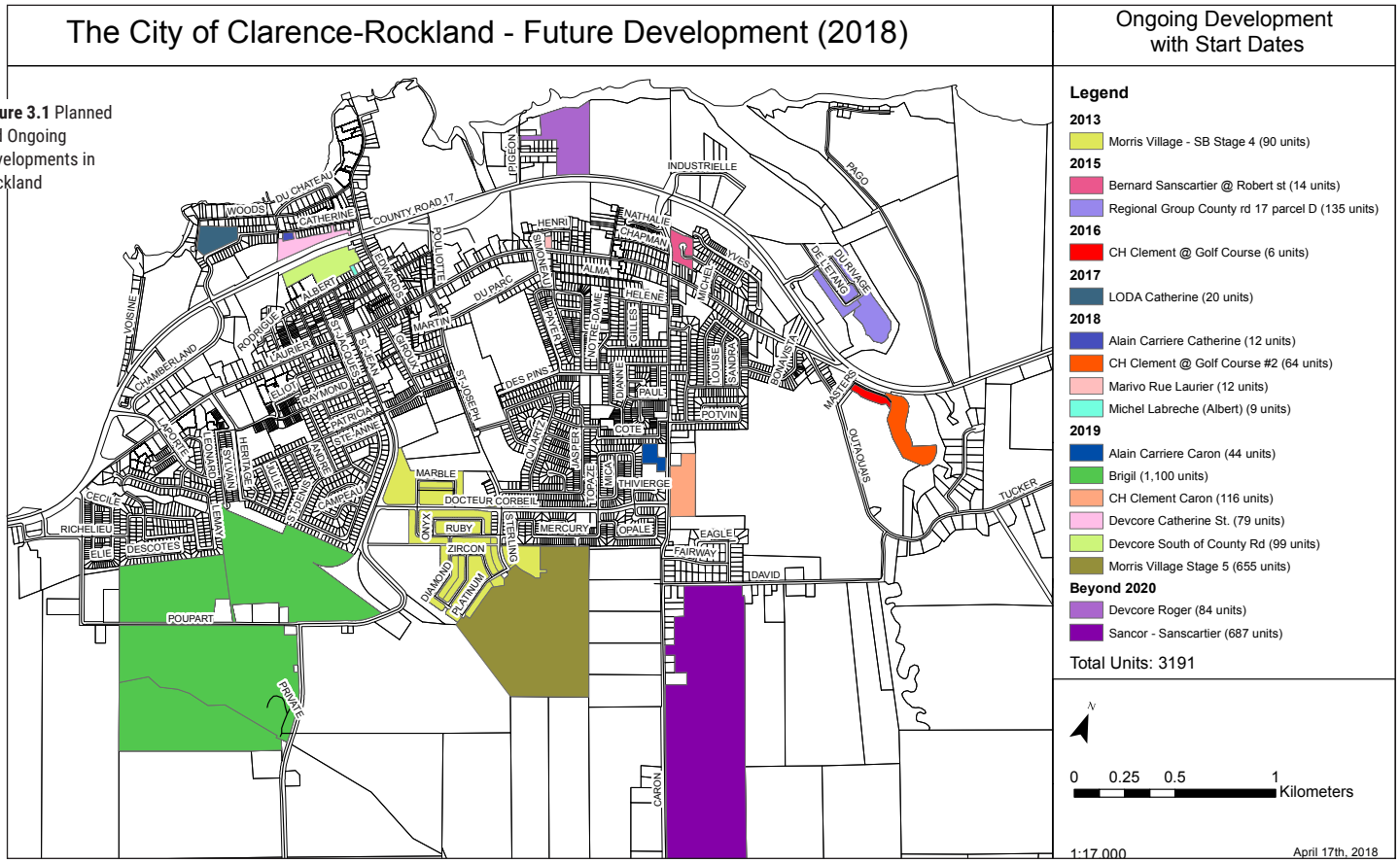


Figure 3.1 Planned and Ongoing Developments in Rockland

Source: City of Clarence-Rockland On-going development 2018 to beyond 2020

3.0 Future Conditions

3.1 Historical & Future Growth

In the ten-year period between 2006 and 2016, the City experienced an annual population growth rate of 1.7% adding approximately 4,000 new residents and accounting for almost half of all growth in the United Counties of Prescott & Russell (UCPR). One of the main reasons for this growth is likely Clarence-Rockland's proximity to the National Capital Region, attracting people that prefer a suburban or rural residential setting at a fraction of the cost but still within a reasonable travel distance to the employment opportunities in the NCR. **Table 3.1** shows the historic growth in population in Clarence-Rockland and the surrounding regions.

The majority of population growth within Clarence-Rockland has been focused in the urban settlement of Rockland which saw an increase to population by 1,322 people between 2011 and 2016, accounting for nearly all population growth in the City during this period as shown in **Table 3.2**.

According to City staff projections, over the next 15 years Clarence-Rockland is forecasted to experience a 36% increase in population by the year 2031, which would yield a population of around 33,200, or 8,700 new residents over existing levels.

Table 3.1 Historical Population Growth NCR area | 2006-2016

Jurisdiction	2006	2011	2016	Annual Growth (%)
Clarence-Rockland	20,800	23,200	24,500	1.7%
UCPR	80,200	85,400	89,300	1.1%
Ottawa-Gatineau	1,130,800	1,254,900	1,323,800	1.6%

Source: Statistics Canada - Community Profile, 2016

Table 3.2 Historical Population Growth in Clarence-Rockland | 2011-2016

Community	2011	2016	Difference
Rockland	10,980	12,302	1,322
Bourget	1,080	1,169	89
Clarence-Point	996	1,018	22
Clarence-Creek	270	257	(13)
Other Areas	9,859	9,766	(93)
Total	**23,185**	**24,512**	**1,327**

Source: Statistics Canada - Community Profile, 2016

Similar to historical growth, the majority of new residents are anticipated to be accommodated within Rockland, particularly on the southern edges of the urban areas as visualized in **Figure 3.1** showing the City's planned and ongoing developments.

With the advent of new developable areas in Clarence-Point and Clarence-Creek, coupled with their proximity to County Road 17, it is anticipated that these areas will also experience growth and accommodate approximately 18% of new residents through 2031 as summarised in **Table 3.3**. Both urban areas directly connect to County Road 17 providing an easy option for accessing areas within the NCR as most of Clarence-Rockland's external commuter trips are destined for Ottawa.

Most of the growth (54%) in the City is planned to be accommodated through low-rise singles, semis and townhouses. However, mixed-use development is also anticipated to be the single largest type of development and is forecasted to account for 46% of future developments as summarised in **Table 3.4**.

Mixed-use developments present an opportunity to bring a mixture of land uses and development types together to promote higher densities, transit-oriented, active transportation, as well as live/work opportunities.

Despite growth in population, employment is expected to grow at a significantly lower rate, only adding approximately 450 new jobs over existing levels by 2031 creating disproportionate growth in population compared to jobs at a rate of nearly 20:1 as visualized in **Figure 3.2**.

According to City of Ottawa forecasts, the majority of employment growth in the region will be accommodated in the Ottawa-Gatineau area. This will result in approximately 210,000 new jobs being created creating a significant draw from surrounding areas such as Clarence-Rockland for people to fill those positions. Forecasts for future external population and employment are summarised in **Table 3.5** in the following section.

Table 3.3 Future Population Forecasts by Settlement Area | 2016-2031

Community	2016	2031	Growth
Rockland	12,302	18,490	6,098 (+50%)
Bourget	1,169	1,258	89 (+8%)
Clarence-Point	257	589	332 (+129%)
Clarence-Creek	1,018	2,273	1,255 (+123%)
Cheney	249	345	96 (+39%)
Hammond	514	598	84 (+16%)
St. Pascal-Baylon	222	222	0 (0%)
Rural	8,781	9,441	660 (+8%)
Clarence-Rockland	**24,512**	**33,216**	**8,704 (+36%)**
UCPR	**89,300**	**111,491**	**22,191 (+25%)**

Source: Clarence-Rockland - Staff Revised Growth Forecast, 2018

Table 3.4 Future Forecasted Developments in Clarence-Rockland | 2016-2031

Year	Singles & Semis	Rows	Apts	Mixed	Total
2016-2023	561	206	420	554	**1,741**
2024-2031	247	194	314	947	**1,702**
2032-2036	159	12	325	600	**1,096**
Total	**967**	**412**	**1,059**	**2,101**	**4,539**
%	**21%**	**9%**	**23%**	**46%**	**100%**

Source: United Counties of Prescott & Russell - Growth Forecast and Land Needs Assessment, 2012

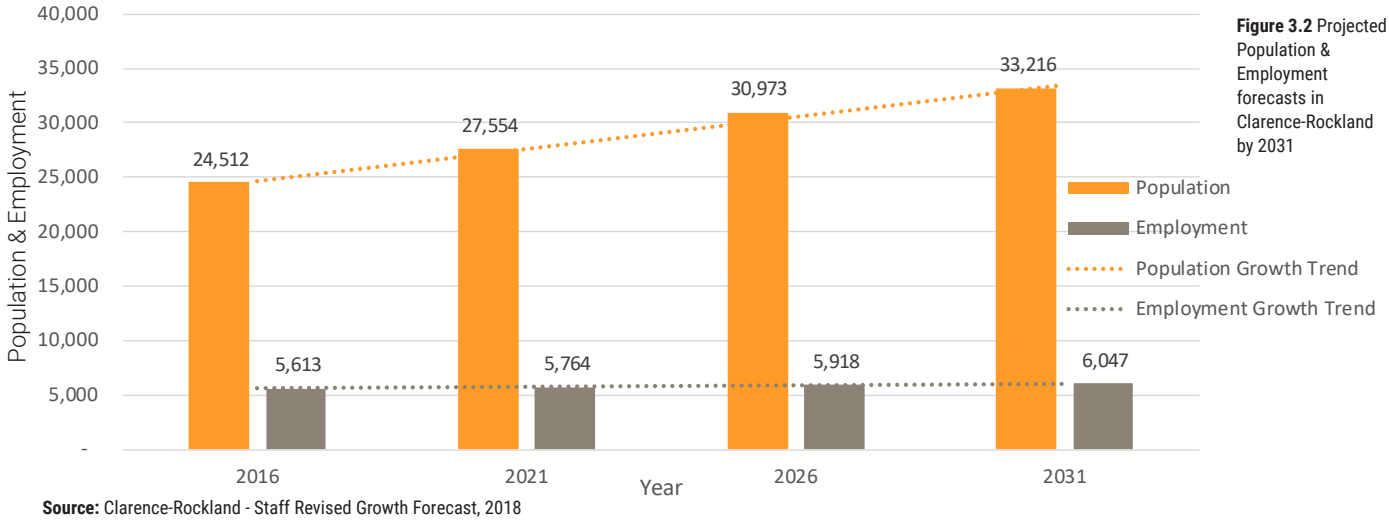


Figure 3.2 Projected Population & Employment forecasts in Clarence-Rockland by 2031

Source: Clarence-Rockland - Staff Revised Growth Forecast, 2018

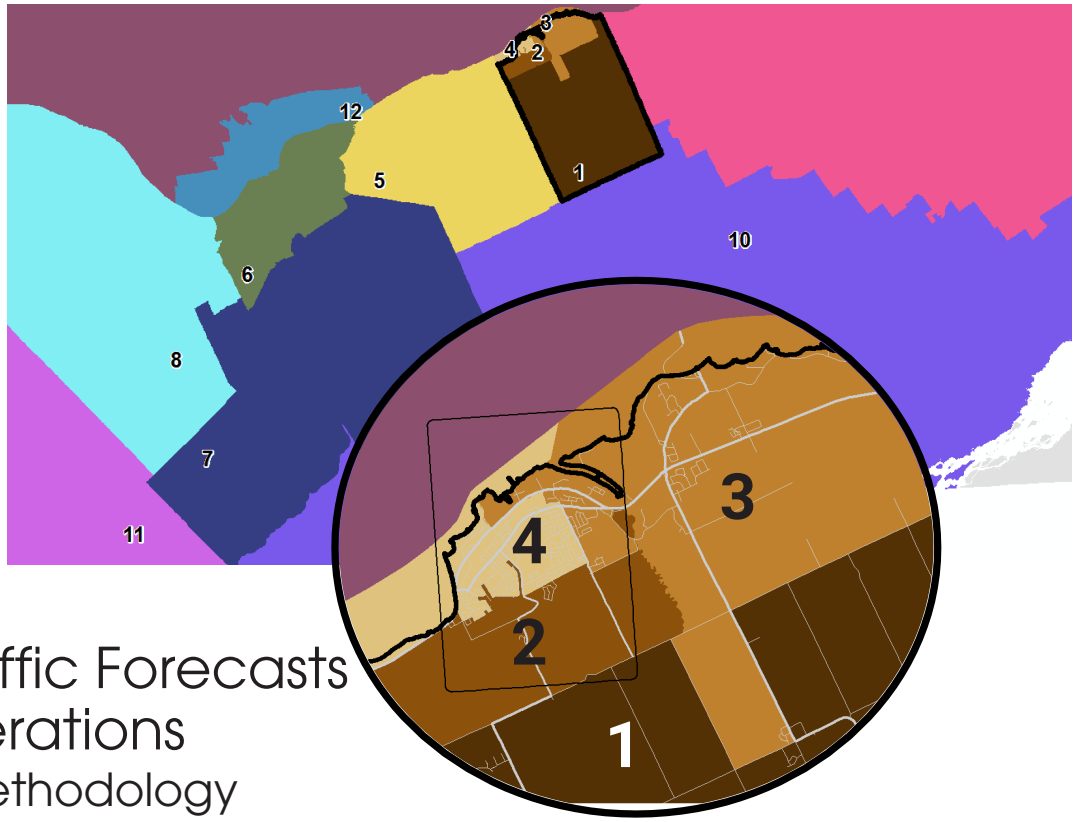


Figure 3.3
Aggregated Traffic Area Zones used for future forecasting and distribution

3.2 Traffic Forecasts & Operations

3.2.1 Methodology

To forecast trip growth at a more granular level within Clarence-Rockland, population and employment growth forecasts were disaggregated and distributed between four Traffic Area Zones (TAZ) that comprise the City's boundaries (see **Figure 3.3**).

The City of Clarence-Rockland Ongoing Development map and associated data was used to identify the distribution of population growth based on planned dwelling units by TAZ. Residential growth for the city was proportionately split between each of the zones based on their respective population sizes as summarized in **Table 3.5**.

The results of this distribution of growth reflect planned development areas including greenfield areas in the south of Rockland and within the Clarence-Point and Clarence-Creek areas that are forecasted to grow at a much higher rate than already established areas within Rockland.

Employment growth is expected to primarily by focused in Rockland broadly conforming with planned land uses and growth areas identified in the City's Official Plan.

Future transportation network trip growth was estimated by applying 2031 population and

Table 3.5 Aggregated Future Forecasted Population & Employment by internal and external traffic area zone | 2016-2031

TAZ	Description	Population			Employment		
		2016	2031	Growth	2016	2031	Growth
1	Hamlets / Rural	10,935	11,864	929 (+8%)			
2	South Rockland	1,038	5,797	4,759 (+458%)			
3	Clarence Point / Clarence Creek	1,275	2,862	1,587 (+124%)	**5,466**	**6,047**	**581 (+9%)**
4	Rockland	11,264	12,693	1,429 (+13%)			
Sub-Total Clarence-Rockland:		**24,512**	**33,216**	**8,704 (+36%)**			
Ottawa		934,243	1,153,535	219,292 (+24%)	530,510	703,078	172,568 (+33%)
Gatineau		276,245	328,731	52,486 (+19%)	116,325	156,272	39,947 (+28%)
External Ontario		148,771	173,604	24,833 (+17%)	86,688	111,767	25,079 (+29%)
External Québec		57,298	59,653	2,355 (+4%)	28,531	37,213	8,682 (+30%)
Sub-Total External		**1,416,557**	**1,715,523**	**298,966 (+21%)**	**762,054**	**1,008,330**	**246,276 (+32%)**

Sources: Clarence-Rockland - Staff Revised Growth Forecast, 2018 | City of Ottawa Growth Projections 2006-2031, 2007

employment growth rates to existing trips based on purpose. Existing trip distribution and mode split data were obtained by blending the NCR's External Travel Survey with expanded survey response results from the MTMP Online survey and split into four main trip purposes including: Work-related trips, School-related trips, discretionary trips, and non-home-based trips. Growth rates were applied to the existing network trips and re-distributed based on the Fratar method which distributes total trips for each zone based on interzonal movements and relative attractiveness of each movement. This results in the future trips estimated for any zone being distributed to movements involving that zone in proportion to the existing trips and the expected growth between it and each other zone. This method is expressed through the following equation with the resulting Origin-Destination matrix outputs provided in **Appendix C** of this MTMP:

$$T_{i-j} = t_{i-j} x \frac{P_i}{p_i} x \frac{A_j}{a_j} x \frac{\sum_{\square}^{k} t_{i-k}}{\sum_{\square}^{k} [\frac{A_k}{a_k}] x t_{i-k}}$$

Where,

- T_(i-j)=Future trips from zone i to zone j
- t_(i-j)=Present trips from zone i to zone j
- P_i=Future trips produced at zone i
- p_i=Present trips attracted at zone i
- A_i=Future trips attracted to zone j
- a_i=Present trips attracted to zone j
- k=Total number of zones

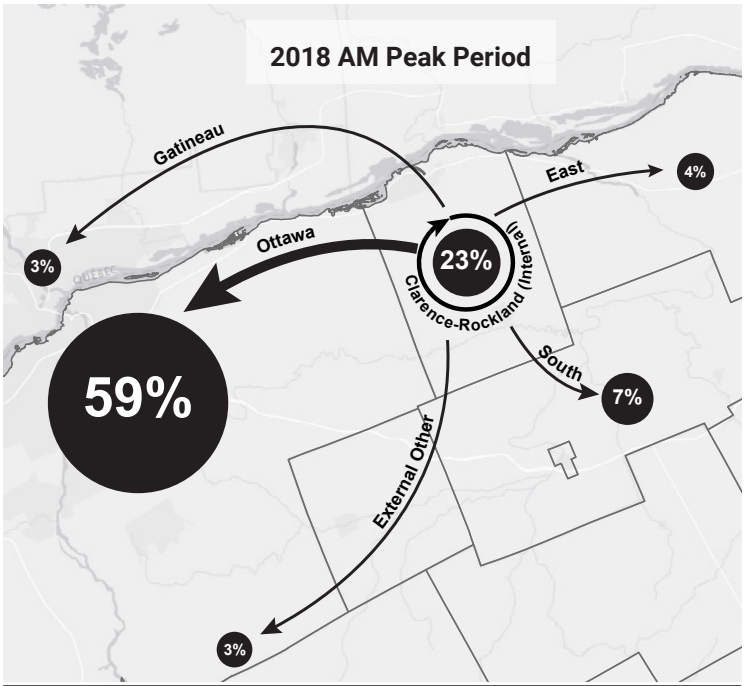


Figure 3.4 Forecasted Trip Distribution from Clarence-Rockland | 2018 - AM Peak Period

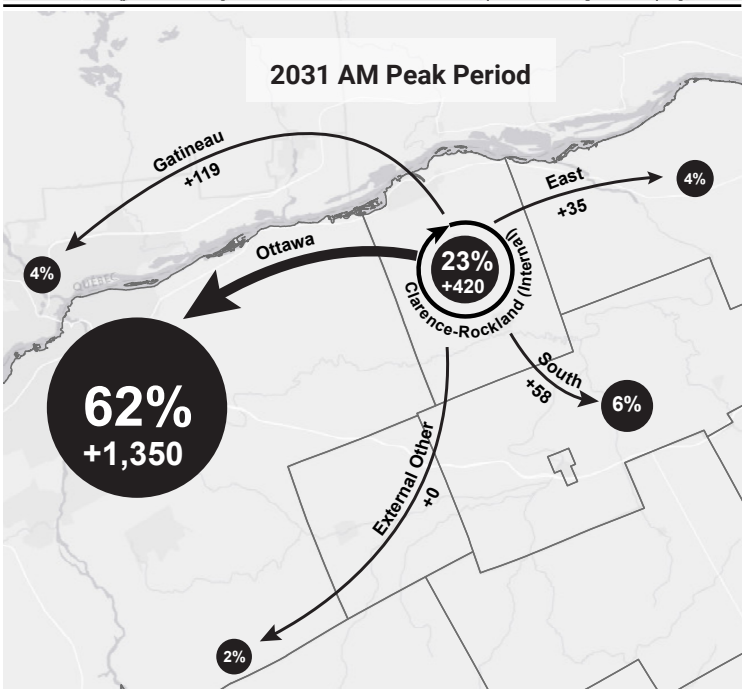


Figure 3.5 Forecasted Trip Distribution from Clarence-Rockland | 2031 - AM Peak Period

3.2.2 Results

Forecasted travel demand shows that future growth to Ottawa-Gatineau will far outpace demand for any other area with an estimated increase of 1,470 new trips in the AM Peak period from Clarence-Rockland. This is estimated to account for 74% of all future trip growth from Clarence-Rockland as summarised in **Table 3.6**.

The impacts of these external trips are expected to be primarily felt along County Road 17 and Russell Road (County Road 2) as the two primary corridors that provide east-west linkages to Ottawa-Gatineau.

Subsequently, the second largest trip growth will be internal trips within Clarence-Rockland as new residential developments lead to new localized work-related and school-related trips. Internal trips are forecasted to account for 21% of all future trip growth through 2031. These trips are anticipated to primarily be focused along Rockland's major roadways including Poupart Road, St. Jean Street, Caron Street, and Laurier Streets. Visualizations of existing and future 2031 AM peak period trip distributions from Clarence-Rockland are shown in **Figures 3.4** and **3.5**.

Table 3.6 Forecasted Trip Distribution From Clarence-Rockland | 2018 vs 2031 - AM Peak Period

Zone	2018 AM Peak Period		2031 AM Peak Period		Change	Proportion of growth
	Volume to	%	Volume To	%		
Internal	1,286	23%	1,705	23%	+420	21%
Ottawa	3,268	59%	4,618	62%	+1,350	68%
Gatineau	169	3%	288	4%	+119	6%
East	242	4%	276	4%	+35	2%
South	364	7%	422	6%	+58	3%
Other External	166	3%	166	2%	0	0%
Total	**5,493**	**100%**	**7,475**	**100%**	**+1,982**	**100%**

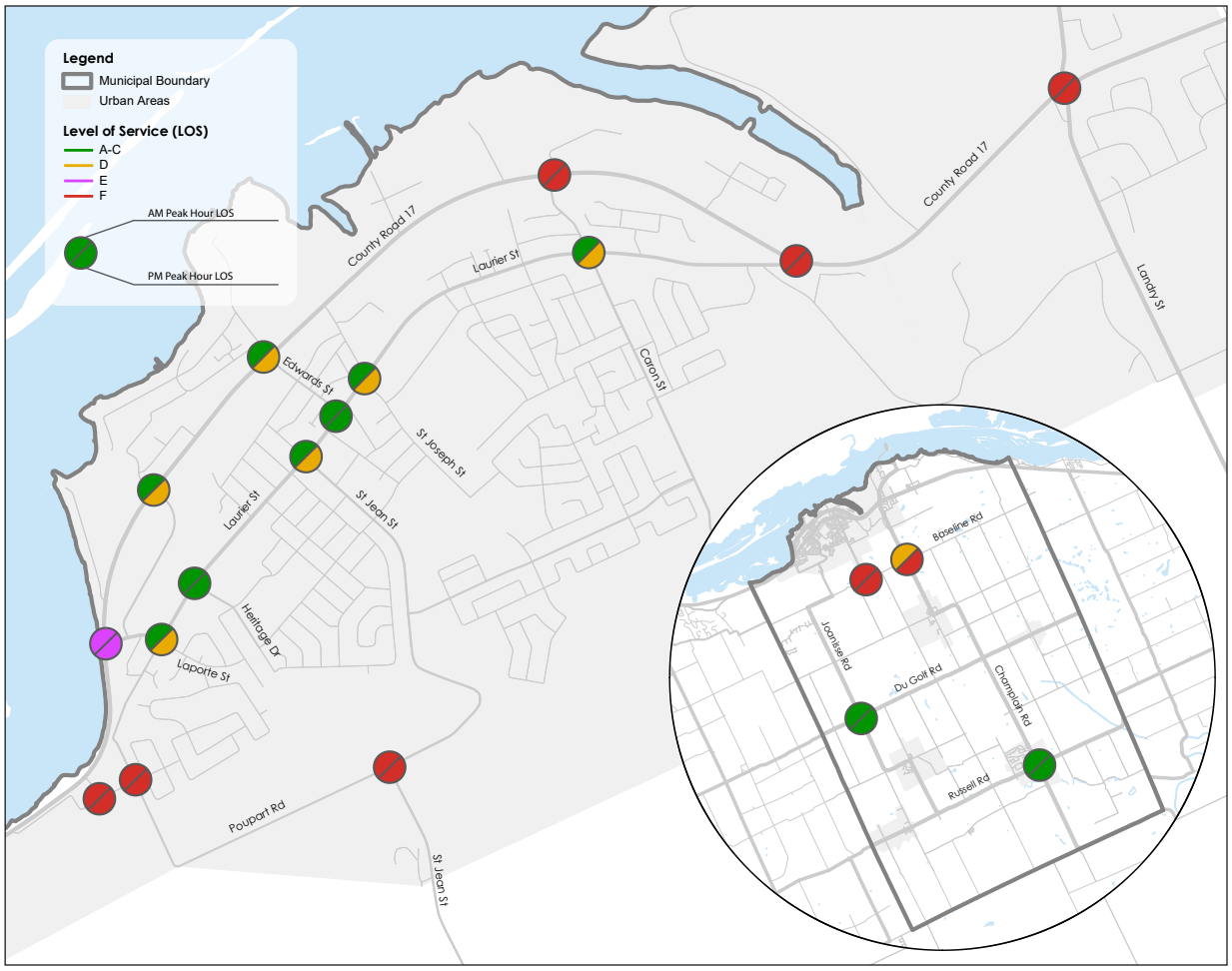


Figure 3.6
Future 2031 "Do Nothing" Peak Hour Intersection Operations in Clarence-Rockland without any improvements

Future AM Peak Period growth was applied to the local transportation network without any infrastructure improvements and modified to reflect the Peak hour. This process was also applied, and the peak directions were switched to analyze PM Peak Hour conditions.

This scenario represents the future 2031 "Do Nothing" scenario where growth occurs but no roadway improvements are applied to the network.

Future 2031 Peak hour forecasts identify significantly deteriorated intersection operations along County Road 17, Carmen Bergeron Street, Poupart Road, and Baseline Road as shown in **Figure 3.6**.

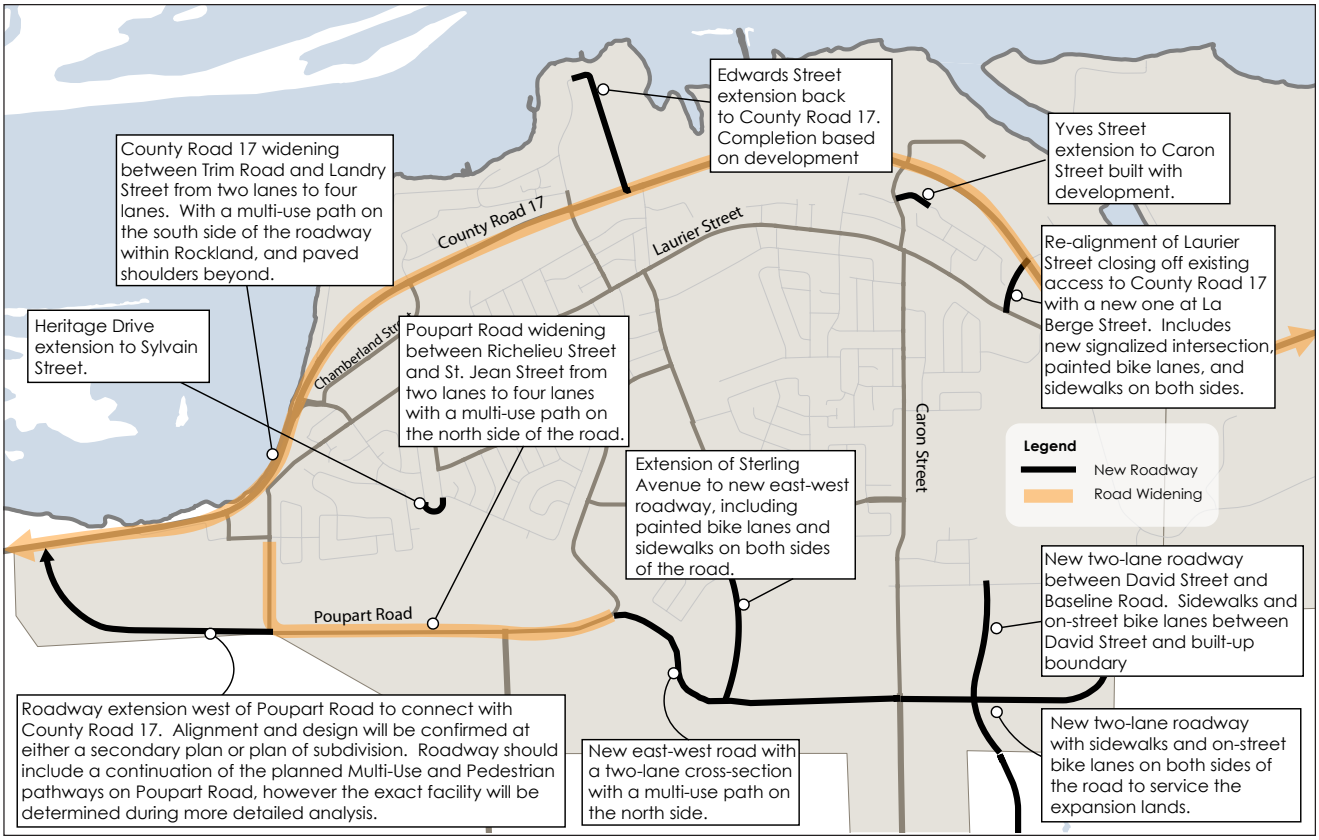
These roadways are key corridors for both internal and external travel which coincides with future residential growth in the areas along Poupart Road and County Road 17. This is further coupled with background traffic growth that will be generated by municipalities east of Clarence-Rockland who are anticipated to grow to a smaller extent but still add additional traffic onto County Road 17 to access Ottawa-Gatineau.

