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City of Sarnia
ACTIVE TRANSPORTATION MASTER PLAN

Background Report

June 2023

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1.0 Introduction

1.1 What is Active Transportation ?

Active transportation refers to any mode of travel that relies on human power, such as walking, cycling, skating, the use of a wheelchair and the use of human powered or hybrid mobility aids . Active transportation can be used for leisure to visit or exercise in parks and natural sites or daily for commuting to work to school or university, or to undertake care work such as grocery shopping and health errands.

One of the many benefits of active transportation is that it can improve physical and mental health by increasing physical activity levels and reducing sedentary behaviour. Physical activity can help prevent and manage chronic diseases, such as obesity, diabetes, cardiovascular disease, and some cancers. It can also improve mood, cognition, and well-being.

Another benefit of active transportation is that it can reduce greenhouse gas emissions and air pollution by replacing motorized vehicle trips by non-polluting means of transportation. Transportation accounts for about a quarter of global carbon dioxide emissions, which directly contributes to global warming and associated negative impacts on the environment and human health.

Moreover, active transportation can reduce noise pollution and traffic congestion, which can improve the quality of life in urban areas. According to the Canada's National Active Transportation Strategy, the estimated cost of inactivity in Canada totals $6.8 million a year and air pollution is the reason for up to 15,300 premature deaths and other related issues.

Finally, active transportation supports a greater social interaction in cities, whereby people can cycle and walk together, share their travel experience and gather in public spaces. Social interaction is a key driver of a happy city.

WHY IS IT IMPORTANT?

The Active Transportation Master Plan ('ATMP') for the City of Sarnia can help improving the liveability and accessibility of the Sarnia community by providing more travel options and access to natural spots around Sarnia and Lambton County. By developing an ATMP, the City of Sarnia aims to develop a guiding document for orientating the active transportation projects and investments for the next decade and provide an active transportation network that meets the diverse needs of its community.

In Sarnia, motor vehicles (cars, trucks, motorcycles) are the most used travel mode to move around the city and the majority of streets is designed to facilitate the movement of vehicular traffic. The approach of the ATMP proposes to reverse the traffic pyramid by putting the human at the center of the mobility equation rather than the vehicles. Active transportation modes should come first in the design of streets and places, because they rank highly in terms of cost, space efficiency, and health benefits. As illustrated in Figure 1, by putting the safety and comfort of active transportation users first in the reversed pyramid, the design of streets can encourage a wider diversity of people to travel actively, in any mobility condition whatsoever, thus creating an inclusive transportation network.

Therefore, putting an Active Transportation Master Plan in place is an essential project that can benefit the environment, society and the local economy in the short and long term. It will be developed in a comprehensive and collaborative approach that involves various stakeholders, such as government agencies, private sector, civil society organizations and residents. It will also set out a clear vision, achievable goals, as well as a realistic action plan, budget and monitoring system.

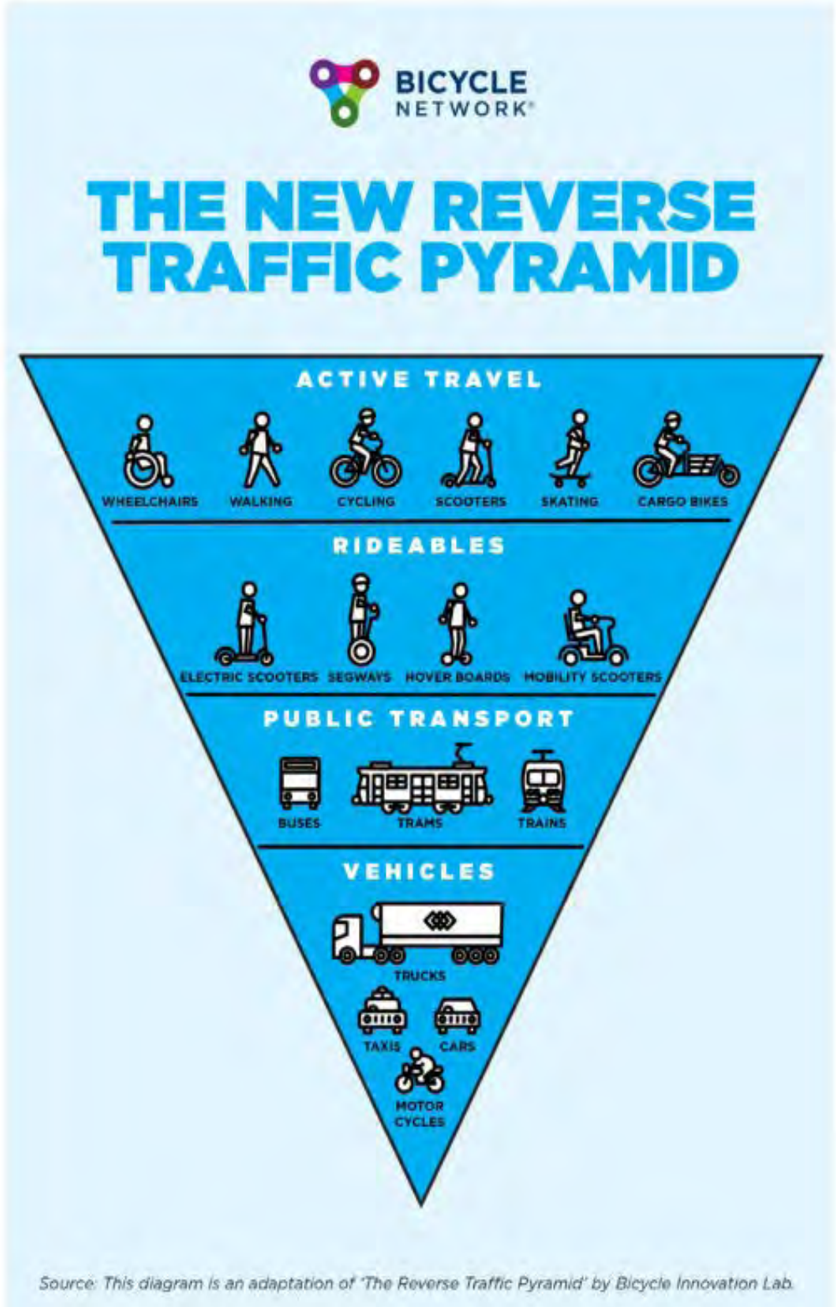

Figure 1: The new reverse traffic pyramid

1.2 History of Active Transportation in Sarnia

The City of Sarnia and its residents have been involved in improving active travel for over 20 years with various public initiatives such as programs, one-time events, workshops and on-street improvement projects, presented on Figure 2. The Bluewater Trails Committee was first created in 1999 and since then a Transportation Masterplan was adopted in 2014. In addition, Active and Safe routes to Schools and Car-Free Downtown programs were implemented to improve and make the active travel experience of Sarnians safer. Temporary pedestrianizations of Christina Street have contributed to the vitality of the city's downtown and its businesses which can be beneficial to Sarnia's economic growth.

One-day events have been held all around Sarnia such as bike races like the Bluewater International Gran Fondo (BIG) Slow Roll which is a free community 10km bike ride dedicated to contributing to the growth of bike culture in Sarnia.

The City has been collaborating with various stakeholders and partners, such as the Bluewater Trails Committee, to support and promote active transportation in the community. The City's efforts are being consolidated into the elaboration of the Active Transportation Master Plan, which will build upon projects already on-track for completion by the City. Future projects already engaged include:

- Confederation Line Multi-Use Pathway: This project will establish a multi-use pathway along Confederation Line from Murphy Road to Upper Canada Drive.

- Afton Drive Multi-Use Pathway: This project will create a separated multi-use pathway along Afton Drive, connecting the Howard Watson Nature Trail to Preston Drive on the North side of Afton Drive and the East side of Murphy Road.

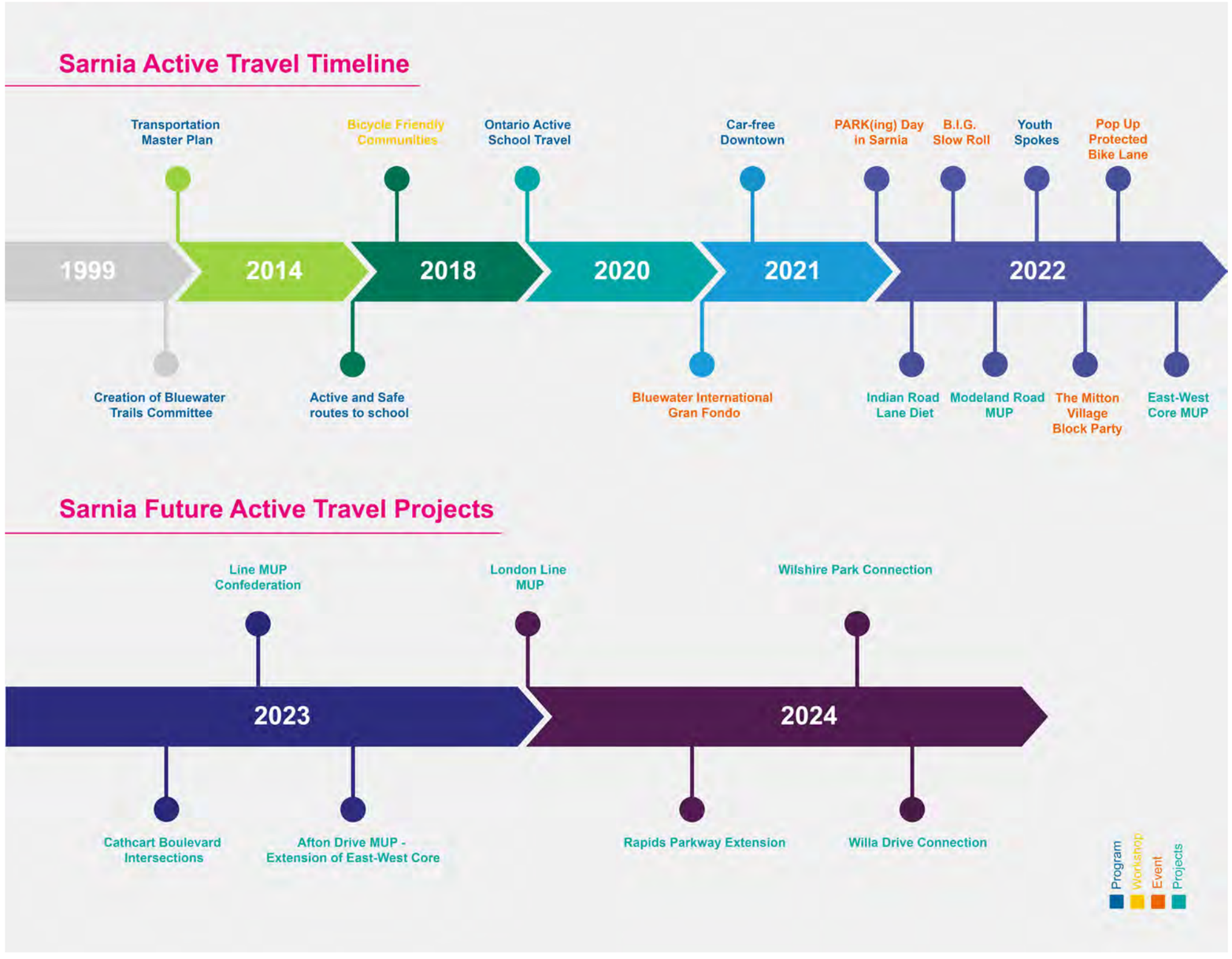

Figure 2: Active Travel Timeline

1.3 Objectives of the ATMP

CONSIDERING THE BENEFITS OF ACTIVE TRANSPORTATION AS WELL AS SARNIA'S ACTIVE TRANSPORTATION AMBITION AND PROJECTS, THE OBJECTIVES FOR THE ATMP WERE DEFINED AS FOLLOWING:

1. To increase the mode share of active transportation for all trip purposes and across all age groups.

2. To raise awareness about active transportation for all road users.

3. To increase the connectivity of the active transportation network and integrate it with other modes of transportation.

4. To promote the health, environmental, social, and economic benefits of active transportation among City of Sarnia residents and visitors.

1.4 Process and ATMP Timeline

The ATMP will provide the network plan, the policies and the vision to support safe, convenient and sustainable travel by non-motorized modes. The process and project timeline for the ATMP consist of four phases illustrated on Figure 3: a review of background information gathered and the preparation of a Background Report which composes this document, the development of a vision for the plan, the validation of a proposed network and implementation strategy and the preparation and submission of the ATMP.

- The first phase consists of the collection of relevant data and information on the existing conditions and needs of active transportation users. A policy review and benchmark on best practices were also conducted to inform the diagnosis of the active transportation conditions in Sarnia. This composes the current document entitled Background Report.

- The second phase consists of an engagement process with key stakeholders and the public to establish the vision for the active transportation network proposed.

- The third phase will be used to develop different network options according to the vision and an associated implementation strategy and action plan. A network amenities plan, a bike parking strategy and a Facility and Intersection Design Standards document will complement the draft ATMP.

- The final phase consists of the preparation of a final ATMP document that summarizes the findings and recommendations of the previous phases, which will be presented to decision makers and key stakeholders in the City of Sarnia, before adoption by the Council.

Figure 3: ATMP Process

2.0 The Context of Sarnia

2.1 Who are Sarnians ?

Sarnia is a city in southwestern Ontario, Canada, located on the shores of Lake Huron and the St. Clair River. It is the largest city on Lake Huron and had a population of 72,047 people in 2021. The city area is 164.85 km2 but most of the urban area is concentrated on the western end of the city, along the river and lake front.

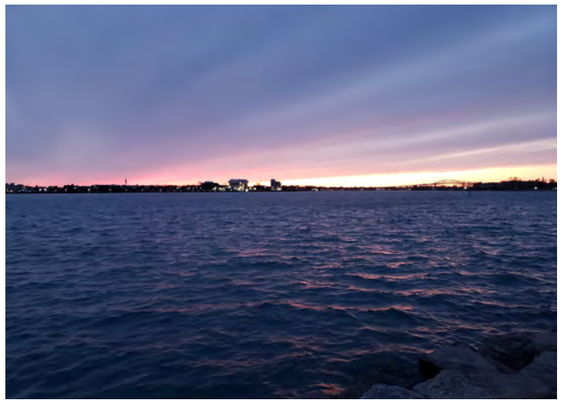

Figure 4: Portrait of the Population of Sarnia

The demographic profile of Sarnia shows that it has an ageing population. Over the last five years, the proportion of the population aged over 65 increased from 22% to 25% whilst the 15-64 years old proportion of the population decreased. The average family size was maintained from 2016 to 2021 at 2.7 persons per household. It is important to note that 74% of the work commuting trips were made within the city boundaries in 2021, in comparison with 76% in 2016. Overall, a large majority of residents in Sarnia work within the city, which illustrates a higher potential for commuting by active transportation.

A minor decrease in population was noted between 2011 and 2021. It should be noted that the ageing population and demographic change can impact the demand for transportation services and for an accessible active transportation network for all age groups: as the proportion of seniors in the population increases, so does their need for mobility and access to health and social facilities.

Sarnia is a major transportation hub for pipelines, railways, and highways that connect Canada and the United States. Moreover, Sarnia is home to several refineries, chemical plants, and research facilities that produce a variety of petroleum derivative products, which makes Sarnia a dynamic regional economic hub. GDP per capita increased from $41 652 in 2011 to $54 050 in 2021. Nevertheless unemployment has been rising over the last 5 years to reach 13% in 2021.

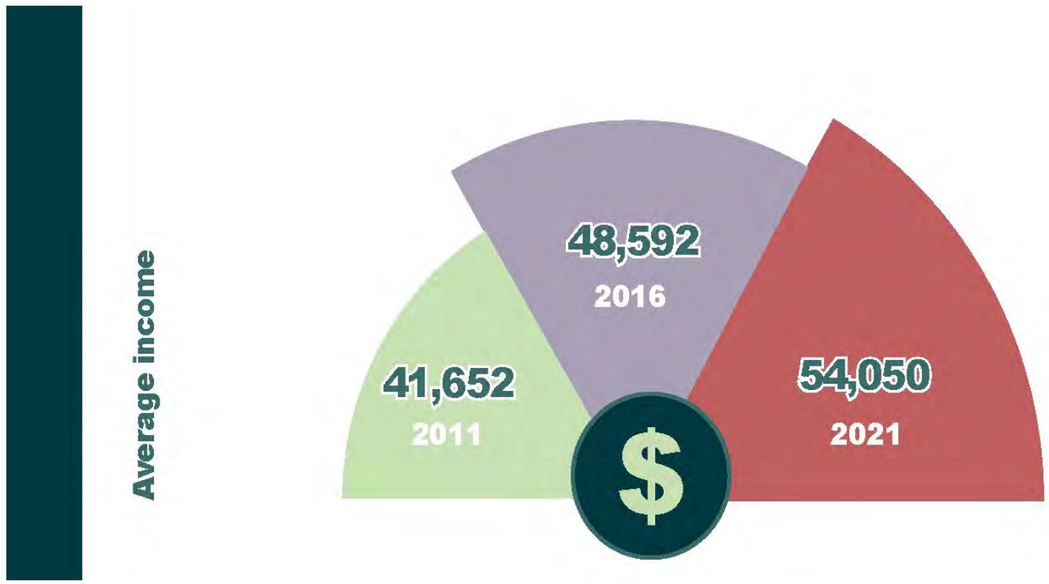

Figure 5: Economic Portrait of Sarnia

3.0 Where Do Sarnians Travel To ?

3.1 Points of Interest

There are many destinations and points of interest that attract trips from Sarnians daily. Residents and visitors from Sarnia, whichever mode of transportation they use, travel to offices, commercial areas to run errands, health facilities such as medical centres and nursing homes, schools and libraries, leisure destinations including parks and trails.

Sarnia boasts 95 parks over 1040 acres of parkland. Some of the most popular parks include Canatara Park, Centennial Park, and Germain Park. Sarnia's trails also offer scenic views of the lake and the river, such as the Bluewater Trail, and the Howard Watson Nature Trail. Sarnia offers beaches that are ideal for swimming, boating, and fishing. Some of the most popular beaches include Bright's Grove Beach, Mike Weir Beach. The main employment areas within the city include the petrochemical park in the south of the city, Lambton College in the east and the downtown area along Christina Street and Front Street. The main destinations for retail trips are located along London Road and Exmouth Street, where most of the retail and services are located, as seen on Figure 6.

The residential areas of Sarnia are spread across the city. Areas to the north of Highway 402, especially along Lakeshore Road and Bright's Grove, and to the east of the city, are mainly residential. Lambton College also attracts new residents to Sarnia which do not know the street network and are confronted with active transportation challenges to get to and from the college.

Schools are mostly located within residential areas. In the northern sector of the city, many schools are along Indian Road, Murphy Road and Cathcart Boulevard. In the southern section, five schools are around Coronation Park and Clearwater Community Park; and another cluster can be seen in the eastern part of the city. Generally, people commute to work between the north and south of the city, while recreational and leisure trips are more frequently made between the eastern and western parts of the city.

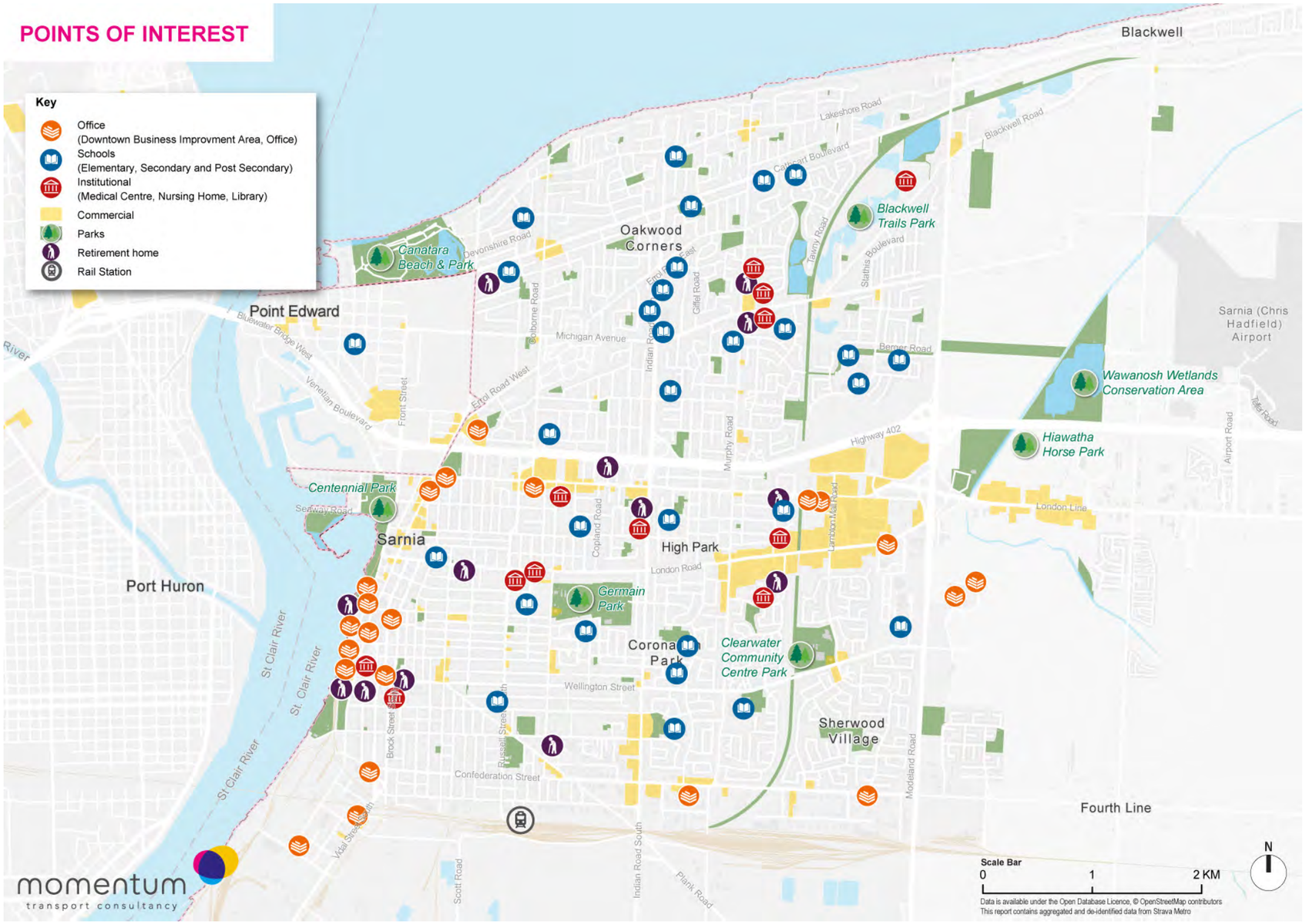

Figure 6: Points of Interest

3.2 Walking Analysis for Schools

Most of Sarnia's schools are within walking distance from residential areas. As identified on Figure 7, most of the Sarnia territory is within a 10-minute walk from a school. This highlights the potential to facilitate active transportation to schools considering the proximity of most schools to residential areas, thus encouraging physical activity and social interaction among students, particularly for older children attending high school. It should be noted that school catchment areas as defined by the School Boards do not necessarily align with these catchment areas, as reported in Engagement activities.

Several schools are located in close proximity to each other, creating the potential for corridors serving schools with improved active transportation infrastructure, such as:

- Indian Road where a Community Safety Zone has been created, which serves the Rosedale Public School, the Northern Collegiate Institute and Vocational School, the Errol Road Public School, and the Lakeroad Public School.
- Cathcart Boulevard which is another Community Safety Zone and serves the Cathcart Boulevard Public School, the Gregory A Hogan School, and the King George VI Public School.
- The Rapids Parkway, also within a Community Safety Zone, serves the St. Patrick's Catholic High School: the school is easily accessible from the surrounding residential areas and is connected to the Howard Watson Nature Trail.