3.2.3 Planned Improvements

Previously planned transportation improvements outlined in the 2005 Strategic Plan, the City's Official Plan, and recently completed Environmental Assessments are anticipated to address many of the operational impacts that are identified in the "Do Nothing" scenario including:

- Widening of County Road 17 / Highway 174 between Landry Street and Trim Road from two lanes to four lanes with a possibility to have HOV or Transit-Only lanes (estimated to be built by 2031) - Ottawa Road 174 / County Road 17 Environmental Assessment Study, 2016
- Widening of Poupart Road between Richelieu Street and St. Jean Street from two lanes to four lanes and converting existing intersection at St. Jean Street to a roundabout (build-out date undefined) Traffic Impact Study for the Morris Village Development, 2018
- New east-west roadway in south Rockland between St. Jean Street and Caron Street (build-out date undefined) Traffic Impact Study for the Morris Village Development, 2018

Figure 3.7
Summary of already planned improvements



- Sterling Avenue extension from the existing terminus southward toward the new east-west roadway (build-out date undefined) Traffic Impact Study for the Morris Village Development, 2018
- Re-alignment of Laurier Street in the east at County Road 17 to connect with La Berge Street with a signalized intersection (build-out date undefined) City Official Plan Schedule B, 2013
- Heritage Drive, Edwards Street, Yves Street, and Green Street extensions based on future development (build-out date undefined) City Official Plan Schedule B, 2013
- Roadway extension west of Poupart Road to County Road 17. This has been identified in recent secondary plan studies and traffic impact studies for the long-term, however the land use plan for the area has not been confirmed. This is anticipated as a long-term improvement (build-out date undefined) Traffic Impact Study for the Morris Village Development, 2018
- New roadways as part of the Expansion Lands Secondary Plan area connecting between Caron Street in the west and David Street in the north (build-out date medium-term) Expansion Lands Secondary Plan, 2019

These improvements are summarised and visualized in **Figure 3.7**.

Based on the assessment of future conditions it is forecasted that all of these improvements will be required by the future 2031 horizon year along with some additional needs at the following intersections:

- Richelieu Street at Carmen Bergeron Street and at Poupart Road. The existing intersections are four-way stops which will need to be upgraded in the future to accommodate additional traffic;
- Baseline Road at Caron Street and at Landry Street. The existing intersections are two-way stops that may need to be upgraded in the future to accommodate higher volumes of left turns.

Future 2031 forecasts are based on the status quo mode shares and represent a high-level identification of planned roadway needs for vehicular movement.

Beyond the planned and identified improvement needs, it is expected that further operational enhancements will be determined and analyzed at the development application level in the form of traffic impact studies that will be able to provide more detailed micro-analysis of intersections than this study can account for.

"[We need] in town transportation. If I live down at caron and my kids want to get a job at the walmart or anywhere else in town they have no options for public transport without paying an arm and a leg."

- Annonymous survey respondent

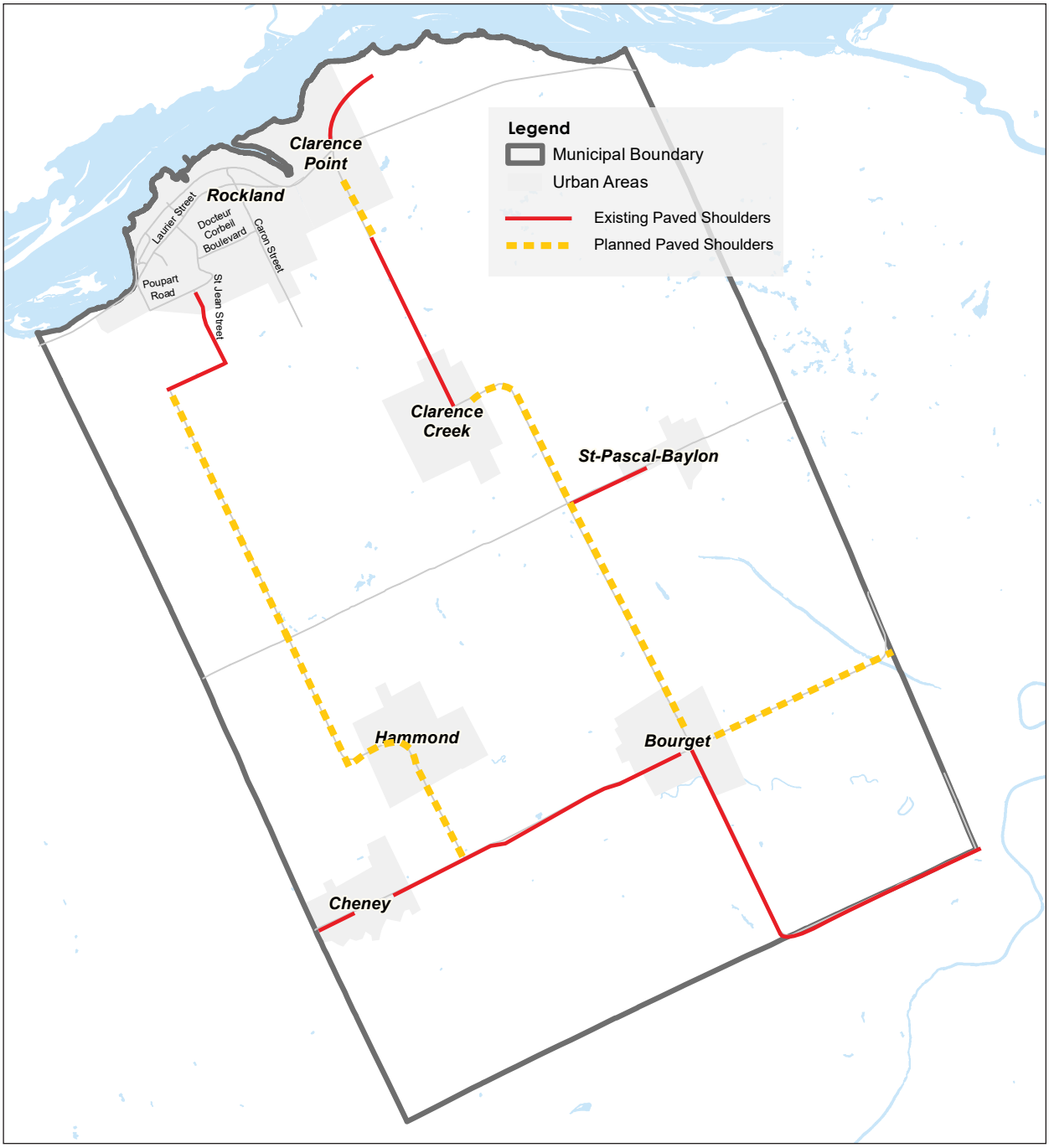


Figure 3.8 Planned County Commuter Cycling Network within Clarence-Rockland

County Commuter Cycling Plan

The United Counties of Prescott & Russell have identified within their Commuter Cycling Plan a number of corridors within Clarence-Rockland that are planned to have paved shoulders added to the roadway including (as visualized in **Figure 3.8**):

- Joanisse Road;
- Lacroix Road;
- Gendron Road;
- Landry Street (Between County Road 17 and the existing paved shoulders);
- Labonte Street;
- Champlain Street; and
- Russell Road (east of Champlain Street).

These paved shoulders will provide additional internal connections within Clarence-Rockland between the settlement areas, as well as connect to the broader county and Ottawa cycling networks. These improvements are planned to be built over the next 11+ years.

3.3 What we heard

3.3.1 Priorities

Residents identified a future need to continue to plan for automobiles, however on average respondents identified that 45% of the MTMP should focus on sustainable modes of transportation such as transit, cycling, and walking.

Young professionals had a greater focus on automobiles, compared to school-aged and older respondents as summarised in **Figure 3.9**. This is likely a result of the concentration of jobs in Ottawa-Gatineau creating a higher likelihood that a young professional from Clarence-Rockland will be required to commute outside of the City for work and likely have less flexibility to show up to work late or work flexible hours which makes travel reliability a priority. As people get older, they typically advance in their careers and get more flexibility for arriving at work making transit a more viable option for older residents.

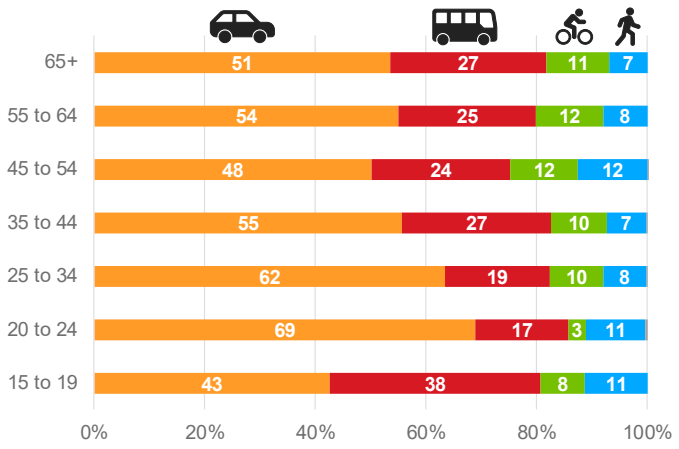


Figure 3.9 Survey Respondent mode priority by age group

Another consideration is the aging demographic in Clarence-Rockland that is moving to the City to retire, along with younger residents who may not own, or be eligible to drive creating a demand for alternative forms of transportation beyond private automobiles.

3.3.2 Future Corridors

Through the online survey residents were able to identify corridors to be explored for automobile (**Figure 3.10**), transit (**Figure 3.11**), cycling (**Figure 3.12**), and walking (**Figure 3.13**).

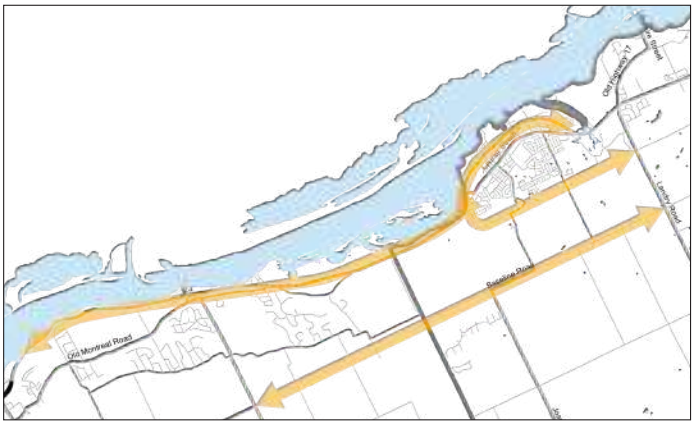


Figure 3.10 Survey identified automobile desire corridors

Automobile: Generally, automobile corridors revolved around east-west movements identifying a need to look at improvements along County Road 17, as well as potentially exploring an alternative corridor along Baseline Road. An extension of Poupart Road to connect eastward toward Caron Street was also identified to better connect emerging neighbourhoods in Rockland.

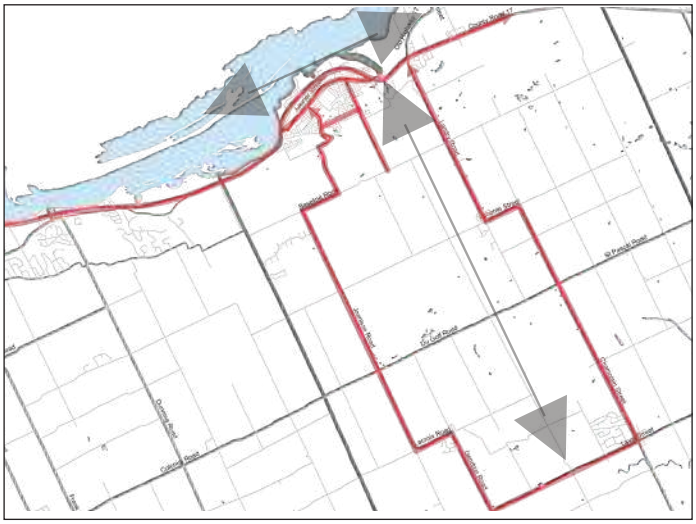


Figure 3.11 Survey identified transit desire corridors

Transit: corridors can generally be grouped into two buckets: External Connections; and Internal Connections.

County Road 17 was identified as a key connecting transit corridor to provide access to jobs, recreation and opportunities in Ottawa-Gatineau, while internal links between Clarence-Rockland's settlement areas were also identified as an important consideration to connect the City's rural areas with services that are concentrated in Rockland. Currently, CR Transpo only operates a commuter service during peak periods that primarily connect settlement areas in the north and south with Ottawa, as opposed to providing internal connections between the settlement areas.

Cycling: Residents identified a need for future cycling connections to fill in the gaps between the existing network, particularly within Rockland, and between the settlement areas and Rockland. Laurier Street, County Road 17, Caron Street, and Landry Street were highlighted as specific corridors. Additionally, several corridors were identified as opportunities to leverage infrastructure to not only provide efficient connections to work or school, but also to serve as recreational facilities themselves with a major corridor identified along the City's waterfront.

Over half of survey respondents identified safety and comfort as the primary factor encouraging them to cycle, followed by access to facilities and travel time. This is an important distinction that separates cyclists from the broader group of road users that have specific needs and priorities that translate more toward accessibility and safety, underpinned by a broader overall desire to cut down on travel time, which is shared across modes.

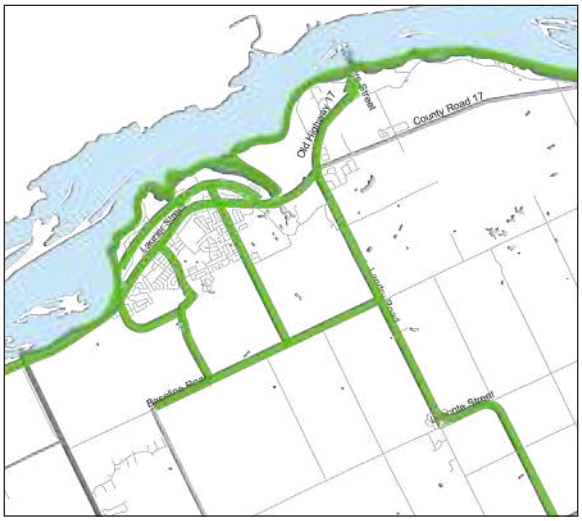


Figure 3.12 Survey identified cycling desire corridors

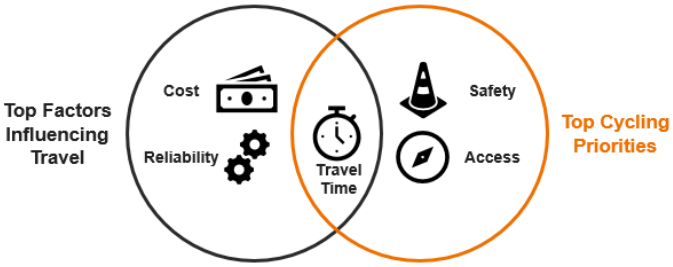


Figure 3.14 Ven Diagram of factors influencing mode choice and cycling priorities

Pedestrian: Similar to cycling corridors, the survey identified candidate pedestrian routes focused around filling-in the gaps in Rockland between existing pedestrian facilities to create a more permeable pedestrian network with better connectivity. Similar to the cycling feedback, respondents identified the opportunity for a recreational path along the Ottawa River waterfront.

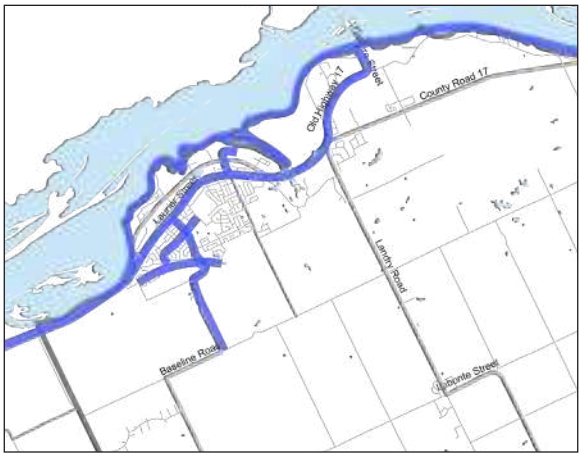


Figure 3.13 Survey identified pedestrian desire corridors

3.3.3 Vision

Overall, residents want an MTMP with a vision focused on efficient motor circulation. However rural & hamlet areas place more importance on active transportation and sidewalk safety compared to respondents from Rockland. Sidewalk Safety is a vision that is consistently demanded across all age groups and areas. Residents also identified a vision toward having access to active transportation options to be able to leave their car behind as well as make use of the recreational aspects of these modes.

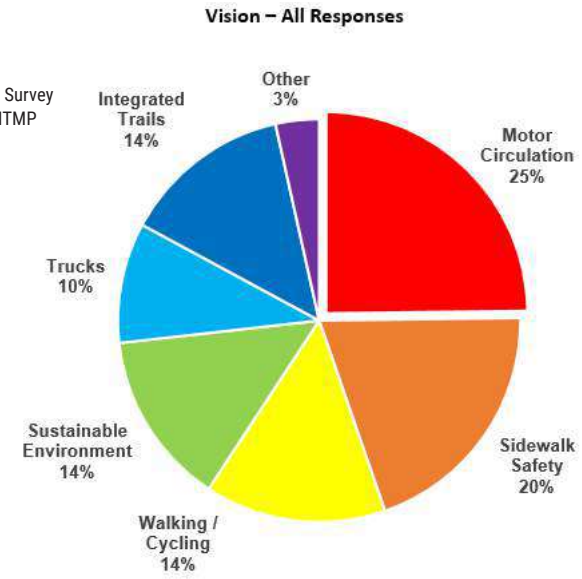


Figure 3.15 Survey identified MTMP vision

Needs & Opportunities

Six key needs & opportunities were identified through our analysis and public engagement and are summarised here:

There are many areas in Rockland where sidewalks are non-existent

Currently:
- There is only 24 km of sidewalk in Clarence-Rockland
- Most of the sidewalks are located in Rockland

The **objectives** for the development of alternatives are:
- Enhance safety for pedestrians
- Expand the existing pedestrian network

The **opportunities for improvement** are:
- Share more equitably the road space by maximizing the City's Right-of -Way in order to accommodate pedestrians, cyclists, automobiles, and transit safely and efficiently
- Provide facilities for residents in the Hamlets to enhance connectivity to commercial, community and recreational facilities within their boundaries

Most of C-R's Residential Development is Low-Density Low-Rise

Currently:
- Lower-density housing neighbourhoods are challenging to serve with transit and active transportation facilities as the number of potential riders are further spread out

The **objectives** for the development of alternatives are:
- Promote higher-density developments in Rockland

The **opportunities for improvement** are:
- Develop complete streets and parking strategies
- Prioritize space for walking and cycling in designated locations in Rockland so that they may complement Transit service
- Connect the high-density areas to transit services

Clarence-Rockland has limited Cycling Facilities

Currently:
- Clarence-Rockland only has approximately 3 km of bike lanes and 18 km of multi-use trails, compared to a 409 km for vehicular network
- There are many places that are inaccessible by active transportation outside of Rockland

The **objectives** for the development of alternatives are:
Prioritize the development of a bicycle network based on:
- Needs (safety, connection to points of interest, etc.)
- Available right-of-way
- Connectivity to existing network

The **opportunities for improvement** are:
- The development of a cycling network that connects to trip generators, community facilities, employment and residential areas

Transit ridership is decreasing

Currently:
- Travel demand from Clarence-Rockland to Ottawa is significant and will increase
- Ridership on Line 530 has decreased by 12% between 2015 and 2017
- Currently, in 2019, the last departure in the morning is at 8 am
- Headways are ~ 30 minutes between 7 and 8 am
- Travel time by bus is more than 10 minutes longer than car to travel to Ottawa in the morning peak period

The **objectives** for the development of alternatives are:
- Increase transit ridership for trips between C-R and Ottawa while optimizing the benefit-cost ratio for the services
- Reduce travel demand by car between C-R and Ottawa

The **opportunities for improvement** are:
- Reducing the number of stops along the bus route to decrease transit travel time
- Implement bus priority measures along the corridor
- Implement express service between C-R and the future LRT

Hamlets are not well connected to jobs, services and recreation in Rockland

Currently:
- Transit services between Bourget, Hammond, St-Pascal-Baylon, Clarence Creek and Rockland are nonexistent
- Distances between these hamlets and Rockland (>10 km) do not support the use of bicycle and walking to travel
- Transit ridership is decreasing on Line 535

The **objectives** for the development of alternatives are:
- Transit should provide a transportation choice for young and elderly residents who are more likely not to own or have access to a car allowing them to access Rockland's jobs, services, and recreational facilities

The **opportunities for improvement** are:
- On-demand transit service
- Rideshare service
- Collective taxi service

There is congestion on County Road 17

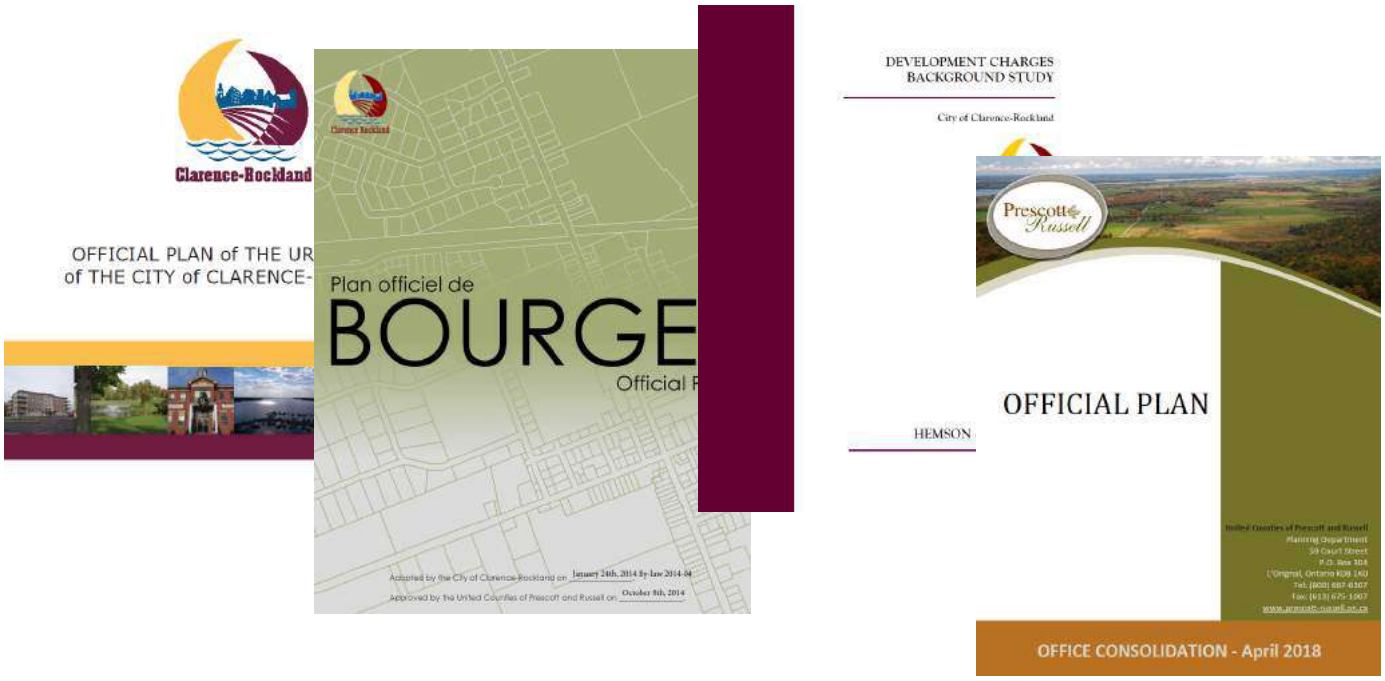
Currently:
- 60% of commuter flows are external and destined to Ottawa. Another 4% is destined to Gatineau
- Only 22% of commuter trips are internal to Clarence-Rock land (C-R)

In the **future:**
- It is estimated that 82% of the growth in commuter flows will be external and destined for Ottawa/Gatineau

The **objectives** for the development of alternatives are:
- Reduce congestion on CR 17
- Promote the use of alternative modes of transportation on the corridor

The **opportunities for improvement** are:
- The Ottawa Road 174 / County Road 17 Environmental Assessment Study recommends the widening of CR 17 from 2 to 4 lanes (2 per direction) with multi-use paths on both sides of the road within Rockland by 2031
- A new LRT extension and station is planned by 2031 on the corridor at Trim Road

4.0 Foundations



4.0 Foundations

4.1 Planning Context

"We're here today to talk about this nine kilometres stretch [of County Road 17]. I anticipate that we'll continue to have those conversations, that continue to demonstrate progress, continue to work with our partners to get it right. It's not lost on me that there are requirements for additional transportation infrastructure in the united counties, in Ottawa, and beyond in eastern Ontario."

- Steven Del Duca, Former Provincial Transportation Minister

The MTMP is directed by several key Provincial, County and local municipal policies that set a strong foundation to manage growth while building strong, healthy and sustainable communities.

4.1.1 Provincial

#CycleON Strategy, 2013: #CycleON is Ontario's 20-year vision through the year 2033 to have cycling recognized as a respected and valued mode of transportation within Ontario. This plan acknowledges Cycling's potential to bringing province-wide benefits in terms of personal and public health, the environment, tourism and traffic congestion. The guiding principles of this strategy are safety, partnership, accessibility and connectivity which culminate in five strategic directions including:

- Design healthy, active and prosperous communities;
- Improve cycling infrastructure;
- Make highways and streets safer;
- Promote awareness and behavioural shifts; and
- Increase cycling tourism opportunities

Provincial Policy Statement (PPS), 2014: These are the Province's policies on land use planning to promote strong communities, a strong economy and a clean and healthy environment. It requires transportation systems that are safe, energy efficient, facilitate the efficient movement of people and goods and maximize the use of the existing infrastructure. Clarence-Rockland is required to plan to protect for future corridors and major goods movement facilities.

4.1.2 County

Prescott-Russell Recreational Trail Strategic Plan, 2014: The Prescott-Russell Recreational Trail runs 72 km along a former CN railway right-of-way through five municipalities within the United Counties, including Clarence-Rockland. Most of the trail is surfaced in gravel, aside from a small number of short paved sections, and features five recreational pavilions along its length. The Strategic Plan, completed in 2014, outlines a re-scoped and focused role for the trail, develops recommendations for a complementary cycling network on County roads, and identifies implementation strategies.

Recommendations include endorsing the renewed mandate of the Prescott-Russell Recreational Trail Corporation, adopting an updated marketing strategy, improving signage on the on-road cycling network, adopting a prioritized list for paving of road shoulders within the cycling network and integrating it into Public Works budgets, including policy statements aimed at improving active transportation uptake in municipal official plans, and including sidewalk and cycling facility requirements in municipal by-laws.

Prescott-Russell Recreational Trail Assessment and Improvement Plan, 2015: The Prescott-Russell Recreational Trail Assessment and Improvement Plan, examines in detail the Prescott-Russell Recreational Trail and presents a detailed financial and technical plan for improving the trail over the short- and long-term. High- and medium-priority improvement items include surfacing repair, especially on the eastern portion of the trail, trail access reconfiguration, safety hazard mitigation, and vegetation removal and pruning. The total estimated cost for trail improvements is approximately $2 million, including $790,000 for high priority action items; the study noted that this cost can be reduced if the United Counties uses in-source resources instead of outsourcing at standard contractor rates.

Prescott-Russell Official Plan, 2018: The Official Plan provides guidance and direction for growth, development, and land-use planning within the United Counties of Prescott and Russell for a twenty-year planning period. This includes detailing the policy framework for regulatory tools within the Counties' constituent lower-tier municipalities, which comprises zoning by-laws, plans of subdivision and consents, and municipal budgets and by-laws. The most recent Official Plan for the United Counties was adopted by County Council on August 26, 2015 and was approved by the provincial Ministry of Municipal Affairs and Housing on March 22, 2016. As with all municipal official plans in Ontario, under the Planning Act, the Counties' Official Plan must be reviewed and updated every five to ten years.

4.1.3 Local

Strategic Transportation Plan for the Urban Area of the City of Clarence-Rockland, 2005: The Strategic Transportation Plan studied the transportation network of the City's urban area (the community of Rockland) in that year with the goal of producing a transportation network concept plan for the City. The Plan uses collected traffic data, projected growth figures, and input from municipal staff and the public to develop a conceptual street network and staging plan that accommodates the needs of both the existing community and planned growth over a twenty-year horizon. The Plan provides a detailed overview of Rockland's major road links and recommends roles and specific improvements for each corridor within the overall network concept, as well as identifies staging strategies and design challenges. Some recommendations from the Strategic Plan, such as the establishment of an east-west collector in southeastern Rockland (now Docteur Corbeil Boulevard), have been realized, while others have not.

Official Plan of the Urban Area of the City of Clarence-Rockland, 2014: The Official Plan presents a strategy to direct the future development of the City's urban area (the community of Rockland) over a twenty-year period, and is consistent with the Provincial Policy Statement, the Planning Act, and the United Counties of Prescott & Russell Official Plan. The Plan sets out an overarching land use concept, specific governing policies in matters related to planning, and comprehensive implementation tools, thus aiming to ensure that the future growth of Rockland is sustainable, preserves the quality of life within the community, and reflects the community's existing unique character. It also sets out the City's own priorities with respect to Rockland's growth over a twenty-year period, including transportation facilities, environmental policy, zoning, parks and open space, heritage, and economic growth and development. The Plan is sensitive to the functional connections between Rockland, other hamlets and municipalities both in the City, the United Counties of Prescott & Russell, and the City of Ottawa.

Bourget Official Plan, 2014: The Bourget Official Plan, similar to the Plan for the Urban Area of the City of Clarence-Rockland, establishes a planning concept, guiding policies, and implementation strategies to direct the growth and development of the Village of Bourget over a twenty-year horizon. It articulates a vision for the Village as a clean, safe, and connected community, and is structured with the goals of ensuring that the Village's growth is sustainable, improving active transportation facilities, creating a vibrant village core, and enhancing recreational opportunities for residents.

Development Charges Background Study, 2014: The Development Charges Background Study was completed on behalf of the City of Clarence-Rockland under the provisions of the provincial Development Charges Act, which requires that such a study be prepared when a development charges by-law is proposed. The Study analyzed the costs of services provided by the City, including the costs associated with maintaining and expanding municipal transportation infrastructure, and provides growth forecasts for the City between 2014 and 2023, thus

allowing for calculation of costs related to servicing that growth. Development charges which fully recover those costs are therefore calculated and recommended in accordance with the requirements and limitations of the Development Charges Act.

Transit Feasibility Study, 2014: As of 2014, no local intra-city transit service operated within the City of Clarence-Rockland; transit service only existed to connect Clarence-Rockland with the City of Ottawa. The Study determined the demand for local transit service and identified the associated operational, financial, and implementation requirements and implications of the City offering such a service. The Study analyzed the City's community profile and conducted a peer review of transit systems in 11 comparable municipalities. Combined with the results of a public engagement campaign and transit service analysis, these informed the Study's short-term recommendation of an on-demand transit pilot project in Clarence-Rockland, as well as longer-term options for the City which would build on the results of the pilot project.

Parks & Recreation Master Plan, 2016: The Parks and Recreation Master Plan sets out a framework of priorities and recommendations intended to guide the provision of parks and recreation services in the City of Clarence-Rockland. The Plan acts as a municipal blueprint of planning, financial, and implementation strategies to fulfill the City's stated goals and objectives of parks and recreation playing an active role in the lives of the City's residents. Highlighting the key relationship between active transportation modes and the success of municipal parks and recreational facilities, the Plan makes recommendations to a horizon year of 2031.

Community Improvement Plan Background Study, 2016: The City of Clarence-Rockland initiated its Community Improvement Plan in order to develop strategies to revitalize the City's commercial core along Laurier Street in Rockland by attracting new businesses and supporting existing ones. The Background Study involves a thorough review of the planning and policy context, as well as existing conditions in the area to help develop the options available to the City to realize the Plan's goals. The Study incorporates a strength, weakness, opportunities, and threats (SWOT) analysis, which highlights the strength of and opportunity presented by the urban fabric of Rockland's commercial core. The Study ultimately proposes a series of municipal grant programs to improve the area, as well as suggests implementation strategies.

Clarence-Rockland Strategic Plan, 2018: The Strategic Plan, which was developed by the City of Clarence-Rockland in 2018, is the culmination of a strategic planning process initiated by the City in 2015 with the goal of defining the City's overarching vision, mission, goals, and objectives. Taking into account the extensive feedback received from over 1,300 community members in an interactive and collaborative stakeholder engagement campaign, the City identified its four Strategic Pillars as Sense of Community, Health and Wellness, Financial Stability, and Environmental Responsibility. The Plan furthermore makes recommendations for implementing and monitoring initiatives which support the City's Strategic Pillars.

4.2 Guiding Themes

Transportation networks are influenced and shaped by the communities they serve. Their role within the context of a municipality's quality of life can vary widely depending on how the community would like the network to serve them. Clarence-Rockland is a modern municipality that elegantly balances its rural charm with urban vitality. It is also a diverse city comprised of several unique communities. The City's transportation and active transportation systems must reflect the City's vision to foster multi-modal transportation options that address the needs of people of all ages and abilities.

Not every trip can or should be served by alternative modes of transportation, but it must be recognized that private vehicles, transit, and active transportation are part of a larger multi-modal mobility network that works together to provide transportation for the community as a cohesive system. To that effect, it is important that the planning of multi-modal transportation services acknowledge the City's role in a regional context and provides connections to both local and regional facilities. This must all be done with a delicate balance between a focus on the people that the multi-modal transportation network serves and the City's fiscal and environmental responsibilities of maximizing the network's efficiency while reducing the dependence on private automobiles.

4.2.1 Smart Cities & Open Data

In 2018, the City of Clarence-Rockland submitted an application to Infrastructure Canada's Smart Cities Challenge. Municipalities across Canada apply to the Challenge by submitting their vision for improving the lives of their residents through smart cities approaches that leverage innovation, data, and connected technology; prizes to assist municipalities in achieving their vision are issued to the Challenge's winners. Clarence-Rockland submitted an application that describes the barriers that prevent uptake of active transportation as a travel mode by its residents; its application articulates an innovative proposal to use smart city sensors and geospatial analysis to expand its active transportation network and encourage its growth as a healthy, connected city.

Smart cities are a new trend gaining traction across Canada and the world, whereby municipalities are starting to leverage Big Data to assist in municipal planning. A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. In terms of mobility, traditional methods of data collection use pneumatic tubes or manual counting for automatic traffic recording which are often costly to implement, prone to high maintenance costs, and difficult to leverage for alternative modes of transportation like transit, cycling and walking. As shown schematically in **Figure 4.1**, there are new ways to leverage information and communication technology to optimize the cost-effectiveness of data collection and the efficiency of city operations to promote a dialogue between city planners and the public and to better inform on how the city travels.

Hundreds of municipalities across Canada are leveraging open data to work with residents and businesses to develop cost-effective solutions to several issues. The expansion of open data, combined with advances in big data analytics, is freeing information that was once trapped inside the dusty pages of overlooked reports, enabling improved decision making, new product and service offerings, and greater accountability. This change comes at a time of heightened focus on data-driven knowledge and evidence-based decision making. Smart City technology and Open Data can help improve transportation-demand forecasting, prioritize transport infrastructure improvements, and synchronize the ways different modes of transportation inter-operate. For example, in Toronto the local transit agency, the Toronto Transit Commission (TTC), was able to avoid having to build their own mobile application to identify next-bus arrival times, by making their real-time vehicle GPS data open through an application programming interface (API). This avoided the need to procure a developer and handle the continual maintenance of a mobile application. This same process has been leveraged in the City of Ottawa for OC Transpo where there's been several mobile applications built using open data.

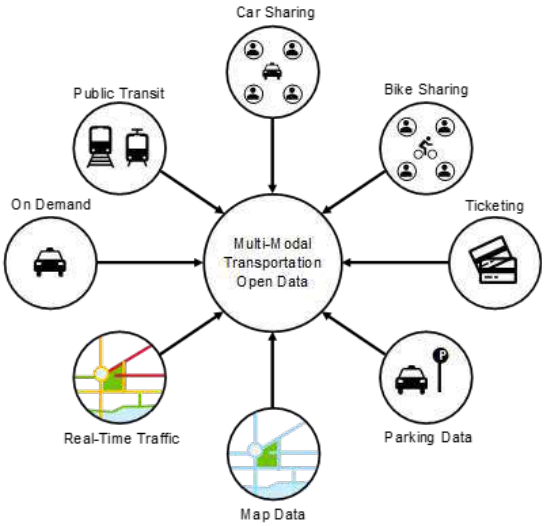


Figure 4.1
Schematic of ways that data can be leveraged for transportation

4.2.2 Mobility as a Service (MaaS)

Mobility as a Service (MaaS) is the integration of various forms of transport services into a single mobility service accessible on demand. To meet a municipality's transportation demand, MaaS facilitates a diverse menu of transport options, be they public transport, ride-, car- or bike-sharing, taxi or private

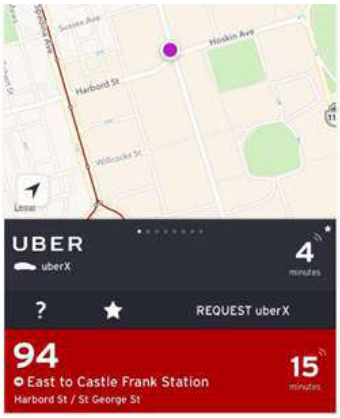


Figure 4.2 Screen of the Transit app and the integration it has with other modes

Source: transitapp.com

automobile, or a combination thereof. For residents this approach can offer added value through use of a single application or service to provide access to mobility, with a single payment channel instead of multiple ticketing and payment operations. At its most basic level, MaaS fits within a value proposition by helping residents meet their mobility needs and solve the inconvenient parts of individual journeys as well as the entire system of mobility services. The aim of MaaS is to provide an alternative to the use of the private car that may be as convenient, more sustainable, help to reduce congestion and constraints in transport capacity, and can be even cheaper.

MaaS is a relatively new concept and approach to transportation planning, with elements primarily integrated in a piecemeal fashion in many jurisdictions across North America. The most abundant form of MaaS is via integrated ride-hailing mobility services such as Uber or Lyft and bikeshare services integrated into transit planning or maps applications such as The Transit App or Google Maps as visualized in **Figure 4.2**. In Europe and Asia various cities have managed to fundamentally change the way people search for, consume, and pay for transportation, much like how Netflix has changed video consumption. Since 2016, Helsinki residents have been able to use an app called Whim to plan and pay for all modes of public and private transportation within the city – be it by train, taxi, bus, carshare, or bikeshare. Anyone with the app can enter a destination, select his or her preferred mode of getting there-or, in cases where no single mode covers the door-to-door journey, a combination thereof-and go.

While there are obvious stark differences between the City of Clarence-Rockland and Helsinki, it is important to acknowledge that MaaS can be moulded to create a localized and tailored solution that works with the available transportation assets and is scaled to the City of Clarence-Rockland.

4.2.3 Complete Streets

Streets are vital places within the City of Clarence-Rockland. They are the common spaces where the city comes together, where children learn to ride bicycles, neighbours meet and couples stroll. They are the proverbial front door to our homes, businesses, parks, and institutions. They reflect the values of the city and, at their best, are a source of pride for residents and visitors alike. Understanding how our transportation network can equitably be shared between different road users such as auto drivers, transit riders, cyclists, or pedestrians is imperative to promoting a multi-modal transportation network that provides a range of attractive choices for mobility by integrating all modes into a seamless network.

Complete Streets is an approach whereby streets are designed to be safe for everyone: people who walk, bicycle, take transit, or drive, and people of all ages and abilities. This ensures that transportation is planned and designed for all road users, not only motorists. There is no singular approach to Complete Streets, however, it acknowledges that a delicate balance needs to be struck between different road users and stakeholders regarding how transportation infrastructure is disseminated. The local context determines this based on the needs and opportunities that dictate the necessity for different infrastructure in different parts of the multi-modal transportation network as visualized in **Figure 4.3**. The link between Complete Streets and public health is well documented as it enhances human and environmental health by providing an environment that enables and encourages active transportation.

Since 2003, Complete Streets has seen over 1,200 policies adopted (as of July 2017) in the United States with a growing interest across Canada including Ottawa (2013).

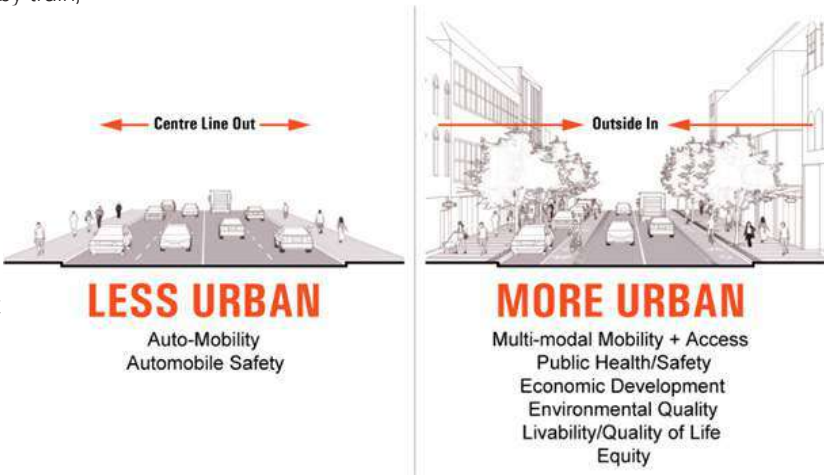


Figure 4.3 Complete Streets philosophy between planning complete streets in urban and less urban environments

Source: Toronto Complete Streets Guidelines, 2017

4.2.4 Vision Zero

Vision Zero is a multi-national road traffic safety project that aims to achieve a transportation network with no fatalities or serious injuries involving road traffic. This approach started in Sweden and was approved by their parliament in October 1997. A core principle of the vision is that 'Life and health can never be exchanged for other benefits within society' rather than the more conventional comparison between costs and benefits, where a monetary value is placed on life and health, and then that value is used to decide how much money to spend on a road network towards the benefit of decreasing how much risk. Sweden has made tremendous progress in road safety. For example, between 2000-2015 the number of traffic fatalities in Sweden decreased by over 50% as visualized in **Figure 4.5**.

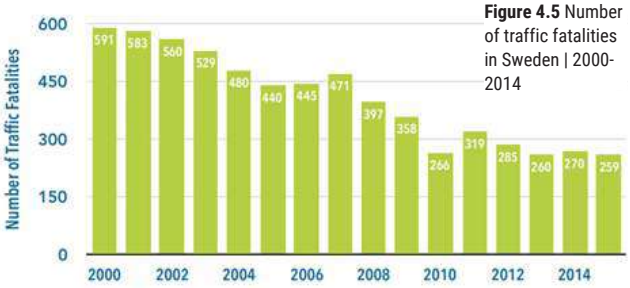


Figure 4.5 Number of traffic fatalities in Sweden | 2000-2014

Several municipalities across Canada are beginning to embrace the Vision Zero approach to road safety by implementing road safety plans and actions to reduce road-related fatalities and protect vulnerable road users. In 2015, Edmonton became the first major Canadian City to officially adopt Vision Zero with the City of Toronto soon following suit in 2017. Vision Zero is now a recognized approach toward planning for road safety with other cities including the City of Ottawa considering the potential for implementing Vision Zero.

4.3 Strategic Priorities

The City of Clarence-Rockland is committed to the provision of municipal services in a sustainable manner to meet the present and future needs of its communities. In 2015 a Strategic Plan to guide the City through to 2021 was created focusing on four strategic pillars including:

Sense of Community: The residents and business in the City are proud of their bilingual culture, their rich heritage, the abundance of natural features in both a rural and urban setting and the extensive number of municipal facilities. It is important that the City acknowledge these traits and provide services that reinforce these community values.

Health and Wellness: The municipality commits to providing services that respond to the continued health and well-being of its residents.

Financial Stability: The City is subject to increasing demands to maintain existing infrastructure and programs as well as position itself for the future. It is, therefore, critical that the municipality ensure that appropriate levels of funding are available to meet community needs and expectations. It is necessary that Council and the administration assesses and implement innovative funding strategies to meet the pressures of funding future requirements.

Environmental Responsibility: Clarence-Rockland has a significant amount of infrastructure that needs to be maintained in an environmentally responsible manner. The City must ensure that timely rehabilitation works are implemented to protect our environment while meeting the needs of the community. It is anticipated that the municipality will continue to grow thus placing further pressures on sound environmental stewardship.

These four strategic pillars and their relation to the MTMP vision & objectives are summarised on the following page.

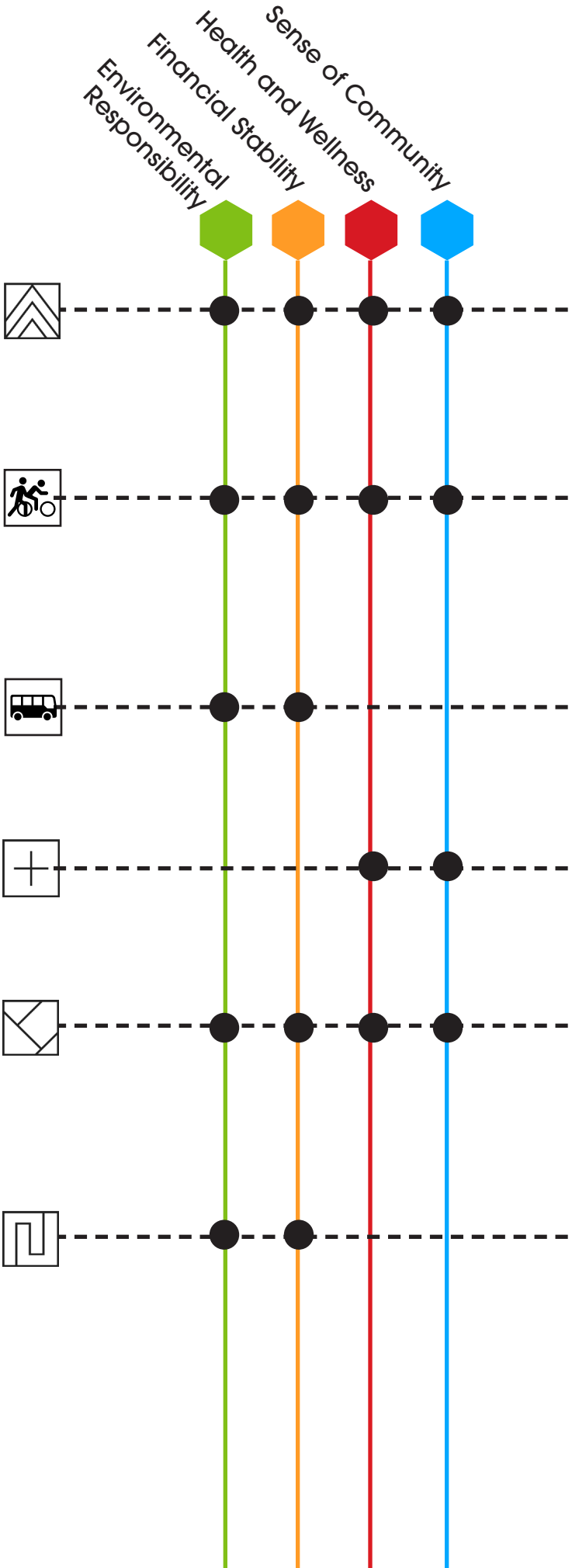
4.4 Vision & Objectives

A well-designed multi-modal transportation network can be a strong contributor to achieving the local goals that are articulated in various plans. Simplicity in design and functionality usually means establishing a **simple and effective multi-modal transportation network** that everyone can understand and use. Understanding why people may react to transportation options in different ways, based on their personal needs and circumstances, helps to create a multi-modal network that is intuitive and that reduces the barrier to use - potentially offering new and sustainable ways to travel for many. The expectation of the network is captured and incorporated in its overall vision and the MTMP articulates this vision by describing what that might look like in terms of service and infrastructure, and then outlines a plan to evolve towards that vision. The creation of a vision is necessary to inform other plans and create a sense of unity and cohesion amongst them.

The vision statement is intended to describe the end state of the transportation network (the ideal outcome)—in the future when all the objectives have been achieved. By its nature, it is inspirational and idealistic.

Vision Statement: A multi-modal transportation network that integrates a mixture of infrastructure and mobility options for residents to access jobs, services, and recreation within and beyond the city safely and efficiently.

It is important to note that the emphasis of the vision statement is on what the end will be like, and less on what Clarence-Rockland needs to do to get there. Statements on how this is achieved are secondary and are stated as objectives and measures.



Taking into consideration the various components of this study six (6) objectives were developed to achieve the vision statement. These objectives were tailored and adjusted throughout the study through consultation & stakeholder engagement:

Objective 1: Provide Infrastructure for Growth:

Plan for the multi-modal transportation network's future needs over the next 5 to 15 years so that it not only addresses existing issues, but also accommodates future growth sustainably.

Objective 2: Prioritize and Encourage Active Transportation

Cycling and walking should be options not only as separate modes of transportation, but also as a means to address future growth and traffic congestion. Active transportation infrastructure should be complimentary toward promoting transit, tourism, and healthier communities.

Objective 3: Prioritize and Encourage Transit

Transit should be a viable alternative for residents, leveraging multi-modal connections and emerging/creative service solutions to maximize its investment.

Objective 4: Improve Safety for All Road Users

The multi-modal transportation network should be safe, comfortable, and reliable for all road users regardless of how residents choose to travel throughout Clarence-Rockland.

Objective 5: Enhance Multi-Modal Connections

Infrastructure should be planned and coordinated between different modes of transportation to create one multi-modal transportation system instead of separate siloed networks for each mode. This should promote the idea of using different modes for different trips and needs.

Objective 6: Leverage technology and data for the future

Trying to plan for the future is a continually moving target, and one that is bound to change based on new technology and data that is developed over time. The multi-modal transportation network should be planned to leverage emerging and future technology in a way that allows the system to grow proactively and flexibly to maximize investments in transportation.

5.0 A Plan for the Future

5.0 A plan for the future

5.1 Active Transportation Evaluation

The City of Clarence-Rockland currently has a small disconnected network of active transportation facilities, primarily focused within Rockland. This MTMP provides an opportunity to develop an active transportation plan that considers linkages between the existing network, as well as creating new connections to places that residents want to go. To develop a recommended network the following steps were conducted:

- Identify Existing/Future Trip Generators and Network Gaps (summarized in Chapter 2)
- Identify Candidate corridors through consultation with residents (summarized in Chapters 2 and 3)
- Evaluate and refine the candidate corridor network (summarized in the following Section)
- Recommended Active Transportation Network (summarised in Chapter 5.2)

5.1.1 Facility Selection

Research shows that one of the most effective measures for improving overall cyclist safety within a road network is increasing the number of cyclists using the system. However, in order to encourage cyclists of different ages and abilities, a variety of bicycle facilities with different degrees of separation between motorists and cyclists must be available. Separation of cyclists and motor vehicles becomes increasingly more important as traffic volumes and operating speeds increase, and on corridors with a high propensity for conflicts.

The selection of active transportation facility type focuses around:

- Vehicular Speed;
- Vehicular Volume;
- Number of accesses onto the roadway; and
- Availability of On-street parking.

Bicycle facilities provide various levels of separation between cyclists and motorists. These range from shared travel lanes with no separation but with the option to provide sharrow markings, to bicycle lanes with a painted buffer or physical barrier. Other alternatives are in-boulevard bicycle facilities within the highway right-of-way, or off-road multi-use pathways outside of the highway right-of-way as summarized in **Table 5.1**.

A direct comparison of the relative safety of different types of bicycle facilities and degrees of separation is difficult. A bicycle facility with greater separation may appear to be 'safer' but may result in more conflicts at intersections and driveways, especially if the separation makes the cyclist less visible to the motorist. The overarching cycling facility selection follows a 3-step process:

Step 1: Facility Pre-Selection: Pre-select an appropriate facility type based on vehicular volume and speed using the Ontario Traffic Manual Book 18 Nomograph as shown in **Figure 5.1**.

Step 2: Consider corridor specific characteristics: Consider design characteristics such as visibility of cyclists, number of driveway accesses and whether on-street parking is provided.

Step 3: Justify Decision and Identify Design Enhancements: Document the rationale.

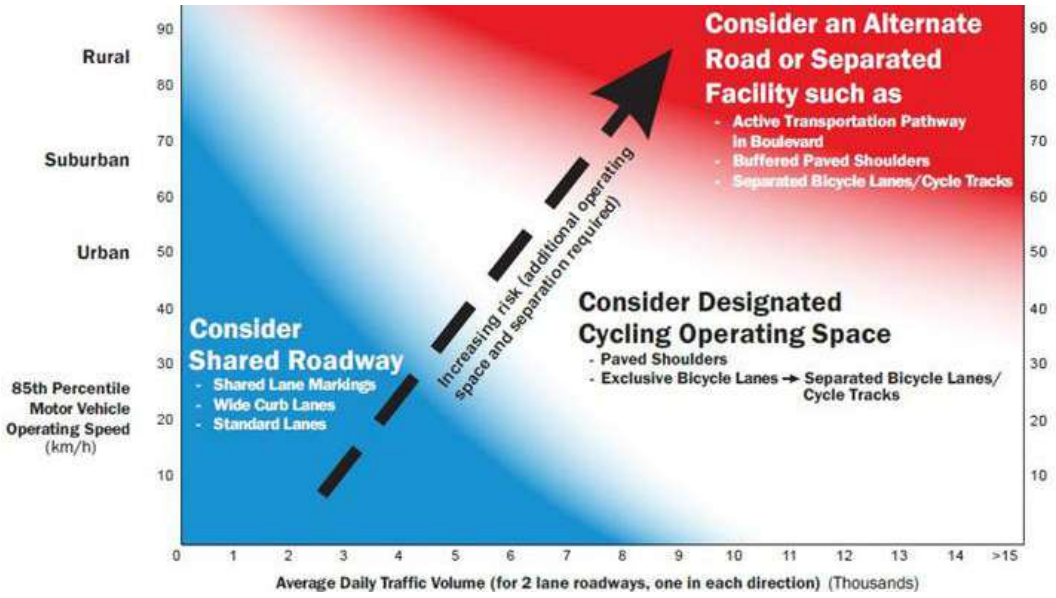


Figure 5.1 Cycling Facility Selection Nomograph from OTM Book 18

Source: Ontario Traffic Manual Book 18

Generally, there are four types of cycling facilities that are distinguished based on their degree of separation from traffic and placement within the roadway right-of-way. These four facility types and their associated geometric requirements are summarized in **Table 5.1** and are further described below.

Table 5.1 Type of cycling facilities and their desired and minimum widths according to OTM Book 18

Facility	Type	Desired Width	Suggested Minimum Width
Separated Bike Lane	Bike Lanes	• 2.0m lane • 1.2m buffer	• 1.5m lane • 0.5m buffer
Painted Bike Lane		• 1.8m lane • 1.2m buffer (if on-street parking)	• 1.5m lane • 0.5 buffer (if on-street parking)
Signed Route	Shared Roadways	• 4.0-4.5m shared lane	• 3.0-4.0m shared lane
Paved Shoulder		• 1.5-2.0m shuolder	• 1.2m shoulder
Raised Cycle Tracks		• 2.0m lane • up to 1.0m curb	• 1.5m lane • up to 1.0m curb
Multi-Use Path	In-Boulevard Facilities	• 4.0m two-way operation • up to 1.0m curb	• 3.0m two-way operations • up to 1.0m curb

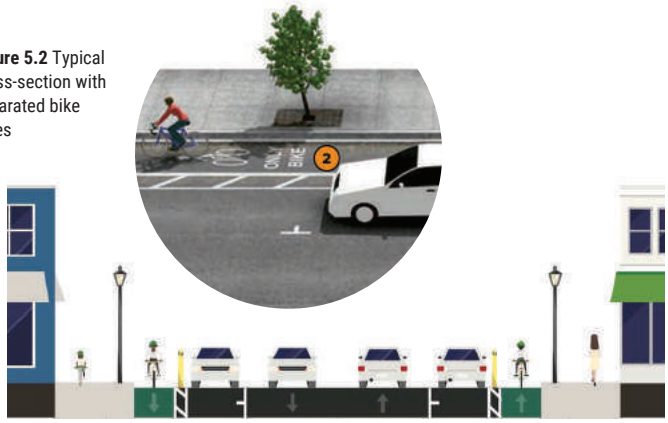


Figure 5.2 Typical cross-section with separated bike lanes

Separated Bike Lanes:

Bike lanes with flex bollards are meant for roadways with a large number of trip generators, high volumes of traffic and on-street parking to provide an additional layer of safety for cyclists separating them from motorized vehicles using flex bollards or planters. This mitigates the chances of getting hit by a door from a parked car or from vehicles stopped at the curb. According to the Ontario Traffic Manual, Book 18, for cycling facilities, it is recommended that this type of facility have between 1.5-2.0m of lane width and 0.5-1.2m buffer.