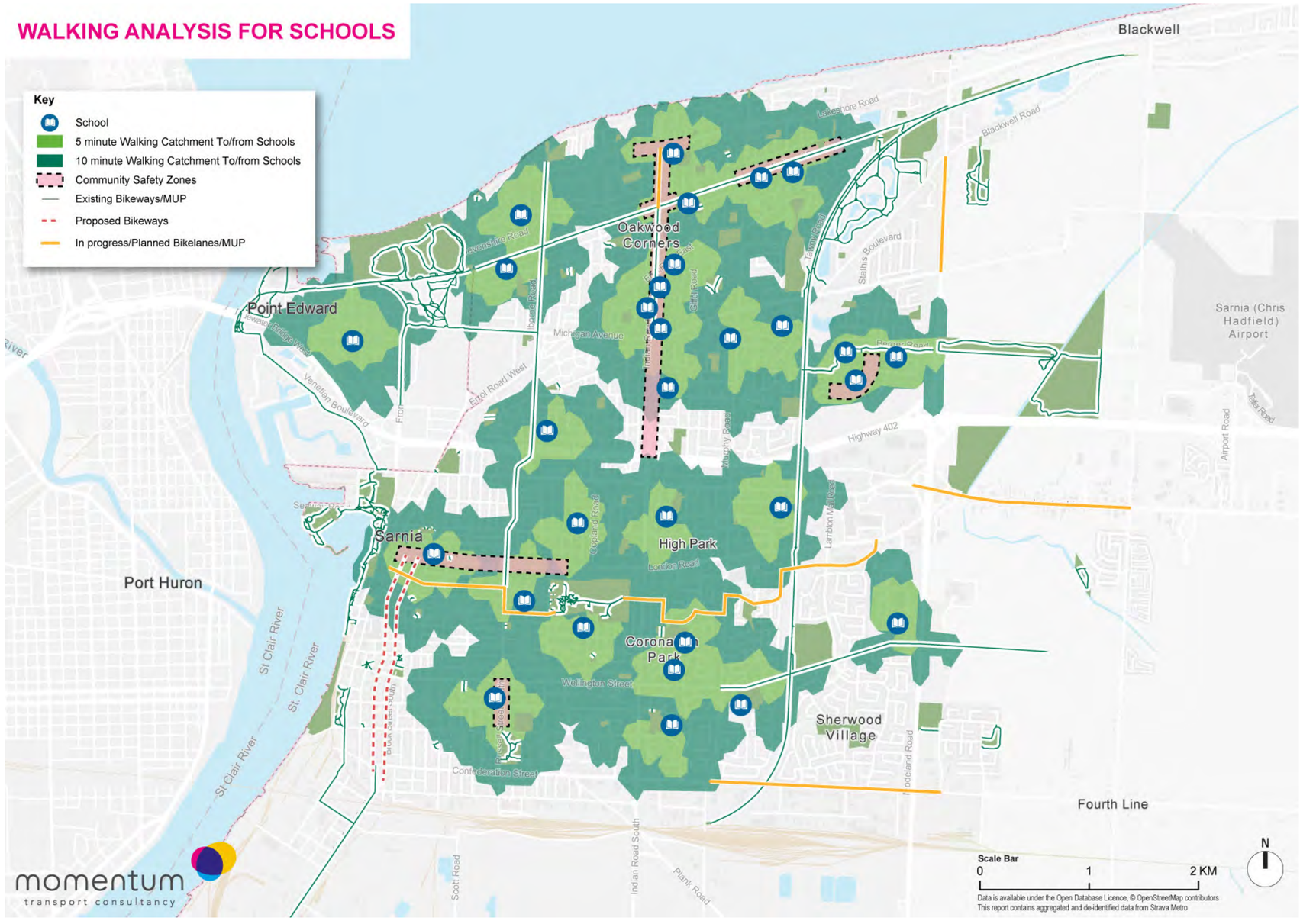

Figure 7: Walking Analysis for Schools

3.3 Walking Analysis for Retirement Homes

Sarnia has a growing retiree population within its boundaries. It is a popular destination for retirees who enjoy the scenic views, the mild climate, and the lack of traffic compared to other Ontarian cities[1]. The growth in retiree population generates new active transportation challenges for Sarnians. Indeed, health impacts such as a gradual loss of vision or mobility limitations can lead elderly Sarnians to move away from driving with active transportation as they main mode for moving around with autonomy[2].

There are 13 retirement homes identified on Google Maps and localized on Figure 8, in addition to other housing developments where retirees live. The Sarnia Downtown is particularly popular because of the access to the waterfront. The City has made considerable efforts in ensuring universal accessibility across its streets, with ramps for scooters across all intersections and texture pads for people with visual impairments. Figure 8 illustrates that there are missing links among the pedestrian network: in particular, the accesses to Centennial Park are limited and as noted during the engagement phase[3], the Downtown area lacks grocery stores accessible on foot or by mobility scooter. Retirement homes like Landmark Village, Marjan Homes or Afton Park Place are located less than a a 10-minute walk from the main commercial areas of the city, nevertheless, theses areas have considerably more vehicular traffic than Downtown.

Retirement homes north of Highway 402 have a more limited walking network and the area lacks commercial destinations so residents of Twin Lakes Village or Trillium Villa will rely mostly on transit services such as Care-a-Van[4] to make their leisure or groceries trips.

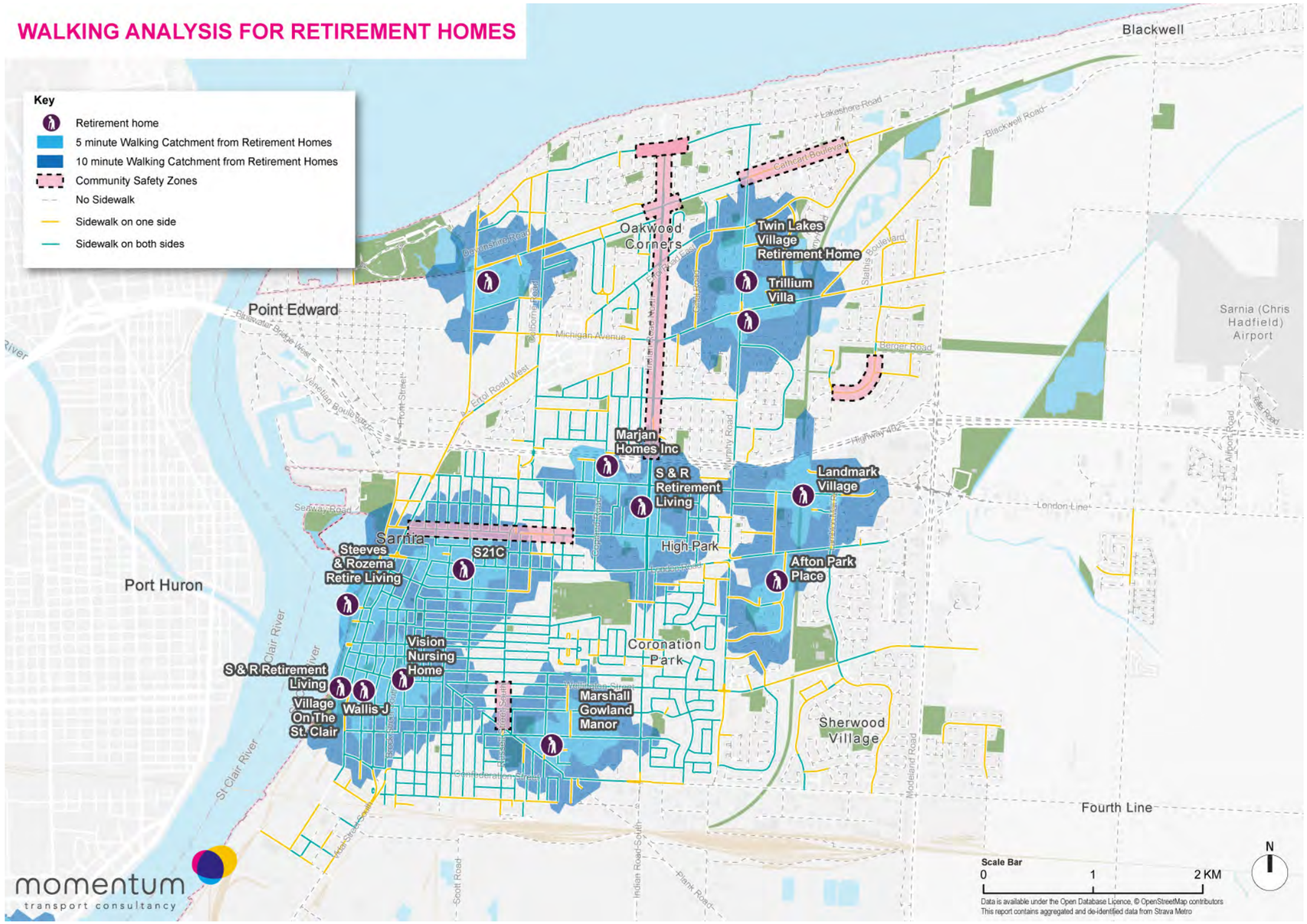

Figure 8: Walking analysis for Retirement Homes

1 See Appendix C: What We Heard Report
2 See Appendix C: What We Heard Report
3 See Appendix C: What We Heard Report
4 Sarnia Transit, Care a Van: https://www.sarnia.ca/living-here/getting-around/sarnia-transit/care-a-van-3/

4.0 How Do Sarnians Currently Travel ?

4.1 Mode Share

According to the 2021 Census, the mode share between the different transport modes has remained stable in the last 10 years. Sarnia is a city where the streets have been designed predominantly with space for vehicles which generates little congestion and an increased use of motorized modes to travel between destinations. Between 2011 and 2021, the car mode share increased from 90% to 92%, to the detriment of active transportation and public transit modes. The walking mode share and the public transport mode share decreased from 5% and 3% to 4% and 2% respectively as illustrated on Figure 9. This is contrary to the general trend noted in most cities thoughout the world, where active transportation tends to increase, due to the numerous benefits stated earlier in this report.

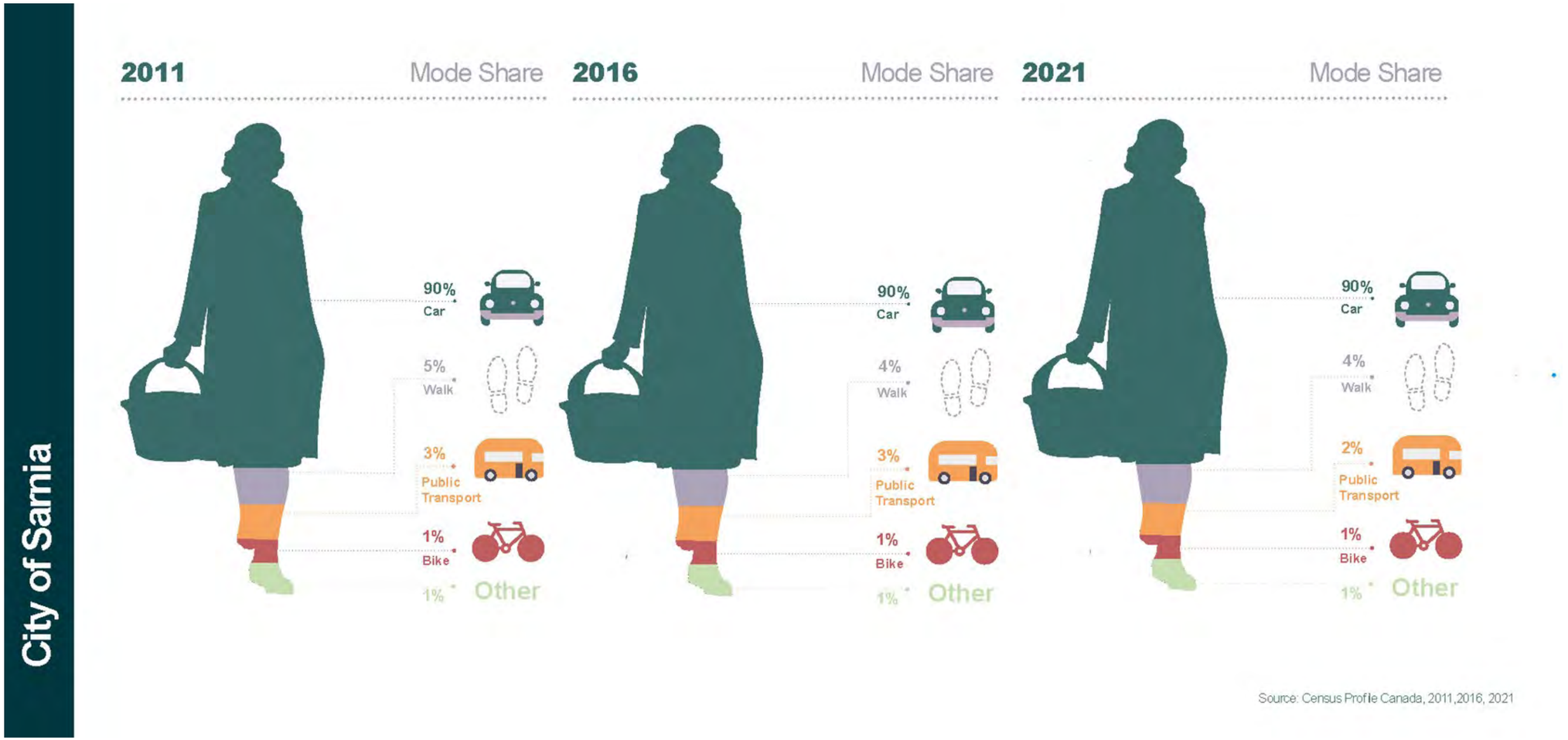

Figure 9: Mode share in Sarnia.

4.2 Road Network and Traffic Counts

The road network in the city of Sarnia is formed of provincial highways, arterial county roads, arterial city roads, collector and local roads. Arterial roads are the main vehicular routes that connect different parts of the city and provide access to highways and regional roads. Their main function is vehicular movement, and thus they are designed with more traffic lanes which are wider and provide higher operational speeds. Collector roads are the secondary routes that link arterial roads with local roads and serve residential and commercial areas. Local roads are the tertiary routes that provide direct access to properties and have low traffic volumes. Their main function is accessibility, which is why they tend to be designed with narrower platforms and have slower operational speeds, which make them attractive for vulnerable users (pedestrians and cyclists).

The main highways that serve Sarnia are Highway 402, which connects to London and the border crossing to Port Huron, Michigan; and Highway 40, which connects to Chatham-Kent and Wallaceburg. It is important to note the presence of the Blue Water Bridge in Point Edward. The bridge is a vital link for trade and tourism between Canada and the US and is one of the busiest border crossings in Canada, with about 14 000 vehicles crossing it daily in both ways. Highway 402 divides the territory of the city in two sectors with a limited number of north-south passages to cross the highway. These are Christina Street, Colborne Road, Indian Road and Murphy Road, concentrating vehicle and active transportation users in these bottleneck intersections.

As seen on Figure 9, the arterial county roads that carry most of the traffic in Sarnia are London Road, Confederation Street and Indian Road. As for arterial city roads, the most traffic-heavy roads are Exmouth Street, Murphy Road, Colborne Road and Christina Street. These streets connect the main commercial and office destinations of the city and the traffic observed generates busy intersections along these corridors.

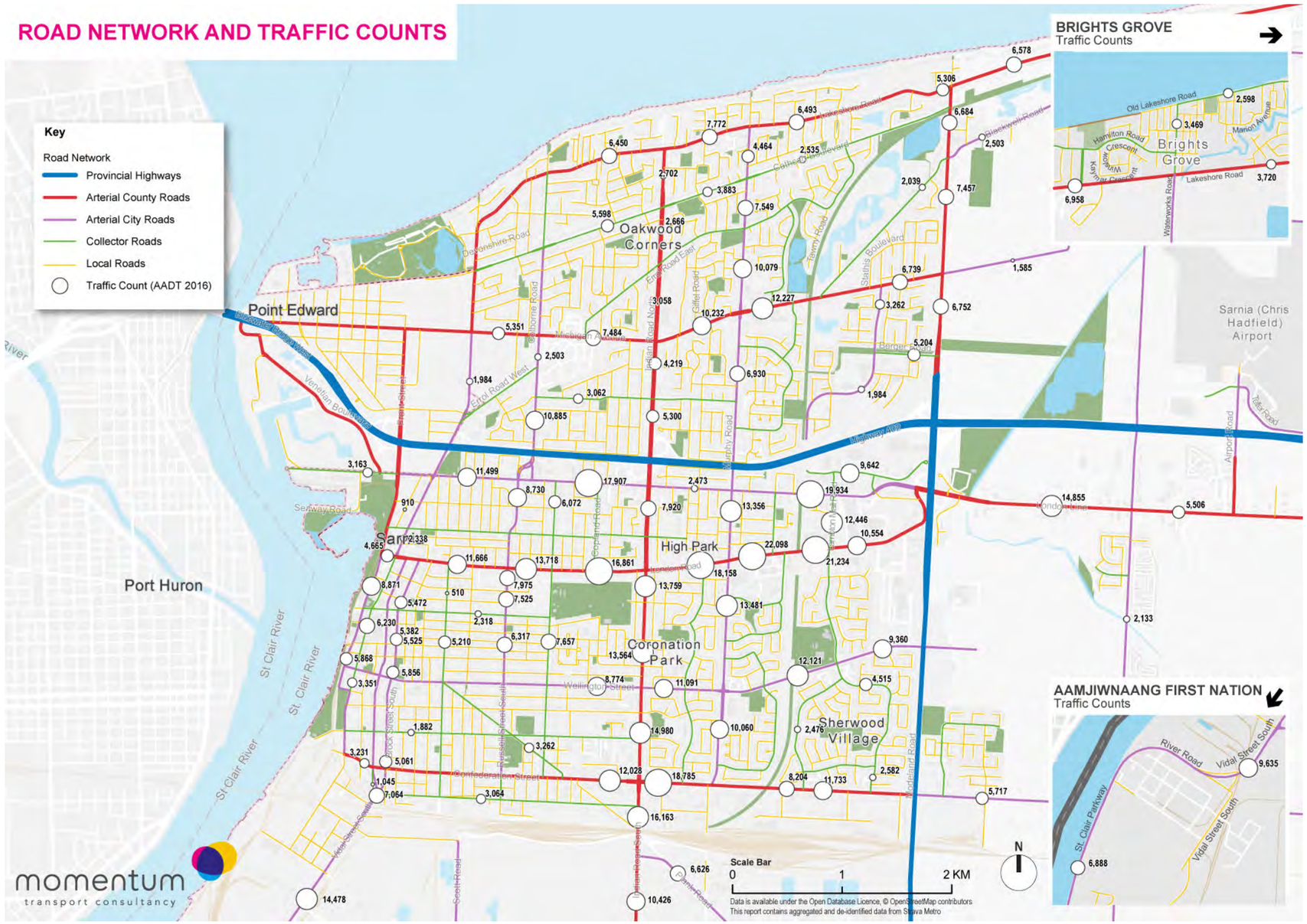

Figure 10: Road Network and Traffic Counts

4.3 Speed Limits and Community Safety Zones

In Sarnia, the current default speed limit for most of the local roads is 50 km/h, as established by the City of Sarnia's Traffic and Parking By-Law. Major arterial roads and highways have speed limits between 40 km/h and 80 km/h. Recently the city has raised concerns about speed limits on certain streets and routes due to the issue of road safety for vulnerable road users. The city considered two options to improve road safety: lowering the default limit to 40 km/h and using video surveillance cameras to enforce the existing limits. However, both options were rejected at Council due to public opposition in April 2022.

In this context, Community Safety Zones (CSZ) were established in 2019 with the aim of enhancing road safety around schools. Community Safety Zones are designated areas in the city where speeding fines are doubled and speed limits may be reduced to enhance the safety of pedestrians, cyclists and vulnerable users. These zones are usually located near schools, where there is a high volume of traffic and vulnerable road users, such as around Indian Road and Cathcart Boulevard. Other roads in Sarnia have also been approved for Community Safety Zones resulting from community initiatives. For example, citizens' concerns about speeding and collisions ended up in the establishment of a CSZ on Blackwell Road. The city of Sarnia now has 10 CSZ as of April 2023 as illustrated on Figure 11.

Moreover, Sarnia has several roads with a speed limit lower than 40 km/h, shown in green in Figure 11. These roads are mostly located in residential areas, school zones, or near parks and playgrounds, such as Errol Road between Murphy Road and Cathcart Boulevard, Afton Drive between London Road and Murphy Road or Finch Drive between Wellington Street and Confederation Street.

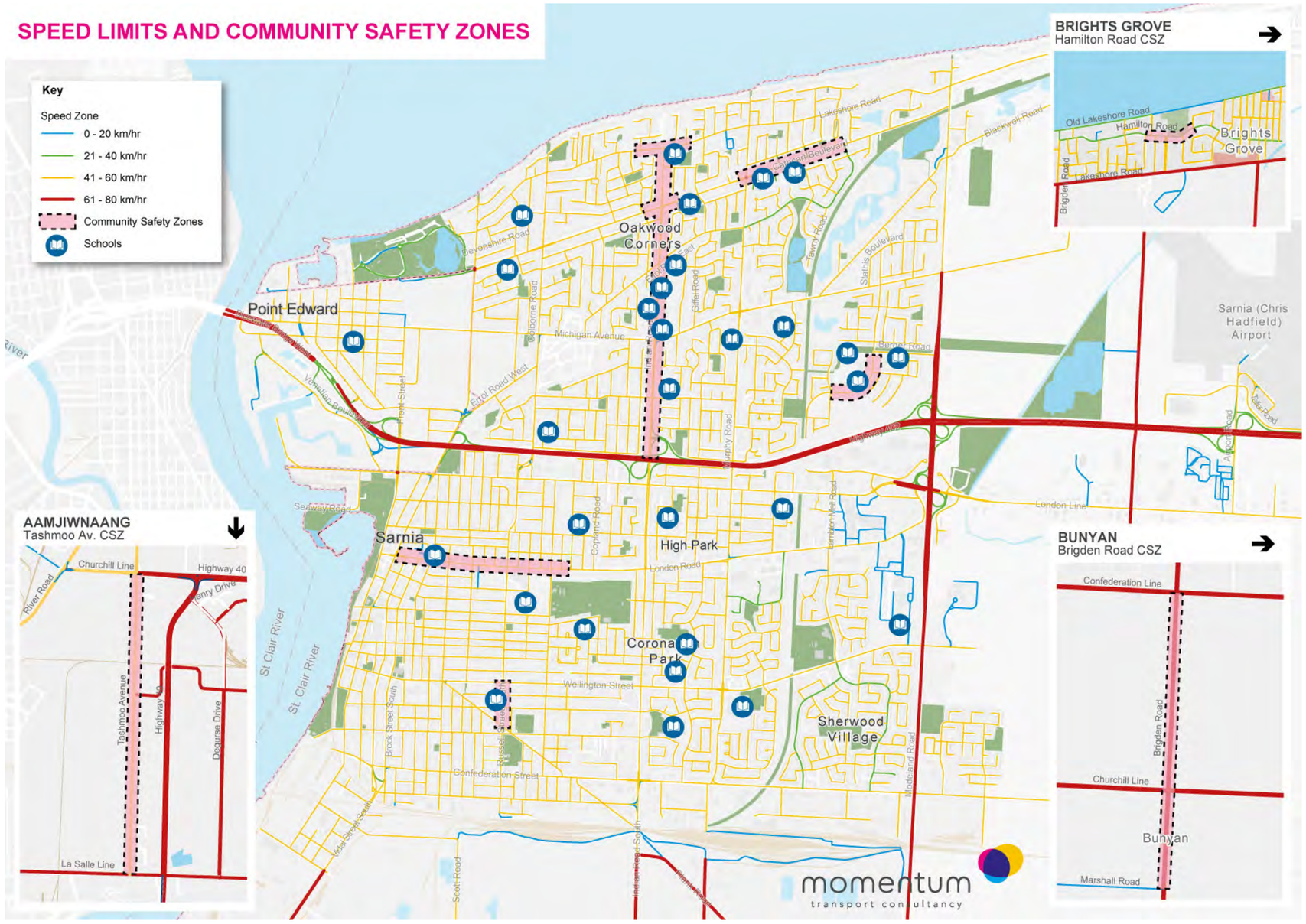

Figure 11: Speed Limits and Community Safety Zones

4.4 Transit Routes

Public transport in the city of Sarnia is provided by Sarnia Transit, a public service operated by the municipal government. Sarnia Transit offers 15 bus lines that serve different areas of the city and connect at three main terminals: Downtown, Northgate Plaza, and Lambton Mall terminal. A new bus terminal is planned to be built adjacent to Clearwater Arena, by the Howard Watson Nature Trail.