Figure 5.3 Typical cross-section with painted bike lanes

Painted Bike Lanes:

Painted bike lanes serve many of the same functions as separated bike lanes to service areas with high trip generation, but do not need the same degree of protection due to lower traffic volumes and fewer roadway conflicts such as parked vehicles or pick-up & drop-off locations. Painted bike lanes often consist of painted lanes on the roadway with associated signage. According to the Ontario Traffic Manual, Book 18, for cycling facilities, it is recommended that this type of facility have between 1.5-1.8m of lane width and 0.5-1.2m buffer where bike lanes are adjacent to on-street parking between the parking lane and a general purpose lane.

Figure 5.4 Typical cross-section with sharrows

Signed Routes

Signed Routes:

Signed routes are shared roadway facilities recommended on low-volume roadways meant to connect to higher-order cycling facilities. Sharrows comprise primarily of road painting and signage that is intended to alert motorists to share the lane.

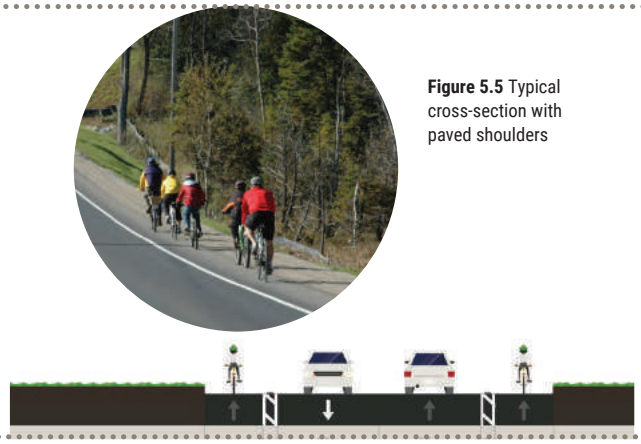


Figure 5.5 Typical cross-section with paved shoulders

Paved Shoulders

Paved Shoulders:

Paved Shoulders are meant for rural areas with low cycling volumes. The shoulder is paved to allow for cyclists to travel separated from traffic when the shoulder is not being used for other purposes. Paved shoulders provide an opportunity to connect Rockland with rural areas and hamlets by cycling.

Figure 5.6 Example of a multi-use path

Multi-Use Paths

Multi-Use Paths:

Multi-use paths are shared pathways that can be used by pedestrians and cyclists that are separated from traffic and provide a much safer environment, particularly on roadways with high motor vehicle speeds and volumes. Multi-use paths are often 3m to 4m wide to allow for two-way movement and are often used as mid-block connections within and between parks and other recreational areas, but can also be used in boulevards to provide pedestrian and cyclist access to neighbourhoods.

5.1.2 Network Evaluation Criteria

The evaluation criteria for active transportation improvements are focused around five (5) criteria including:

- **Population Density;**
- **Incline;**
- **Crossing Barriers;**
- **Access to Major Destinations; and**
- **Network Connectivity**

These evaluation criteria and rationale are described in this section, with a line-by-line summary of each recommended improvement with the associated costs, implementation timing, and evaluation score provided in **Appendix B** of this MTMP document.

Population Density

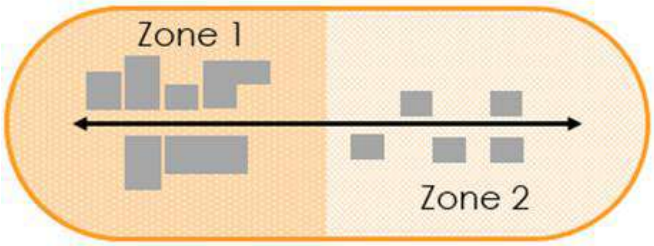


Table 5.2 Evaluation Criteria for Population Density

Criteria	Points
< 15 people/Km^1	0
15 - 50 people/Km^1	10
>50 people/Km^1	15
Maximum Points:	**15**

Rationale: Active transportation facilities are more likely to be used where they are connected to more people or jobs. The higher the density, the higher the likelihood that active transportation facilities will encourage and shift people to use them.

Analysis Approach: Due to the lack of employment data, 2016 census population data was used to calculate population density by dissemination area. A buffer of 500 meters was developed around each candidate corridor and the population density in the buffer area was determined as a weighted average of the density within each dissemination zone it stretched across.

Evaluation: The criteria points that were assigned based on population density thresholds are summarised in **Table 5.2**.

Incline

Table 5.3 Evaluation Criteria for Incline

Percent Incline	Description	Points
<1%	A flat road	15
1-3%	Slightly uphill but not particularly challenging	10
4-6%	A manageable gradient that can cause fatigue over long periods	5
7-9%	Starting to become uncomfortable for seasoned riders, and very challenging for casual riders	1
10%+	Difficult for all riders	0

Rationale: Roadway incline can present a significant challenge and deterrent for cyclists using available facilities. If a route is too challenging, cyclists will choose to use an alternate route to access their destination. A flat route provides the most comfortable ride, while inclines of 1-3% present a slight impact on cycling effort, but are mostly manageable for casual riders, a 4-6% incline presents some challenge over extended lengths for casual users and inclines greater than 7% presents a challenge for all riders.

Analysis Approach: An average incline percentage was calculated for each segment of active transportation improvements leveraging GIS data and validating it with Google Maps data.

Evaluation: The criteria points that were assigned based on incline percentage thresholds are summarised in **Table 5.3**.

Crossing Barriers

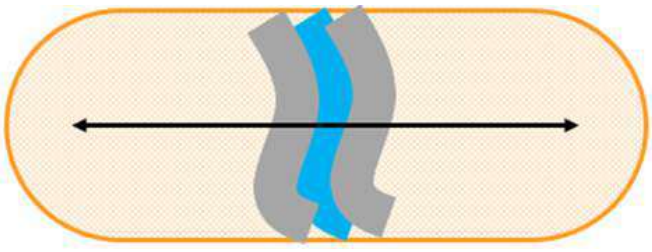


Table 5.4 Evaluation Criteria for Crossing Barriers

Criteria	Points
Crosses County Road 17	15
Crosses St. Jean Street	15
Maximum Points:	**30**

Rationale: Resident survey response identified County Road 17 and St. Jean Street as barriers between North-South, and East-West travel, respectively. Providing linkages across these barriers can present vital connections to areas of the City that may feel isolated. For instance, it is currently difficult to get to the commercial retail area on Carmen Bergeron Street from the east end of Rockland due to the winding route that is needed to access this area, particularly for active transportation users. Similarly, due to the high volume of traffic on County Road 17 there are limited crossing opportunities to connect new emerging residential neighbourhoods on the north of the roadway with the built-up core to the south.

Analysis Approach: Any links crossing one of the two barriers identified were assigned 15 points per barrier crossed.

Evaluation: The criteria points that were assigned based on each candidate corridors ability to provide a connection across barriers are summarised in **Table 5.4**.

Access to Major Destinations

Table 5.5 Evaluation Criteria for Major Destinations

Criteria	Points
Community Destinations	5
Supporting Active School Travel	10
Key Commercial Areas	5
Last mile connections to Transit	5
Maximum Points:	**25**

Rationale: Major destinations such as community centres, employment centres, or schools are all places that people typically want to go to. Providing an active transportation network is as much about providing an available, and connected option, as well as creating a network that takes people where they want to go.

Analysis Approach: 500m buffer was assigned around each candidate corridor and the number of trip generators within the buffer was used to determine its score for the criteria, up to a maximum of 25 pts. The Clarence-Rockland zoning map and common points of interest obtained through the online survey were used to determine the trip generators. community centres, parks, libraries and arenas were classified as community destinations. Business parks, commercial core areas and commercial service providers were classified as key commercial destinations. Location of current transit stops were used to determine last mile transit connections.

Evaluation: The criteria points that were assigned for each major destination type within a candidate route's buffer area are summarised in **Table 5.5**.

Network Connectivity

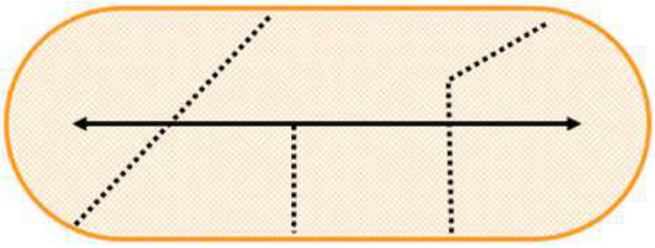


Table 5.6 Evaluation Criteria for Network Connectivity

Criteria	Description	Points
Existing Facility	Connects to an existing active transportation facility.	10
Minor Additions	A future candidate corridor that would require minor cost/effort to implement.	10
Rehab Additions	A future candidate corridor that would be able to be implemented as part of a regular rehab or maintenance work, which would typically be more long-term.	5
Capital Investments	A future candidate corridor that would require specific capital investment to implement, thus potentially being much longer-term.	2
	Maximum Points:	**25**

Rationale: It is important that active transportation corridors create a connected network that doesn't leave users isolated or stranded. Greater connections improve the usability of active transportation infrastructure. This factor evaluates which candidate corridors will provide the best network connections between existing and future corridors.

Analysis Approach: The number of network connections for each candidate corridor were evaluated based on whether they are existing connections, thus requiring no additional investment and providing an immediate benefit once built, or whether it would connect to future corridors that would require varying degrees of investment to make a useful connection. Each of the different connection types were assigned points.

Evaluation: The criteria points that were assigned based on network connectivity attributes are summarised in **Table 5.6**.

5.2 Recommended Multi-Modal Network

This section of the MTMP summarises the full-build out of the recommended multi-modal networks. Details on costing and implementation are provided in subsequent sections.

5.2.1 Pedestrian Network

The recommended pedestrian network focuses on providing a connected network of walking routes that address residents' most important needs and underline this MTMP's objectives in terms of:

- Objective 1: Providing Infrastructure for Growth;
- Objective 2: Prioritizing and Encouraging Active Transportation;
- Objective 3: Prioritizing and Encouraging Transit;
- Objective 4: Improving Safety for All Road Users, and
- Objective 5: Enhancing Multi-Modal Connections.

All of these objectives can be distilled into the following broad criteria that include:

- Improving Safety,
- Improving Accessibility;
- Creating connections to places people want to go to; and
- Integrating the pedestrian network with other modes of transportation such as transit and cycling.

At first blush it may seem as if the pedestrian network separately serves an isolated need for walking, but it can provide a vital first/last mile link between other complementary modes of transportation.

For instance, there is a saying that says, "every transit trip begins and ends with a walk". Pedestrian connections are vital to supporting and encouraging transit usage by providing safe access to transit stops. Similarly, sidewalks support local retail and neighbourhood trips, even when automobiles are used to make final endpoint connections to destinations. Nowhere is this more prevalent than along Laurier Street where the sidewalks support and provide a connection to retail, or along Patricia Street where sidewalks provide a key connection to various schools.

The recommended pedestrian network incrementally expands upon the existing network that is primarily focused along the urban core of Rockland and expands outward to provide connections to schools, transit stops, and several other community amenities as visualized in **Figure 5.7**.

Due to the nature of the typical distances that are amenable to walking, the network was designed to fill-in network gaps, particularly within neighbourhoods, to connect residential areas with retail, community facilities, schools, and parks. The short-term (2023) pedestrian network fills-in several of these gaps (as visualized in **Figure 5.8**), while the subsequent horizon years incrementally expand toward new development areas to culminate in an additional 63 km of pedestrian facilities across Rockland and Bourget as summarised in **Table 5.7** by the 2031 horizon year.

Pedestrian improvements were primarily focused on Rockland and Bourget, with the understanding that pedestrian connections in other settlement areas could be planned and made as development occurs in the future.

Many communities struggle with expanding the sidewalk network due to the high cost of concrete. It is currently estimated that 1 km of sidewalk costs approximately $300,000. To mitigate the high costs of providing pedestrian infrastructure many of the planned residential neighbourhoods, particularly in the south of Rockland and in Bourget, are being built with multi-use paths as a means to provide flexible active transportation infrastructure that can both serve pedestrian and cyclist demands. These corridors can have concrete sidewalks added over time as development occurs and usage increases.

A detailed line-by-line summary of each individual improvement along with their associated costs and associated evaluation scores are provided in **Appendix B** of this MTMP document.

Table 5.7 Recommended Kilometres of Pedestrian Facilities added by Horizon year

Pedestrian Facility	Existing	Kilometres Added			Total	Change
		2023	2028	2031+		
Sidewalks	35.6	12.5	9.1	2.9	60.1	+24.5
Multi-Use Paths	17.7	4.5	22.4	19.1	63.7	+46.0
Total	**53.2**	**17.0**	**31.5**	**22.0**	**123.8**	**+70.5**

"Il faut penser que chaque nouvel aménagement de trottoirs, pistes,rues etc. requiert des investissement d'entretien."

- Annonymous survey respondent

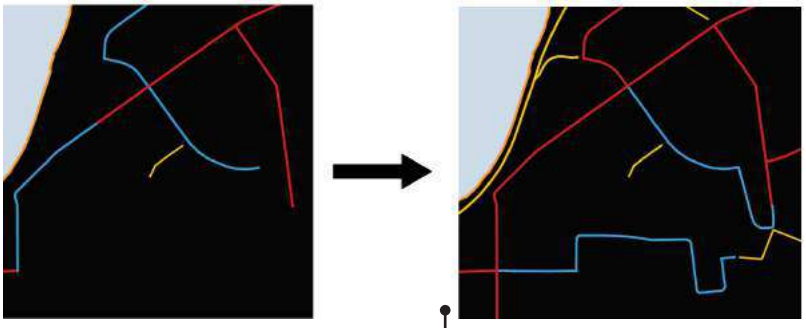


Figure 5.8
Example of how the recommended network fills-in gaps in the existing network Cycling network

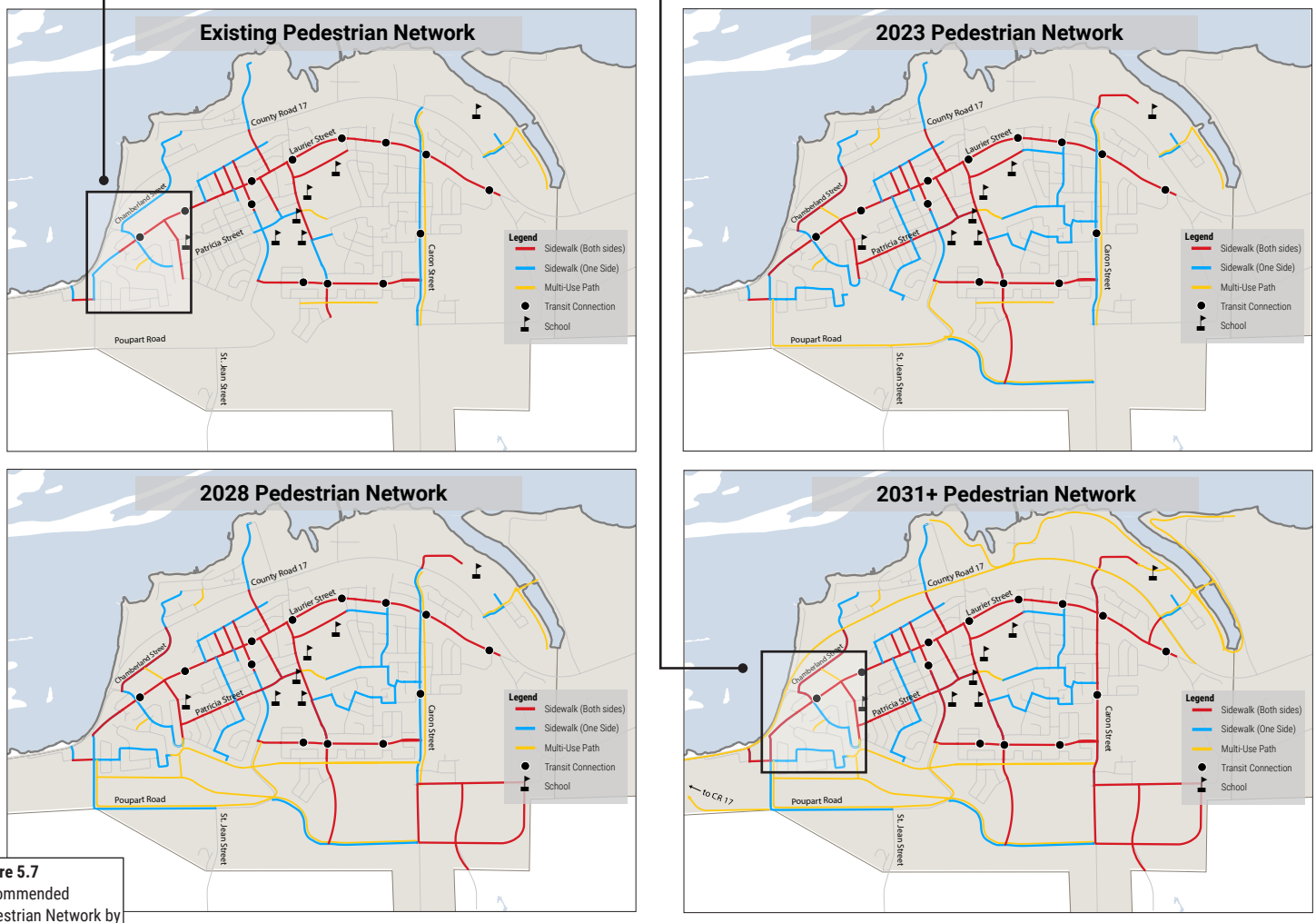


Figure 5.7
Recommended Pedestrian Network by Horizon Year

5.2.2 Cycling Network

The recommended cycling network focuses on the same objectives and needs as the pedestrian network including a focus on improving safety, accessibility, creating connections to key trip generators, and integrating the network with other modes of transportation.

It is important to distinguish that cycling is typically best suited for trips that go distances of 3 Km or less, whereas most walking is typically done for distances of 1 Km or less. As a result, cycling is complimentary to short-distance trips and fits nicely between walking and other modes of transportation such as transit to create cohesion between different modes.

The resulting recommended cycling network comprises a mixture of dedicated and shared cycling infrastructure culminating in an overall network of 200 km of cycling routes that are recommended to be added incrementally through the 2031 horizon as visualized in **Figures 5.9** to **5.12** and summarised in **Table 5.8** by horizon year.

This represents an additional 151 km of cycling infrastructure over existing levels through the next 15+ years that will bring some form of cycling facility within 100m of 80% of the City's settlement areas compared with only 30% today.

Within Rockland a network of dedicated, and shared cycling infrastructure is planned to support existing and new neighbourhoods that will be built through 2031. The backbone of the system will focus around the Protected and Painted bike lanes that are primarily placed along Major and Minor collector roadways to provide high-quality cycling infrastructure connections across Rockland.

Within new emerging subdivisions, multi-use paths are planned to provide a flexible solution to addressing combined pedestrian and cycling needs, while also promoting recreational usage via new pathways along the Waterfront and through the conservation lands west of St. Jean Street.

Additionally, Rockland's varying landscape and elevation presents an opportunity to create a cycling network that provides desirable routes that also mitigate the physical strain for movement across the city. For instance, the elevation between the area surrounding Poupart Road near St. Jean Street and the neighbourhood directly north around Heritage Drive and St. Jacques Street is a difference of 30m of elevation. The recommended network is laid out to provide softer inclines across the network that both respect the impact on cyclists as well as the natural landscape.

Many of the cycling corridors align with pedestrian corridors and provide connections to transit stops. The current road network within Rockland is difficult to serve by fixed route transit, which presented an opportunity to leverage cycling connections to provide short-to-medium distance first/last mile connections to transit. Whereas only 25% of Clarence-Rockland's settlement areas are within 400m of a bus stop, cycling connections provide an opportunity to create a larger catchment area for transit. This will provide an additional option for residents to access transit beyond driving to a Park-N-Ride lot or walking long distances to a stop.

A key component of the network includes a long-term connected rural network leveraging planned improvements at the County level to implement paved shoulders along County Roads that integrate with the Prescott-Russel Trail, as well as provide internal connections between each of Clarence-Rockland's settlement areas.

A detailed line-by-line summary of each individual improvement along with their associated costs and associated evaluation scores are provided in **Appendix B** of this MTMP document.

"Où sont les routes cyclables à Rockland? Mon fils a eu un accident en descendant les côtes St-Jean, un camion la dépasser au-dessus la limite de vitesse , il a dérapé dans le gravier et s'est briser la hanche."

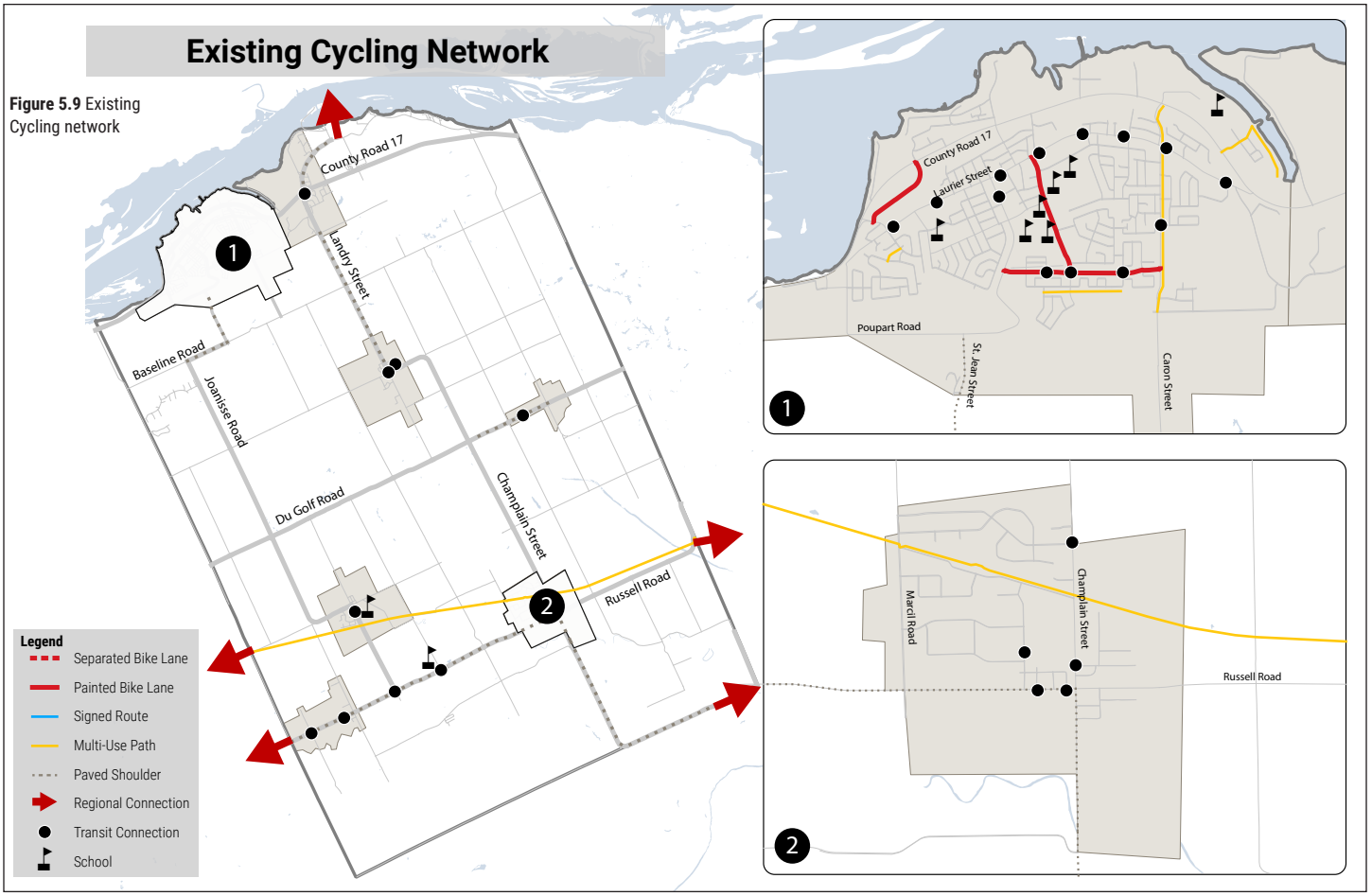
- Annonymous survey respondent

Table 5.8 Recommended Kilometres of Cycling Facilities added by Horizon year

Cycling Facility Type	Existing	Kilometres Added			Total	Change
		2023	2028	2031+		
Protected Bike Lanes	-	1.4	-	0.8	2.2	+ 2.2
Painted Bike Lanes	3.4	7.3	2.9	4.8	18.4	+15.0
Signed Route	-	8.5	0.9	-	9.4	+9.4
Paved Shoulders	28.1	-	2.0	77.3	107.4	+ 79.3
Multi-Use Paths	17.7	4.5	22.4	19.1	63.7	+ 46.0
Total	**49.2**	**21.7**	**28.2**	**102.0**	**201.0**	**151.8**

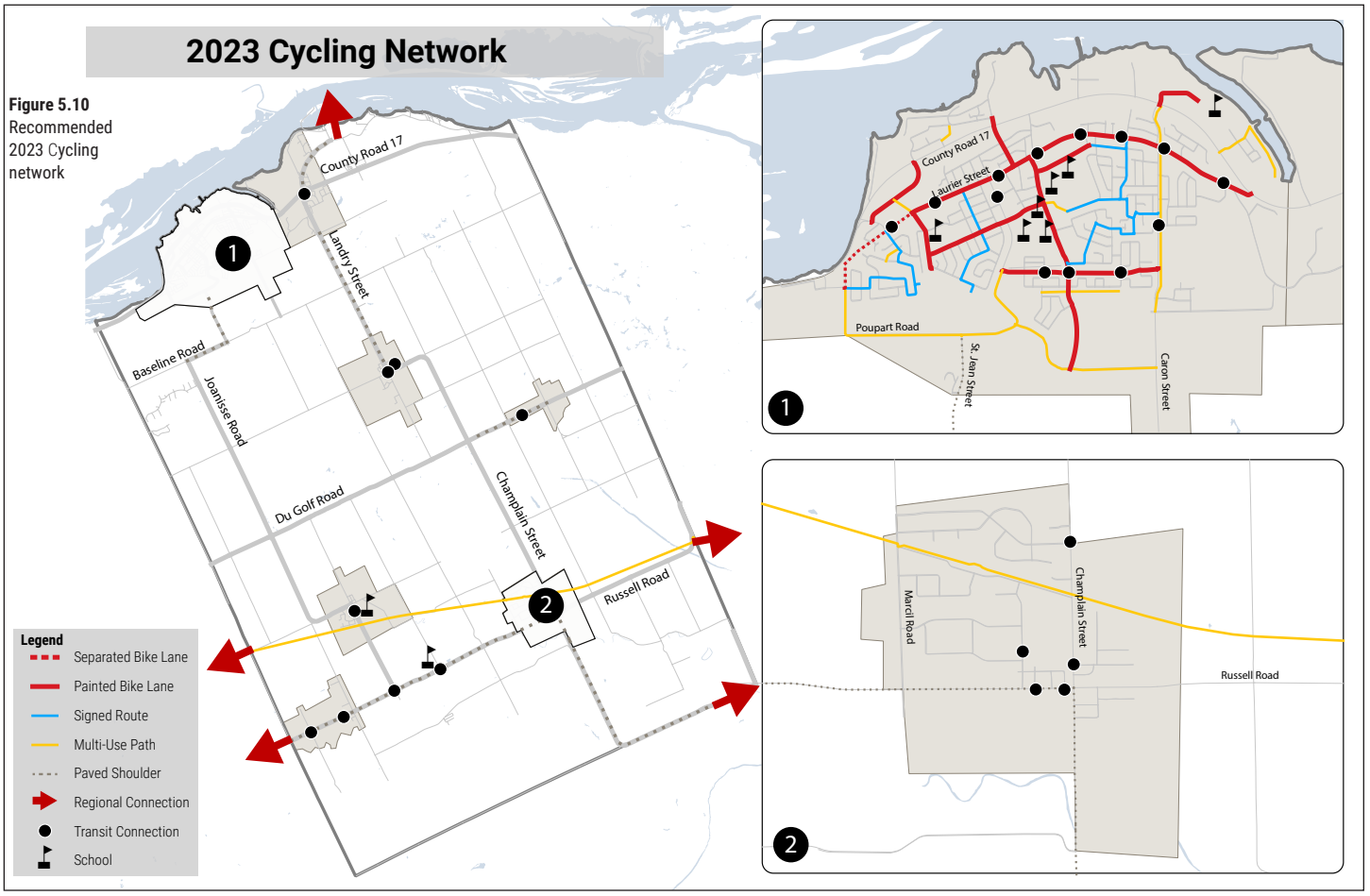
Existing Cycling Network

Figure 5.9 Existing Cycling network



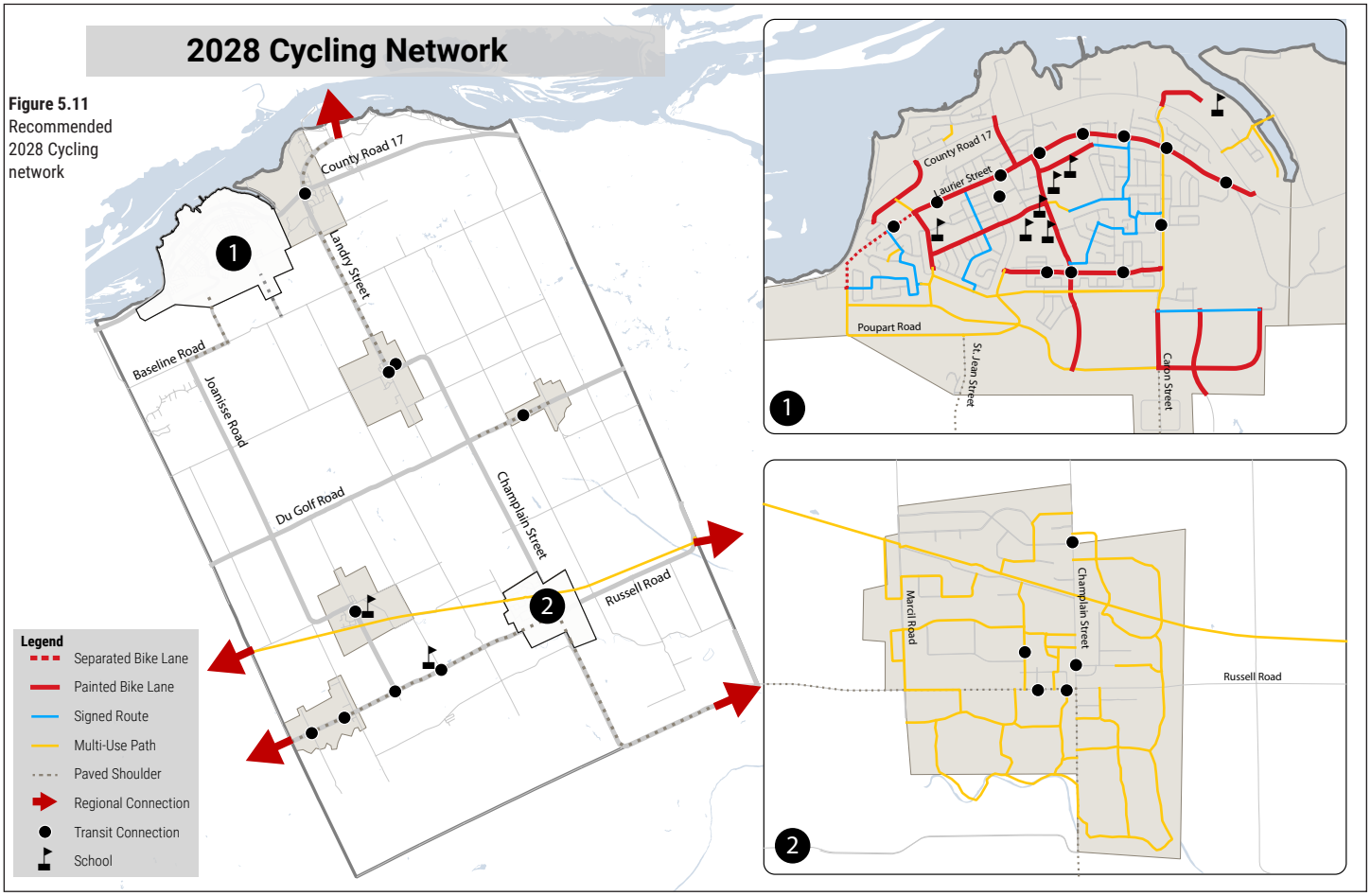
2023 Cycling Network

Figure 5.10 Recommended 2023 Cycling network



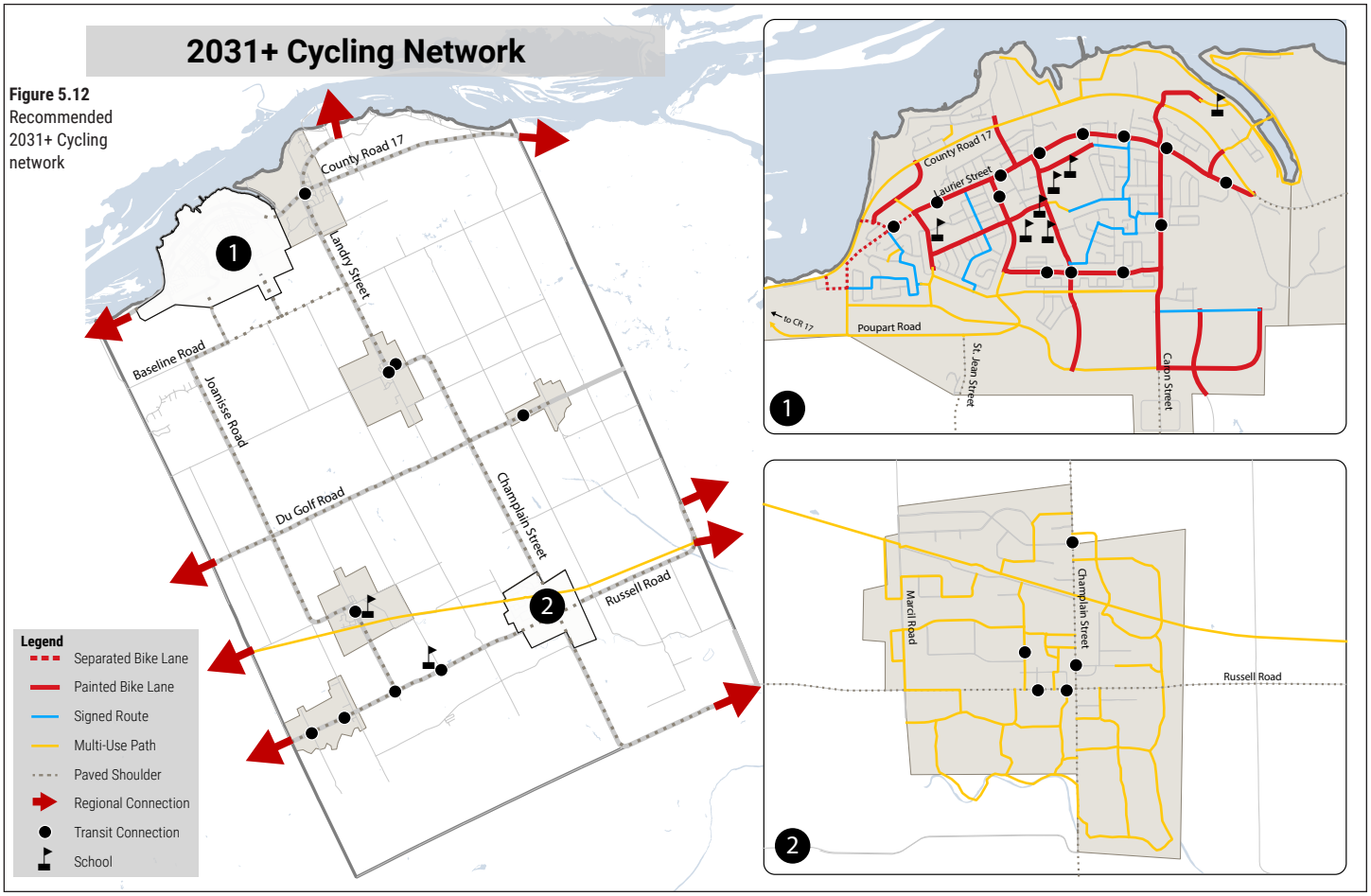
2028 Cycling Network

Figure 5.11
Recommended 2028 Cycling network



2031+ Cycling Network

Figure 5.12
Recommended 2031+ Cycling network



5.2.3 Transit Network & Service Strategy

The existing transit system has experienced declining ridership over the past three years as summarised in **Section 2.2.3** of this document. This has led to fewer trip times and a mandate from Clarence-Rockland City Council in February 2019 to contract the operation, planning and maintenance of the service to a private provider.

While the evaluation and development of transit network improvements were not part of the scope of this MTMP, it is important to acknowledge the integrated role that transit plays within the multi-modal transportation network.

The development of the active transportation network was done as a means to support and encourage transit usage. As CR Transpo evolves in the future it will be important to continue to integrate transit services with key multi-modal connections leveraging a mixture of Park-N-Ride, pedestrian, and cyclist amenities to encourage sustainable modes of transportation.

The travel demand data obtained through this MTMP has identified two very clear transit demands within the City of Clarence-Rockland:

- **External Connections to Ottawa**; and
- **Internal Connections between Rockland and rural settlement areas**.

5.2.3.1 External Linkages

The City of Ottawa is in the midst of opening their first Light Rail Transit (LRT) line to Blair Road with plans to further extend it to Trim Road by 2023. The advent of these expansions present an opportunity to integrate CR Transpo with the OC Transpo network to provide a shuttle service to the LRT terminal and increase frequencies to potentially provide longer service hours than the current limited peak period service.

Highway 174 / County Road 17 is planned to be widened from the existing two-lane cross-section to four lanes between Trim Road in Ottawa and Landry Street in Clarence-Rockland. The Environmental Assessment identified a potential to include an HOV or transit-only lane that would allow CR Transpo vehicles to by-pass congested areas along the corridor.

5.2.3.2 Internal Linkages

Several municipalities across Ontario and Quebec have been using flexible transit services for rural and low-density areas. Flexible transit services comprise a family of transit services that have some combination of flexible routing and scheduling. They are typically implemented in areas where the travel demand is less than what is required to sustain a form of fixed route transit. Three potential Flexible route options that are typically used include:

- Route Deviation;
- Point Deviation; and
- Zone Route.

A summary and description of each of these options is provided in **Table 5.9** on the following page.

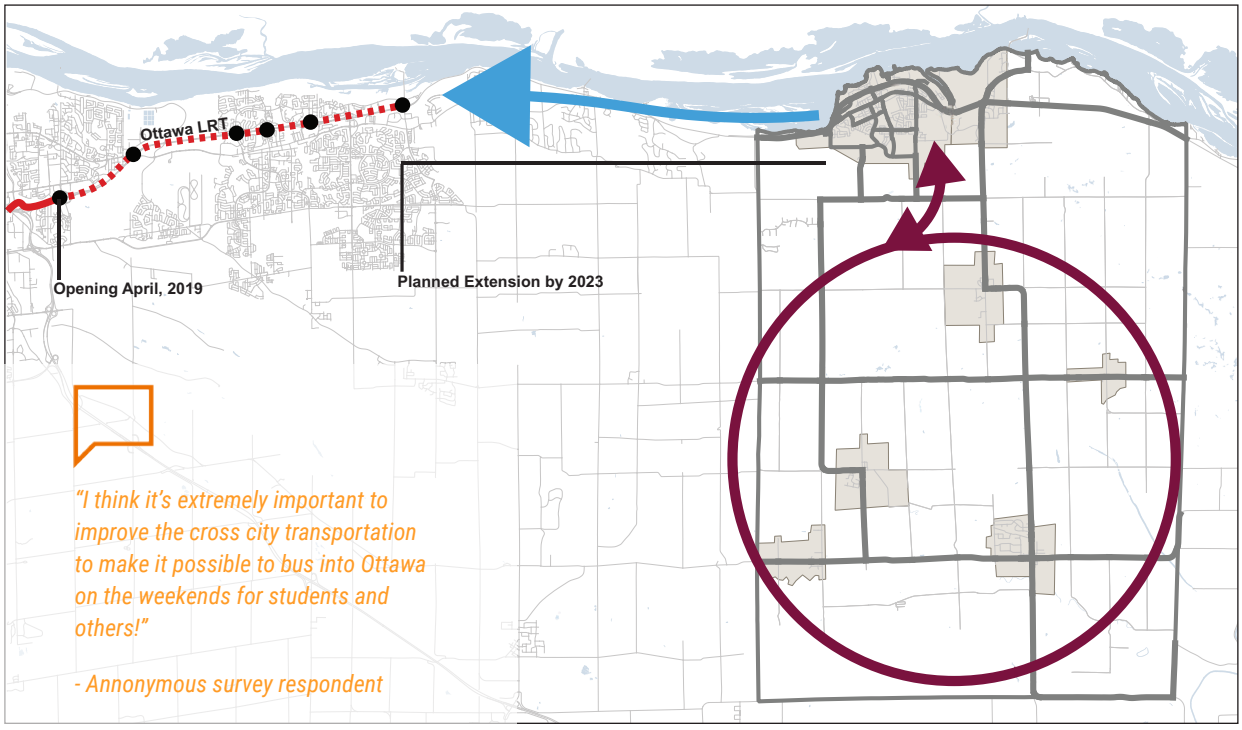


Figure 5.13 Visualisation of the Ottawa LRT expansion and the two identified transit demands in Clarence-Rockland

Flexible demand-responsive transit solutions have been implemented in various municipalities across Canada with success including:

- Taxibus (Rimouski, QC);
- Uber Transit (Innisfil, ON); and
- Taxibus – STM (Montreal, QC).

The three cases presented make use of dispatching technology to offer a demand-responsive service. This means that trips are only made if one or more rides have been booked. The origin, destination and routing of trips depend on the travel needs of each taxibus' passengers. They also make use of existing physical transit infrastructure by starting and ending trips at any of the numbered bus stops in the urban areas. In Rimouski's case, most residents reside within 500 metres of a stop.

These services involve dynamic scheduling, which requires hands-on management. The complex logistical process of receiving calls, organizing rides, dispatching taxibuses and verifying fare payment is simplified by dispatching software.

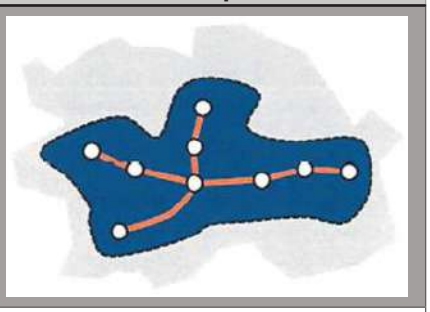
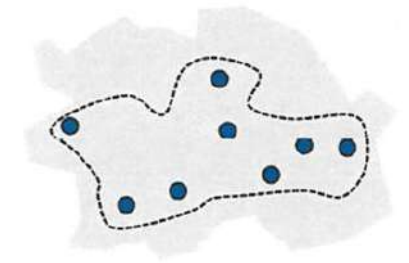
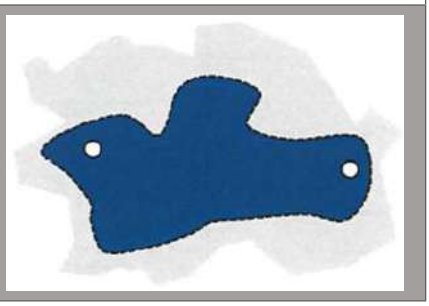
Where these three services distinguish themselves is in who provides the vehicles for the service. In Rimouski and Innisfil, the municipalities came to an agreement with local taxi companies to subsidize fares within a certain municipal boundary, whereas STM uses transit mini-buses to provide the service. New users must register with the municipality to receive a numbered user card. Passengers can either pay a fee per trip or buy a monthly pass. Passengers are penalized if they miss a reserved trip. Users are charged the equivalent of a single cash fare, payable before their next trip.

All three systems' successes stem from the lower capital costs required to implement the service in relation to the lower ridership. In the Rimouski and Innisfil examples, the cost of providing demand-responsive services cost less than the purchase and operation of one or two buses annually

5.2.3.3 Feasibility Study Recommendations

A transit feasibility study was produced in 2014 analyzing the City's community profile and conducted a peer review of transit systems in 11 comparable municipalities. This study did not examine the existing CR Transpo service, but rather the study was designed to complement the existing transit system.

Table 5.9 Flexible Transit Route Options

Flexible Route Type	Example
Route Deviation: A defined path and schedule is used to define a service area, but the vehicle(s) may serve requests for a pick-up or drop-off within a specified zone around the path. The deviation-zone may or may not be strictly bounded	
Point Deviation: Service is provided within a defined zone with a set of specific stops, but the path between the stops is unspecified and the vehicle will serve locations within the zone on request.	
Zone Route: A primarily demand-responsive service that has set departure and arrival times at its end points. The Zone Route is effective when there is not a defined corridor to travel, but a specific origin or destination exists with an area.	

Short-Term Recommendations

The findings of the Transit Feasibility study found that in the short-term a fixed route service was not recommended for the City given the anticipated low demand and high costs, however, an on-demand transit service was deemed to have significant potential. It was recommended that an 18-month "pilot" of an on-demand transit service was to be used to further evaluate the demand for transit, to confirm resident support for the service, and to test service design and delivery options. The specifications of the service were:

- **Duration:** 18-months;
- **Service Design:** door-to-door service or pick-up and drop-off points;
- **Service Delivery:** could be delivered by the City, contracted to an external provider, or to a local taxi company or other community-based transportation organization.
- **Monitoring and evaluation:** need to conduct rigorous monitoring and evaluation including ongoing ridership tracking, origin and destination tracking, and customer surveys delivered multiple times over the course of the pilot.

Long-Term Recommendations

Long-term (5 -10 years) recommendations for transit included:

- Fixed routes in dense areas;
- On-demand service in rural areas; and
- Regional coverage.

The overarching recommendation was that given future population growth, density, and more concentrated destinations, it may be feasible to implement fixed routes within the urban communities of the city, particularly in Rockland. The fixed route system would be supplemented by on-demand service for residents in rural areas and villages to connect to and from the fixed route system.

Finally, a regional on-demand service led by the United Counties of Prescott-Russell could eventually provide regional connections for trips within Prescott-Russell.

5.2.3.4 Service Standards and Contracting Recommendations

Based on a review of CR Transpo's service and the mandate for contracting transit services to the private sector a recommended business model has been prepared with the intent of providing Clarence-Rockland with greater control over the design and delivery of its transit services. The recommended model involves CR Transpo contracting for the provision of its services directly with a service provider. At the same time, the business model involves the municipality increasing its transit staff to provide a level of oversight that will ensure high value for the investment the municipality is making in its transit program.

A performance-based contracting strategy is recommended for Clarence-Rockland with the goal of providing high quality service being delivered at the lowest possible price for riders and the taxpayers of the municipality.

The Competitive Process

Contracting for transit service realizes the benefits of market competition. While some service providers may be the dominant private transit service provider in the area, there are other private contractors like Voyageur, First Transit and new market entrants like TOK Transit that regularly bid on public tenders in the Province. We recommend that CR Transpo hold a vendor conference as part of a Request for Information (RFI) process to solicit industry input into the development of the eventual Request for Proposals (RFP). The RFI allows Clarence-Rockland to refine the competitive process while promoting competition that will drive down the price of providing services. The setting is informal and non-binding, affording potential contractors a chance to become familiar with the CR Transpo opportunity. Prospective bidders can submit questions and comments that will either be incorporated into the final version of the RFP or be answered directly as addendums to the RFP. Please refer to the attached RFI document for York Region Transit as an example in **Appendix D**.

Request for Proposals

The resulting Request for Proposals will include input from the RFI process as well as industry best practice. It is recommended that the RFP include the following:

- A description of CR Transpo's services including hours of revenue service, kilometers of revenue service
- Descriptions of the Transit fleet and facilities
- Details of the expected contractor responsibilities and requirements
- Details of the requirements of the project staff including required years of experience for the General Manager, Operations Manager and Maintenance Manager
- Financial requirements of the prospective contractor including a request for annual reports, annual financial statements, and presentation of financial capability to operate the service
- Technical Proposal requirements with respect to proposal length, submission requirements, and organization
- Service performance standards, processes to enforce the standards, liquidated damages, and incentives for performance
- The criteria to be used to evaluate proposals

- Price proposal formats and requirements
- Schedules for pre-bid meetings, potential dates for oral presentations if required, and a schedule for the entire competitive process

It is expected that the RFP process, from the RFI meeting through creation of the RFP to evaluation of the proposals and negotiating a final agreement, should take approximately six months.

Performance Standards

The proposed business model for the provision of CR Transpo services provides the opportunity for the City to improve service quality, lower operating costs and foster innovation. Establishing performance standards establishes expectations that will foster the relationship between the City of Clarence-Rockland and its service contractor.

Performance standards factor into the evaluation of price proposals. There are normally two payment structures for transit contracts:

- Fixed Fee: This refers to an hourly price that reflects the fully allocated cost of providing the levels (hours and kilometres) and types (fixed-route, express, accessible, on-demand, etc.) of service;
- Variable Pricing: This is based on an administrative fee plus variable costs for the levels and types of service.

Stantec prefers the fixed fee approach to pricing as variable costs can swing widely among service contractors based upon their size, location and level of expertise. Having previously supported clients through the RFP process, we do not suggest that price be the most heavily weighted factor, rather we recommend that the evaluation criteria emphasize the bidders' experience in providing high quality service.

In the work that Stantec's team has previously concluded for York Region Transit, we introduced the concept of performance-based contracting with financial bonuses for attaining and exceeding performance standards. It is recommended that Clarence-Rockland utilize the same approach to its contract, as the strategy for York Region helped attain cost savings while also improving service quality over and above the performance of the previous private contractor.

Stantec suggests the following standards for Clarence-Rockland to evaluate the performance of its service contractor:

- Achieve 100% of scheduled service delivered, or in other words, no missed trips;
- Attain a ratio of 90% on-time performance as measured by Clarence-Rockland periodic checks. On-time performance is defined as no more than zero minutes early and no more than five minutes late at any time point;
- Rider complaints shall not exceed 10 per 100,000 boardings;
- No more than one chargeable (non-preventable) accident per 100,000 kilometres of service; and
- No Fewer than 12,000 kilometres of service between road calls.

Stantec proposes that Clarence-Rockland impose liquidated damages of 1% of the contract total for not attaining all of the goals and liquidated damages of 0.05% for not attaining any one of the individual performance standards over a calendar year.

The contractor would be paid an incentive of 2% of the contract total for achieving all the performance standards over a calendar year and 0.25% for achievement of any of the individual performance standards. The contractor can be paid an incentive for achieving some of the standards while also being penalized for not achieving others. Delivering

consistent, high quality service is the result of establishing performance standards and having a well written contract that provides the accountability necessary for both the service provider and Clarence-Rockland in the achievement of performance standards.

Other Contract Considerations

The end result of the contracting process is a clear and concise contract that serves as the basis for the business relationship between the service provider and Clarence-Rockland. One key to establishing a mutually beneficial relationship is for both parties to understand that the profit motives of the service contractor are not exclusive to providing high quality service at the lowest possible cost. Service quality and safety never have to be sacrificed when there is a strong working relationship between the parties who work as partners.

The resulting contract need not be complex but rather by inserting specific performance standards and liquidated damages, as well as incentives, each party to the agreement can have a clear understanding of their responsibilities. Stantec often creates Standard Operating Procedures (SOP) that dictate the Operations and Maintenance functions to be performed. CR Transpo is not of a large enough size to warrant the SOP approach today, however, Clarence-Rockland may consider developing SOPs in the future based upon its experience during the first term of operation under the new business model.

Stantec recommends that Clarence-Rockland's contract with its service provider have these terms and conditions listed below at minimum. Many of these will have already been specified in the preparation of the RFP.

- Responsibilities: Clear delineation of the responsibilities of Clarence-Rockland and its service provider with regardless to the design and delivery of CR Transpo services. For example, Clarence-Rockland should retain overall responsibility for the types and levels of service to be provided while the service provider should retain exclusive right for hiring and firing personnel;
- Performance Evaluation Criteria: The performance standards outlined previously in this section should be vetted with the service contractor to determine their viability. Once agreed upon, however they will serve as the benchmark by which the contractor's performance will be evaluated;
- Payment Structure: The service contractor has significant cash flow requirements including meeting payroll, paying suppliers (especially the fuel provider), and other costs. A regular schedule of payments from Clarence-Rockland alleviated cash flow problems and result sin more seamless operations;
- Asset Management: The service contractor must develop an asset management plan to ensure that all capital equipment provided to the contractor is maintained to its useful life;
- Labour Management: Public agencies often hire private contractors to remove themselves of the need to bargain directly with labour unions. The contract must clearly state that the management of labour is the exclusive responsibility and right of the contractor, which should be done without interference from Clarence-Rockland;
- Contract Term: Traditionally, private service contracts in transit have had five-year terms. It has been Stantec's recent experience that longer terms with the opportunity for option years results in lower costs for municipalities. In the case of York Region Transit, a seven-year term with options for two more five-year terms resulted in $1M per year of savings.
- Data: The service contractor should be required to provide ridership, usage, and real-time automatic vehicle location (AVL) data to Clarence-Rockland which can be used for planning purposes or made open-source so that third-party app-developers, stakeholders, and businesses can use it to develop transit-related products that can support CR Transpo.

Stantec has provided a formula for Clarence-Rockland to successfully transition to the private operation, planning, and maintenance of transit services. Leveraging these contracting recommendations and considerations will allow the City to improve the quality of its services and enhance the experience of riders, while also minimizing operating costs.

5.2.4 Vehicular Network

The recommended vehicular network comprises a mixture new roadways, extensions, widenings, and intersection improvements to primarily accommodate new growth areas within Rockland and are summarised in **Table 5.10**.

In the short-term it is forecasted that a widening of Poupart Road will be needed to accommodate the influx of new residential property that is planned adjacent to the corridor. A number of intersection improvements are coupled with the road widening including the conversion of the existing intersection of Poupart Road / St. Jean Street to a roundabout. This improvement was previously identified in the Morris Village Traffic Impact Study. The network effects of growth along Poupart Road will require improvements at intersections along Richelieu Street between Carmen Bergeron Street and Poupart Road to accommodate additional traffic to and from County Road 17.

Several existing local street extensions such as Yves Street, Green Street and Heritage Drive are all recommended to be contingent on development. However, for future planning, it is anticipated that these extensions will occur in the mid-term as in-fill development occurs in Rockland spurring the need for them.

Conversely, as new residential growth occurs throughout Clarence-Rockland it is anticipated that the long-term travel demand will require County Road 17 to be widened. An Environmental Assessment for the corridor between Trim Road and Landry Street was completed in 2016 and recommended the corridor be widened. Currently, this project is unfunded and does not have a projected implementation date. Additionally, the corridor is under the jurisdiction of the United Counties of Prescott & Russell and is beyond the purview of what the City can control. As a result it is anticipated that this improvement will be implemented over the long-term by 2031.

In the long-term it is recommended that the current eastern Laurier Street intersection with County Road 17 be closed and Laurier Street be re-aligned with De La Berge Street. This is because of the unique intersection geometry at Laurier Street / County Road 17 that presents difficulties for eastbound right-turning vehicles onto Laurier Street from County Road 17, as well as challenging sightlines for vehicles exiting Laurier Street onto County Road 17. A re-aligned intersection with De La Berge Street will provide better sightlines, and operations for access onto Laurier Street, while also providing a signalized access for the existing and future residential properties off of De La Berge Street.

With the inclusion of all these improvements, it is anticipated that the road network will operate well as visualized in **Figure 5.17**. There are a few other intersections that are anticipated to be congested in the future along County Road 17, however it is assumed that during the planning and design of the County Road 17 road widening, enhancements to these intersections will be analyzed and implemented.

A detailed line-by-line summary of each individual improvement along with their associated costs are provided in **Appendix B** of this MTMP document.

Table 5.10 Flexible Transit Route Options

Improvement	Description
County Road 17 Widening	Road widening from two lanes to four between Trim Road in Ottawa and Landry Street in Clarence-Rockland based on the Environmental Assessment recommendation. This will include a multi-use path on the south side of the roadway, as well as paved shoulders east and west of Clarence-Rockland.
Poupart Road Widening	Road widening from two lanes to four between Richelieu Street and the New East-West Roadway. Will include a multi-use pathway on the north side of the roadway.
New Morris Village East-West Roadway	New Roadway Construction. Will include a multi-use pathway on the north side of the roadway and a pedestrian sidewalk on the south side.
Sterling Avenue Extension	Extension of Sterling Avenue with painted bike lanes and sidewalks on both sides of the road.
Yves Street Extension	Extension of Yves Street to Caron Street.
Heritage Drive Loop	Extension of Heritage Drive to Sylvain Street.
Edwards Street Extension	Extension of Edwards Street to loop to County Road 17.
Laurier Street Re-Alignment	Close the existing eastern access of Laurier Street with County Road 17 and re-orient it to connect with De La Berge Street. Will include sidewalks and painted bike lanes on both sides.
Expansion Lands Street 'A'	Extension of the Morris Village East-West Roadway with a two-lane cross-section. Will include sidewalks and on-street bike lanes between Caron Street and David Street.
Expansion Lands Street 'B'	New two-lane roadway to service the new expansion lands area between David Street and Baseline Road. Will have sidewalks and on-street bike lanes on both sides of the road between David Street and the built-up area boundary. Beyond this until Baseline road it will have a rural cross-section.