The bus lines are numbered from 1 to 16. The fare for a single ride is $3, a sheet including 20 tickets can be acquired for 20$, while children 12 & under ride for free and seniors benefit from special discounts. Monthly passes, student passes and yearly fares are also available at discounted rates. Riders can pay with cash and online. The buses run from Monday to Saturday, with reduced service on Sundays and public holidays.

In addition to the regular bus lines, Sarnia Transit also provides a school express line that runs from September to June on school days only. In the morning, the Secondary School Express has two bus routes doing the school run: Trip 1 and Trip 2 connected to each other as one extended route serving St. Patrick's Catholic High School, Northern Collegiate, and Alexander Mackenzie Secondary School. The afternoon service route is shorter, operating as a connection between three north-end schools and established transit routes on The Rapids Parkway. Some of the other schools served by the School Express bus include: St-Anne's school, St-François-Xavier secondary school or Lambton College in the east and Cathcart Boulevard school, Lakeroad Public school and Gregory A. Hogan school in the north.

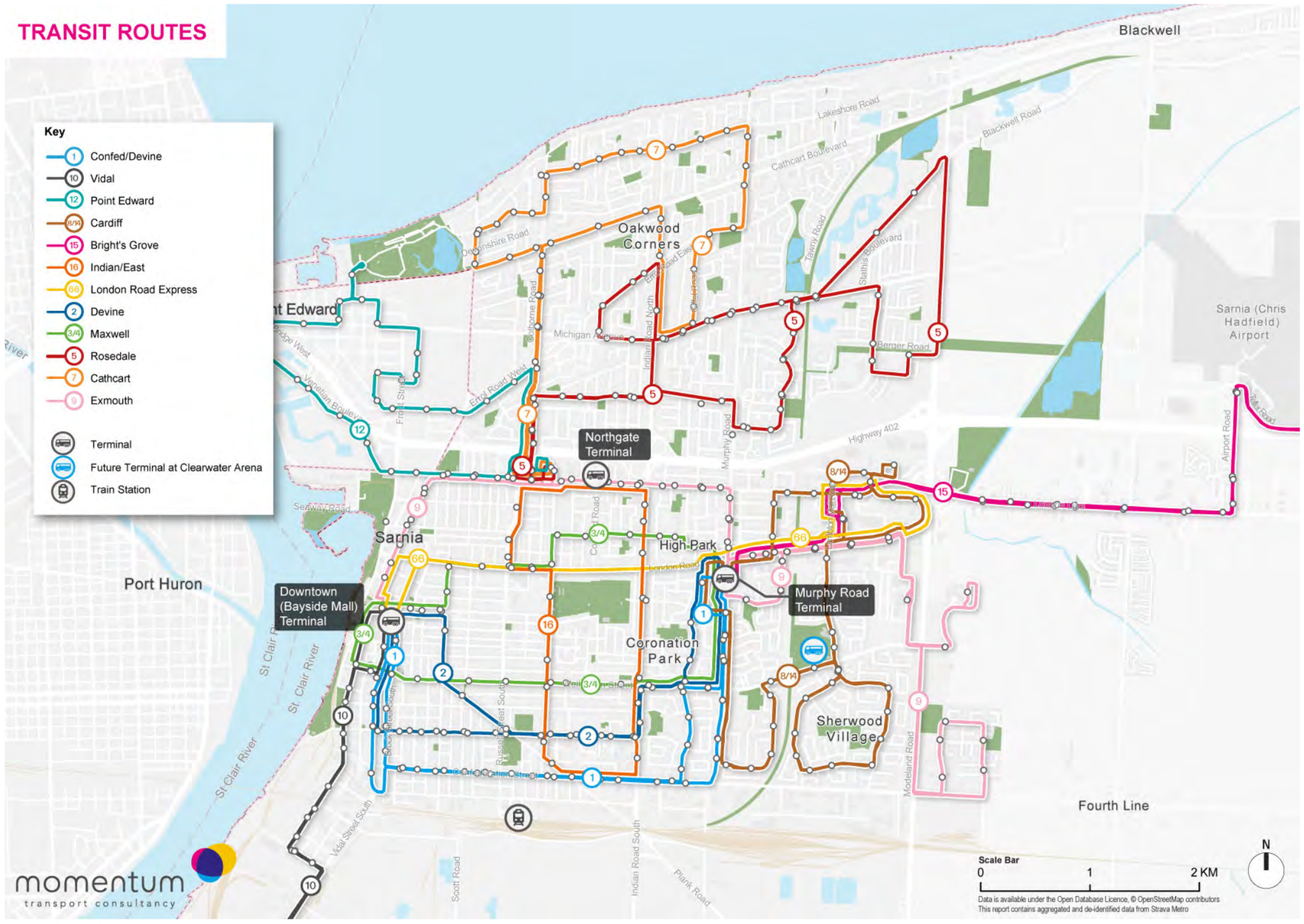

Figure 12: Transit Routes

4.5 Transit Passenger Load

Figure 13 illustrates the passenger load at each bus stop in Sarnia, giving an overview of the most used bus routes and bus stop locations. The busiest bus lines in the city are Route 9 (Exmouth), Route 4 (Maxwell) and Route 1 (Confederation/Devine). Route 9 connects the Downtown Terminal and Lambton Mall via Exmouth Street and Murphy Road.

The line crosses the city from west to east, running from Sarnia Downtown core to Lambton College in the eastern part of the city. The busiest stops along route 9 are on Christina Street (Downtown Terminal), Exmouth Street (Northgate Terminal), Murphy Road, Wellington Street, Confederation Street and at Lambton College (Lambton College Terminal), as shown in Figure 13.

Route 4 offers services to the main commercial and office areas of the city. It runs along Maxwell Street and Wellington Street with its busiest stops on Wellington Street.

Route 1 runs along Confederation Street and Devine Street, serving the industrial park and southern residential areas of the city. The busiest stops along this route are on Confederation Street, Devine Street, where passengers can transfer to other bus lines.

Lines that serve the residential areas north of Highway 402, have much lower ridership levels as seen on Figure 13.

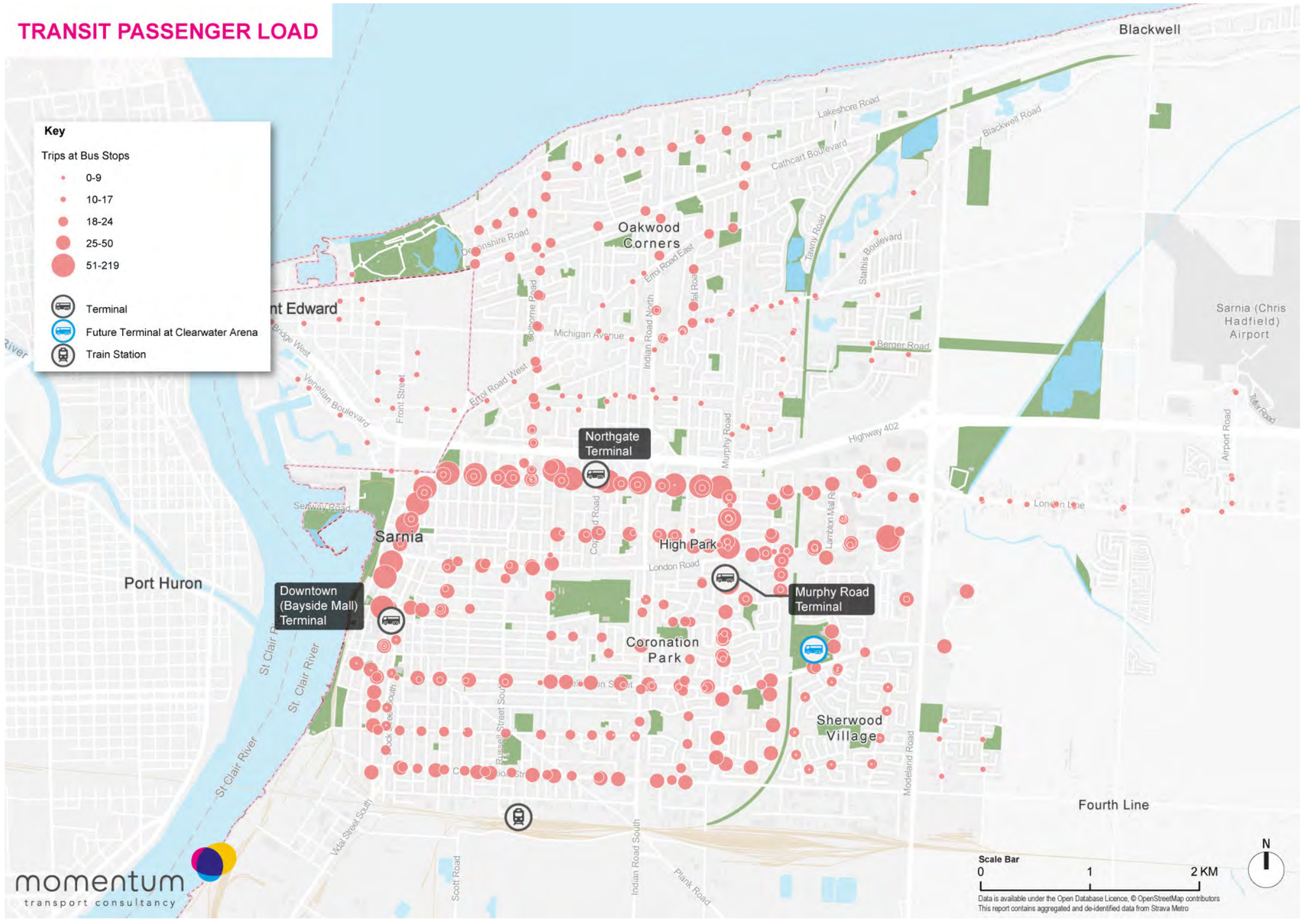

Figure 13: Transit Frequency

4.6 Walking Network

The pedestrian walking network is composed of walkways, sidewalks and pedestrian crossing facilities. They are an essential component of pedestrian infrastructure as every transport user begins and ends their journey on foot. Sidewalks serve multiple purposes: they allow people to walk safely, connect people to public transport and to destinations and make it easier to access businesses. As seen in Figure 14, the sidewalk provision is higher in the downtown area, resulting in a more connected network, with a gradual decrease towards the northern and eastern areas. Since the development of the Transportation Master Plan (2014) a Walkway Infill Program has been implemented in Sarnia to build missing sidewalks across the urban area and upgrade the walking environment.

The Sarnia Official Plan OP presents guidelines for the provision of sidewalks in new developments. Sidewalks are recommended within urban areas and areas with higher pedestrian activity should aim to have wider sidewalks. The OP recommends arterial and collector roads to provide sidewalks on at least one side (except for Michigan Avenue and the Rapids Parkway to London Road where sidewalks are required on both sides). One-sided sidewalks present a challenge for connectivity and accessibility for pedestrians, such as the section of Christina Street from Exmouth to Errol West, and from Errol West to Colborne Road.

Development Areas 1 and 2 are areas earmarked for growth in residential development. Development Area 1 is located west of Highway 40 and Development Area 2 is located north of Highway 402. For Development Area 1, sidewalks are required on both sides of arterial roads. For Development Area 2, sidewalks are required on both sides of Wellington Street and at least on one side of arterial and collector streets. During winter, snow clearing of sidewalks can be a challenge. In the past, the City has assumed responsibility for clearing sidewalks from designated primary routes when there is an accumulation of at least eight centimeters. As an exception, along certain commercial properties, landowners are responsible for snow removal on their adjacent sidewalks.

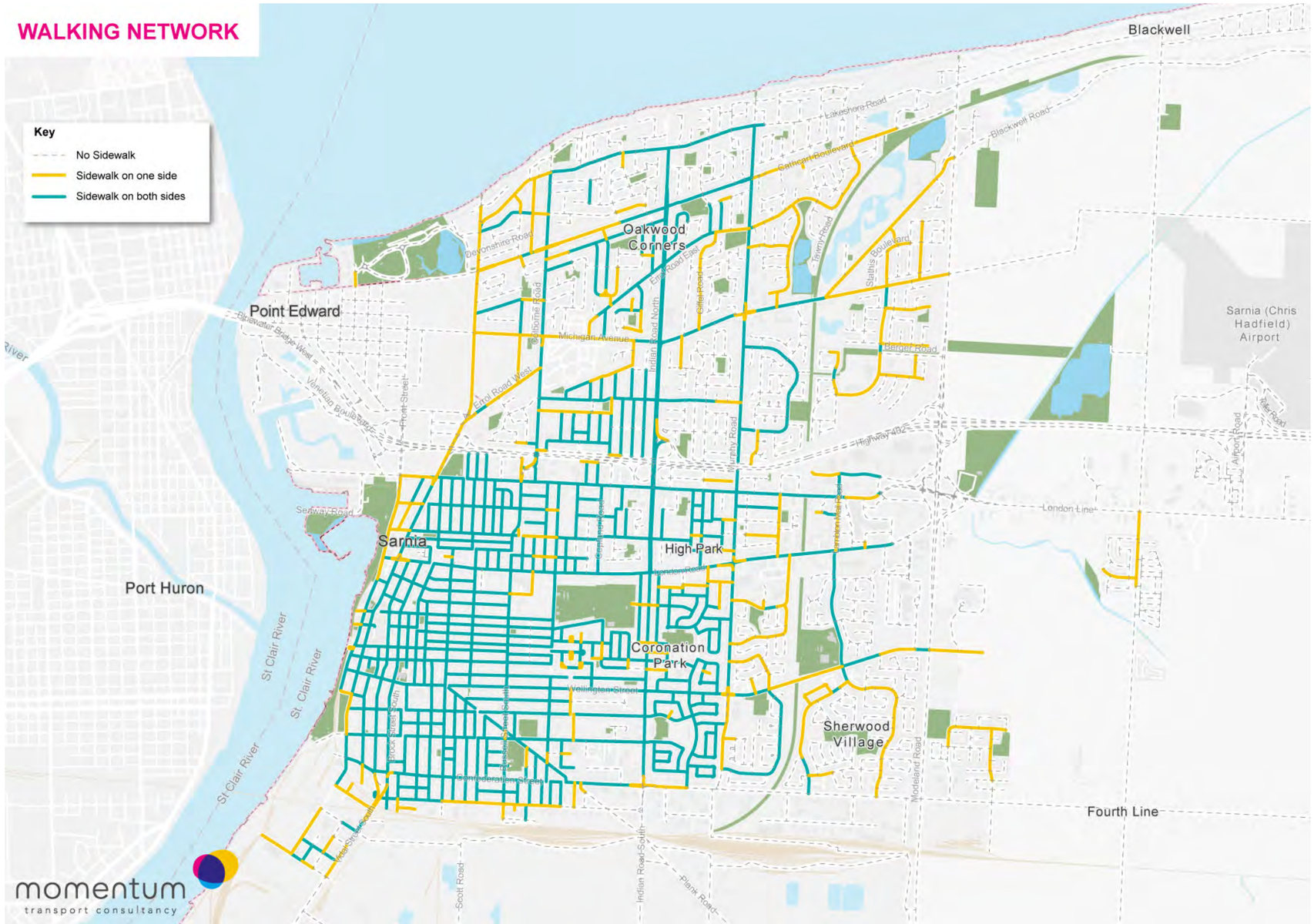

Figure 14: Walking Network

4.7 Cycling and Rolling Network

Figure 15 shows the network of bikeways and multi-use pathways ('MUP') available for Sarnia's cyclists. The existing bikeways include on-road marked bike lanes, shared lanes, as well as off-road trails called MUP. The proposed bikeways aim to expand and improve the existing network by adding more bike lanes, connecting gaps, and enhancing safety features.

Colborne Road has marked unidirectional bike lanes on both sides of the street from Lakeshore Road to London Road south of Highway 402. Indian Road has also marked unidirectional bike lanes on both sides of the road, separated from traffic by on-road parking lanes from Michigan Avenue to Lakeshore Road, following a road diet completed in 2022. The East-West Core MUP planned between Lambton College and Sarnia Downtown is currently in progress and to be completed in 2023. This uses a combination of local streets and existing multi-use pathways to create a continuous safe route to connect the eastern and western parts of Sarnia.

Sarnia has two main trails that are part of the Lambton County Regional Trail System. The Bluewater Trail is a network of trails that follows the shore of Lake Huron and the St. Clair River. It offers views of both the river and lake and the Blue Water Bridge. The trails connect to several parks, such as Canatara Park and Centennial Park, and to Mike Weir Park and the southern industrial zone. The Howard Watson Nature Trail is a 16 km multi-use trail that runs from Sarnia to Camlachie. It is part of the Lambton County Regional Trail System that connects communities, conservation areas, and other points of interest across Lambton County. It passes through natural areas, residential neighbourhoods, and some industrial areas.

Figure 15: Cycling and Rolling Network

4.8 Cycling Journeys in Sarnia: Female and Male

Figure 16 and 17 show the 2022 monthly average bike trips for both male and female[1] in Sarnia. Both maps use data from the mobile application Strava on which users can record their physical activities[2]. Both maps use data from the mobile application Strava on which individuals can record their physical activities and upload leisure and commuting cycling trips.

Lakeshore Road to the north of Sarnia is the busiest route for female trips. Other routes seem to be frequently used by cyclists such as the Howard Watson Nature Trail, Blackwell Road, Cathcart Boulevard. They all offer cyclist-friendly infrastructure. Sarnia Waterfront also seems to have higher bike activity levels than other parts of Sarnia. The roads equipped with protected infrastructure thus seem to attract the highest ridership among female users. Michigan Avenue was also recorded with a high level of bike activity, despite not providing dedicated bike infrastructure, suggesting the need for an east-west route in that location.

Fewer bike trips were recorded for women than men. On the busiest route, Lakeshore Road, up to 280 trips were recorded on average for women and up to 830 trips for men. This highlights the gender disparity in mostly leisure biking between men and women in Sarnia.

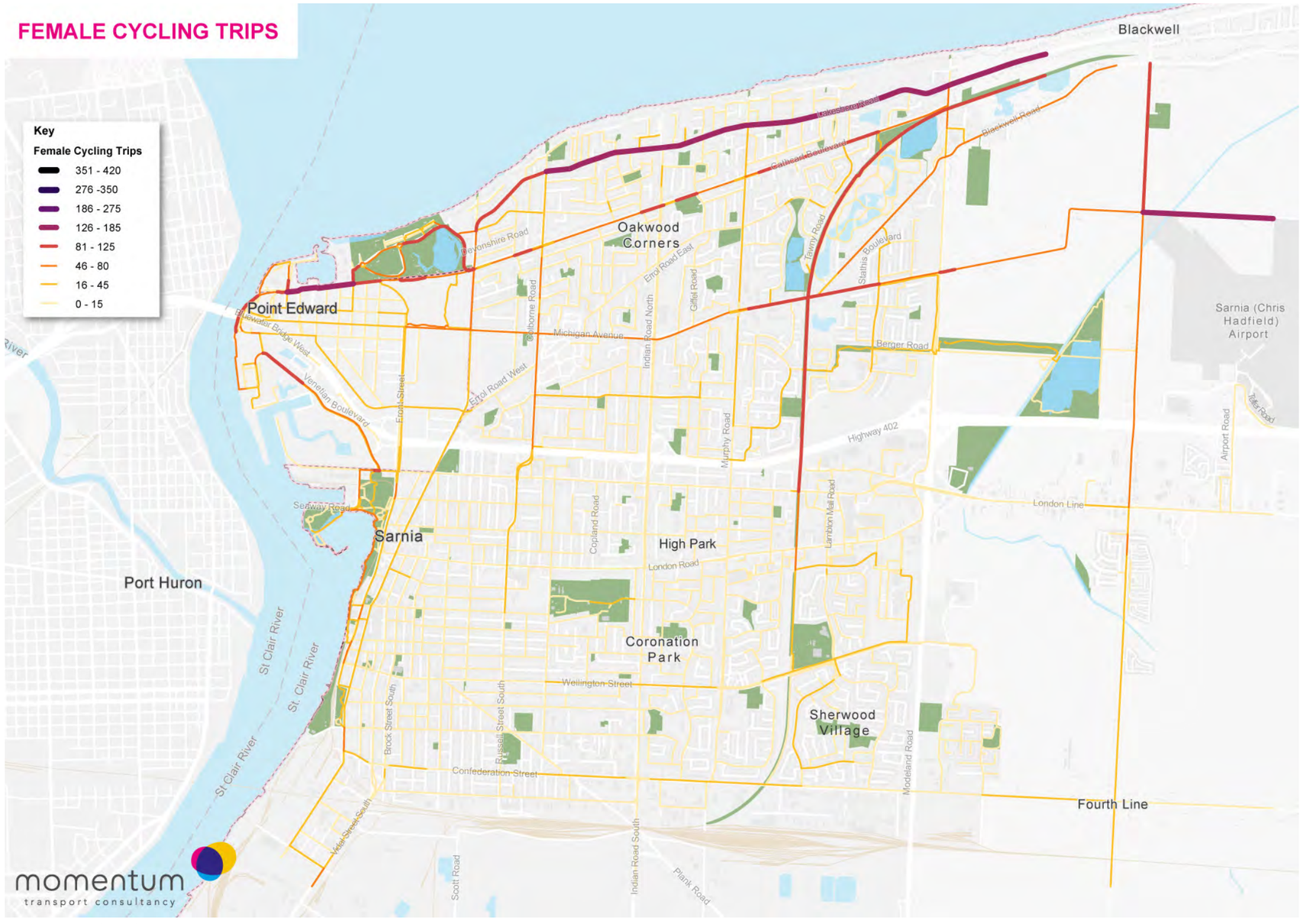

Figure 16: Female Cycling Trips

1 Data on non-binary gender trips was not available in the dataset provided.

2 It is acknowledged that a bias towards leisure cyclists is associated with the Strava App which therefore represents a fraction of all cyclists, mainly the ones who use their bicycle essentially for leisure or sport.

Male cyclists have the same travel patterns as female users which reflect the similar trend in the predominany use of the Strava app for leisure purpose. As with female users, bike infrastructure induce demand on route usage as cyclists take roads with the presence of bike lanes or MUPs such as the Howard Watson Nature Trail, Indian Road or Colborne Road, and the trails on the waterfront. Lakeshore Road is also the busiest road for male cycling trips, tas it is connected to the overall Lambton County cycling network.

Male cyclists travel on north-south patterns in the southern half of the city and on east-west and north-south patterns on the northern half. The northern half, to the north of Highway 402, offers more biking infrastructure. On the southern half, there is an evident lack of east-west trips and users concentrate mostly at the waterfront.

In order to mitigate the limits of the Strava App results, counts are being made in key intersections within the city to identify other important corridors for commuting or shopping trips, which could reflect more gender disparities.