Improvement	Description
Poupart Road / St. Jean Street Roundabouts	New roundabouts at St. Jean Street, future intersection with the New East-West Roadway, and at Docteur Corbeil Boulevard.
Carmen Bergeron Street / Richelieu Street SIgnalization	Upgrade existing stop-controled intersection with a signalized intersection.
Richelieu Street / Poupart Road Signalization	Upgrade existing stop-controled intersection with a signalized intersection.
Re-Aligned Laurier Street / La Berge Street Signalization	Upgrade existing stop-controled intersection with a signalized intersection.
New West Roadway	New Major Collector roadway between County Road 17 and Poupart Road to service a future developable area. Alignment, cross-section, and Design still needs to be determined based on potential development that is still to be determined. This roadway should include provisions of active transportation including pedestrian and cycling facilities.

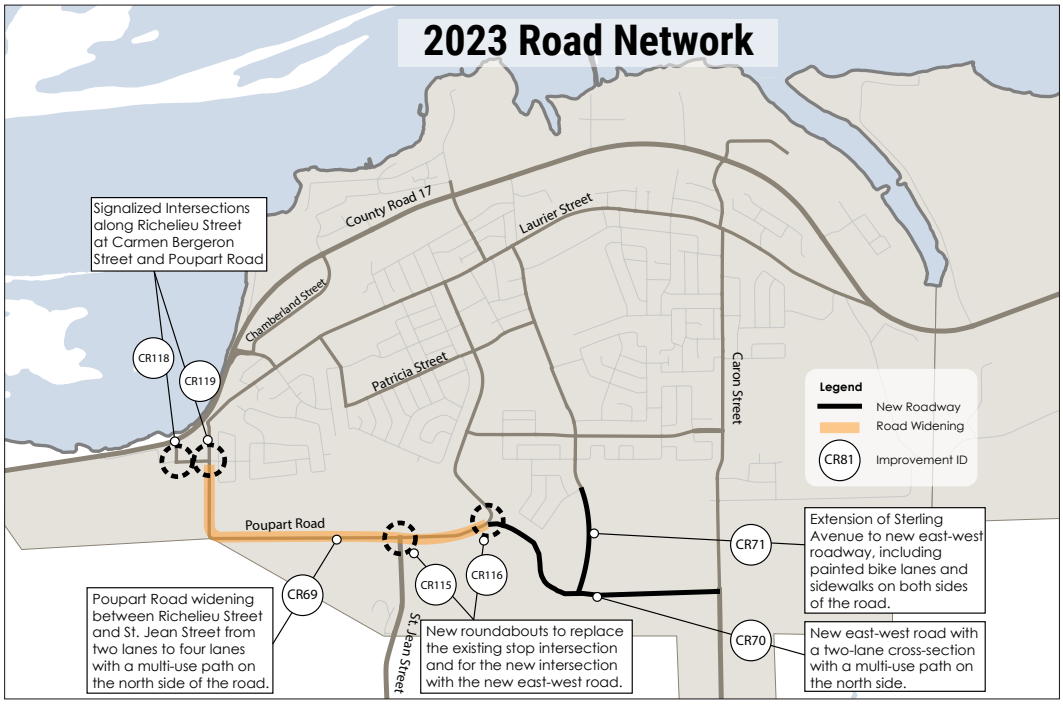


Figure 5.14 Recommended 2023 Road Network Improvements

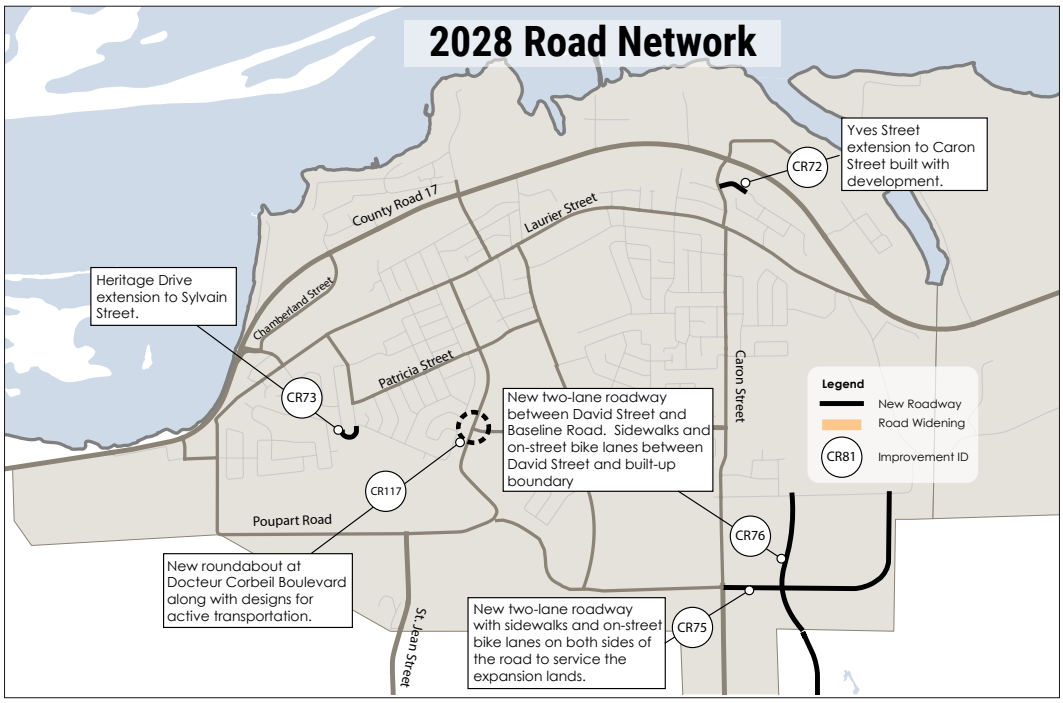


Figure 5.15 Recommended 2028 Road Network Improvements

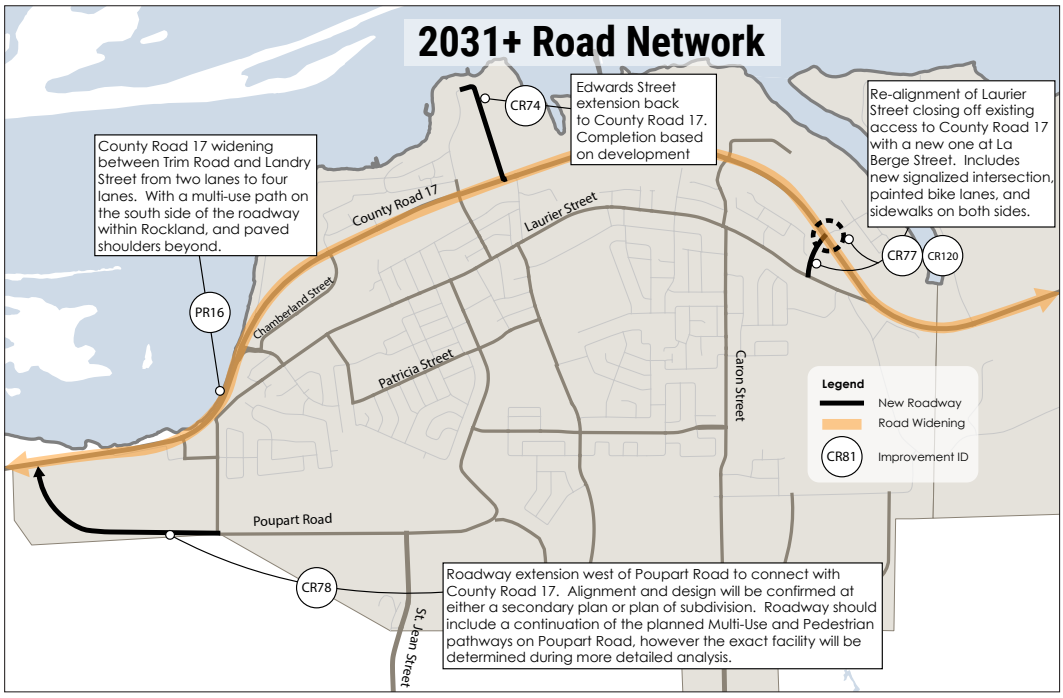


Figure 5.16
Recommended 2031 Road Network Improvements

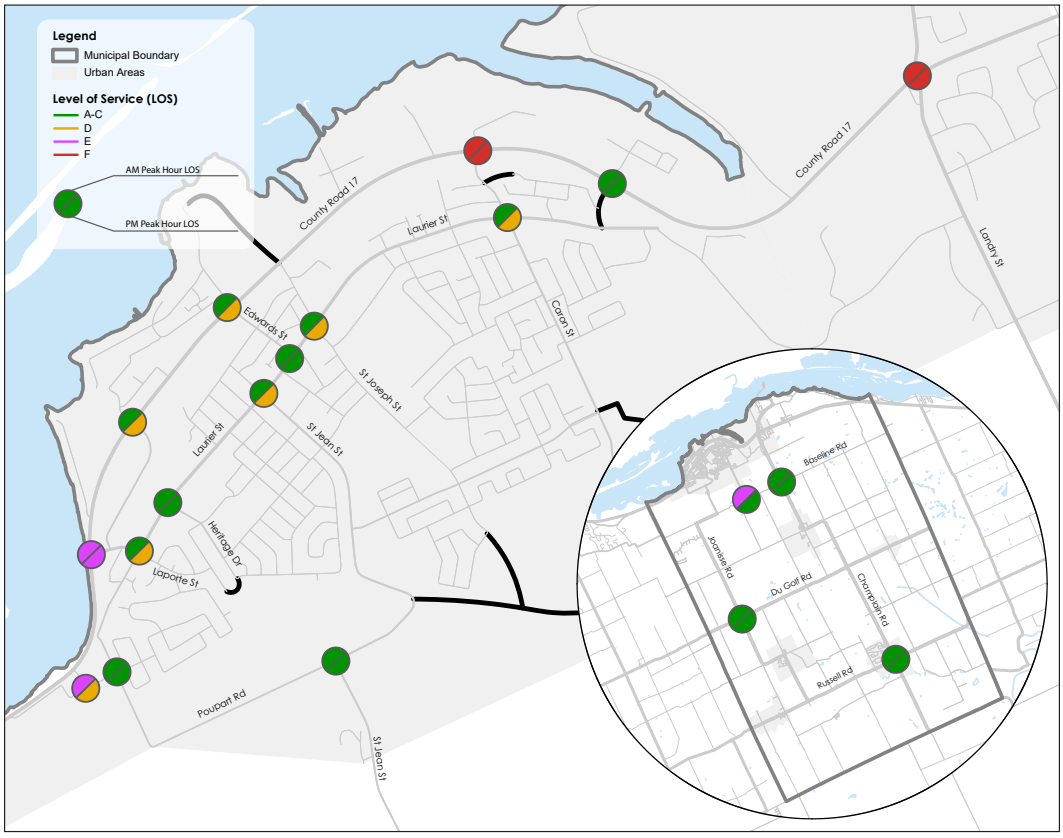


Figure 5.17
Forecasted 2031 Operations with recommended improvements

5.3 Policies & Strategies

A successful multi-modal transportation network relies on a mixture of physical infrastructure and policies that regulate and guide the city toward a vision for the future. The City's Official Plan provides a blueprint for how the community will grow into the future, while the zoning by-laws dictate the operational and physical specifications for the land uses prescribed within the Official Plan. This is done so that the vision identified in the Official Plan can be implemented.

In a similar regard, the transportation network needs policies and zoning by-laws to enhance transportation holistically over time. There are several recommended infrastructure improvements identified in this MTMP that have a deeply connected relationship with land-use that requires a lock-step approach to addressing the City's multi-modal mobility needs.

For instance, as new cycling routes are built across the city, it will be important to ensure that new developments are built in a way that strategically connects to these facilities so that their benefits can be fully realized. This not only involves identifying potential on-site design measures that are amenable to walking and cycling (called Transportation Demand Management), but also parking policies to promote alternative modes of transportation.

Beyond new developments, as more residents are encouraged to use active transportation, there will be an increase in interactions between vehicles, cyclists, and pedestrians. Having an over-arching mechanism for addressing traffic calming and safety is important so that the City can appropriately and equitably address concerns relating to roadway safety.

Many safety considerations are intrinsically connected to municipal design standards for roadways that will need to be updated to equitably accommodate different roads users through design in a way that is amenable to encouraging safe movements of all modes of transportation through Complete Streets.

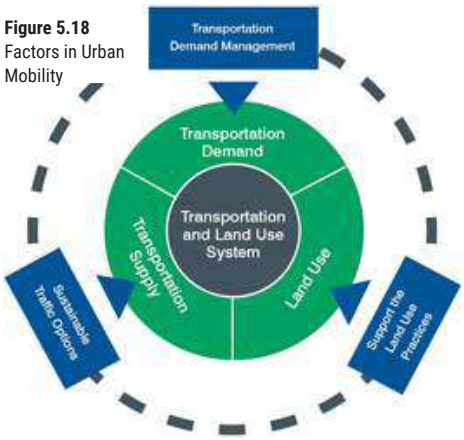


Figure 5.18
Factors in Urban Mobility

All of this is impacted by the environmental reality that faces Clarence-Rockland each year in terms of rain and snow that impact how residents use the transportation system. Despite these weather events, residents still need to have a maintained network of roads, bicycle lanes, and sidewalks in the winter.

This section summarises and outlines policy-driven recommendations for:

- Transportation Demand Management;
- Traffic Calming;
- Complete Streets;
- Active Transportation Winter Maintenance; and
- Downtown Parking Management.

5.3.1 Transportation Demand Management

Currently the City of Clarence-Rockland does not have a defined Transportation Demand Management (TDM) process for new developments. As a result, it is difficult to develop a coordinated integration of development with active transportation investment. This section outlines a summary and recommendations for how the City of Clarence-Rockland can incorporate TDM to leverage development in a way that supports and encourages alternative modes of transportation.

5.3.1.1 What is TDM and why is it important?

Transportation Demand Management (TDM) focuses on understanding how people make their transportation decisions to help manage the demand placed on the transportation network. At its most basic level, TDM is a program of information, incentives and policies to help inform people about the available transportation options, as well as guide land use development to promote the use of sustainable transportation options to mitigate development impacts on the network.

There is also a deeper dimension of TDM that guides the design of transportation and physical infrastructure that underlies major objectives outlined within this MTMP including:

• Objective 1: Providing Infrastructure for Growth;
• Objective 2: Prioritize and Encourage Active Transportation;
• Objective 3: Prioritize and Encourage Transit; and
• Objective 4: Enhance Multi-Modal Connections.

TDM provides tools to help maximize recommended investments for active transportation, transit, and roadway infrastructure identified in this MTMP to encourage sustainable travel choices by supporting alternative options over the convention of frequently driving alone. Achieving these objectives encompasses a wide range of strategies including:

- Shifting travel modes (e.g. walking, cycling, taking transit or carpooling instead of driving alone);
- Reducing the number of trips people must make (e.g. destinations and activities such as work and shopping, near each other); and
- Travelling more efficiently (e.g. making trips outside of peak hours)

TDM plays a vital role in the design of urban environments and its influence on travel choices. Some of the outcomes that the City should aim to achieve by integrating TDM and development are:

- More attractive streetscapes that are inclusive and inviting for all road users (motorists, pedestrians, cyclists, transit riders);
- Preserving streets and public space for a more balanced transportation system with more and better active transportation infrastructure and better integration with transit; and
- Promoting public health and active lifestyles.

The development community has an important role and influence over the urban environment. There is a growing understanding that TDM can be more effectively pursued and implemented when it is incorporated into new developments during the initial planning and design stage, as well as during construction. By integrating TDM into development applications, both the development community and City can influence travel behaviour for all residents, employees and visitors.

5.3.1.2 Development-Based TDM Measures

There are several TDM measures that can be leveraged through the development application process that have varying levels of effectiveness depending on the proposed land use and urban context. For instance, due to the nature of industrial land uses, and the associated shift work, there are fewer incentives that will be effective in shifting employees onto alternate modes of transportation. A factory may be difficult to serve during overnight shifts with transit fare incentives, however a measure such as promoting ridesharing or carpool spaces may provide opportunities for a development to mitigate their spatial impact on the natural environment while also mitigating their impact on the transportation network. **Table 5.11** provides a matrix of TDM measures and their appropriate contexts that could be considered by developments. This is not an exhaustive list; however, it provides a toolbox of measures that can be used for inspiration during development site plan, or secondary planning applications to encourage development to consider integrating multi-modal transportation into their designs to enhance and leverage available or planned transportation improvements.

Table 5.11 Transportation Demand Management Measure Matrix by Land Use and Urban Context

Measaure	Land Uses			Urban Context		
	Residential	Commerical	Industrial	Urban	Suburban	Rural
Multi-Modal Information Packages: New residents and employees to a site should be given transit, cycling, and pedestrian maps when they move in or start to work on a site to help identify alternative transportation options and routes. There is also the option of utilizing an app or website-based interface to make trip planning convenient, especially for students and youth.	●	●		●	●	
Transit Fare Incentives: Free or subsidized transit fares to encourage residents or employees to try transit. Pre-arranging with CR Transpo, or the City on a bulk purchase agreement for new residents or employees.	●	●		●	●	
Alternative Transportation Amenities: Provide on-site amenities such as safe, attractive, and direct walkways for pedestrians, or bicycle repair stations, or employee showers to encourage cycling. If a site is adjacent to transit, there may be opportunities to incorporate weather protected areas into the building design or display transit arrival information in the building.	●	●	●	●	●	●
Private Transit Service: Unavailability of transit in rural or industrial areas can create obstacles to connectivity which are not feasible to serve with conventional transit. An employer can initiate private shuttle services to create a last-mile connection to transit to be more feasible and attractive. Private Transit Service can also be possible with special events or areas of residential developments with residents of limited mobility.	●	●	●		●	●
Carsharing/Bikesharing: Provide shared bikes or cars so that residents and the surrounding community may use a shared option instead of needing to own a car or bike. Many services offer 24-hour access, self-service reservation systems, monthly billings, financing, insurance, and maintenance of the vehicles	●	●		●	●	●
Ridesharing: Greatest in situations where transit ridership is low and, parking costs are high, and where larger numbers of car commuters live reasonably far from the workplace. Possible partnerships with Personal Transportation Providers such as Uber or Lyft to subsidize these trips can increase connectivity for people with limited mobility. Employers can have a dedicated portal for employees seeking and offering rideshare services. Discounted parking fees for carpools can be an extra incentive to rideshare.	●	●	●	●	●	●

5.3.1.3 Parking-Based Measures

Parking is a key component of transportation demand management that has a direct correlation with automobile use. Historically, parking rates were developed to satisfy forecasted future parking demand, itself extrapolated from historical parking trends. This tends to create a self-fulfilling prophecy, since parking supply increases vehicle use and urban sprawl, causing parking demand and parking supply to ratchet further upward as illustrated in **Figure 5.19**.

This brings to light the question of the optimal parking supply for a given development. Conventional planning determines how much parking to provide at a particular site based on recommended minimum parking standards published by professional organizations and codified in municipal zoning by-laws. These standards are often excessive and can usually be significantly reduced. Most parking standards have historically erred toward oversupply as a way of mitigating externalities – reducing on-street parking. Applying such historical parking rates provides far more parking supply than is usually needed, reinforcing automobile dependency. This is particularly the case at mixed-use destinations, serviced with good travel options, and where parking can be efficiently priced or managed.

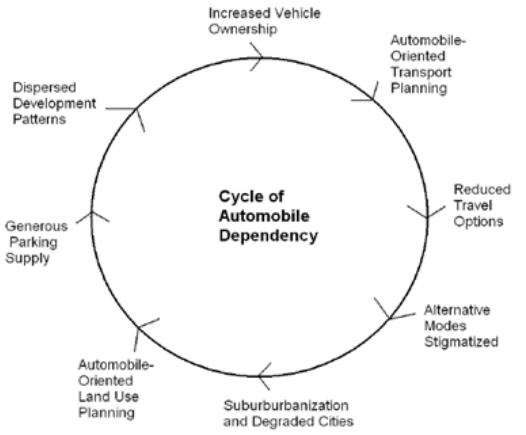


Figure 5.19 Cycle of Automobile Dependency

Oversupply of on-site parking has additional externalities: the high costs of the parking structures themselves, along with the societal costs of the upkeep and maintenance of underutilised structures, and high water and energy usage.

Contextual Parking By-Laws

Currently, the City of Clarence-Rockland applies blanket parking rates across the entire municipality based on land use. There are opportunities to create specific zones where reduced parking requirements are needed to encourage higher-density housing and transit-oriented development.

Many municipalities create specific zones or secondary plan areas where parking rates are adjusted to reflect the local context. For instance, a high-density development adjacent to transit or active transportation may require less parking by the nature of having additional mobility options. The average underground parking space costs approximately $50,000 per space to construct underground.

Reducing parking requirements in areas that are capable of shifting drivers onto alternative modes of transportation can enhance not only the built form, but also support transit and active transportation to make those modes viable.

Parking Maximums

Traditionally, the supply of parking is regulated through zoning codes that prescribe minimum parking requirements calculated as a ratio of the number of parking spaces required per square foot, dwelling area or other measure of intensity. The methodology often results in oversupply of parking leading to vast expanses of parking which in turn separate land uses, reduce densities, impair walkability, and create obstacles to providing transit and pedestrian friendly communities.

Maximum parking requirements on the other hand limit the number of parking spaces that may be built and prevent the developer from building additional spaces than required. This will guide developers toward developments that are more transit-oriented in nature.

Shared Parking

Best-practices for parking utilize shared parking strategies to minimize a building's parking footprint while simultaneously maximizing parking utilization. Shared parking serves multiple land uses that have different peak demand periods with one set of parking spaces that are shared as visualized in **Figure 5.20**.

Considering the City's Official Plan, Community Improvement Plan, and this MTMP's objectives, it is important that development parking requirements do not result in an oversupply of spaces. An oversupply of parking represents underutilized infrastructure that will continually need to be maintained and paid for with little operational benefit and can even work against other municipal investments in transit and active transportation.

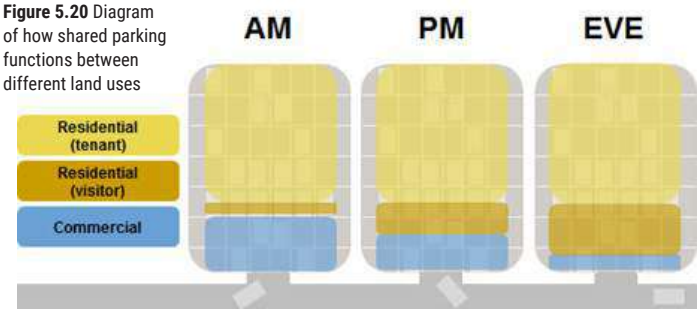


Figure 5.20 Diagram of how shared parking functions between different land uses

Carpool Spaces

Carpooling is the sharing of car journeys so that more than one-person travels in a car and prevents the need for others to have to drive to a location themselves. In addition to alleviating the demand for driving, carpooling reduces personal travel costs such as fuel, tolls, maintenance and driving stress.

Municipalities and transit agencies could provide an interface for people to share their trips and available spaces helping to connect potential commuters traveling in the same direction.

Carshare Spaces

Car share programs provide access to short-term car rentals and are operated by private transportation network companies. Language can be included into the zoning bylaws which encourages or requires developers to provided dedicated carshare spaces and partnerships with private companies. In turn, developers could be provided incentives for providing car share vehicle spaces through reduced parking requirements.

Priced Parking- Increased Parking Fees

Setting the price of parking involves much more than just revenue generation because it can address a number of transportation objectives. It can be implemented as a Transportation Demand Management (TDM) strategy to reduce vehicle traffic in an area by encouraging use of alternative modes of travel. The price of parking also forms part of a parking management strategy to reduce parking problems in a particular location such as a downtown. Also, to make transit a financially competitive option compared to driving, tying the pricing of monthly parking passes to monthly adult transit passes is strongly advised.

Increased parking revenue could be invested back into the neighborhoods where it originated in smarter ways rather than going into the City's general fund.

Additional revenue could be used to pay for services such as: additional street patrols, transit, streetscaping, advanced parking management systems, additional parking lots/garages, etc.

Priced Parking - Demand-priced Parking

A system could be developed whereby the city compares the actual parking occupancy with the desired parking occupancy and every few weeks nudge prices up or down accordingly based on demand. Prices can be set by block and time of day to produce one or two open spaces on every block and thus reduce demand.

Cash-in-Lieu of Parking

Cash-in-lieu (also called fee-in-lieu or payment-in-lieu) parking programs allow developers to provide fewer on-site parking stalls in exchange for contributing money to the cash-in-lieu fund. Typically, these funds are then used to facilitate construction of offsite shared parking facilities. Most often, cash-in-lieu is intended to allow commercial development to occur, especially the redevelopment of existing buildings on lots that are too small to accommodate on-site parking, without providing the full amount of parking that is required under the Bylaw. The funds could also be used to develop active transportation facilities and streetscaping to motivate a mode change.

5.3.1.4 TDM Recommendations

The City of Clarence-Rockland should develop context-specific TDM policies, including associated zoning by-law updates for parking policies. This will provide a mechanism by which the City can use to collaborate with developers to encourage active transportation and transit, while also presenting opportunities for developers to mitigate their impact on the vehicular network as well as mitigating the spatial needs of parking on a site.

Recommended Policy Documents:

- Transportation Demand Management Checklist of applicable TDM measures for new developments based on land use;
- Context-sensitive amendments to zoning and parking by-laws including: developing maximum and reduced vehicular parking rates for new developments based on the implementation of TDM measures.

5.3.2 Traffic Calming

Traffic calming uses physical design or social and cultural measures to improve safety for all users of a roadway. The purpose of implementing traffic calming measures is typically to encourage safer and more responsible driving by reducing automobile speeds and cut-through neighborhood traffic. The traffic calming practice has been gaining traction throughout North America in recent years as municipalities and residents aim to revitalize and improve the livability of their neighborhoods.

5.3.2.1 Problem Identification

When considering whether to initiate an evaluation that would lead to the implementation of traffic calming measures, the City should first consider whether the flagged issue can be resolved through traffic calming and whether the roadway characteristics are conducive to traffic calming measures. Considerations for this should include the road classification, location, adjacent land uses, local context, collision history, public concern, and the number of pedestrians using the facility.

An evaluation of the conditions can be initiated either by a member of the public, or by the City of Clarence-Rockland. By initiating these processes proactively, the City shows that they are actively seeking to improve the quality of life for their residents and will encourage public involvement in the traffic calming process, potentially leading to the voicing of additional concerns across the City.

To determine project priority and to maintain a transparent and traceable process for the implementation of traffic calming measures, both requests from the public and from the City should include the following details outlining the problem:

- Roadway of concern;
- Segment of roadway; and
- Problem (speeding, aggressive driving, cut-through neighbourhood traffic).

Additional information that should be noted by the City includes:

- Road classification;
- Posted speed limit;
- Adjacent land uses; and
- Collision history.

Prior to the initiation of the study, City staff can conduct a site visit during the period identified to ascertain the degree of the problem and validate the conditions. Once a flagged problem has been validated to ensure that the process should move forward, the solutions which best address the problem are to be identified.

5.3.2.2 Solution Identification

When determining which traffic calming measure is to be implemented to address the confirmed issue, consideration should be given to whether a physical measure or a social / cultural traffic calming measure is preferred:

- **Physical measure:** Attempts to improve conditions through physical alterations to the roadway. Physical measures come with benefits such as reduced volume, speed, noise, and pollution, but can also include detrimental impacts such as traffic diversion, reduced connectivity and access for emergency vehicles, and difficulty with snow removal.
- **Social & Cultural Measure:** Attempts to increase road safety by psychological measures which lead to reduced automobile usage and safer driving habits (newspaper ads, brochures, speed watch programs, educational programs).

A summary of potential physical measures is provided in **Table 5.12** on the following pages, highlighting what the subject traffic measure is, what problems the measure aims to solve, where the measures would be applicable, and an example of the implemented measure. The City should consider all measures that solve a particular problem while having regard for the nearby land uses and local context.

5.3.2.3 Implementation Strategy & Monitoring

Once a traffic calming solution has been identified, an implementation strategy should be developed by the City. The implementation strategy will include:

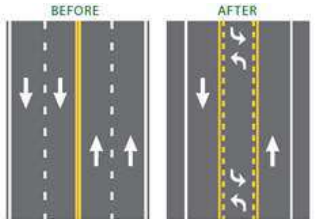
- Identification of Impacted Users
- Public Outreach & Engagement
- Schedules (Bid, Procurement, Implementation & Monitoring)
- Estimated Project Costs

The process for implementing traffic calming measures must be transparent and involve public participation to ensure that the implementation strategy addresses all stakeholder concerns. The strategy developed must be prudent and weigh the benefits of the traffic calming measures with the disadvantages that they may pose through reductions in connectivity, emergency access, and impacts to snow removal.

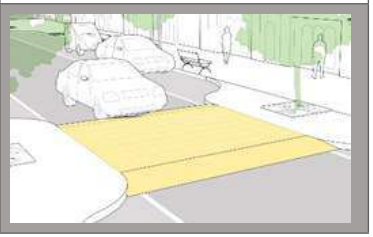
City staff should plan to monitor all permanent traffic calming measures that are implemented to receive local feedback on whether the issue has been satisfactorily resolved and on pedestrian and resident satisfaction. Key metrics to monitor will depend on the initial justification for the traffic calming measure, but may include road volume, cut-through traffic volumes, operating speeds, collision rates, pedestrian and cyclist comfort.

Table 5.12 Physical Traffic Calming Measures, their applicability, and examples

Measure	Description	Purpose	Applicability	Example
Speed Cushion (Vertical Deflection)	Raised areas placed across a roadway; the raised areas have gaps between them to accommodate emergency vehicles.	Reduces automobile speeds, while accommodating emergency vehicles.	• Residential Land Use • Suburban Context • Urban Context	
On-Street Parking	Restricts the roadway width by allowing automobiles to park along the roadway.	Reduces automobile volume, speed, and cut-through neighborhood traffic.	• Old Residential Land Use • Close to Town Center • Commercial Land Use • Suburban Context • Urban Context	
Raised Median Island	An elevated median installed in the center of a roadway to restrict the width of roadway available. Runs parallel with the direction of traffic.	Reduces automobile speeds, improves pedestrian safety, and allows for in-median landscaping.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	
Raised Median Island Through Intersection	An elevated median installed through an intersection, blocking through traffic and left turning movements in certain directions.	Reduces automobile volume, improves safety, and obstructs short-cutting traffic. Provides refuge and reduces crossing distance for pedestrians.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	
Traffic Circle	An intersection control type; provides a raised island in the center of the intersection which traffic circulates around.	Reduces automobile speed and collision rates. Helps drivers arriving from a wide roadway to adjust to a local small street in a safe and efficient manner.	• Residential Land Use • Suburban Context	

Measure	Description	Purpose	Applicability	Example
Curb Extension	A horizontal extension of a curb into the roadway; also referred to as a bump-out.	Reduces crossing distance for pedestrians. Increases pedestrian safety and visibility.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	
Radar Speed Display Sign	Devices that display the speeds of approaching vehicles, designed to reduce speeds and promote cautious driving.	Reduces automobile speeds and promotes cautious driving. Suitable for high priority areas where young children and older pedestrians are present.	• Residential Land Use • Commercial Land Use • Industrial Land Use • Recreational Land Use • Suburban / Urban Context • Rural Context	
Diagonal Parking	Angled parking spaces designed to change the perception and function of a street. Provides easier maneuvering and more stalls than parallel parking.	Cost-effective strategy which forces drivers to be more aware of nearby vehicles and pedestrians, while also reducing the crossing distance for pedestrians.	• Commercial Land Use • Urban Context	
"Traffic Calmed Neighborhood" Sign	Sign indicating that the driver is entering a traffic calmed neighborhood.	Informs drivers that they are entering a neighborhood that has forms of traffic calming measures in place.	• Residential Land Use • Suburban Context • Urban Context	
Road Diet	A reconfiguration of the roadway; can include narrowing of lane widths or removal of lanes to accommodate bicycle lanes, two-way left turn lanes, and parking.	Reduces automobile speed and can provide opportunity to provide bicycle lanes, two-way left turn lanes, on-street parking, or other streetscape improvements.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	

Measure	Description	Purpose	Applicability	Example
Curb Radius Reduction	A redesign of an intersection corner to allow for a smaller radius. Smaller curb radii result in slower turning speeds and greater pedestrian comfort.	Reduces right turning speeds at intersections and improves pedestrian comfort. Small curb radii also provide pedestrians with larger waiting areas.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	
"Community Safety Zone" Sign	Sign indicating a zone where pedestrian safety is a high priority. Traffic related incidents or violations often result in doubling of fines in these areas.	Encourage safe driving; typically installed near schools, daycare facilities, senior homes, public places, or hospitals.	• Residential Land Use • Commercial Land Use • Suburban Context • Urban Context	
On-Road Messaging (Pavement Markings)	On-road pavement markings which communicate a higher sense of priority to drivers and improve visibility.	Increases the visibility of the message being communicated to drivers (SLOW, School Crossing Ahead, 40 km/h max). Beneficial in high priority areas such as schools.	• Residential Land Use • Commercial Land Use • Urban Context • Rural Context	
Raised Crossings (Vertical Deflection)	Elevated pedestrian crossing, typically implemented mid-block and at intersections, which slows vehicles and increases safety and visibility of pedestrians.	Reduced speed of vehicles approaching the crosswalk. Improves safety and visibility of pedestrians or cyclists utilizing the crosswalk.	• Residential Land Use • Urban Context • Suburban Context	
Raised Intersections – All-Way Stop Control	An intersection that is slightly elevated compared to the intersecting roadways; aims to reduce vehicular speed and improve safety conditions.	Reduced speed of vehicles approaching the intersection. Improves safety and visibility of pedestrians or cyclists crossing the intersection.	• Residential Land Use • Urban Context • Suburban Context	

Measure	Description	Purpose	Applicability	Example
Road Watch Program	A community driven initiative that allows residents and visitors the ability to report dangerous driving to the police.	Encourages safer driving habits by providing residents with the tools to contribute to the enforcement of safe conditions on the roadway.	• Residential Land Use • Commercial Land Use • Industrial Land Use • Urban / Suburban Context • Rural Context	
One Lane Chicane	Two or more curb extensions that are designed to narrow a two-lane roadway to a one-lane roadway for a short distance.	Forces drivers to stop and allow one direction of traffic to pass through the chicane at a time.	• Residential Land Use • Suburban Context • Rural Context	
Textured Crosswalks	A textured or patterned surface placed along a pedestrian crosswalk to increase visibility and safety.	Increases visibility and safety of a pedestrian crosswalk. Can be combined with curb extensions and elevated crosswalks to further enhance pedestrian safety.	• Residential Land Use • Commercial Land Use • Urban Context • Suburban Context	
Right-In/Right-Out Islands	Raised triangular islands in an intersection that prevent vehicles from turning left or driving through an intersection.	Reduces the crossing distance and the number of conflicts at an intersection. May result in increased automobile speeds when drivers are not required to stop.	• Residential Land Use • Urban Context • Suburban Context	
Speed Bumps / Humps	Raised areas along a roadway which can be installed to be temporary or permanent. Inexpensive to design and install.	Reduced automobile speeds and can lead to lower short-cutting traffic volumes.	• Residential Land Use • Local / Collector Streets • Commercial Land Use • Urban Context • Suburban Context	
Speed Tables	Flat-topped speed humps constructed with brick or other materials along the flat portion. Typically, inexpensive to install.	Less effective as reducing automobile speeds compared to speed bumps / humps, however, speed tables do not provide as much discomfort to passengers.	• Residential Land Use • Commercial Land Use • Urban Context • Suburban Context	

Measure	Description	Purpose	Applicability	Example
Full Closure	Installation of a barrier across the entire width of a roadway, preventing drivers from passing through. Built to accommodate emergency vehicles and cyclists.	Prevents through and short-cutting traffic while accommodating emergency vehicles and cyclists.	• Residential Land Use • Commercial Land Use • Urban Context • Suburban Context • Rural Context	
Bicycle Boulevard	Installation of signage and pavement markings indicating that the roadways are shared facilities for bicycles and automobiles.	Promotes active transportation on streets that experience low automobile volumes.	• Residential Land Use • Commercial Land Use • Urban Context • Suburban Context	
Speed Kidney	A vertical traffic calming device that allowing motorists to move through a path instead of over a bump. Consists of a raised and curved area.	Reduces automobile speeds. Acts as a speed bump, while also providing an alternative path to avoid the vertical deflection.	• Residential Land Use • Commercial Land Use • Urban Context • Suburban Context	

5.3.2.4 Traffic Calming Recommendations

The City of Clarence-Rockland should develop a Traffic Calming process to address roadway safety concerns so that there is a clear tool for municipal staff and residents to work collaboratively on ensuring the City's roadways are safe.

Recommended Policy Documents:

- Develop a Traffic Calming Policy, Process and Framework for addressing roadway safety concerns.

Figure 5.21
Sketch of an urban complete street

5.3.4 Complete Streets & Road Classification

5.3.4.1 What are Complete Streets?

Complete Streets are streets that are safe for everyone including people who walk, bicycle, take transit, or drive, and people of all ages and abilities. A Complete Street policy ensures that transportation planners and engineers consistently design and operate the entire street network for all road users, not only motorists.

Smaller communities face unique transportation challenges. Major roads that bring traffic through the City can present significant safety barriers for residents on foot or on bike, and in Clarence-Rockland's case many roadways are controlled by a higher tier government. These major roads are not only key transportation routes but are also important to the economic vitality of the community. With a Complete Streets approach, Clarence-Rockland is empowered to coordinate with outside agencies on new project designs to ensure that it will serve residents as well as visitors.

5.3.4.2 What does a Complete Street look like?

There is no singular design prescription for Complete Streets; each one is unique and responds to the community context. A complete street may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more.

The over-arching philosophy is that Complete Streets takes a holistic approach to equally sharing the roadway for all road-users based on the contextual needs.

5.3.4.3 Recommended Road Classification

The City of Clarence-Rockland is served by a mixture of municipal and county roadways as described and visualized in Chapter 2.2.1. While the existing road classification has a robust definition of motor vehicle requirements, there are opportunities to re-define the road network in a way that incorporates appropriate design parameters and considerations for active transportation and transit.

The Classification Framework

A framework has been developed to define the function of the street network to inform the planning outcomes and investment decisions for the City. The framework defines the future function of the street network on the basis of overall land use and transport objectives.

The roads within Clarence-Rockland will provide two primary functions:

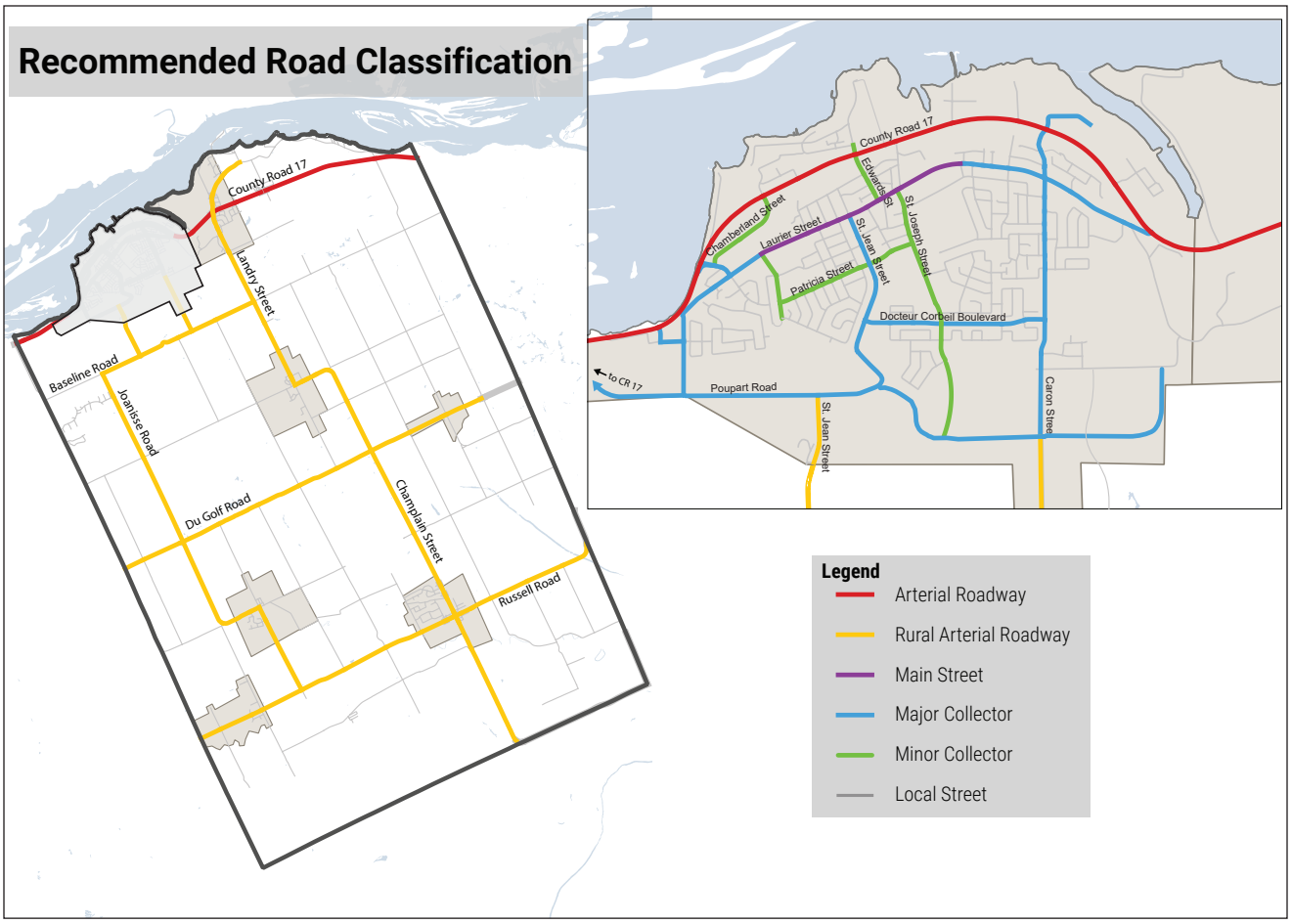
- **Movement:** the ability to travel between places; and
- **Place:** the ability to access origins and destinations of travel.

An understanding of the two functions that street environment play is especially important when the two functions compete, such as through increased movement requirements or improved place amenity. The movement place function of the street environment informs planning for the level of access across each mode of transport. The following different road classifications based on the function they serve within the transportation network:

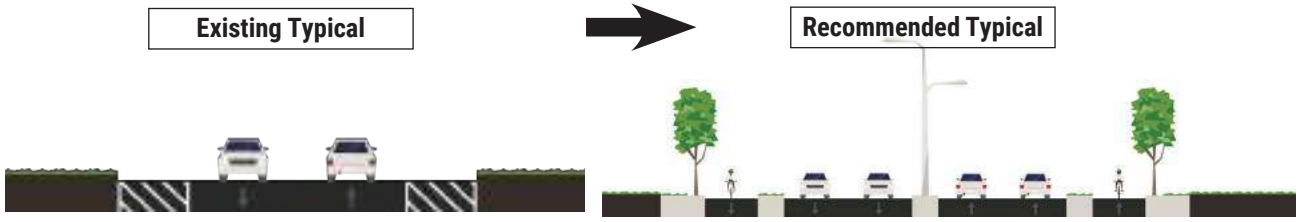
- **Arterial Roadways:** Dedicated to the quick and efficient movement of goods and people over long distances with Arterials playing a strategically significant function within the road network.
- **Rural Arterial Roadways:** Similar to Arterial Roadways but are designed to rural cross-sections and speeds.
- **Main Streets:** High demand for movement as well as destinations and activity centres within the same road space. These streets should balance pass-through vehicular operations, with destination-based needs such as on-street parking, pedestrian, cyclist, and transit mobility.
- **Major Collector Roadways:** Provide safe, reliable and efficient movement between neighbourhoods and strategic centres.
- **Minor Collector Roadways:** Service major neighbourhood nodes such as schools and community centres as well as provide a link to the broader Major Collector Roadway system.
- **Local Streets:** Facilitates local access to communities and private properties.

The recommended road classification is visualized in **Figure 5.22** and changes are summarised in **Table 5.13**. With a comparison of current and recommended design standards complete streets cross-sections on the following pages:

Figure 5.22 Recommended Road Classification

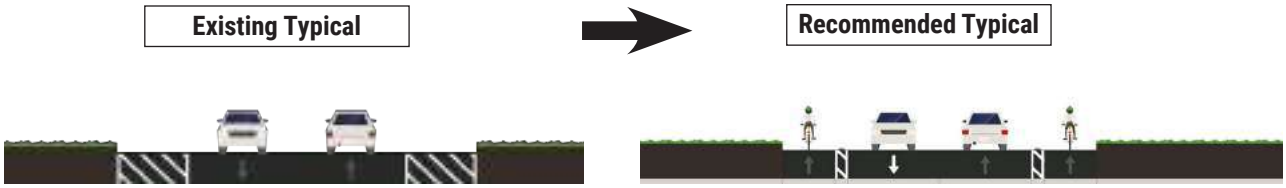


Arterial



Arterial roadways should be dedicated to long-distance connections between rural areas and hamlets, as well as neighbouring municipalities. Arterials should be designed to handle large volumes of traffic at higher speeds. Because of this, Arterials should have off-road active transportation facilities such as multi-use paths or cycle tracks to provide active transportation access where needed. The typical right-of-way width should be between 25 to 30 metres. The recommended Road Classification identifies only one Arterial Roadway; County Road 17, which is planned to eventually have a four lane cross-section with separated multi-use pathways.

Rural Arterial



Rural Arterial roadways are similar to Arterial roadways in the sense that they should be dedicated to long-distance connections between rural areas and hamlets, as well as neighbouring municipalities. They should be designed to primarily handle vehicular and commercial vehicle traffic at higher speeds. Because of the lower volumes of traffic expected along Rural Arterials and their cross-city and cross-county connections, they should provide paved shoulders for active transportation. The typical right-of-way width should be at least 12 metres to accommodate two lanes of vehicular traffic with paved shoulders. Within rural settlement areas paved shoulders can be converted to painted bike lanes and may include sidewalks or multi-use paths where needed. The recommended Road Classification identifies all County Roads other than County Road 17 as Rural Arterials.

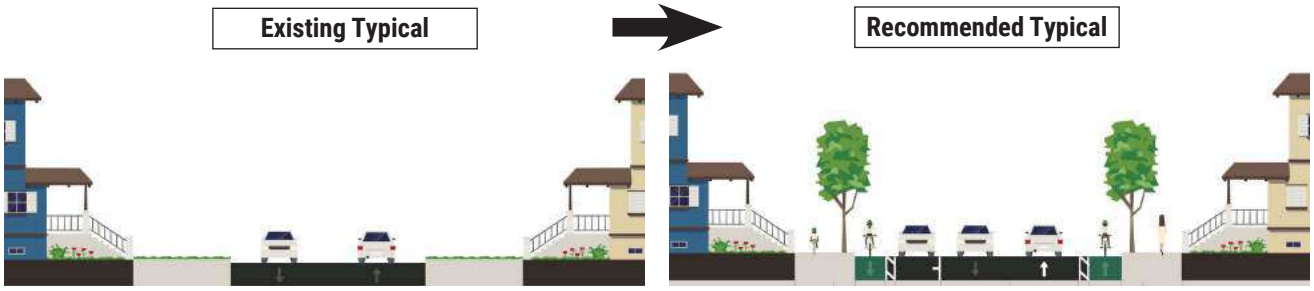
Main Street

Main Streets should be dedicated to Placemaking to accommodate a high demand for movement as well as destination and activity centre activity within the same road space. These streets should balance pass-through vehicular operations, with destination-based needs such on-street parking, pedestrian, cyclist, and transit mobility. Because of this, Main Streets should have dedicated on-street cycling facilities with a preference for protected facilities such as flex bollard bike lanes, or cycle tracks, but can allow the use of painted bike lanes where space constraints prohibit using better facilities. Main Streets should also have dedicated pedestrian sidewalks on both sides of the road. The typical right-of-way width should be between 18 to 30 metres. The recommended Road Classification identifies only one Main Street; Laurier Street, which is planned to be improved with dedicated cycling and pedestrian facilities along the corridor to encourage placemaking activities.

Major Collector

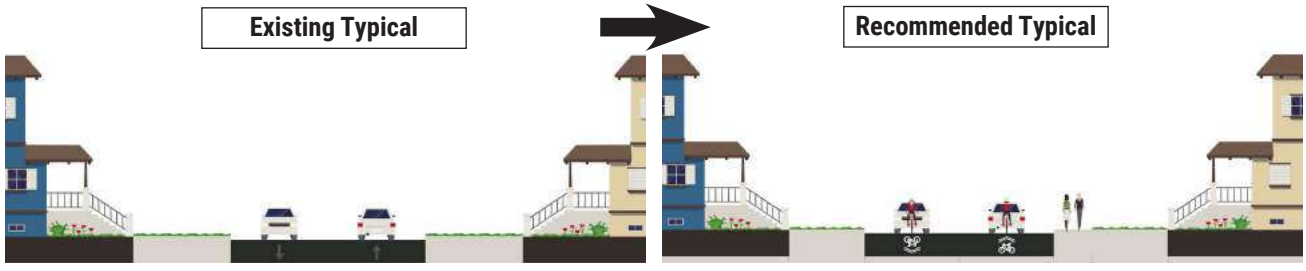
Major Collector roadways should service major commercial areas internal to Rockland as well as connect to Arterial and Rural Arterial Roadways. They should accommodate pedestrian sidewalks on both sides of the street where needed as well as dedicated bike lanes due to the expected higher volumes of traffic that will use these roadways. In areas where cycling demand is anticipated to be low, there may be opportunities to accommodate active transportation through the implementation of multi-use paths that can served both pedestrians and cyclists. Where needed on-street parking may also be accommodated, however, generally Major Collectors would not have on-street parking. Typical right-of-way width should be 18m - 24m depending on the configuration.

Minor Collector



Minor Collector roadways should service major neighbourhood nodes such as schools and community centres as well as provide a link to the broader Major collector roadway system. They should accommodate pedestrian sidewalks on both sides of the street as well as painted bike lanes. On-street parking may be accommodated depending on the available space. Typical right-of-way width should be 14m to 22m.

Local Street



Local Streets facilitates local access to communities. Due to the low volumes of traffic that travel along Local Streets strategically located streets may accommodate pedestrian sidewalks on one or both sides of the street as well as signed bicycle routes to connected to the broader dedicated cycling system (i.e. painted or protected bike lanes) on Collector and Main Streets. On-street parking may be accommodated depending on the available space and need. Typical right-of-way width should be 14m to 18m.

Table 5.13 Recommended Changes to Road Classifications and their Implications

Roadway	Limits	Previous Classification	Recommended Classification	Implications
Poupart Road	Between Richelieu Street and St. Jean Street	Minor Collector	Major Collector	• Enhanced pedestrian, cycling, and transit amenities; • Higher maintenance standards
St. Jean Street	Between Poupart Road and Baseline Road	Minor Collector	Rural Arterial	• Designed for inter-community travel, primarily auto-oriented • Lower maintenance requirements
St. Jean Street	Between Laurier Street and Poupart Road	Minor Collector	Major Collector	• Enhanced pedestrian, cycling, and transit amenities; • Higher maintenance standards
St. Joseph Street / Sterling Avenue	Between Laurier Street and the future New East-West Roadway	Local Street	Minor Collector	• Enhanced pedestrian and cycling amenities; • Higher maintenance standards
Patricia Street	Between St. Joseph Street and Heritage Drive	Local Street	Minor Collector	• Enhanced pedestrian and cycling amenities; • Higher maintenance standards
Heritage Drive	Between Patricia Street and St. Jacques Street	Local Street	Minor Collector	• Enhanced pedestrian and cycling amenities; • Higher maintenance standards
Caron Street	Between David Street and Baseline Road	Major Collector	Rural Arterial	• Designed for inter-community travel, primarily auto-oriented • Lower maintenance requirements
Industrielle Drive	Between County Road 17 to the end	Local Street	Major Collector	• Enhanced pedestrian, cycling, and transit amenities; • Higher maintenance standards
Baseline Road	Between St. Jean Street and Joanisse Road	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Baseline Road	Between Landry Street and St. Jean Street	Local Street	Rural Arterial	• Designed for inter-community travel, primarily auto-oriented • Lower maintenance requirements
Joanisse Road	Between Baseline Road and Lacroix Road	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Du Golf Road / St. Pascal Road	Between western and eastern municipal boundary	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Lacroix Road	Between Joanisse Road and Gendron Road	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Gendron Road	Between Lacroix Road and Russell Road	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Russell Road / Laval Street / Boudreau Road	Between western and eastern municipal boundary	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Old Highway 17	Between County Road 17 and Dallaire Street	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Landry Street	Between County Road 17 and Labonte Street	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Labonte Street	Between Landry Road and Champlain Street	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities
Champlain Street	Between Labonte Street and the municipal boundary	Arterial	Rural Arterial	• Re-defined for rural cross-sections and activities

5.3.4.4 Complete Streets Recommendations

The recommended changes to roadway classification are intimately connected with land use planning. As a result, the proposed changes to roadway classification should be amended in the next Official Plan Update. This should be done in coordination with specific parameters to account for Transit, Active Transportation, and roadway safety for each road classification category so that municipal geometric design standards support the over-arching policy.

Figure 5.23 Example of an unmaintained bike lane along St. Joseph Street

Recommended Policy Documents:

- Official Plan Amendments to account for the updated road classifications and changes;
- Updated Municipal Design Standards for the Road Classification categories to include Transit, Active Transportation, and road safety parameters conducive of Complete Streets.

5.3.5 Active Transportation Winter Maintenance Strategy

In snowy cities across Canada, cycling volumes drastically decrease in the winter months. For instance, in the City of Ottawa, it was estimated that approximately 17% of yearly bike trip volumes along major routes occur during the period between December and March.

Currently, the City of Clarence-Rockland maintains pedestrian sidewalks, but does not maintain on-street cycling facilities as shown in **Figure 5.23**.

Public engagement identified reliability as being one of the top three factors influencing mode choice in Clarence-Rockland. Walking and Cycling are mode choices that can be a year-round option for getting around Clarence-Rockland, particularly for short-distance trips to community centres, schools, or nearby commercial areas.

In the early implementation of cycling facilities across North America design practices ignored winter operations and many agencies were unsure how to shift their roadway-focused maintenance experience to maintaining new infrastructure that has different considerations. All-seasons maintenance is critically important to provide people with a viable and safe travel option throughout the year. In colder climates, several communities have shown the ability to retain people cycling through the winter if winter operational considerations are part of the design process and if they have predictable and consistent maintenance practices.

5.3.5.1 Design and Operation Considerations

Maintenance techniques for active transportation facilities are different than those of roadways, the design treatments used for active transportation infrastructure must be sensitive to and enable good maintenance techniques so walking and bicycle riding in the winter months can occur with minimal impedance.

Key considerations for winter maintenance and operations include:

- Coordination of street/sidewalk/bikeway clearing to minimize the transfer of snow and debris between the various facilities and to reduce the level of effort required to perform maintenance operations;
- Snow clearance, storage, and removal practices to ensure clear travel paths are provided to all users;
- Facility dimensions consider equipment dimensions to allow for maneuverability around design elements and efficient clearing of streets; and
- Snow clearing, and ice-control practices are appropriate for pedestrians and cyclists, taking into account their unique movement weight, narrow tires, and lack of radiating heat

The buffer space between the travel lane and the protected bike lane can be used for snow storage and its width must consider the sufficient linear space to store the snow plowed from the sidewalk, bikeway, and/or vehicle travel lanes as shown in **Figure 5.24**.

In the absence of a buffer between the bike lane and the travel lane the buffer between the sidewalk and the vehicular/bike lanes can be used to store snow allowing the bike lanes to be cleared in conjunction with vehicular lanes.

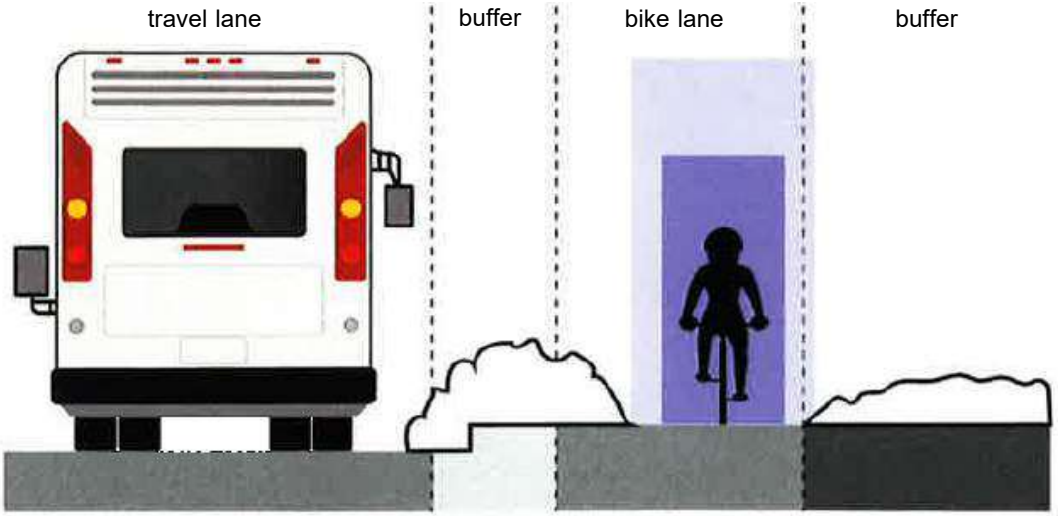


Figure 5.24 Example of buffer areas between active transportation and roadway facilities being used for snow

Where there is limited buffer space between the sidewalk and travel lanes, an organized snow removal method between the roadway and sidewalks can be implemented to gradually shift the snow from vehicular, pedestrian, and cycling facilities.