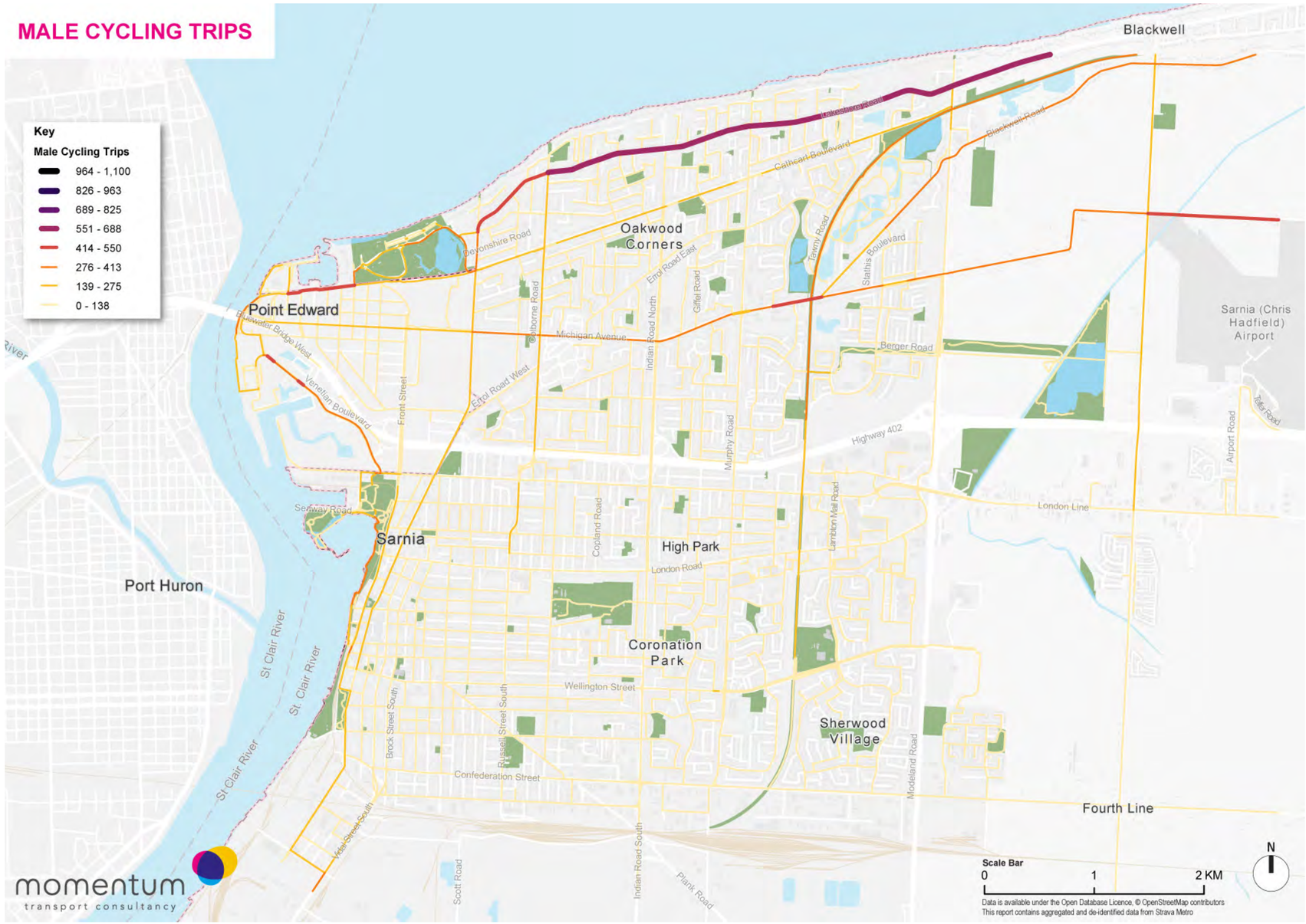

Figure 17: Male Cycling Trips

4.9 Cycling Journeys in Sarnia: Leisure and Commute

Figures 18 and 19 present the 2022 monthly average of leisure and commuting trips by bike respectively[1].

Leisure bike trips are mostly concentrated to the north of Sarnia on Lakeshore Road, on the Howard Watson Nature Trail and on Blackwell Road, with up to 2,800 trips recorded monthly on average in 2022 on Lakeshore Road. Most of these roads and trails offer protected bike infrastructure making it more accessible to all users, including low-confidence cyclists.

Leisure bike trips represent about 92% of trips recorded on Strava which suggests a higher use of cycling as a leisure activity than as commuting[2]. Interestingly, Lakeshore Road records a high level of bike leisure trips, despite not having bike infrastructure designed on the street platform.

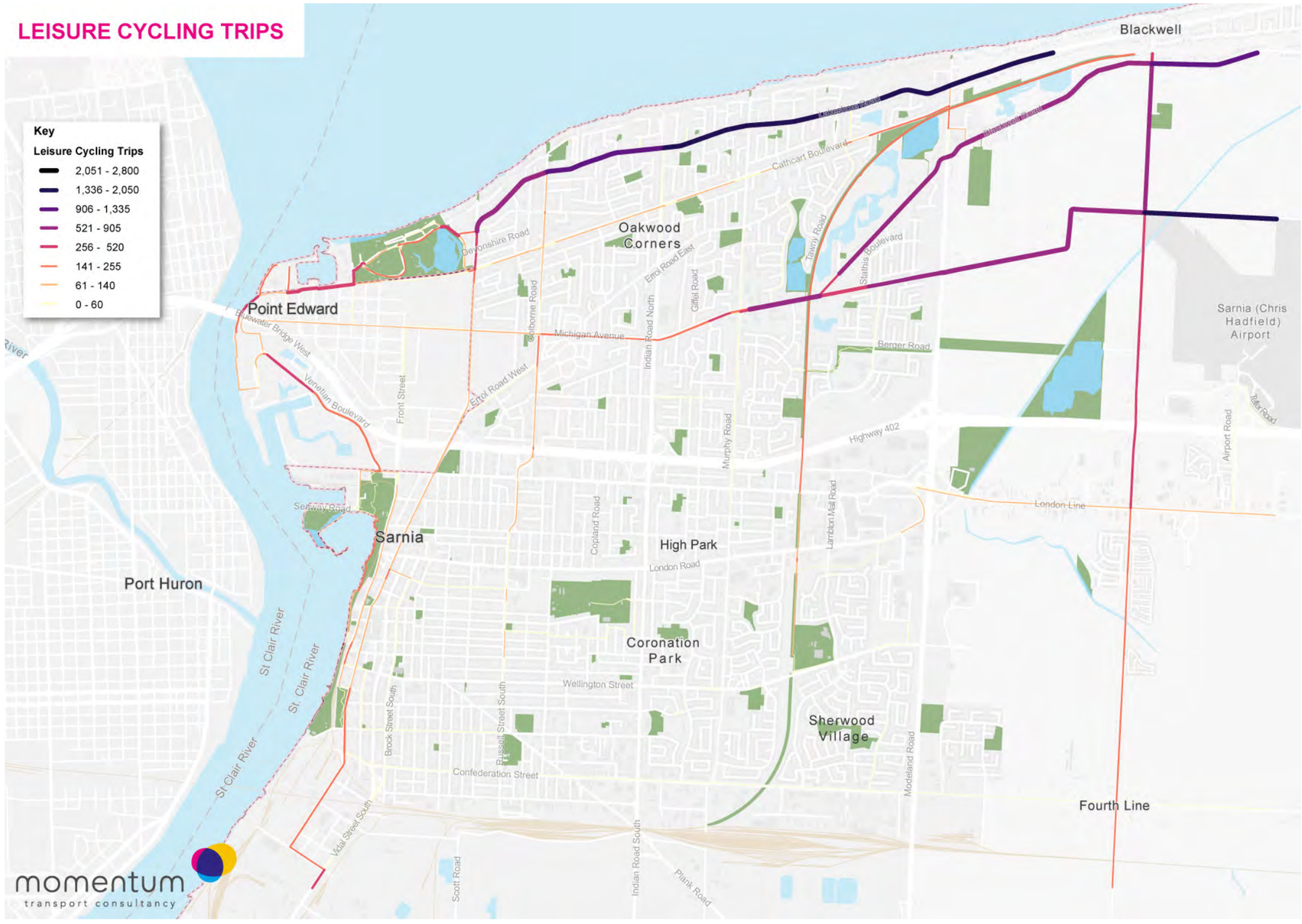

Figure 18: Leisure Cycling Trips

1 Not all users systematically change their settings from leisure to commuting, therefore it is anticipated that an overlap between the two categories exists.

2 It should be noted that Strava's development as a leisure app first also orientates the results in that direction.

Commuting bike trips shown on Figure 19 are mostly recorded in the southwestern part of Sarnia, on Christina Street South, with up to 255 trips recorded monthly on average in 2022.

As seen in Figure 7 illustrating Points of Interest in Sarnia, most of Sarnia offices are located along the waterfront. Sarnia's industrial zone is located south of the waterfront, meaning that Christina Street South is a key route for commuter trips. There is an opportunity to promote commuter bike trips by implementing an adequate bike infrastructure along this axis.

To promote cycling to and from work there is an opportunity to also enhance the bike infrastructure along Vidal Street South.

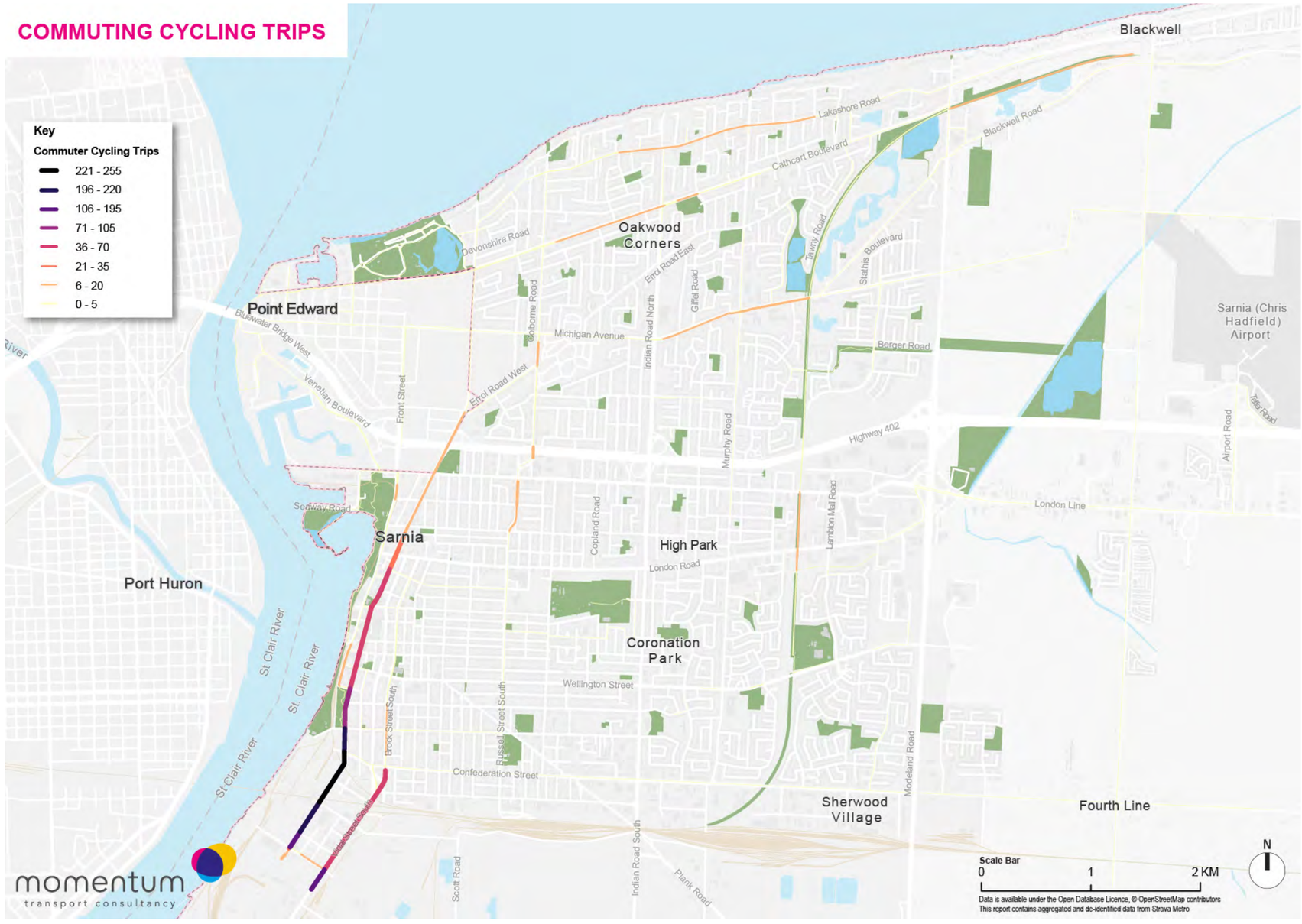

Figure 19: Commuting Cycling Trips

4.10 Cycling Journeys in Sarnia: Seasons

Figures 20, 21, 22 and 23 present the 2022 monthly average trips in Sarnia by season. All four maps use data from the mobile application Strava on which individuals can record their physical activities[1].

The highest number of bike trips was recorded in the summer with up to 4,015 trips recorded on Lakeshore Road. A high proportion of trips were also recorded around Blackwell Trail Park and Sarnia waterfront which can be due to Sarnians going for a bike ride as an activity in the summer rather than using bikes as their main transportation mode. This highlights that there is a potential to promote active travel through entertainment and social activities.

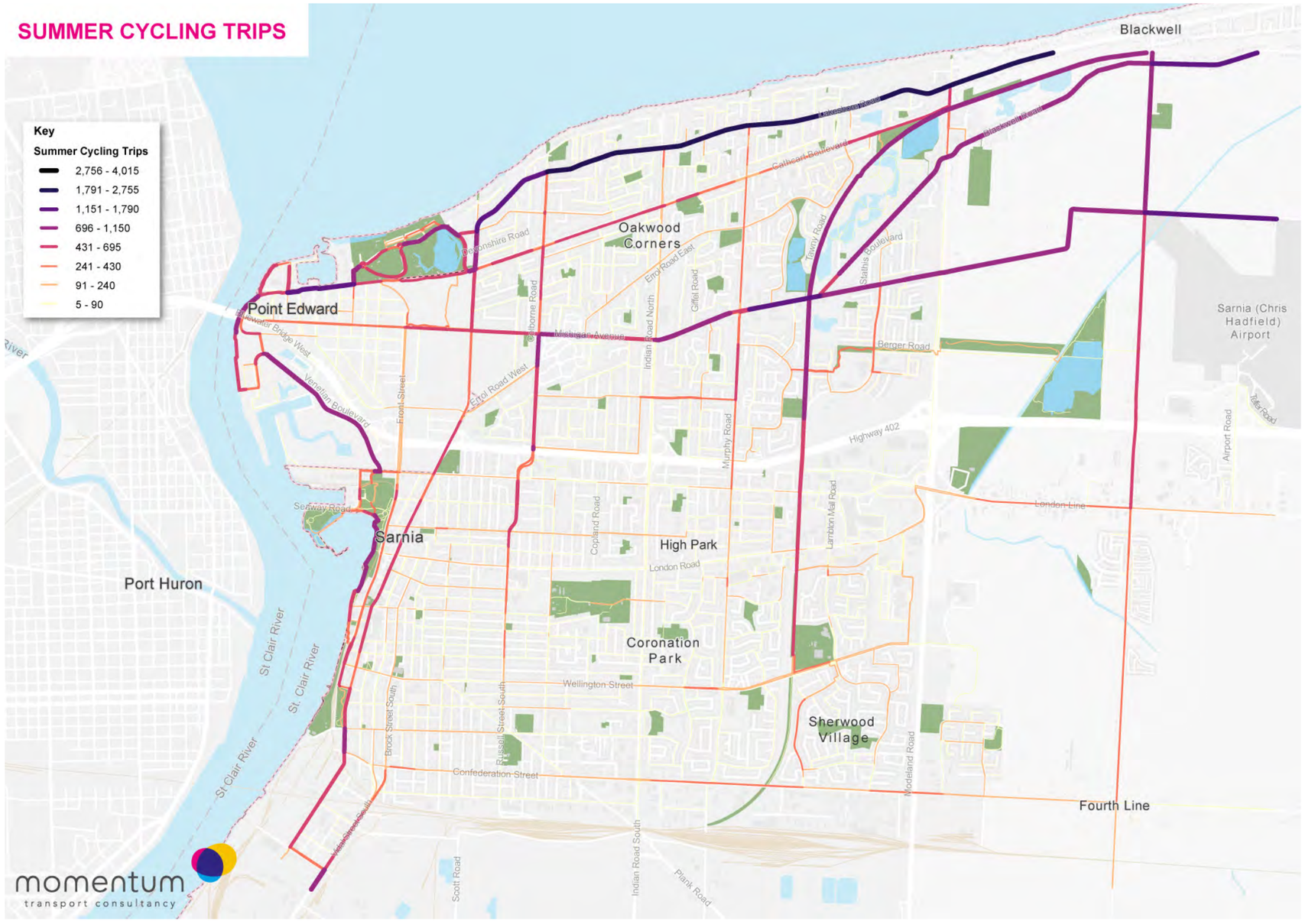

Figure 20: Summer Cycling Trips

1 As noted, the use of Strava data most likely underestimates the total number of cycling trips, nevertheless this provides a comparison basis for the four seasons as the same dataset is used throughout this section.

As expected, fewer bike trips were recorded in the winter with a maximum of 130 trips monthly on average recorded on Michigan Avenue. In the winter, most trips recorded seem to be in the direction of the industrial site in the southwestern section of Sarnia. This suggests that most bike trips in the winter are commuting trips.

The lower number of bike trips in the winter are due to the extreme climate conditions with low temperatures and snow making it difficult for cyclists to navigate roads in the city and suggesting the importance of maintenance of bike infrastructure to encourage winter cycling[1].

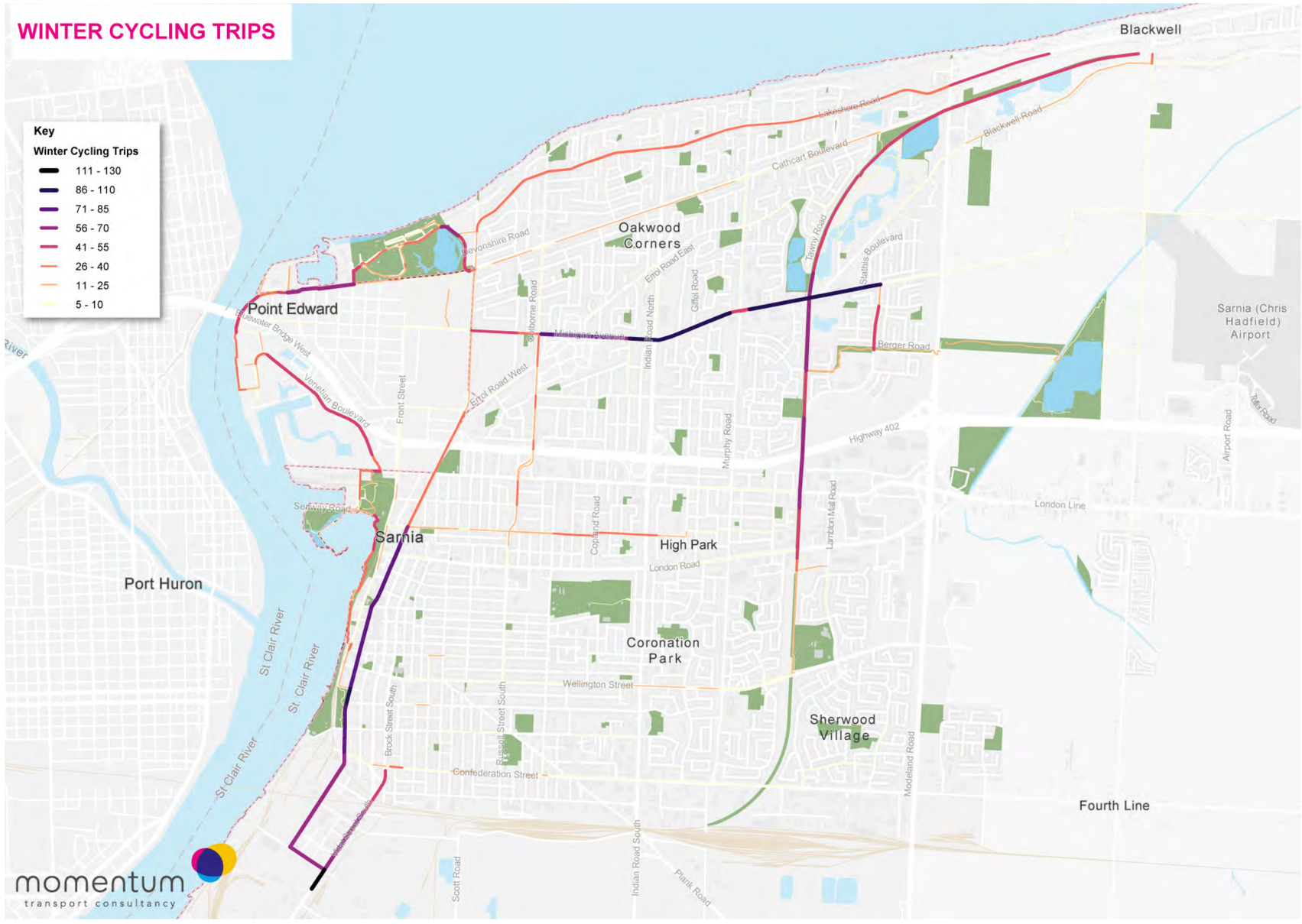

Figure 21: Winter Cycling Trips

1 See Appendix C: What We Heard Report.

Many cyclists take advantage of the spring season to start their cycling activities. According to the data, cycling trips in spring go up to 1,115 on Lakeshore Road, which is a significant increase from the winter months. However, this number is still lower than the summer peak, when 4,015 trips are recorded on the same road.

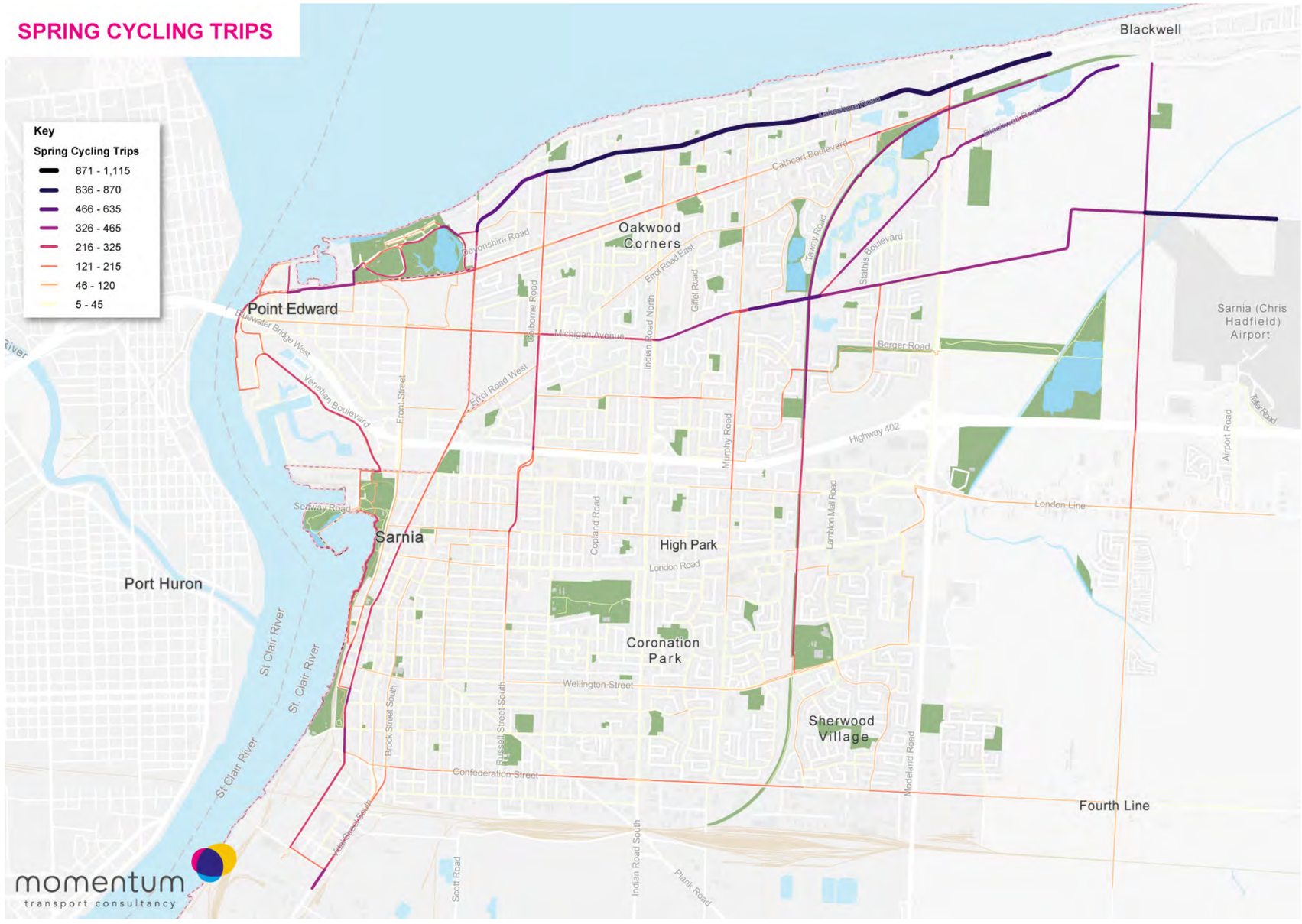

Figure 22: Spring Cycling Trips

On the opposite, the fall season sees a signicant reduction in ridership dropping sharply in December as winter sets in and the cold weather and shorter days become a deterrent for active transportation users.