5.3.5.2 Provincial Minimum Maintenance Standards

As of May 3, 2018, substantive changes were made to the Minimum Maintenance Standards for Municipal Highways, O Reg 239/02 including:

- The introduction of winter maintenance standards for bicycle lanes;
- The introduction of winter maintenance standards, including patrol obligations, for sidewalks;
- The ability for municipalities to declare a "significant weather event" with implications for winter maintenance on roadways, bicycle lanes and sidewalks during the duration of the event; and
- Inspection standards for areas "adjacent to sidewalks."

Bicycle Lanes

The Minimum Maintenance Standards (MMS) now provide a definition for a bicycle lane which includes a portion of the roadway with marked or buffered lanes, whether for the exclusive or preferential use of cyclists.

The MMS now include specific sections outlining winter maintenance standards for snow accumulation in bicycle lanes. **Table 5.14** compares the new snow accumulation depth standards for bicycle lanes as compared to the existing standards for roadways.

The snow accumulation standards for bicycle lanes is lower than for the adjacent roadways in which they are contained, with the implication that where maintenance is performed on the roadway and bicycle lane in unison, both standards should be satisfied.

Similar to the sections dealing with roadways, the MMS provide that where the depth of snow accumulation on a bicycle lane is less than or equal to the depth set out in the table, the bicycle lane is deemed to be in a state of repair in respect of snow accumulation.

While there is no separate section dealing with ice formation on bicycle lanes, the section which sets out the standards for ice formation on bicycle lanes, the section which sets out the standards for ice formation on roadways does note in section 5(5) that "this section applies in respect of ice formation on bicycle lanes on a roadway, but does not apply to other types of bicycle facilities."

Table 5.14 Provincial minimum maintenance standards for bicycle lanes and roadways

Class of Highway or Adjacent Highway	Depth	Time for bicycle lanes	Time for roadways
1	2.5 cm	8 hours	4 hours
2	5 cm	12 hours	6 hours
3	8 cm	24 hours	12 hours
4	8 cm	24 hours	16 hours
5	10 cm	24 hours	24 hours

Sidewalks

For the first time, the MMS now contain specific sections dealing with sidewalk winter maintenance. Section 16.3 provides that snow accumulation on sidewalks shall be reduced to less than or equal to eight centimetres within 48 hours of the end of a snow event. The section further provides a standard of a minimum maintained width of one metre. This section appears to mirror the standards which many municipalities on their own initiative have had in place for some time. Notably, the section does not require clearing to bare pavement; rather, simply reducing the depth to less than or equal to eight centimetres.

Sidewalks are deemed to be in a state of repair with

respect to snow accumulation (a) where snow depth is less than or equal to eight centimetres; and (b) during ongoing snow accumulation, even where it exceeds eight cm, until 48 hours after the snow accumulation ends.

Section 16.5 sets out standards with respect to ice formation on sidewalks. It requires that municipalities monitor weather in accordance with section 3.1, and to "treat the sidewalk if practicable to prevent ice formation or improve traction within 48 hours if the municipality determines that there is a substantial probability of ice forming on a sidewalk, starting from the time that the municipality determines the appropriate time to deploy resources for that purpose". This appears to be an effort to impose standards for sidewalk maintenance during ice formation events. Necessarily, this standard still leaves the municipality with considerable discretion in terms of the deployment of resources during such events.

Similar to the other "deeming" provisions found in the MMS, where ice forms on a sidewalk despite complying with the standard in subsection (1), the sidewalk is deemed to be in a state of repair in respect of ice until 48 hours after the municipality first becomes aware of the fact that the sidewalk is icy. Pursuant to subsection (3), an icy sidewalk is deemed to be in a state of repair for 48 hours after it has been treated.

The deeming provisions with respect to snow accumulation and ice ought to provide municipalities with more objective arguments in defending sidewalk slip-and-fall claims together with the gross negligence defence provided in section 44(9) of the Municipal Act, 2001 and section 42(5) of the City of Toronto Act, 2006.

Section 16.7 for the first time introduces standards for winter sidewalk patrols, which are to be conducted by the municipality where "the weather monitoring referred to in section 3.1 indicates that there is a substantial probability of snow accumulation on sidewalks in excess of eight cm, ice formation on sidewalks or icy sidewalks." The patrols are to be conducted on sidewalks that the municipality selects "as representative of its sidewalks at intervals deemed necessary by the municipality." Accordingly, there is no expectation that all sidewalks are to be patrolled; rather, this section appears to reflect the practice already in place in many municipalities to inspect "representative" sidewalks for winter maintenance conditions.

Table 5.15 Best Practices for Active Transportation Snow Clearing in Canada and Abroad

Municipality	Standards
Ottawa, ON	• Plowing: started after 2.5 to 5.0 cm of snow accumulation; • Snow Removal: 50% encroachment into cycling facility.
Montreal, QC	• Sweeping: 3.0 to 5.0 cm of snow accumulation; • Plowing: more than 5.0 cm of snow accumulation.
Calgary, AB	• Priority 1 facilities: snow cleared within 24 hours of the start of snowfall; • Priority 2 facilities: snow cleared within 72 hours of the start of snowfall
Oulu, FInland	• Priority 1 facilities: snow clearing started after 3.0 cm snowfall, completed before 7 am the following day; • Priority 2 facilities: snow cleared after the Priority 1 network maintenance is completed, only after 5.0 cm snowfall.

5.3.5.3 Clarence-Rockland's Current Winter Maintenance Standards

Clarence-Rockland's Winter Control Policy identifies the winter maintenance period being between November 15 and March 31.

The policy states that sidewalks and multi-use pathways will be cleared as soon as practicable after becoming aware that the snow accumulation is greater than 8-15 cm depending on the roadway class. The expected standard is for snow to be cleared between 12 and 24 hours depending on the roadway priority.

Sidewalk snow clearing priority is in the following order:

- School zones;
- Major collectors;
- Minor Collectors; and
- Local Streets.

While there are provisions for sidewalks and multi-use paths there are no explicit provisions for bike lanes.

5.3.5.4 Maintenance Service best-practices

Setting maintenance policies, priorities, and service standards is important so agencies can avoid inconsistent levels of service across the active transportation network, fragmentation of the network, and/or uncoordinated efforts between off-street and on-street facility maintenance. To have a coherent, continuous winter active transportation network, the maintenance priority for facilities should be based on contiguous routes, independent of road maintenance priority.

Each municipality has its own needs and standards that are set to reflect changing priorities. **Table 5.15** summarises some of the best-practices for active transportation snow clearing standards across Canada and Europe.

Generally, municipalities will create a priority or classification system for cycling facilities to distinguish varying levels of snow clearing priority (similar to what is currently done in Clarence-Rockland for roadways and sidewalks).

5.3.5.5 Fleet Considerations

The City's winter maintenance fleet includes:

- 7 tandem combination plow / spreader trucks
- 1 top-kick (3T) Combination plow/spreader truck;
- 2 graders (owned) + 1 rental grader w/ operator;
- 3 sidewalk plows;
- 1 loader with wing;
- 1 backhoe (owned);
- 1 loader rental; and
- 1 larue snow blower.

The addition of over 150 km of cycling infrastructure (including multi-use paths), as well as 18 additional kilometres of sidewalk will add further demand on the existing winter maintenance fleet.

Certain on-street cycling facilities such as shared or painted bike lanes can be serviced by existing roadway snow clearing, however additional off-street facilities like sidewalks, and multi-use paths may require additional sidewalk plows to adhere to the City's current winter maintenance standards.

5.3.5.6 Active Transportation Winter Maintenance Recommendations

Winter is an inevitable part of yearly life in Clarence-Rockland. While active transportation certainly tends to drop during winter months, there are still residents who will need to walk to/from bus stops, retail stores, and other areas around the City. Furthermore, as more cycling facilities are implemented, there may be a winter demand for better maintenance of these facilities to allow cyclists to ride around the City safely.

The City of Clarence-Rockland should identify a classification system for cycling facilities and an associated winter maintenance standard for each to continue to maintain the high-quality of life and safety that residents currently enjoy. The implications of this will require a re-evaluation of fleet requirements to service the additional recommended infrastructure.

Recommended Policy Documents:

- Develop snow maintenance standards for the cycling network and amend the changes to the existing Winter Control Policy;
- Re-evaluate the fleet requirements for maintaining additional active transportation infrastructure.

5.3.7 Downtown Parking Management

Parking management involves the application of various specific strategies in an integrated program. Not every strategy is appropriate in every situation. Actual impacts vary depending on geography demography, implementation and other factors.

5.3.7.1 Context

The existing downtown core of Rockland does not provide any municipally owned surface parking beyond on-street spaces. Despite this, there is a healthy supply of off-street surface parking lots that service several retail uses. These privately-owned lots provide a fairly good accessibility to most places within Rockland's core, however there are some notable gaps, particularly between St. Jean Street and Edwards Street as visualized in **Figure 5.25**.

As Rockland's Downtown continues to grow, and Laurier Street is revitalized, there will be additional demand for access and parking in the area. There is currently limited land to build a publicly owned off-street surface lot which may present some constraints for parking in the future as most of the parking capacity in the area is privately-owned and could be subject to re-development or changes to usage requirements beyond the City's control.

5.3.7.2 Parking Management Measures

There are several parking measures that should be further explored to accommodate greater parking demand in the Downtown over time so that the City of Clarence-Rockland can support the downtown revitalization while balancing land use objectives. These measures include:

Demand Priced Parking

A system could be developed whereby the city compares the actual parking occupancy with the desired on/off-street parking occupancy and every few weeks nudge prices up or down accordingly based on demand. Prices can be set by block and time of day to produce one or two open spaces on every block and thus reduce demand and shift motorists to other modes of transportation.

Increase capacity of Existing facilities

Existing facilities could be optimized by using spaces that are currently wasted areas such as corners, edges, and undeveloped land to increase the parking supply. This can be particularly appropriate for compact car, motorcycle, and bicycle parking. Another method is to reduce parking stall widths from 9 feet wide to 8 feet wide in order to create compact car

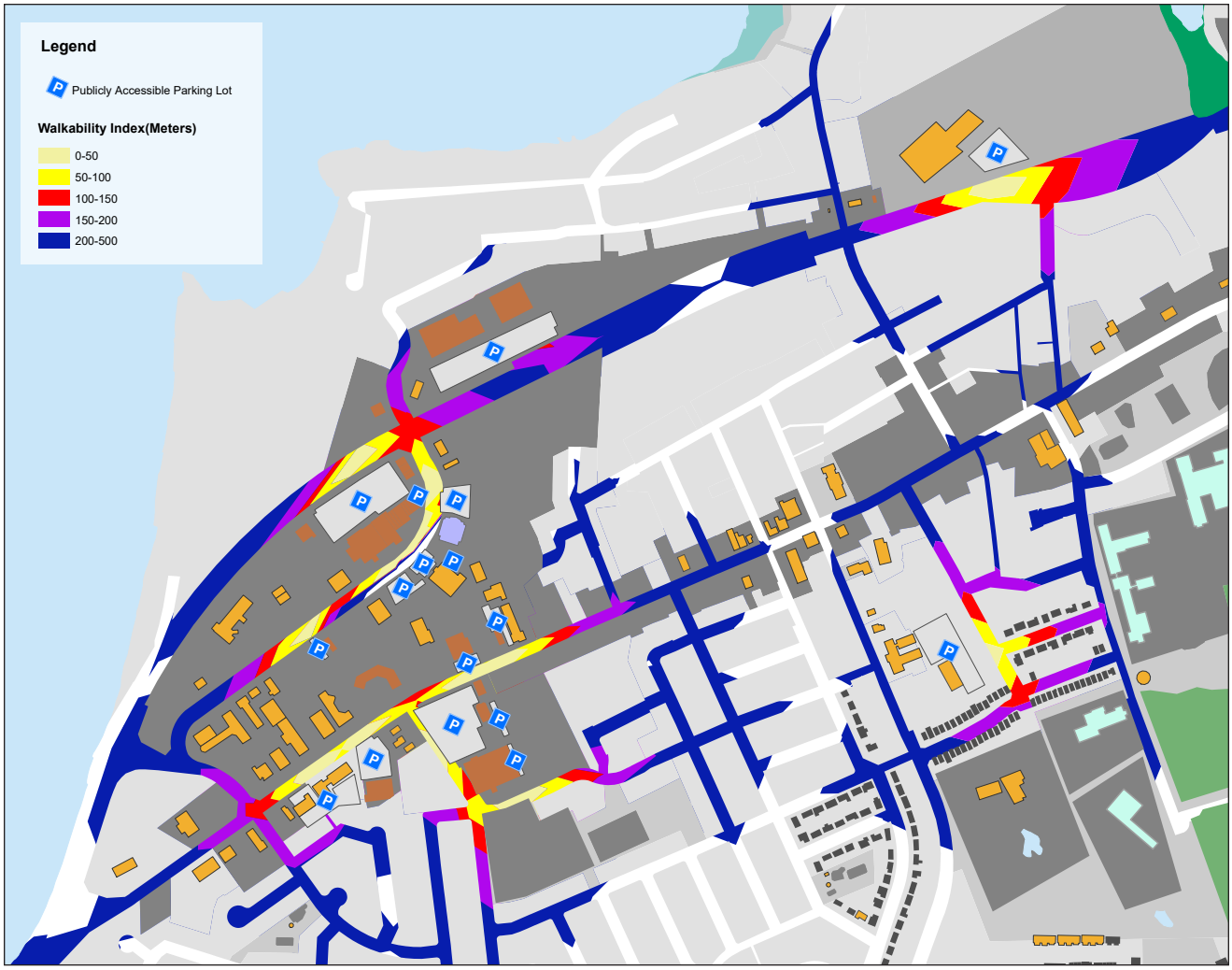


Figure 5.25
Downtown Parking Accessibility

parking. One additional parking space for every eight can be created.

Remote Parking

Remote parking, also called satellite parking, typically involves the use of parking facilities located at the periphery of a business district or other activity centers. Special shuttle buses, or free transit service, may be provided to connect destinations with remote parking facilities, which would allow them to be farther apart than would otherwise be acceptable.

Parking Space Sales and Leasing

Create or market a website which allows residents or workers to look for parking to rent on a daily, weekly, or monthly basis. Facilities or businesses with excess parking capacity can lease or trade it to others.

Transferable Parking Rights

Developers can choose between constructing required parking spaces or transferring parking spaces to another development. This works best in areas where parking maximums limit the amount of parking that can be built. A transfer program could allow historic properties, low income housing, and senior housing projects, where parking demand is lower, to transfer parking spaces to another development that would like additional spaces above the maximum allowed.

Mechanical Stackers

Stackers and mechanical garages can significantly increase the number of vehicles that can be stored in an area. Various types of lifts and elevators can be used to increase the number of vehicles that can fit in a parking structure or on a surface level parking lot.

They are a flexible way to address growing demand for parking spaces at relatively low construction cost and no additional land requirements.

Unbundled Parking

Parking facilities and infrastructure can be unbundled from the rent or purchase price of residential and commercial units and sold or rented out as a premium add on service. Including the costs of parking in rents or purchases encourages automobile ownership and is a disincentive to active modes. Unbundling also allows a more equitable allocation of costs by allowing tenants and owners to pay only if they use the parking infrastructure. Unused parking spaces could be used for public parking at an hourly rate.

Land Banking

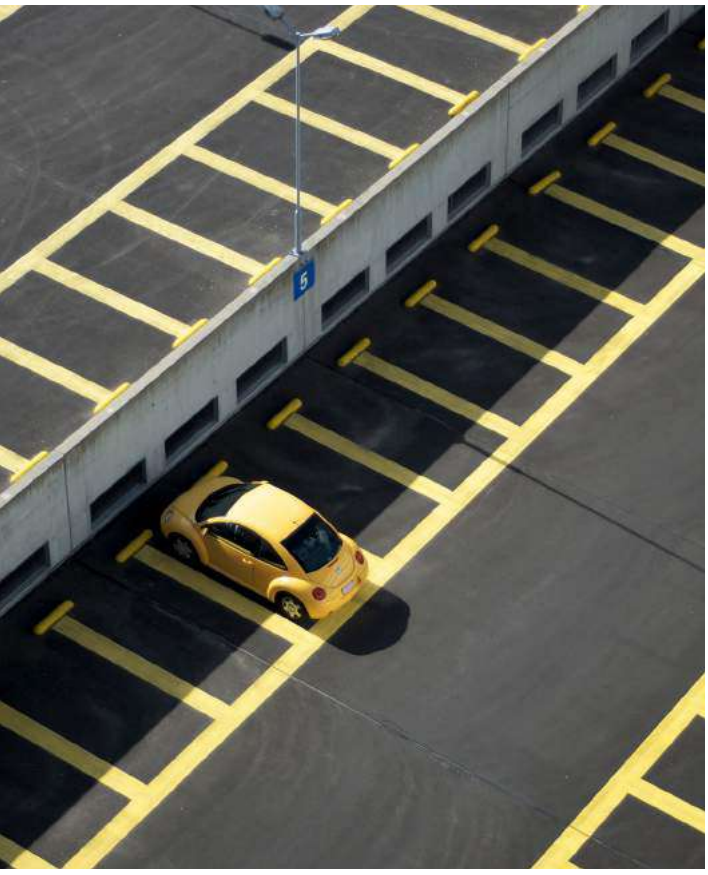
Land banking addresses the uncertainty of future parking demand. The strategy reserves unpaved space for anticipated future parking demands if they arise. Meanwhile, the space can be used for amenities such as playgrounds or parks. Land banking can be a useful tool for developments that occur in phases - since developers may be holding the land for future parking demand that will only be fulfilled when a project is complete. Land banking is best for low- to medium-density areas where land for future development is likely to remain fallow for some time.

Wayfinding and Signage

A comprehensive and uniform wayfinding and signage program for the City's parking system can help guide drivers of parking options and reduce confusion about payment and restrictions. Improved signage can alleviate demand by providing directions to nearby destinations and other peripheral lots. Information can also be used to clearly identify lots that are available to the general public and those that are restricted to monthly pass holders, providing information on fines and discouraging noncompliance.

Streetscaping and Landscaping

Making outer city lots more appealing with shading (natural or artificial) and promoting cleanliness will encourage people to want to park there. In addition, making walks from distant parking lots desirable and shaded, will help people enjoy their walk to work. Improving walkability (the quality of walking conditions) expands the range of parking facilities that serve a destination. It increases the feasibility of sharing parking facilities and use of remote parking facilities. Improving walkability also increases "park once" trips, that is, parking in one location and walking, rather than driving to other destinations, which reduces vehicle trips and the amount of parking required at each destination. In addition, walking and cycling improvements encourage transit use – since most transit trips involve walking or cycling links.



5.3.7.3 Curbside Demand Management

Specific pick-up & drop-off curb spaces can be designated throughout the downtown to encourage ridesharing and allow freight vehicles to safely deliver packages to commercial properties along the roadway without having to take up parking spaces.

The average dwell time for vehicles picking up and dropping off a person is approximately 2:45 minutes, meaning a designated pick-up & drop-off spaces has a theoretical capacity of being able to serve 22 vehicles per hour. Commercial vehicle dwell times are closer to 10-15 minutes meaning curbside capacity for deliveries can only serve approximately 4-6 delivery vehicles per hour.

Typically, demand in an area is monitored and analysed to determine the quantity of curb spaces needed for freight and pick-up/drop-off demand. The importance of providing dedicated curb-spaces for these uses is so that on-street parking can be better utilized for parking supply rather than temporary operational needs.

With the advent of ridesharing services such as Uber and Lyft, it is important for municipalities to consider curbside demand usage and develop a strategy to address this type of demand.

5.3.7.4 Downtown Parking Management Recommendations

It is recommended that the City of Clarence-Rockland be proactive and prepare a Downtown Parking Plan that considers the on and off-street parking needs into the future, with a more detailed consideration for new infill development opportunities, as well as future curbside demand usage. This should also consider the impacts of transit and active transportation investments, as well as the potential impacts of emerging technology.

Recommended Policy Documents:

- Develop a Downtown Parking Plan that considers future parking and curbside demand needs.

5.4 Implementation & Costs

5.4.1 The Concept

Through the development of alternative transportation solutions, several roadway, active transportation, and policy-related improvements have been recommended.

With the significant shift towards complete streets captured in the vision for the current Multi-Modal Transportation Plan, there is an opportunity to expand the scope of infrastructure implementation to target strategic corridors of the automobile, cycling, and pedestrian networks through the road capital and rehab programs. The following concept outlines the approach developed to identify, prioritize and implement recommended improvements to create a connected network over the plan's horizon years. Each of the implementation categories involved a review of each recommended improvement to identify the most appropriate method for implementing it.

Recommended improvements are split into three categories:

Minor Additions:

Several active transportation improvements can be added to existing roadways without altering the roadway infrastructure or geometry. Examples of these types of improvements include painted markings, signage, or the addition of flex bollards on existing bike lanes.

Rehab Additions:

The road maintenance plan provides an opportunity to provide active transportation facilities as roads are reconstructed / rehabilitated. This is a cost-effective method of implementing active transportation facilities with savings realized through already planned reconstruction. Planned Rehab Additions include active transportation facilities that would require physical changes to the existing roadway infrastructure such as minor roadway widening for accommodating bike lanes or adding pedestrian sidewalks/multi-use paths within the right-of-way.

Capital Investments:

Planned Capital Investments include improvements that would require new infrastructure or major alterations to existing infrastructure. Examples of these types of improvements include road widening, roadway extensions, new roads, or new multi-use paths that are not tied within a larger road project.

5.4.2 Costs of the Plan

The capital cost of the recommended transportation strategy over the next 15+ years, inclusive of new road construction, intersection improvements, sidewalk extensions, pedestrian routes, multi-use, and off-road trails, pedestrian crosswalks, and cycling facilities and will total approximately $63,851,902 (not including improvements and costs to be incurred by the County).

Of the total capital costs, $23,291,498 is needed for short-term improvements (<5 years), $26,130,498 for medium term (5-10 years), and $14,429,906 for long-term (>10 years).

Certain transportation improvements will benefit current residents and would comprise the non-growth component of the Development Charges (non-DC). The improvements required to accommodate higher volumes of traffic and increased demand on the existing infrastructure directly attributable to new developments are eligible for funding through Development Charges (DC).

Based on our analysis, the bulks of short and medium-term improvements will be triggered by development, particularly within Morris Village. Generally, transportation improvements triggered or required to accommodate development are eligible to be paid for through development charges (DC). Some of the costliest improvements such as the Poupart Road widening and associated intersection upgrades are required to accommodate the influx of new residents.

Approximately 85% of the capital improvement costs will be eligible for cost recovery through DC mechanisms. The remaining 15%, primarily pedestrian and cycling improvements could be financed from the residential tax base. A summary of the costs by timing and by DC or non-DC chargeable is provided below in **Table 5.15**.

A detailed line-by-line summary of each improvement is provided in **Appendix B** including details on:

- Improvement Description;
- Cost;
- Length (in Km);
- Implementation Category (i.e. Minor Addition, Rehab Addition, or Capital Investment);
- Percent split between DC and Non-DC charges; and
- Environmental Assessment Requirements and Cost.

Table 5.15 Estimated Capital Programming Costs by Horizon and by Jurisdiction

Phasing	Clarence-Rockland			United Counties of Prescott & Russell
	Total Cost (DC + Non-DC)	DC	Non-DC	Total Cost
Short-Term (<5 years)	**$23,291,498**	**$19,761,590**	**$3,529,908**	**$0**
Cycling	$1,471,540	$859,056	$612,484	$0
Pedestrian	$4,374,950	$1,640,386	$2,734,564	$0
Multi-Use	$1,852,542	$1,669,683	$182,859	$0
Roadway	$13,752,466	$13,752,466	$0	$0
Intersections	$1,840,000	$1,840,000	$0	$0
Medium-Term (5-10 years)	**$26,130,498**	**$22,459,094**	**$3,671,404**	**$0**
Cycling	$1,432,710	$1,141,070	$291,640	$0
Pedestrian	$3,189,732	3189731.501	$0	$0
Multi-Use	$8,964,636	$6,401,309	$2,563,327	$0
Roadway	$11,968,420	$11,151,982	$816,437	$0
Intersections	$575,000	$575,000	$0	$0
Long-Term (>10 years)	**$14,429,906**	**$12,123,171**	**$2,306,736**	**$84,862,627**
Cycling	$3,239,072	$1,401,273	$1,837,799	$20,806,528
Pedestrian	$797,785	$776,380	$21,405	$226,827
Multi-Use	$2,336,968	$1,889,436	$447,532	$3,718,508
Roadway	$7,711,081	$7,711,081	$0	$59,420,765
Intersections	$345,000	$345,000	$0	$690,000
Total	**$63,851,902**	**$54,343,854**	**$9,508,048**	**$84,862,627**

NOTE: *All figures in 2019 dollars ($), rounded to the nearest hundredth, and include a 15% contingency. Preliminary estimate only unless otherwise noted – subject to further review at preliminary/detailed design stage*

5.4.2.1 Funding Mechanisms for Active Transportation

Financing implementation of the active transportation improvements could be supported by a variety of provincial and federal financing programs. One of the most widely used programs is the Gas Tax Fund (New Deal for Cities and Communities) initiative which consists of an ongoing transfer of funds from the federal government to municipalities. The funds are generally allocated to municipalities on a per capita basis and are to be used for "environmentally sustainable municipal infrastructure." Eligible expenditures include public transit, water, wastewater, solid waste, community energy systems, as well as local roads, bridges and tunnels, and active transportation infrastructure (e.g. bike lanes) that enhance sustainability outcomes. Funds must result in net incremental capital spending on public transit infrastructure. There cannot be any reduction in capital funding provided by the municipality and the funds must be used within three years of receipt.

A similar program to the Federal Gas Tax Fund is offered by the province of Ontario. The Ontario Gasoline Tax is an ongoing transfer of funds to municipalities exclusively for public transit. The Provincial Gas Tax has reached 14.7 cents per litre in 2017. The existing allocation is based upon each municipality's proportionate share of the province's population. The funds can be used for either operating or capital costs.

6.0 Bibliography

- City of Clarence Rockland. (2018, July 18). On-going Development 2013 to Beyond 2020. City of Clarence-Rockland - Future Development Map. Clarence-Rockland, Ontario, Canada: City of Clarence-Rockland.
- City of Clarence-Rockland. (2018, July 18). Staff Revised Growth Forecast - Residential Units. Clarence-Rockland Growth Forecast. Clarence-Rockland, Ontario, Canada: City of Clarence-Rockland - Planning Department.
- City of Ottawa. (2018, August 29). Growth Projections for 2006-2031 - Employment Projections. Retrieved from City of Ottawa Website: https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics/growth-projections-2006-0/30-employment-projections#3-0-employment-projections
- City of Toronto. (2017). Toronto Complete Streets Guidelines. Toronto: City of Toronto.
- County of Prescott & Russell. (2013). By-Law Number 2013-24. Russell: County of Prescott & Russell.
- Deloitte. (2017, Issue 20). The rise of mobility as a service. Deloitte Review, 113-129.
- HDR | iTRANS. (2009). National Capital Region 2009 External Travel Survey. Ottawa: National Capital Region.
- Hemson Consulting Ltd. (2012). Growth Forecast and Land Needs Analysis - United Counties of Prescott and Russell. L'Original, Ontario: United Counties of Prescott and Russell.
- Hemson Consulting Ltd. (2014). Development Charges Background Study. Rockland: City of Clarence-Rockland.
- J.L. Richards. (2014). Official Plan of the Urban Area of the City of Clarence-Rockland. Rockland: City of Clarence-Rockland.
- Leduc Bus Lines Ltée/LTD. (2018). Rapport périodique (CRT-Bourget) - Leduc Bus Lines Ltée/LTD. Rockland: City of Clarence-Rockland.
- McCormick Rankin Corporation. (2005). Strategic Transportation Plan for the Urban Area of the City of Clarence-Rockland. Rockland: City of Clarence-Rockland.
- MMM Group Ltd. (2014). City of Clarence Rockland Transit Feasibility Study. Rockland: City of Clarence-Rockland.
- Parachute Vision Zero Network. (2017). Vision Zero: The Canadian Landscape. Cas Study Series, 1-13.
- Satistics Canada. (2016, 11 29). Journey to work: Key results from the 2016 Census. Retrieved from Statistics Canada Website: https://www150.statcan.gc.ca/n1/daily-quotidien/171129/dq171129c-eng.htm
- Smart Growth America. (2018, June 13). Complete Streets Policies Nationwide. Retrieved from Organization Website for Smart Growth America: https://smartgrowthamerica.org/program/national-complete-streets-coalition/policy-development/policy-atlas/
- Statistics Canada. (2011). 2011 National Household Survey - Commuting Flow. Ottawa: Statistics Canada.
- Statistics Canada. (2017, February 8). Census Profile, 2016 Census. Retrieved from Statistics Canada Census Program: http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E
- Statistics Canada. (2017). Commuting Flow, 2016 Census. Ottawa: Government of Canada.
- United Counties of Prescott & Russell. (2018, July 9). Réseau Cyclable - vos options. Retrieved from Sentier récréatif de Prescott et Russell: https://www.sentiertrail.ca/reseaucyclable
- United Counties of Prescott and Russell. (2018). Official Plan. L'Original, ON: United Counties of Prescott and Russell.