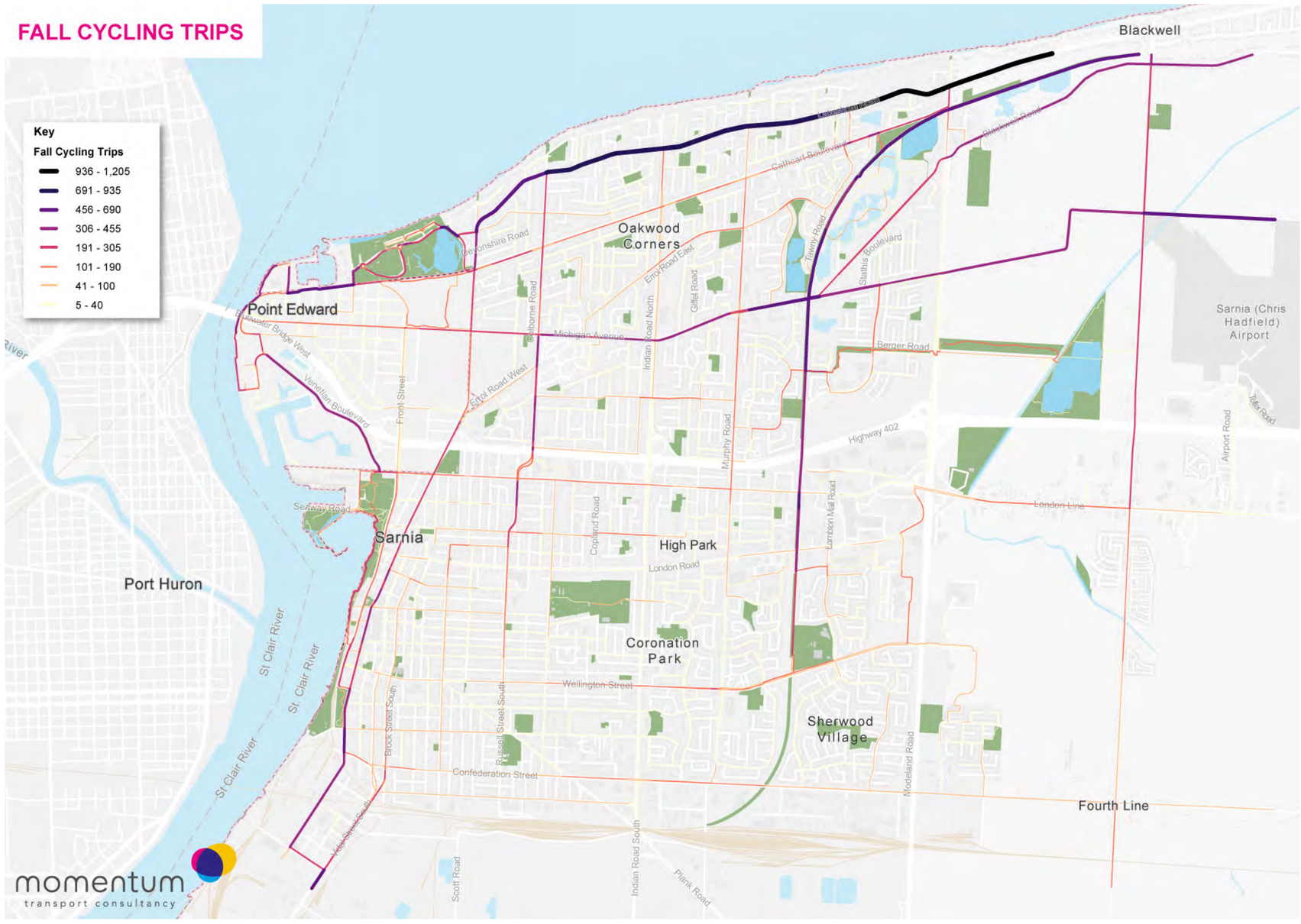

Figure 23: Fall Cycling Trips

5.0 What is the Current Active Transportation Experience ?

5.1 Safety of Vulnerable Users: Collisions involving Cyclists and Pedestrians

Pedestrian and cyclist collisions are an important concern of the current conditions of active transportation in Sarnia. They illustrate the numerous challenges associated with protecting vulnerable users in urban areas, such as providing appropriate road design and adequate visibility to all users, ensuring proper enforcement of speed limits, as well as awareness and education of all users.

Figure 24 and Figure 25 show collision counts for each type of user based on a grid analysis: each hexagon has an area 25 000 square meters and indicates the number of crashes in that area : the number of crashes range from one to seven for cyclists and from one to six for pedestrians for each hexagon indicated on the maps.

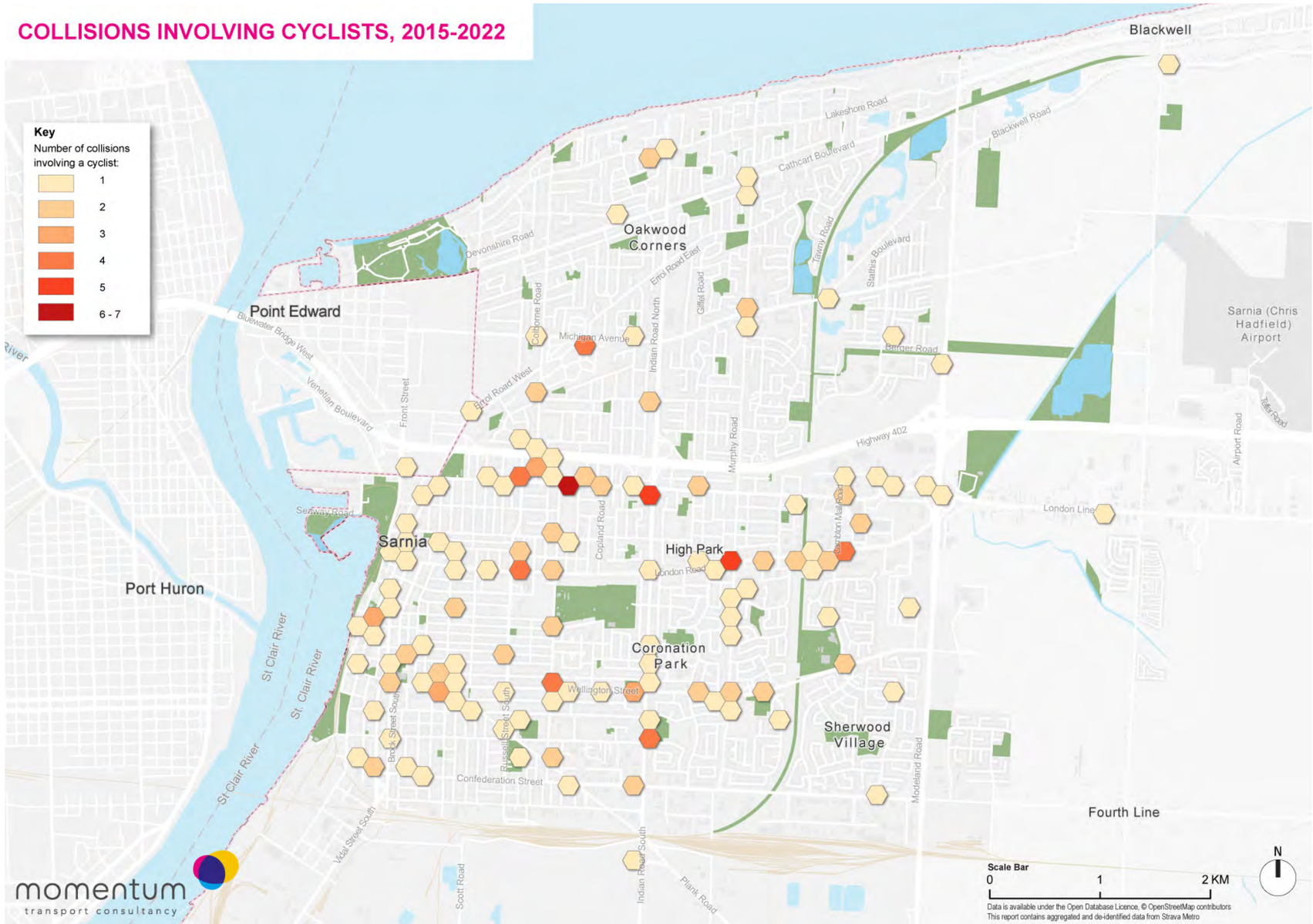

Figure 24: Collisions involving Cyclists

According to the 2015-2023 collision history reports involving pedestrians and cyclists provided by the City of Sarnia, the most unsafe street sections for pedestrians and cyclists are: Christina Street, Wellington Street, Exmouth Street, Indian Road and London Road:

- Exmouth Street between Christina Street and Murphy Road has the highest concentration of collisions involving a pedestrian or a cyclist.

- London Road between Indian Road and Lambton College also has a considerable concentration of collisions involving a pedestrian or a cyclist, with over 40 collisions in that section. A lot of new international students come to Lambton college and travel on main roads for employment. Non sarnians do not know back streets and are often trapped at intersections not knowing where to cross.

- Wellington Street between Christina Street and Murphy Road also has a higher number of collisions. Collisions involving a cyclist are numerous along the street, specifically near the intersections with Indian Road and Brock Street, making it one of the most crash-prone areas in the city.

- Christina Street south of Highway 402 also has a considerable number of collisions: the intersection with London Road has numerous collisions involving a cyclist and up to six pedestrian collisions can be identified on Figure 25.

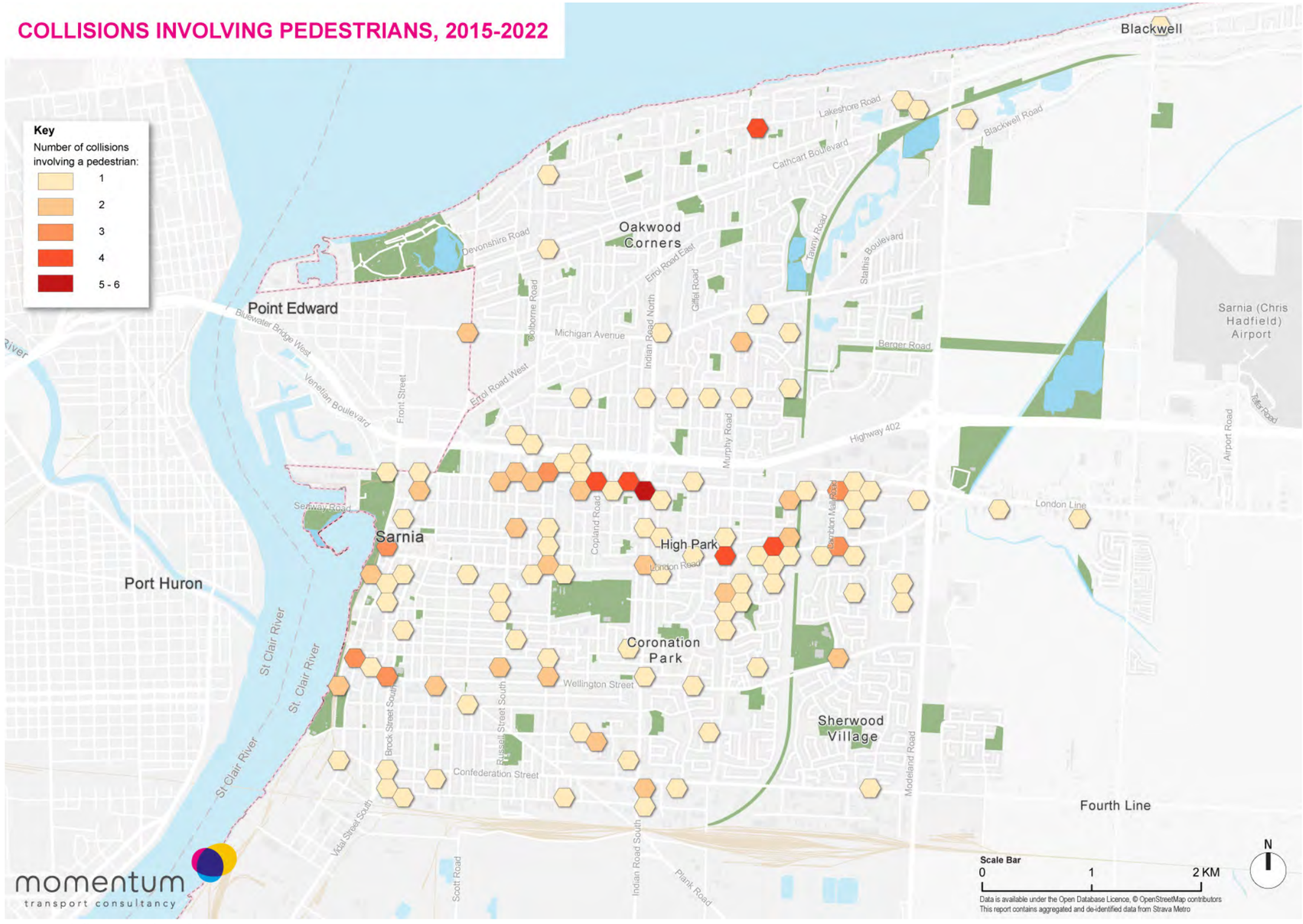

Figure 25: Collisions involving Pedestrians

5.2 Cycling Level of Traffic Stress

The Cycling Level of Traffic Stress ('LTS') is a measure used to assess how comfortable and safe it is to cycle in a specific street environment. This tool aims to provide a comparable measure of the quality of the cycling experience based on the conditions of the cycling infrastructure. This analysis was developed by the Mineta Transport Institute (MTI) in 2012 and has since been used and refined by different universities, municipalities, and transportation planners. The criteria used for this ATMP are based on the road segment criteria developed by Peter G. Furth[1] and summarized in three tables. The three tables are divided as bikes in mixed traffic as illustrated in Figure 26, conventional bike lanes not adjacent to a parking lane and conventional bike lanes alongside a parking lane. Additionally, factors like the posted speed , the Average Annual Daily Traffic (AADT), the number of lanes and the lane width are taken into account to define the LTS.

The LTS is divided into four levels:

- LTS 1: Very low level of traffic stress, suitable for most children: this level is comfortable for young cyclists. It poses minimal challenges to cyclists from all walks of life. Off street facilities, multi-use pathways are considered in this category.
- LTS 2: Low level of traffic stress, suitable for the majority of adults: this level is suitable for most adults who prefer a relatively calm and safe cycling environment.
- LTS 3: Medium level of traffic stress, suitable for "passionate and confident" cyclists: this level is appropriate for cyclists who have confidence when riding but still prefer having a dedicated space.
- LTS 4: High level of traffic stress, suitable for "strong and fearless" cyclists: this level is challenging for most cyclists and only suitable for experienced and confident cyclists who can ride in stressful traffic conditions.

Bikes in mixed traffic

Number of lanes	ADT	Prevailing Speed (mph) 0 - 23.5	23.5-28.5	28.5-33.5	33.5-38.5	38.5-43.5	43.5-48.5	48.5+
Unlaned 2-way street (no centerline)	0-750	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	751-1500	LTS 1	LTS 1	LTS 2	LTS 3	LTS 3	LTS 3	LTS 3
	1501-3000	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	3001+	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
2-way with 1 lane per direction and centerline, or wide* 1-way, 1-lane	0-1000	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	1001-1500	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1501+	LTS 2	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
Narrow* one-way, 1-lane	0-600	LTS 1	LTS 1	LTS 2	LTS 2	LTS 3	LTS 3	LTS 3
	601-1000	LTS 2	LTS 2	LTS 2	LTS 3	LTS 3	LTS 4	LTS 4
	1001+	LTS 2	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
2 thru lanes per direction	0-8000	LTS 3	LTS 3	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4
	8001+	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4
3+ thru lanes per direction	any ADT	LTS 3	LTS 3	LTS 4	LTS 4	LTS 4	LTS 4	LTS 4

Notes * A one-way street is "narrow" if its width is less than 30 ft with parking on both sides, less than 22 ft with parking on one side, or less than 15 ft with no parking. Otherwise, it is "wide."

Figure 26: Example of LTS Table for Bikes with Mixed Traffic

1 LTS Tables v.2.2, May 2022

For the Sarnia ATMP, an initial assessment of the road network using the AADT GIS data from the City and the mixed traffic conditions criteria has been done. Then, additional observations of certain road segments were conducted on-site to present examples of each LTS. In parallel, the results of the survey conducted as part of the Engagement for this ATMP indicate how comfortable people feel using different types of cycling infrastructure[1].

Sarnia's road network is predominantly designed for vehicular traffic. This is seen by the fact that the speed posted is 50 km/h on the majority of the streets, including local roads, as mapped on Figure 11, and the design of road segments provides predominantly lanes and widths to accommodate vehicles.

The results of this analysis aim to compare which road conditions can be more beneficial to cyclists' safety and comfort, thus feeding into design recommendations in the ATMP that provide lower levels of traffic stress in strategic locations within Sarnia. Figure 27 shows the results for the road segments where information was available and collected to identify the level of traffic stress. Hereafter some specific examples are presented to illustrate the different conditions associated with each level.

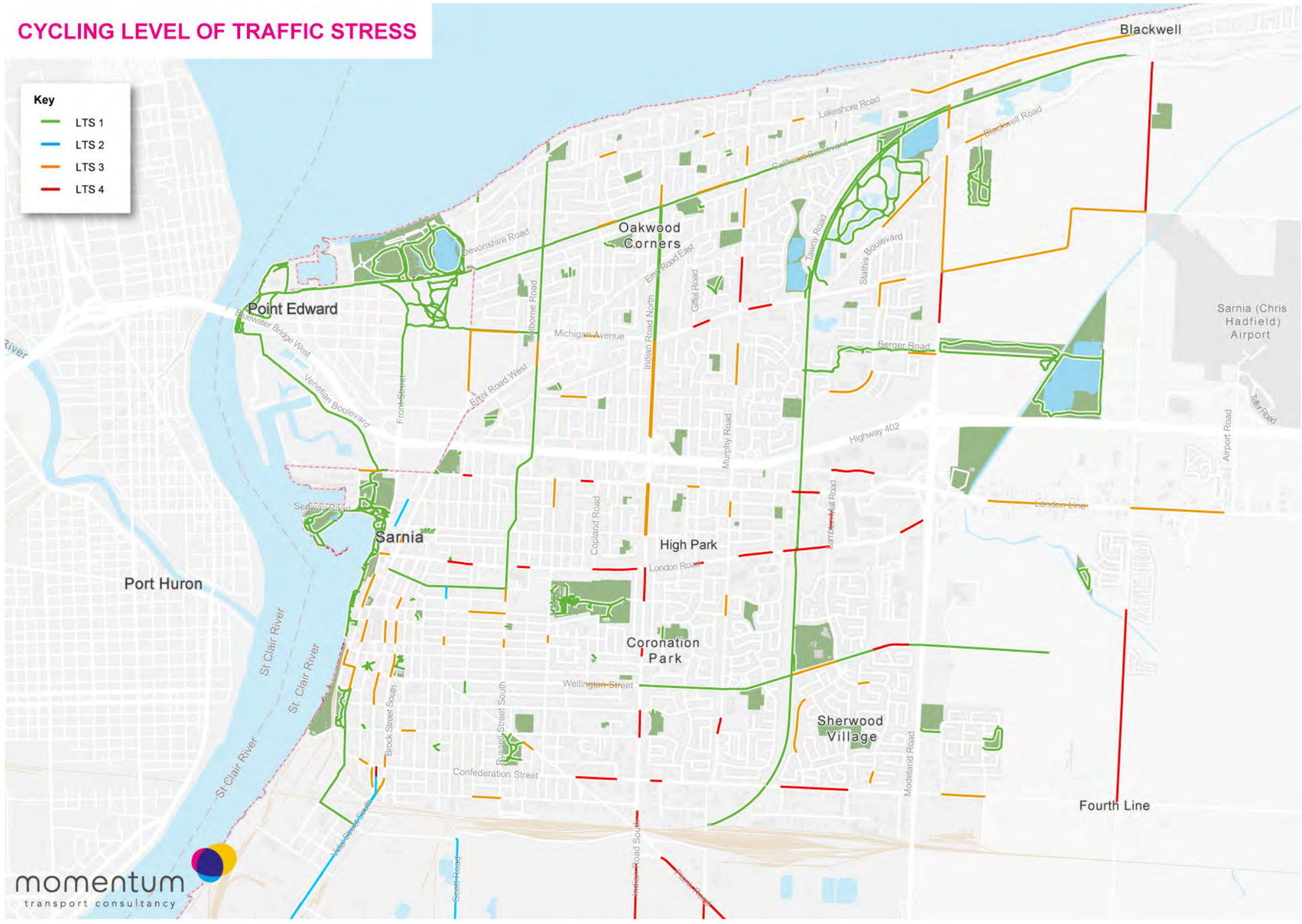

Figure 27: Cycling Level of Traffic Stress

1 See Appendix C: What We Heard Report

LTS	Maria Street	Conditions
LTS 1		Type: Mixed Traffic, quiet local Cycle infrastructure: Shared street Speed : 40 km/h AADT: lower than 750 vehicles Lanes: 1 lane per direction

The combination of having low traffic conditions and lower posted speed of 40 km/h are key for reaching a LTS rating of 1 on Maria Street.

Figure 28: Maria Street, LTS 1

LTS	Vidal Street	Conditions
LTS 2		Type: Bike lane not adjacent to a parking lane and unprotected Cycle infrastructure: Bike lane Width of the bike lane: 2.2 m Speed : 50 km/h AADT: ~4,700 vehicles Lanes: 2 lanes per direction

The presence of two vehicular lanes is a key factor for reaching a LTS rating of 2 on Vidal Street.

Figure 29: Vidal Street, LTS 2

LTS	Lakeshore Road	Conditions
LTS 3		Type: Mixed Traffic Cycle infrastructure: none Speed : 50 km/h AADT: ~5,300 vehicles Lanes: 1 lane per direction

The high vehicular traffic is the key factor for reaching a LTS rating of 3 on Lakeshore Road.

Figure 30: Lakeshore Road

LTS	Exmouth Street	Conditions
LTS 4		Type: Mixed Traffic Cycle infrastructure: none Speed : 50 km/h AADT: ~17,000 vehicles Lanes: 2 lanes per direction

The high vehicular traffic and posted speed of 50 km/h are the key factors for reaching a LTS rating of 4 on Exmouth Street.

Figure 31: Exmouth Street, LTS 4

5.3 Healthy Streets

The Healthy Streets Approach is a human-centred framework developed in the United Kingdom for embedding public health in transport, public realm and planning[1]. It aims to create streets that are pleasant, safe and attractive for everyone, especially for the most vulnerable groups such as children, older people and people with disabilities. The approach is based on 10 evidence-based Healthy Streets Indicators, each describing an aspect of the human experience on the streets, these indicators are: everyone feels welcome, easy to cross, shade and shelter, places to stop and rest, not too noisy, people choose to walk and cycle, people feel relaxed, things to see and do, clean air and people feel safe. Each indicator has multiple variables.

The methodology was adapted to a reduced version in order to evaluate nine aspects of street quality around sections of important streets in Downtown Sarnia:

- Sidewalk width sufficient for walking.
- Motor vehicle speed.
- Sidewalk state
- Quality of the public space.
- Destinations and places to rest.
- Noise from vehicles
- Provision of cycle parking
- Street trees
- Bus stop accessibility

Observations showed that the streets closest to the waterfront have a good quality of life for pedestrians. Front Street or Christina Street have segments with wide sidewalks, shade, or benches to rest as well as many points of interest. The streets furthest away from the waterfront in turn have medium or poor-quality segments. On London Road, for example, there is a lack of trees, and the sidewalk is reduced so that a person on a scooter can occupy all the space on it. Brock Street, as another example, has a high traffic speed, which generates noise and can negatively impact pedestrian users. The improvement of these segments is fundamental to better connect the residential areas with

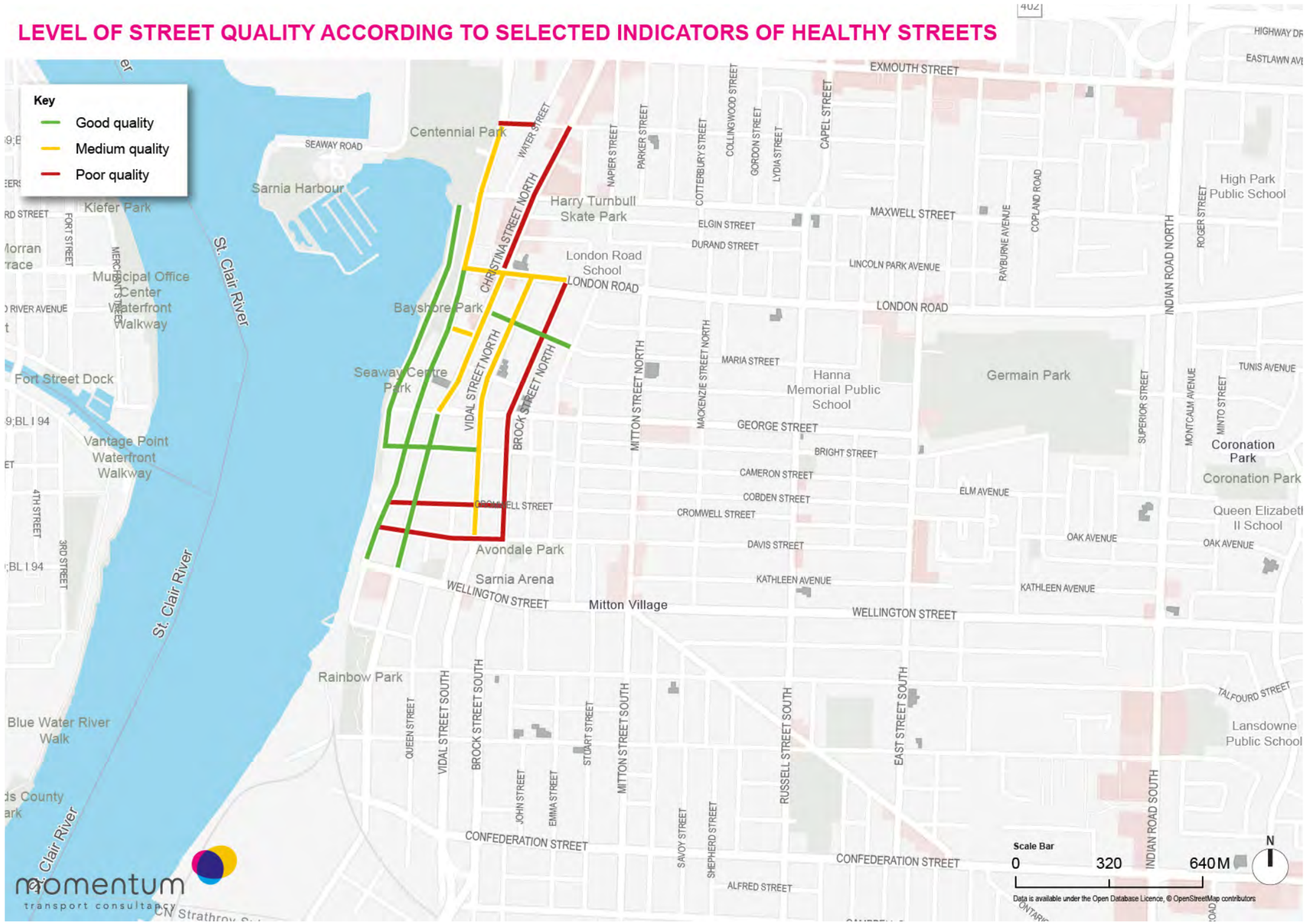

Figure 32: Level of Street Quality According to Selected Indicators of Healty Streets

1 What is Healthy Streets? — Healthy Streets, Healthy Streets (2023)

Figure 33: Healthy Streets evaluation, Lochiel Street. Street is fully pedestrianized, with no vehicle traffic, benches, lighting, coffee shops and restaurants which make the street an attractive destination.

Figure 34: Healthy Streets Evaluation, Christina Street. The wide sidewalks, the presence of trees and benches make the experience of walking in Christina Street pleasant.

Figure 35: Healthy Streets Evaluation, Front Street. Front Street has plenty of destinations and pedestrian infrastructure, the walkways are in excellent quality.

Figure 36: Healthy Streets Evaluation, Vidal Street. The street is missing shade from trees in important sections, there are no points of interest and some sections of the sidewalks can be improved.

6.0 Constraints, Opportunities and Conclusion

6.1 Constraints for Active Travel in Sarnia

The analysis in the Background Report show that the conditions of active transportation are heterogeneous in the city of Sarnia. The city has made considerable efforts to lay the foundations of an active transportation network that takes into account the needs of all inhabitants of the city. However, many residents have experienced challenges and barriers when using the existing facilities, such as gaps, discontinuities, security concerns and issues with motorized traffic. These constraints are synthetized on Figure 37.

For example, Centennial Park in Sarnia is a popular destination for many residents and visitors who enjoy its green spaces, waterfront views and recreational facilities. However, for elderly people who rely on walking or public transit to get around, accessing the park can be challenging and unsafe due to the lack of pedestrian crossings. The accessibility of parks and points of interest to vulnerable users is a key challenge in Sarnia.

Furthermore, anthropic barriers such as highways and railways create bottlenecks in locations where all modes of transportation need to cross these barriers. Intersections such as in Indian Road and Exmouth Street or Wellington Street and Christina Street also happen to be the most unsafe in terms of collisions. These intersections and major roads and streets in the city are designed predominantly for vehicles with a high number of lanes and wide lanes which are easier to speed on and reduce the visibility of vulnerable users. Further bottlenecks are identified between the railways and the petrochemical valley area.

Another constraint is the low level of awareness and education among the public about the benefits and safety of active transportation, as well as the rights and responsibilities of different road users, specifically vulnerable users such as pedestrians and cyclists. The engagement phase revealed that cyclists feel particularly unsafe when cohabiting with vehicles when there is no dedicated infrastructure[1].

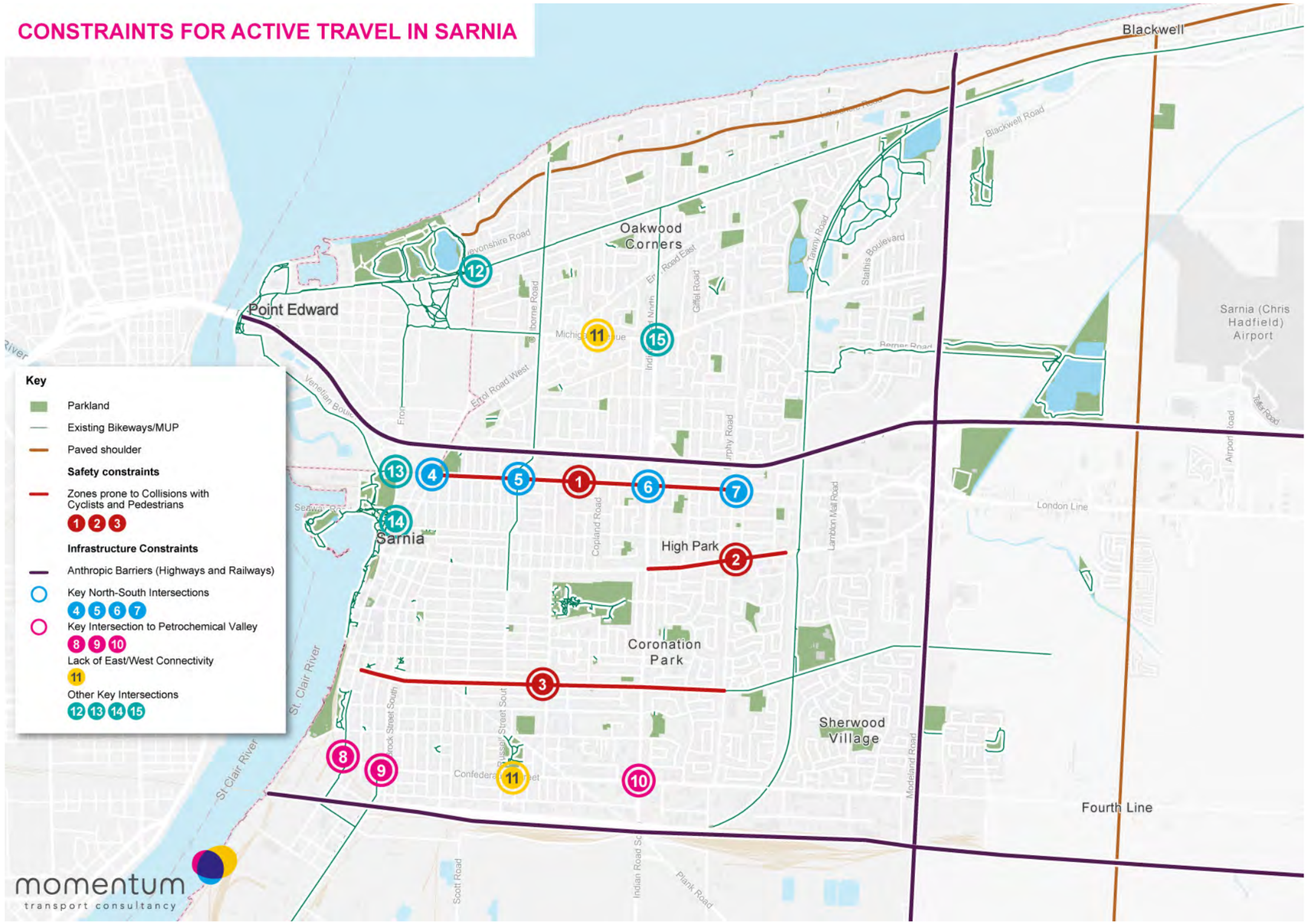

Figure 37: Constraints for Active Travel in Sarnia

1 See Appendix C: What We Heard Report.

6.2 Other Constraints

There are other constraints that limit the potential of active transportation in Sarnia, including:

- Lack of adequate bike parking around points of interests. Bike theft has been reported and workers do not have long term bike parking in employment locations.

- Lack of pedestrian crosswalks around commercial areas. Long distances between crosswalks can encourage people to jaywalk between busy streets like Exmouth Street, which generates a higher probability of collisions with pedestrians.

- A growing elderly population with mobility challenges. This group may have different mobility challenges and require a safe and connected active transportation network.

Figure 39: Pedestrian with mobility aid on Exmouth Street. As seen on the picture, there is a significant proportion of Sarnians with mobility challenges and a growing retiree population.

Figure 38: Exmouth Street. Pedestrians were observed jaywalking between shopping centres along Exmouth Street.

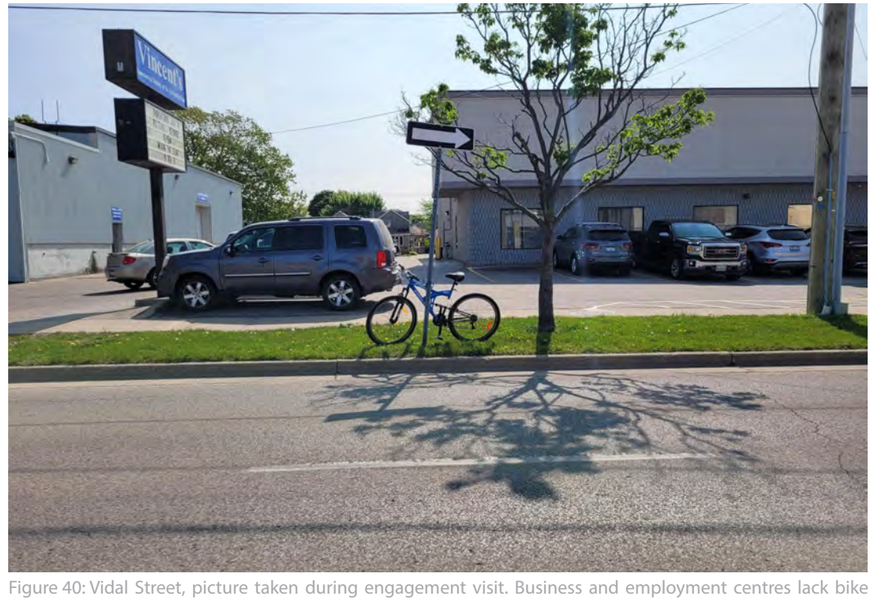

Figure 40: Vidal Street, picture taken during engagement visit. Business and employment centres lack bike parking all over the city, people are more at risk to get their bikes stolen.

6.3 Opportunities

The City of Sarnia has moved forward with progressive design and planning thinking to place active transportation users at the heart of future plans in the city, including with the Germain Park Master Plan, Sarnia Downtown Waterfront Master Plan, the Walkway Program and multiple efforts to consolidate the cycling network. As such there are multiple opportunities to enhance the active transportation network, which are identified in Figure 41 and Figure 42[1].

Sarnia has a unique opportunity to leverage its compact built environment, where most locations are within a 10-minute walking distance from a school or a commercial area, especially Downtown. This means that a proportion of trips can be easily made by walking or cycling, reducing the need for driving and parking.

Sarnia has several planned projects that can incorporate a people-focused design for active transportation. For example, the street sections up for reconstruction can be redesigned to include on-road bikeways or off-road trails that connect to the existing network.

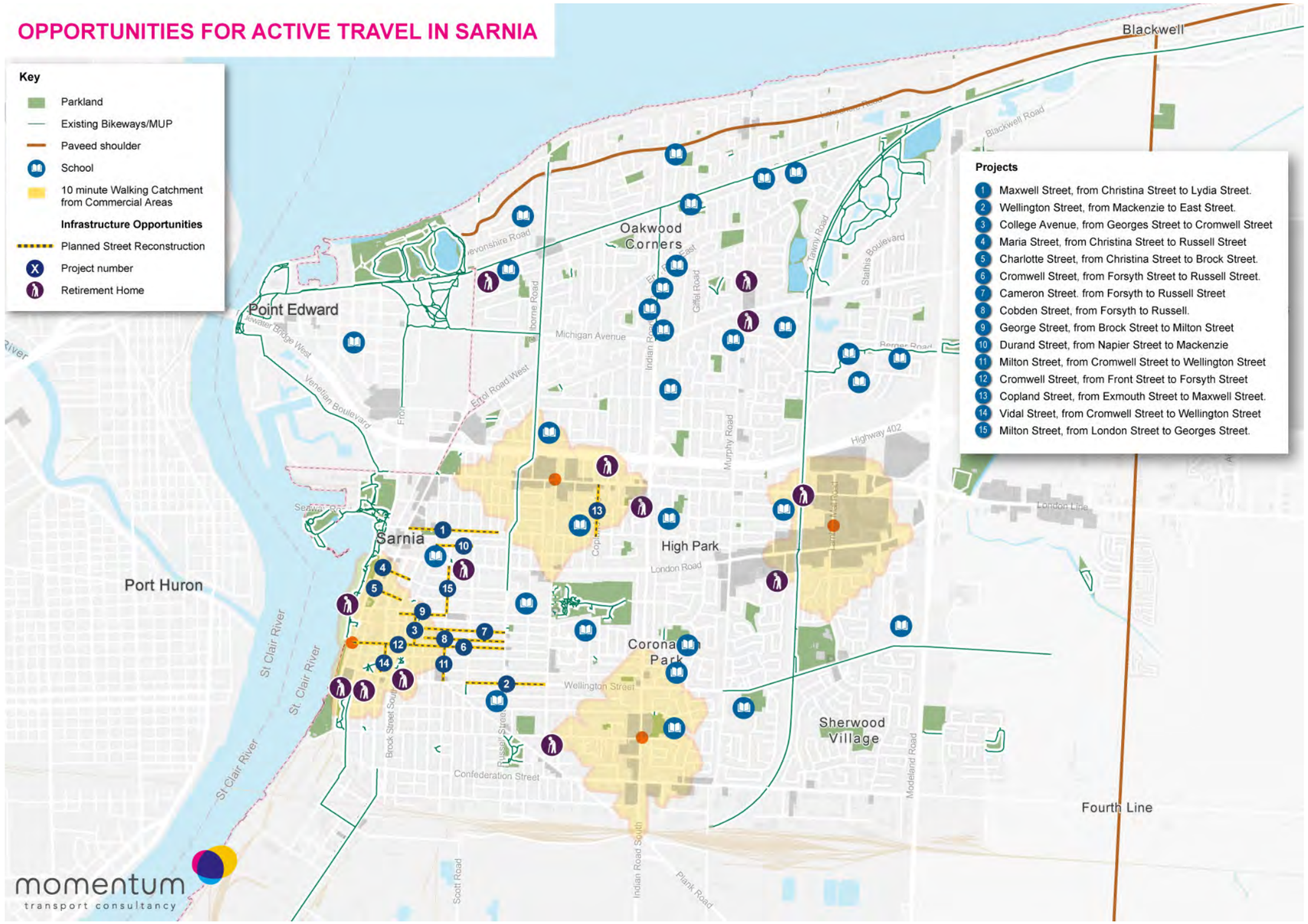

Figure 41: Opportunities for Active Travel in Sarnia

1 Inputs from the What We Heard report were taken into consideration to update these maps..

Most of the Sarnia territory is within a 10-minute walk from a school. Nevertheless, at pick-up and drop off times, there have been reports of double waiting rows in front of schools. In addition, school boards determine wider catchment areas which means that not all kids live in close proximity to the school they attend.

With the proportion of kids living within the 10-minute catchment areas from schools, there is an opportunity to attract more active transportation users to schools. There is an opportunity for parents to take their children to school by active transporation and for other children to go on their own. Besides, improving the active transportation network around schools can have an immediate impact on traffic and users' safety around schools and impact positively neighborhoods by reducing noise and congestion at drop-off and pick-up times.

The integration of active transportation with frequently-used transit routes and with the existing VIA Rail station is an opportunity for intermodal connections. The future bus terminal at the Clearwater Arena can be developed as a multimodal mobility hub that integrates different modes of transportation, such as cycling, transit, or car-sharing. Parks also provide green spaces that improve the quality of life and the environment; some of the city's parks are among Sarnians' favorite destinations such as Canatara Park or Germain Park[1]. There is an opportunity to better connect these destinations loved by all Sarnians by active transportation.

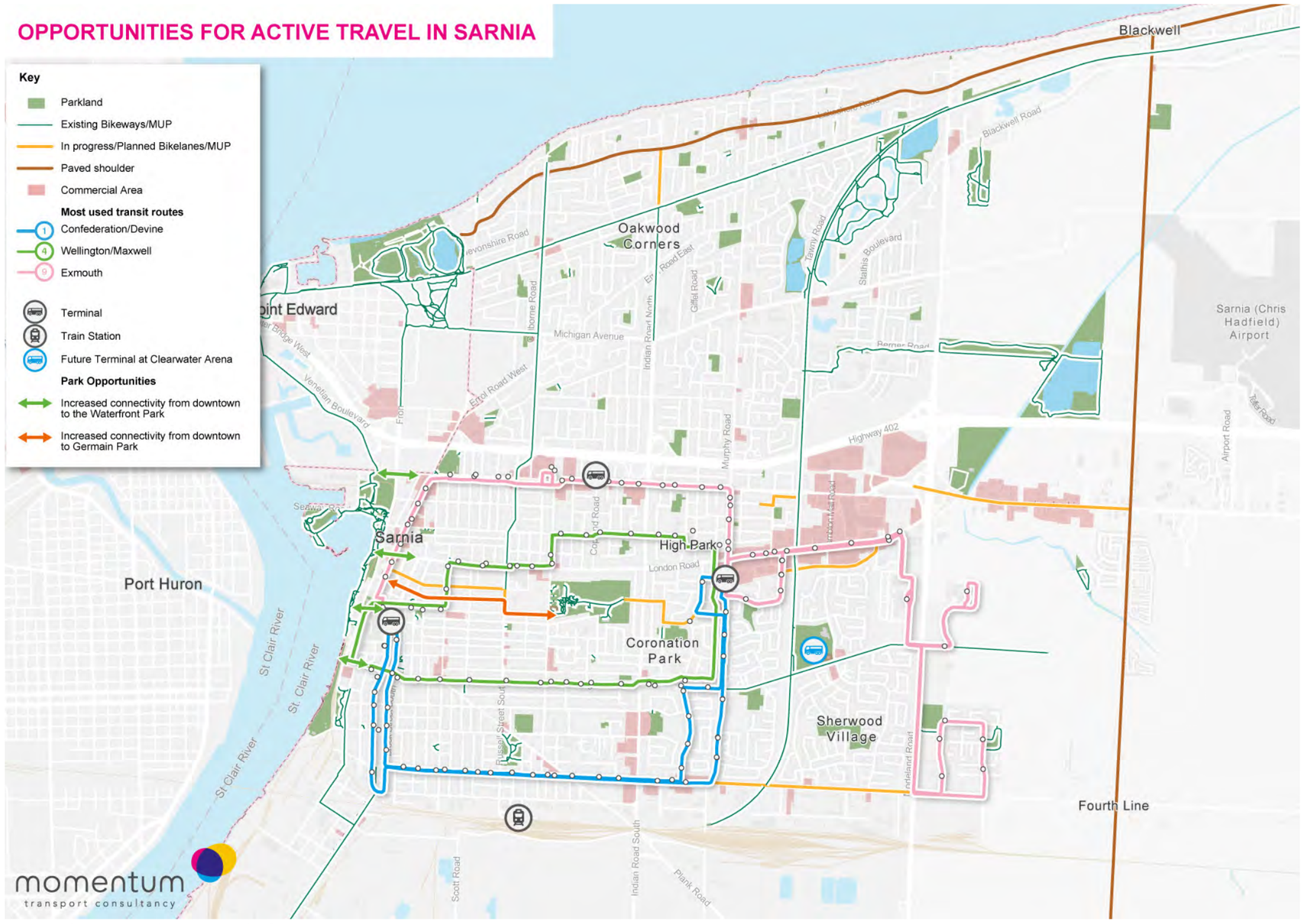

Figure 42: Opportunities for Active Travel in Sarnia

1 See Appendix C: What We Heard Report.

6.4 Other Opportunities

There are other opportunities to harness in the development of the ATMP:

- Access to points of interests like Centennial Park or schools can be secured by implementing more pedestrian crosswalks, implementing curb extensions around intersections, and implementing a pedestrian phase for the traffic lights.

- The busiest bus routes have opportunities to become intermodal links. The City has been already implementing buses with frontal bike racks mainly on Lambton College routes, these can be amplified to all the routes with highest ridership. Terminals can also accommodate further bike infrastructure like short term and long-term bike parking to further increase connectivity between points of interests and residential areas.

- Wide streets like Brock Street have the space and capacity to implement a fully protected bike lane which can have a benefit for speed and noise reduction from traffic for residents and vulnerable users.

Figure 43: Front Street and London Road, Google StreetView. The intersection has no pedestrian phase which forces cyclists to go down their bikes to press the pedestrian button. Curb extensions at the intersection could also reduce crosswalk distance.

Figure 44: Northgate Bus Terminal. Northgate Terminal facilities can be modernized to include cycle parking and clear signalisation for pedestrians and cyclists (separated path for example)

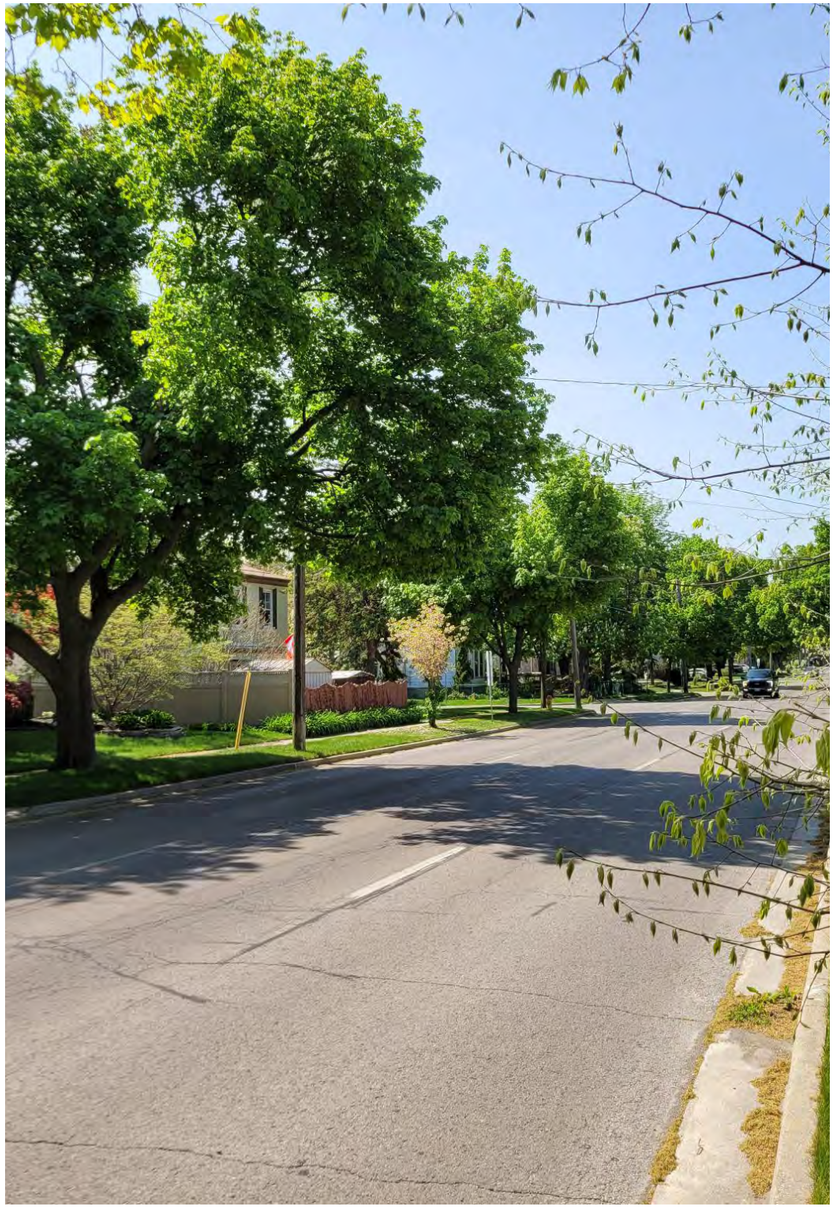

Figure 45: Brock Street. The wide geometry of the street causes high speed driving and much noise in some segments of the street, whilst the right lane is less used by vehicular traffic.

6.5 Conclusion

The Background Report has provided an overview of the current context of active transportation in Sarnia, including the following sections:

- An introduction to the approach and objectives of the Active Transportation Master Plan for the City of Sarnia
- An overview of Sarnia's context
- A presentation of where Sarnians need to travel to, taking into consideration any mode of transportation they might use
- A review of the current transportation modes they use, their current active travel patterns as well as the walking, cycling and rolling networks available for them to use
- An analysis of their experience when using an active transportation mode
- Key constraints and opportunities for active transportation highlighted from this analysis

The majority of Sarnia's street network is currently designed to facilitate the movement of vehicular traffic, with wider right of way and multiple vehicular lanes favoring higher speeds. Whilst this approach provides a better capacity for vehicular traffic to move freely, it is also in contradiction with a global, national and provincial trend to better share the public space by allocating road space for safe and comfortable movements by all vulnerable users. These include pedestrians and cyclists, but also considers the needs and safety of children, elderly, and people with mobility constraints..

The Background Report, in association with the What We Heard Report highlights areas where the design and planning of streets can put the needs of vulnerable users forward. These findings will feed into the Active Transportation Master Plan developed for Sarnia to balance street space for all users in a safe and inclusive manner.

Figure 46: View of Sarnia Waterfront in the Winter

7.0 APPENDIX A: POLICY REVIEW

7.1 Summary of Reviewed Documents

The following section presents a literature review of policy documents that are relevant to understand the planning context relevant to active transportation for the City of Sarnia. The intention of this section is to inform and illustrate the foundations of the ATMP at the federal, provincial and local context.

FEDERAL DOCUMENTS

NATIONAL ACTIVE TRANSPORTATION STRATEGY, INFRASTRUCTURE CANADA, 2021-2024

1.1 Infrastructure Canada published in 2021 the National Active Transportation Strategy. The strategy creates a framework for making data-driven and evidence-based investments to develop safe environments for more equitable, healthy, active and sustainable travel options for Canadian cities, including expanding active transportation networks.

1.2 The framework is broken down into six elements to create the A-C-T-I-V-E framework consisting of Awareness, Coordination, Targets, Investment, Value, and Experience.

Relevant information to the ATMP

1.3 The federal government has introduced several active transportation funding streams to deliver the strategy and support communities across the country:

- The Investing in Canada Infrastructure Program (ICIP) provides funding for public transit, green infrastructure, community and recreation and rural and northern communities.
- The Active Transportation Fund (ATF) includes a $400 million fund dedicated to active transportation, available for any territorial entity of Canada.
- The Canada Community-Building Fund (CCBF) is permanent fund to finance local infrastructure projects.
- The Natural Infrastructure Fund (NIF) provides funds for the protection of the environment, the support of healthy lifestyles, and the improvement of access to nature for Canadians.
- The Disaster Mitigation and Adaption Fund (DMAF) provides funding for the prevention of natural hazards.
- The Permanent Public Transit Program (PPTP) fund is dedicated for public transit funding and to start in 2026/2027.

PROVINCIAL DOCUMENTS

TOUR BY BIKE: ONTARIO'S CYCLING TOURISM PLAN, ONTARIO, 2017

1.4 Tour by Bike: Ontario's Cycling Tourism Plan is a document that outlines the government's vision and actions to support and promote cycling as a tourism draw in Ontario communities. The plan builds on the Tourism Action Plan and the Strategic Framework for Tourism in Ontario, as well as the Ontario's Cycling Strategy, which aims to encourage the growth of cycling and improve safety for cyclists across the province.
Relevant information to the Active Transportation Master Plan (ATMP)

1.5 Ontario's Regional Tourism Organizations engage with numerous tourism partners including sector associations, municipalities, Destination Marketing Organizations, operators and other organizations on matters of shared interest.

1.6 RTOs assist with trail signage projects, developing cycling and trail experiences and packages, and marketing trail routes and events through integrated marketing campaigns.

1.7 The Tourism Development Fund (TDF) and Celebrate Ontario funding program provide support for cycling tourism trail projects, industry capacity building and bike-related festivals and events in order to enhance and create cycling tourism experiences in Ontario.

1.8 The province also provides funding to national and international cycling events through the Sport Hosting Program that continues to build on the legacy of the Pan/Parapan American Games.

CYCLING SKILLS: ONTARIO'S GUIDE TO SAFE CYCLING, ONTARIO, 2019

1.9 The document consists of a guide with recommendations for safe cycling. The guide includes tips on how to ride a bike, how to identify safe places to bike as well as explanations of road signs, road traffic signs and related laws.

COUNTY OF LAMBTON

INFRASTRUCTURE & DEVELOPMENT SERVICES DIVISION, CHAIR AND COMMITTEE MEMBERS MEETING, JUNE 15, 2022

1.10 Over the past two decades the County of Lambton, along with local municipalities and stakeholders including the Lambton County Regional Trails Committee (LCRTC), have advocated for advancements in active transportation infrastructure and enhanced safety for vulnerable road users. The LCRTC was formed in the early 2000s to provide a forum for planning and coordinating a regional trail system for Lambton County.

1.11 The county confirmed its commitment to continue developing the Active Transportation plans of the county's municipalities.

1.12 The Committee plans to include partially paved shoulders along the Lambton County Regional Trail Network (LCRTN) and scope active transportation opportunities in urban areas such as Sarnia. The County stated that it is committed to advance active transportation policies.

CITY OF SARNIA

TRANSPORTATION MASTER PLAN, CITY OF SARNIA, 2014

1.13 The Transportation Master Plan brings together long-range plans that integrate infrastructure requirements for existing and future land uses with environmental assessment planning principles and provides a set of actions on how the city can meet its transportation needs and vision over the next 20 years.

1.14 The document reviews the planning context, the public transit service, the road safety conditions, the downtown public parking dynamics, it establishes an Active Transportation Strategy, and it describes the implementation strategy for all modes of transportation.

Relevant information to the ATMP

1.15 The Active Transportation Strategy summarizes recommendations for active transportation under six different categories: Walking Environment, Bike Network, Education and Promotion of Active Transportation in Sarnia, Implementation of the Walkway Infill Program, Urban Bike Network and Rural Cycling Strategy.

1.16 The Walking Environment and the Implementation of the Walkway Infill Program consider developer fees for new developments to finance the cost of constructing new sidewalks.

1.17 Appendix E: Walkway Infill Program provides a list of candidate projects to infill missing sidewalks or multi-use trails or to upgrade existing sidewalks. It also contains a list of future walkways to be built in new communities as development occurs.

1.18 The Plan voices concerns on the impact of the Walkway Infill Program on City resources for snow clearing. In the past, the City has assumed responsibility

1.19 As for the education and promotion of active transportation, the plan considers endorsing a Pedestrian Charter that recognizes the benefits of walking in Sarnia and affirms the City's commitment to improving the walking environment.

1.20 Documents related to cycling include the Bike Network, Urban Bike Networks and Rural Cycling Strategy. The documents recommend that the City must pursue the installation of the proposed bikeways along Core Routes, Connector Routes and Enhanced Routes as identified in the Urban Bike Network. This would include the proposed bike lanes on Cathcart Boulevard.

1.21 In rural areas during road reconstruction, authorities must pursue the installation of 1.5 m paved shoulders along all City roads along the Lambton County Regional Trail. The city should also encourage the County of Lambton to install paved shoulders on all County Roads along the Lambton County Regional Trail.

1.22 The Appendix C of Sarnia Transportation Master Plan provides information on the urban bike network with the proposed project name, type, bikeway, and length.

TRANSIT MASTER PLAN, CITY OF SARNIA, 2012

1.23 The plan was prepared to meet two general objectives:

- To develop short term, mid-term and long-term recommendations to improve the quality of service.
- To complete a review of existing transit services, both conventional and specialized, and clarify the City's strategic priorities for delivery of services and operations, while focusing on the overall quality, performance and efficiency of transit services and on the role transit plays in the City.

1.24 The document focuses on the development of the Short-Term Conventional Transit Service Improvement Plan with an initial system assessment, a market assessment to identify opportunities for the increase of ridership and a 10-year Service Plan to improve Sarnia transit services for the period between 2015 and 2024.

Relevant information to the ATMP

1.25 Transit is fundamental for active transportation as it gives users the possibility to move around taking less road space, thus reducing city congestion. No detailed actions are given for active transportation, but some issues are relevant to the study, such as the need to relocate and improve bus terminals.

1.26 The City proposes to relocate the Murphy Road terminal to a new location east of Murphy Road. This proposal is currently carried forward by the City with the construction of the Clearwater bus terminus adjacent to the Clearwater Arena.

1.27 There have been several studies over the past number of years to consider a more suitable, permanent location for the downtown transit terminal which could include the construction of a more formal terminal building with indoor amenities for transit users.

1.28 The transit route network needs to be restructured to better reflect travel patterns such as north-south trips and to improve service to major destinations such as Lambton College, Lambton Mall, Walmart.

1.29 A proportion of work-based trips are not currently well served by the transit system. This means people working in Sarnia rely on vehicles to move around the city.

TRAFFIC CALMING GUIDELINES, CITY OF SARNIA, 2018

1.30 The guideline outlines how residents can initiate the traffic calming process and identify the criteria that need to be met for a street or neighbourhood to be eligible for consideration. The guideline is based on similar examples from other municipalities, including London, Milton, and the Transportation Association of Canada – Canadian Guide to Traffic Calming.

1.31 Traffic calming is the implementation of measures to reduce speeds and traffic volumes on local and collector roads to improve the safety for all modes of transportation. The goal is to restore roads to their original intended purpose of providing access to local residential properties, not to act as cut-through routes or high-speed roads.

1.32 Traffic calming can:

- Reduce vehicles speeds
- Reduce traffic volumes
- Reduce number of cut-through vehicles
- Improve neighbourhood safety, especially for pedestrians and cyclists
- Reduce conflicts between road users
- Increase compliance with regulatory signs

Relevant information to the ATMP

1.33 Traffic calming requests are made by the residents of the neighbourhoods, who submit a request in writing to the Engineering Department identifying their concerns and requesting that traffic calming be investigated for their neighbourhood.

1.34 Traffic calming will only be considered on local and collector streets in residential neighbourhoods. City staff conduct a brief preliminary assessment to determine if the requested location meets the Initial Screening Criteria, which are:

- The road should be a local or collector road
- The road should have a minimum Average Daily Traffic (ADT) of 500 vehicles
- The road's speed limit shall not be greater than 50 km/hr
- All reasonable efforts have been made to address the concerns using other means including engineering, education, and enforcement.
- The zoning in the affected sector should be primarily residential in nature.
- The road should have a minimum length of 150 m.

1.35 If the requested location meets the initial screening criteria, the proponent is responsible for collecting signatures for the petition. A minimum of 40% of property owners within the area must indicate their approval by signing the Traffic Calming Petition.

1.36 Traffic calming measures are currently being implemented in some of Sarnia's community safety zones.

OFFICIAL PLAN, CITY OF SARNIA, 2014 AS AMENDED IN 2022

1.37 The Official Plan ('OP') presents policy directives for the future growth of the City of Sarnia with a comprehensive, community-based framework. The intent is to guide decision-making for the future development of the city. The Plan coordinates land use, infrastructure development and public service facilities, all through the lenses of resource protection, public health and safety, the natural environment, as well as the quality of life for all residents. The policies within the Plan aim to guide the City through to the year 2031.

Relevant information to the ATMP

1.38 The Plan establishes six principles for a vibrant city including striving for design excellence to ensure pedestrian friendliness and safety, animating streets as places of interaction and physical activity and to improve accessibility and connectivity through the support of an integrated transportation network, planning for pedestrian-oriented development and ensuring a greenspace network that links built and natural points of interest.

1.39 Within the Urban Residential designation, Neighbourhood Parks should be accessible to pedestrians through an interconnected network.

1.40 Within the Parks and Open Spaces policies of the OP, Sarnia sets an objective to ensure an interconnected open space network that links neighbourhoods, supports active transportation and protects the natural heritage system. Trails and leisure facilities should be attractive, multi-purpose and multi-season and should appeal to all ages and skill levels. This network should be capitalized upon for tourism and community collaboration.

1.41 Parks and Open spaces should be regularly assessed to ensure they meet recreational demands of local residents and should be maintained, enhanced and improved over time. High-quality parks and amenities should be designed to promote user comfort, safety and accessibility with year-round use to enhance the sense of place. The network should be used as an opportunity for education and an opportunity to interact with the natural world.

1.42 The City promotes the concept of developing a continuous open space system along the St. Clair River and Lake Huron waterfronts to link major parks areas, inland watercourses and open municipal drains with cycling and pedestrian facilities. The Plan sets as an objective, the acquisition of lakefront and riverfront property by the City for such public purposes.

1.43 Along the St. Clair River Waterfront, a continuous pedestrian walkway is to be maintained for passive activities (walking, sitting, viewing, fishing, etc.) but where feasible, a cycling path may be incorporated. The waterfront is to be integrated with the Downtown area from street ends.

1.44 Within Mainstreet and Commercial Areas, the management of vehicular access into these areas must be balanced with the need to support transit and active forms of transportation through public realm improvements.

1.45 Within Employment Areas, walking and cycling are to be promoted by creating safer and more attractive conditions for active transportation.

1.46 Community design policies promote linkages and connectivity for all users including pedestrians, cyclists and transit riders. New developments should further be designed with an active transportation network connecting major roads and natural corridors.

1.47 As part of the City's desire for energy-efficient development, policies have been adopted which promote a compact urban form with a well-connected pedestrian and bike network where feasible.

1.48 The Plan's Transportation Policies seek to maximize efficiency in land use and mobility by developing an integrated multi-modal transportation system and encouraging active transportation. The Plan further establishes that a Transportation Master Plan will be prepared, maintained and implemented by the City and that the development of Transportation Demand Management measures will be encouraged at any opportunity.

1.49 More specifically regarding Active Transportation, the City promotes expanded pedestrian and cycling routes which serve major activity centres and the provision of adequate and secure parking facilities. Active Transportation routes will be outlined within the TMP but will be made up of on-road bike routes, multi-use trails, pedestrian walkways and sidewalks and pedestrian and bike facilities. On-road routes, composed of mixed-traffic and exclusive bike routes, are intended to serve the main community, civic, commercial, service, recreational, institutional and cultural destinations within the city. Multi-use paths are intended to serve the natural heritage and parks and open space networks of the city while Pedestrian Walkway and Sidewalks are intended to provide safe and convenient access for pedestrians throughout the urban area.

DEVELOPMENT AREA 2, SECONDARY PLAN, CITY OF SARNIA

1.50 Development Area 2 represents the largest greenfield development area for the City of Sarnia. The Secondary Plan presents more detailed policy direction for this expansion area furthering the objectives of the Official Plan. In 2022, the City initiated a review of the Secondary Plan which is currently ongoing having launched a survey and several public information sessions. A preliminary land use plan has been developed but no other policy directives have yet been presented.

1.51 The goals of the Secondary Plan are to provide for the orderly development of the lands that is equitable to all landowners, to recognize and maintain the natural features of the lands, to develop an adequate distribution of affordable housing, social and recreational facilities, and deploy an efficient and effective transportation network and infrastructure system.

Relevant information to the ATMP

1.52 Policies of the Secondary Plan aim to establish a community structure that is integrated with the existing urban area and linked by pedestrian and transportation systems to community, park, institutional, commercial and school facilities.

1.53 Parks and Open Space policies call for the development of an integrated open space system that, among other things, is comprised of bikeways and walkways and trails to serve the active and passive recreational needs of existing and future residents. Further, the policies seek to provide for an off-street pedestrian system that links residential areas with parks, stormwater management areas, schools, institutional uses, local and general commercial facilities public transit and super mailbox locations.

1.54 Within Neighbourhood and Community parks, bike paths are one recreational facility that may be provided and the Perch Creek and Porter Creek watercourses are intended to be preserved as natural hazard and heritage corridors which are integrated into the trail and path system in order to provide a series of pedestrian links through the development area.

1.55 The design of development land uses within Development Area 2 are to incorporate provisions for a linked open space system that may include pedestrian walkways, trails and bike paths which is intended to provide safe linkages between residential areas, schools, commercial areas, transit stops, super mailbox locations and other similar public facilities. Public walkways should also be provided through all residential blocks which would otherwise require long detours.

1.56 School areas have been identified as being required to be incorporated into the system of trails, pathways and walkways.

1.57 Arterial and Collector roads may be offset to permit wider boulevards on one side of the road. The wider boulevard is intended to better accommodate pedestrian and bike paths.

8.0 APPENDIX B: BEST PRACTICES

8.1 BIKE PARKING REVIEW

The City of Sarnia is currently reviewing its parking by-laws which includes bike parking requirements. Momentum has reviewed the proposed by-laws and provided the City of Sarnia with some recommendations to include in the Parking by-law as presented below:

Recommendations

- It is recommended to separate requirements by short-term vs. long-term bike parking (higher ratio for long-term facilities).
- It is recommended to include a definition of short-term vs. long-term.
- In paragraph m) the requirement is a % of parking spaces. It is recommended to dissociate bike parking from car parking provisions and to present the bike parking as a ratio by floor area.
- It is recommended to add requirements for change and showers facilities for non-residential land uses. A minimum of one shower should be required and additional shower provision could be correlated to the number of bike parking spaces provided.
- It is recommended to include a higher requirement for bike parking for the institutional(including schools and universities) land use, since there is an opportunity to increase bike trips for this land use.
- It would be helpful to present a clear table comparing the requirements by land use.
- It is recommended to include a paragraph stating that the amount should be rounded up to the above number.

References:

- Two best practice examples and referents are Ottawa and Toronto. There is a higher level of detail by land use and requirements by surface area.

City of Toronto

The City of Toronto provides bike parking requirements for different land uses and includes recommendations for both short-term and long-term bike parking as follows:

- Toronto divided the City in two bike zones; bike zone 1 which refers to the city center and close suburbs located within the area bounded by the Humber River on the west, Lawrence Ave. on the north, Victoria Park Ave. on the east and Lake Ontario on the south; and bike zone 2 which refers to the area outside of bike zone 1.
- Dwelling developments in zone 1 require a minimum of 1.1 bike parking for each dwelling unit where 0.9 is long-term and 0.2 is short-term bike parking. In zone 2, dwelling developments require a minimum of 0.75 bike parking for each dwelling unit where 0.68 is long-term and 0.07 is short-term bike parking.
- The highest bike parking rate is for post-secondary schools. In bike zone 1, they require 3 plus 2.0 short-term bike parking spaces and 2.0 long-term for each 100 square meters of interior floor area used for post-secondary school use.
- Office developments in zone 1 require 3 plus 0.2 short-term and 0.2 long-term bike parking per 100 sqm. In zone 2, office developments require 3 plus 0.15 short-term bike parking and 0.13 long-term bike parking per 100 square meters.
- Long-term bike parking should be located inside a building.
- New buildings with other uses than residential which require long-term bike parking should provide showers and change facilities for each gender.

Figure 47: On-street Bike Parking in Toronto

City of Ottawa

The City of Ottawa provides bike parking requirements in Section 111 of the zoning-by-law Part 4 on Parking, Queuing, and Loading Provisions14. The bike parking rates vary for different land uses and include recommendation as follows:

- Bike parking requirements are for developments located in Central Ottawa (Area A), the inner-city area (Area B) and in the suburban area (Area C).
- Appartement dwellings require 0.5 bike parking per dwelling unit.
- Office developments require 1 bike parking per 250 square meters of floor area.
- Schools require 1 bike parking per 100 sqm of gross floor area. This represents the highest bike parking rate for the City of Ottawa.
- Bike parking should be located in areas which provide convenient access to main entrances.
- Where the number of bicycle parking spaces required for a single office or residential building exceeds 50 spaces, a minimum of 25% of that required total must be located within a building, bike locker or secure area such as supervised parking lot.

Bicycle Security Advisors

Bicycle Security Advisors, an agency which advises individuals, local governments and developers on best practices in bike security issues and bike parking, have provided a guidance15 to define bike parking rates based on detailed cycling objectives and land use. Their recommendations are based on various cities' bike parking requirements and APBP guidelines, they include the following:

- Bike parking requirements should be divided between short-term and long-term bike parking.
- For general or professional offices it is recommended to implement 0.5 long-term bike parking per 93 square meters and 0.10 short-term bike parking per 93 square meters.
- For multi-unit residential dwellings it is recommended to implement 1 long-term bike parking per dwelling and 0.2 short-term bike parking per dwelling.
- It is recommended to round up the number of bike parking spaces when calculating the requirements.

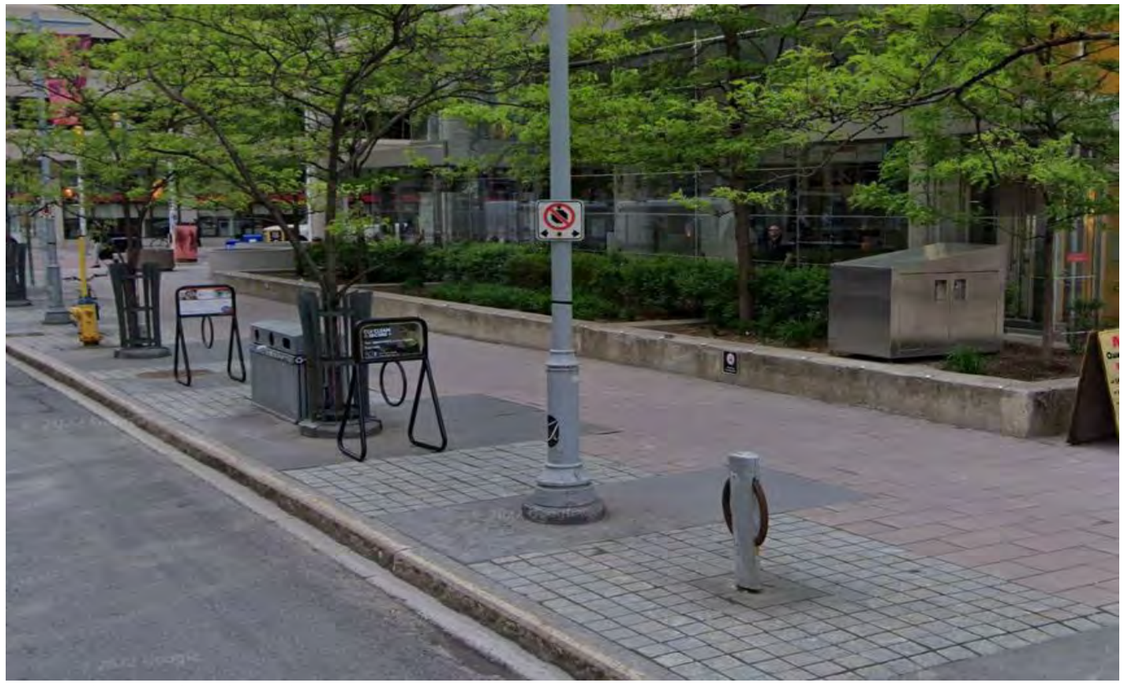

Figure 48: On-street Bike Parking in Ottawa

8.2 Crossings & Intersections

Better crossing and intersection designs make streets and roads safer to navigate for pedestrians, cyclists and vulnerable road users. Implementing signalized junctions in cities helps to reduce conflicts between users and improve comfort for less confident cyclists.

The Ottawa Protected Intersection Design Guide, released in September 2021, highlights key components to take into consideration when designing sustainable, safe and accessible intersections such as:

- Reducing crossing distances which can be done by implementing pedestrian refuges;
- Improving visibility;
- Providing tactile paving;
- Reducing vehicular speed;
- Providing appropriate lighting; and
- Accommodating drainage and snow storage and clearing.

Road markings such as colored bike lanes, white chevrons and sharrows can also improve the safety of cyclists when approaching intersections. Advanced Stop Lines and Bike Boxes have been widely popular as an efficient and rapid solution to improve intersections and cyclists' experience in cities across the world.

KEY LINKS

- Protected Intersection Design Guide, Ottawa (2021)
- Separated Bike Lane Planning & Design Guide, Federal Highway Administration, USA (2015)
- Appendix on Safety Performance of Bicycle Infrastructure, The Transportation Association of Canada (2020)

Figure 49: Protected Intersection in Vancouver

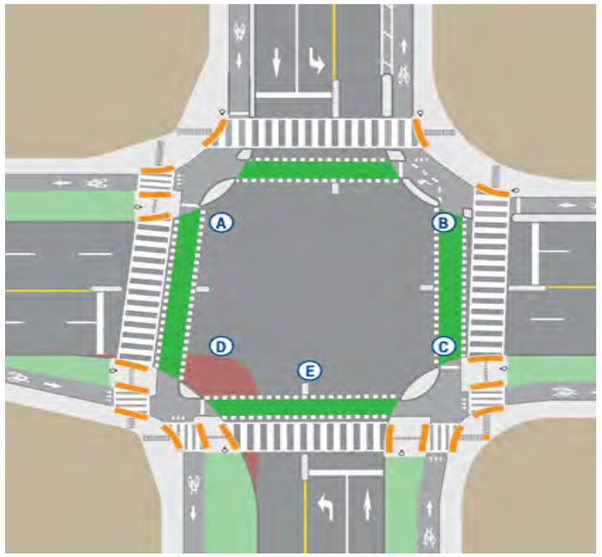

Figure 50: Example of a Protected Intersection with Key Design Features

Design Features

- (A) Large radius protected corner with corner apron
- (B) One-stage protected corner
- (C) Standard protected corner
- (D) Hybrid protected corner
- (E) Centreline hardening

8.3 Lanes Types

Various designs of bike lanes can be implemented to improve the cyclists' experience and safety such as physical barriers or road markings.

The Transportation Association of Canada Appendix on Safety Performance of Bicycle Infrastructure in Canada (2020) includes the following lane design recommendations:

A. Protected Bike Lanes

they are located within the road right-of-way, but are physically separated from motor vehicle travel lanes by concrete curbs, planters, etc. They can be designed to provide both unidirectional and bidirectional travel.

B. Buffered Bike Lanes

Buffered bike lanes provide more protected space for cycling than a painted bike lane, typically through a painted buffer or "shy" zones on one or both sides of cyclists. Plastic posts can be used to delineate the lanes. These lanes can be further separated from traffic by a parking lane.

C. Painted Bike Lanes

Painted bike lanes are separated lanes that are designated exclusively for bike travel and include pavement markings. They reduce bike injury and crash frequency when compared to roadways without bike facilities.

D. Bike Accessible Shoulder

Where intended for cyclist use, and provided sufficient width is available, paved shoulders on the edge of roadways can serve as a functional space for cyclists in the absence of other facilities with more separation or delineation.

Figure 51: Protected Bike Lane in Montreal, Quebec

Figure 52: Buffered Bike Lane in Toronto, Ontario

Figure 53: Painted Bike Lane in Sammamish, WA, US

Figure 54: Bike Accessible Shoulder in Grey County, Ontario

E. Major Street Shared Lanes

Shared lanes provide direct routes for experienced cyclists along the outer travel lane of a roadway. While cyclists mix with motor vehicle traffic, they are separate from pedestrians using the sidewalk. Sharrows are painted on the road surface to remind drivers they must share the road with cyclists.

F. Advisory Bike Lanes

Advisory bike lanes are used on low-volume streets that are too narrow for the installation of conventional bike lanes and standard-width travel lanes for motor vehicles. Dashed bike lanes are marked on the outside or the roadway with a single narrow two-way vehicle lane occupying the middle of the roadway. The dashed bike lane line permits motorists to merge into the bike lane to negotiate oncoming traffic when no cyclists are present. Vehicles travel closer to cyclists when cyclists have a marked lane which raises safety concerns.

G. Bike Lane Mechanism

Bike lanes can be separated from vehicular traffic by different urban objects such as

- Delineator posts
- Bollards
- Concrete barriers
- Raised medians
- Planters
- Parked cars
- Raised lanes

KEY LINKS:

- Separated Bike Lane Planning & Design Guide, Federal Highway Administration, USA (2015)

- Appendix on Safety Performance of Bicycle Infrastructure, The Transportation Association of Canada (2020)

Figure 55: Shared Bike Lane in Sarnia, Ontario

Figure 56: Advisory Bike Lane in Newmarket, Ontario

Figure 57: Bike Road Markings on Shaw Street, Toronto

8.4 Surface Types

Trail surfacing can highly impact the experience and the comfort of users which is why the surface should be adapted to the frequency of use and the type of users as well as the type of activity which can include cyclists or pedestrians commuting or using active travel as leisure. When choosing a surface for a trail route, the Rails to Trails Conservancy recommends considering the following aspects:

- User acceptance and satisfaction;
- Accessibility;
- Cost to purchase and install materials;
- Cost of maintaining the surface;
- Life expectancy; and
- Availability of material.

When deciding between hard or soft surface for a trail, it is important to consider that while hard-surface trails are more accommodating, require less maintenance and can withstand frequent use, they are also significantly more expensive. On the other hand, soft-surface trails cost less, but generally do not hold up well under heavy use or varying weather conditions.

The TAC Safety Performance of Bicycle Infrastructure in Canada Appendix (2020) highlights that both off-road bike and multi-use pathways can be paved with concrete asphalt or surfaced with stone, dust, fine limestone or gravel screenings.

Figure 58: Greenbelt Parkway in Ottawa, Ontario

The Laurel Trail located in Waterloo (ON) is a great trail design example showing how to choose the right surface type accordingly to its future use. The Laurel Trail is an off-road pedestrian and bike pathway that crosses Waterloo Park. Over the years, the promenade has received several improvements including the implementation of uniform hard surfaces, width improvements, road markings and signage segregating bicycle and pedestrians.

The promenade was previously surfaced with different materials throughout its length including gravel. To improve the quality and comfort of the path for all users, the surface was upgraded to asphalt guaranteeing more comfort and safety. Moreover, road markings were implemented along the promenade indicating which users are welcomed onto the path. The road markings separate the path in two directions with a white lane line in the middle. The upgrades to the trail have helped to increase the average number of cyclists using the trail from 320 to 540 cyclists daily.

The Laurel Trail shows that with the right choice of surface type, a trail can be upgraded to multi-use and be safe and comfortable to all users.

KEY LINKS:

- Rails to Trails Conservancy, Surfaces
- Appendix on Safety Performance of Bicycle Infrastructure, The Transportation Association of Canada (2020)

Figure 59: Laurel Trail, Waterloo, Ontario

8.5 Lighting

Public realm lighting is key in improving the feeling of safety for active transportation users as well as significantly reducing risks of collisions at intersections.

In the context of implementing lighting for off-road bike and multi-use pathways, the Rails to Trails Conservancy sets out key trails lighting recommendations. Trail lighting should be done in a small scale and only where needed. The use of flat lenses is recommended to only illuminate the intended path to protect the natural environment and wildlife. Consideration should also be taken on the warmth of LED streetlights to ensure they are the least detrimental, to surrounding wildlife; and narrower spacing between lighting fixtures and fixtures to have a shorter height than streetlamps.

Furthermore, as per the guidelines provided by AASHTO, the placement of lights on a trail should be at a minimum at the following locations:

- Always in a tunnel or at overpasses
- Trailheads and signage
- Bridge entrances and exits
- Public gathering places
- Along streets and crosswalks
- Where the path crosses another path or sidewalk

The Vancouver Outdoor Lighting Strategy (2019) includes key recommendations for lighting designs as shown in the table in Figure 60.

IllumiLane in Vancouver is a great example of best practice for cycle lane lighting. IllumiLane promotes active travel by implementing interactive lighting on a cycling and pedestrian path by Vancouver's waterfront. The lights improve safety for all users by flashing red when a cyclist is going over 20mph, the lights also make the path more engaging for pedestrians.

KEY LINKS:

- Outdoor Lighting Strategy, Vancouver (2019)
- Rails to Trails Conservancy, Lighting

	Light levels	Colour temperature	Luminaires	Possible controls	Aesthetic Design
Conventional street and sidewalk	General guidance from IES RP-8 based on pedestrian and vehicular traffic volumes. Overall levels may vary and be adjusted due to environmental factors	3000K – warm white source to balance aesthetic with safety	Standard pole-mounted roadway luminaire	Programmed scheduling of light levels; eg. higher levels during peak hours, lower after curfew	Consistent with surroundings: poles, fixture style, colour, and existing guidelines
Priority pedestrian and cycling route (greenways, seawall)	May be adjusted to operate with surrounding ambient light levels and land use	Up to 3000K – warmer sources may be considered to meet ambience objectives	Low-glare pedestrian level lighting encouraged	Programmed dimmed light levels after curfew, with motion sensor to gradually raise levels when in use	Consider selection of fixtures that would provide a consistent public realm along the network

Figure 60: Lighting Designs, Vancouver Outdoor Lighting Strategy (2019)

Figure 61: IlumiLane in Vancouver

Figure 62: IlumiLane in Vancouver

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ONTARIO

City of Sarnia
ACTIVE TRANSPORTATION MASTER PLAN

What We Heard Report
June 2023

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Contents

Part 1: Online Survey and Interactive Mapping

Summary

Part 1 of the Sarnia Active Transportation Master Plan (ATMP) Engagement Strategy was implemented to gain a comprehensive understanding of the current state of active transportation use in Sarnia. Through an online survey and interactive mapping tool, we collected valuable data and insights from the community.

The online survey received a strong response, with 151 participants sharing their perspectives on various aspects of active transportation. Topics covered included demographic information, preferred modes of transportation, encountered barriers, and motivations for incorporating active transportation. Additionally, the interactive mapping tool allowed residents to pinpoint specific areas within the city where they had positive or negative experiences while engaging in active transportation, providing valuable insights into the strengths and areas for improvement in Sarnia's infrastructure.

Survey Results

A total of 151 responses were received for the online survey conducted through SpeakUp Sarnia.

The survey was comprised of 21 questions, beginning with demographic inquiries such as age, ability, gender, and employment status in order to establish a comprehensive understanding of the respondents. Participants were then categorized as either active transportation 'users' or 'non-users' based on their self-identification.

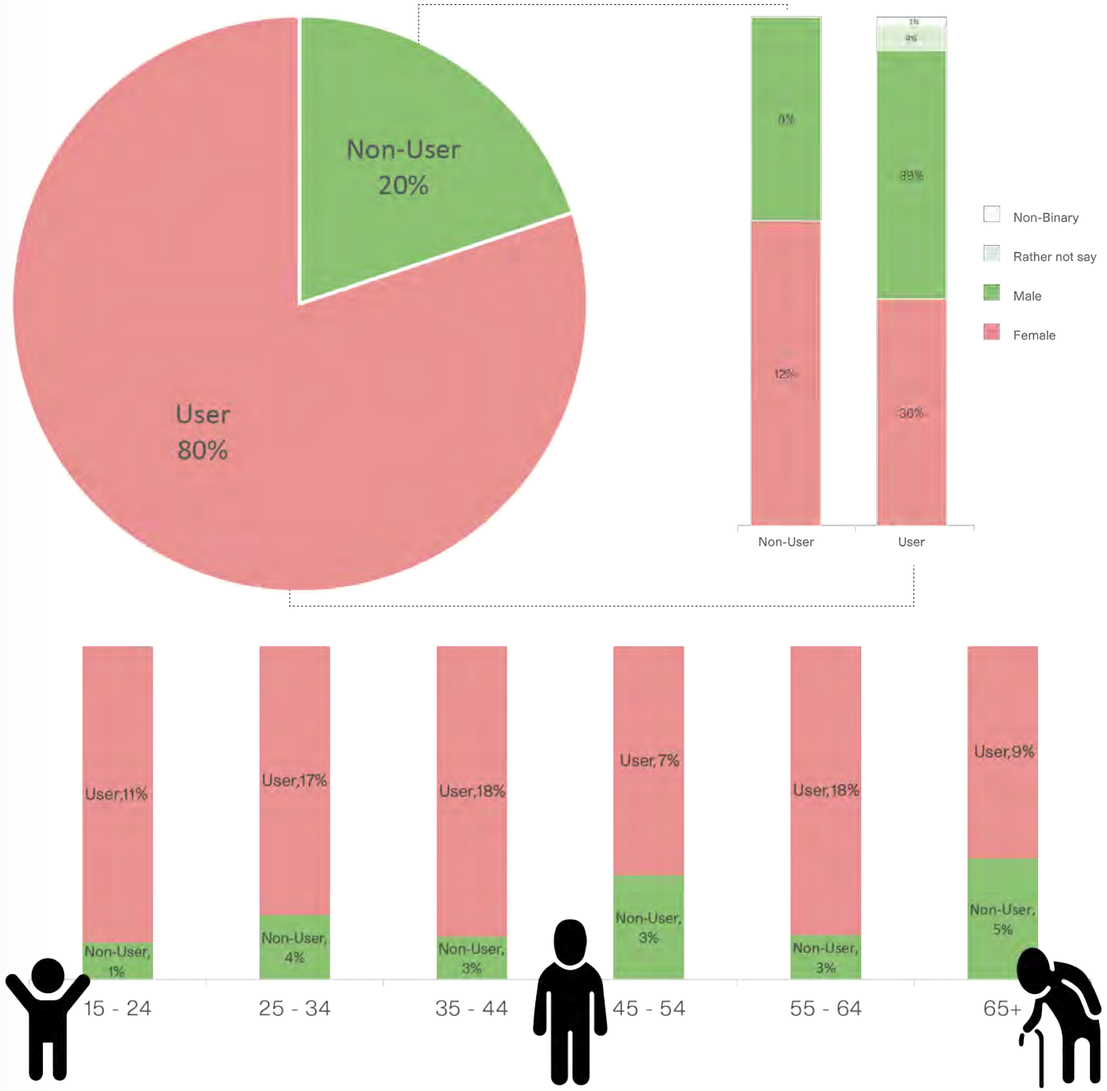
For active transportation users, questions 7-13 delved into their preferred methods of active transportation, the obstacles they encountered, and their motivations for incorporating active transportation into their routines. Non-users, on the other hand, responded to questions 14-20, which explored their reasons for not adopting active transportation. Question 21 involved the respondents' perspectives on preferred cycling infrastructure, encompassing their preferences and suggestions towards future development.

The subsequent section will provide a summary of the survey results, highlighting the key findings and takeaways that offer valuable insights into the community's perceptions and attitudes towards active transportation.

Distribution of Active Transportation Users

80% of survey respondents self-identified as users of active transportation. Usage of active transportation varied across demographics:

- Those aged 65 years or older were the least likely to identify as active transportation users, and those within the age ranges of 15-24, 35-44, and 55-64 were the most likely to be active transportation users.
- Across employment status, those that are retired were the least likely to be active transportation users, and those that are not employed were the most likely to be users of active transportation.

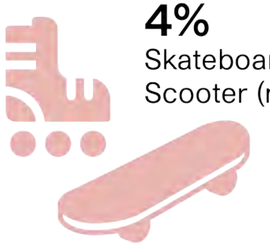


Responses from Active Transportation Users

What forms of active transportation do you regularly use?

48%
Walking

38%
Biking



4%
Skateboard/Rollerblade/
Scooter (non-motorized)

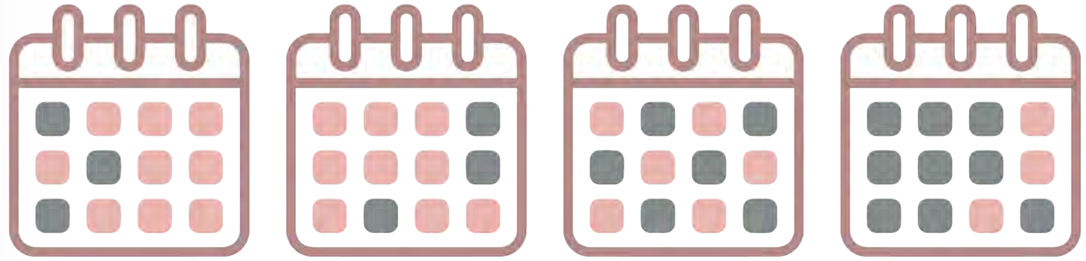
4%
E-Bike

6%
Other

0.4%
Wheelchair

E-bikes were more popular amongst older respondents, while usage of skateboards/ rollerblades/scooters was amongst younger respondents.

How frequently do you use active transportation?



1%
One to two times per week but only on weekends

15%
One to two days per week

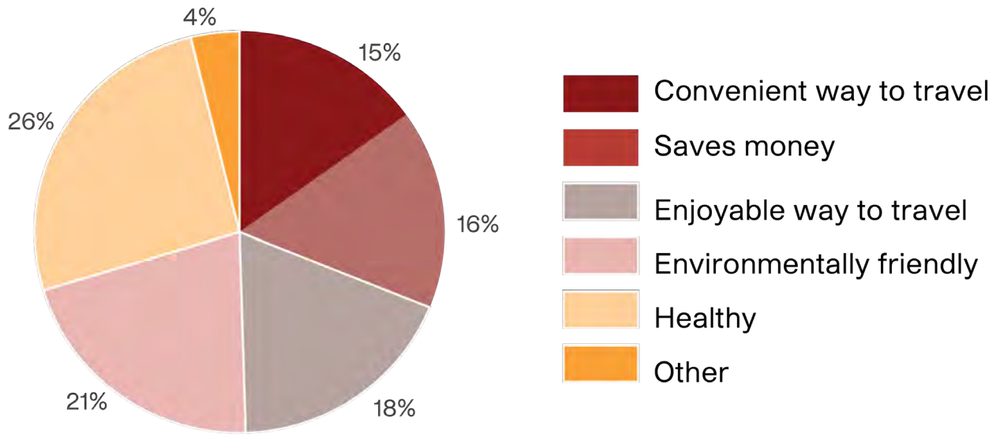
28%
Three to four days per week

56%
Five or more days per week

For what purpose(s) do you use your active transportation method(s) of choice? (ranking)

1. Exercise/Recreation
2. Running errands, shopping or doing business
3. Commuting to school or work
4. Social gatherings or visiting with family/friends
5. Other

What motivates you to use active transportation?

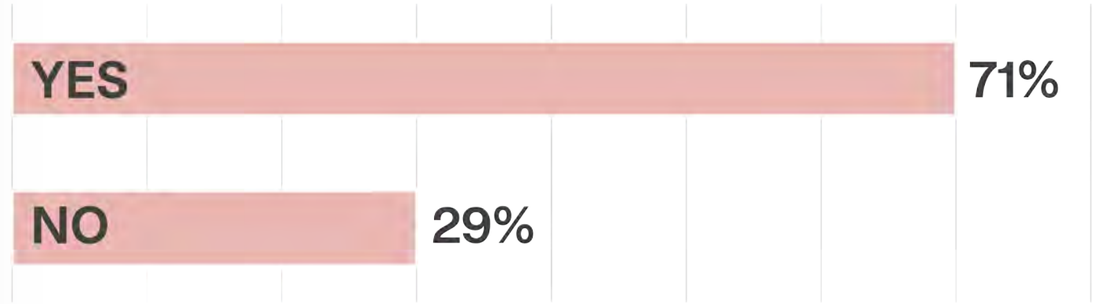


Rank the importance of challenges facing active transportation users

1. Safety
2. Lack of active transportation infrastructure
3. Connectivity of the network
4. Lack of users / active transport culture
5. Weather conditions

Among students only, safety was ranked lowest, with both poor weather and lack of culture being seen as more important.

Do you change your active transportation routine in colder weather?



Why does your active transportation routine change in colder weather ?

52%

Unpleasant Weather

11%

Other

36%

Lack of Maintenance

Questions for Active Transportation Non-Users

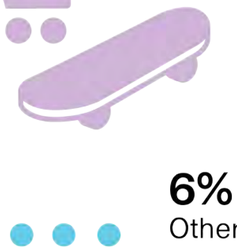
If and when you do use active transportation, what would you be most inclined to use, or what do you use?

49%
Walking

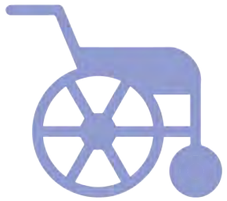
36%
Biking

6%
Skateboard/Rollerblade/
Scooter (non-motorized)

2%
E-Bike



6%
Other



2%
Wheelchair

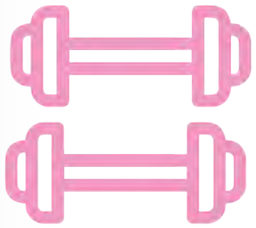
Female respondents were more likely to incorporate active transportation for exercise/recreation or commuting than males, but were less likely to begin using it for running errands, shopping, or doing business.

If and when you use active transportation methods, what do you use it for?

1. Exercise/Recreation
2. Social gatherings or visiting with family/friends
3. Running errands, shopping or doing business
4. Commuting to school or work
5. Do not use active transportation methods at all

In contrast to users, who were least likely to use active transportation for social gathering, non-users indicated that social gathering was the second most popular reason for using active transportation.

If you were to use active transportation methods more, what would you be most inclined to use them for?



63%
Exercise/Recreation

23%
Commuting to work
or school

10%
Running errands/
shopping/ doing business

3%
Other

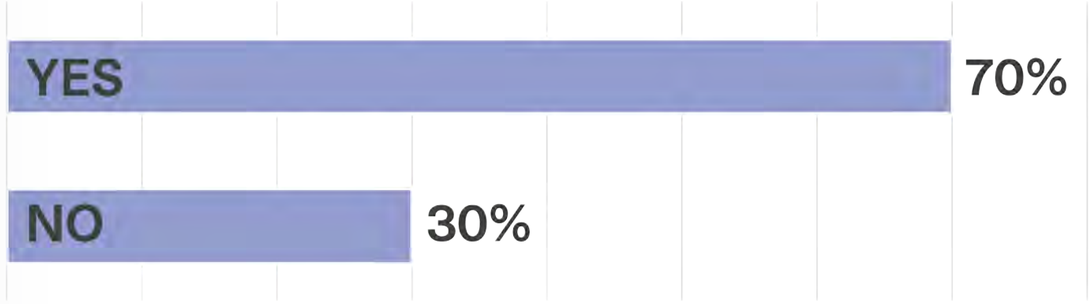
Rank the importance of challenges facing active transportation users

1. Safety
2. Connectivity of the network
3. Lack of active transportation infrastructure
4. Weather conditions
5. Lack of users / active transport culture

What is preventing you from regularly using active transportation?

- **24%** — Sidewalks that are disconnected from each other, are too narrow, and/or not separated from traffic
- **11%** — Not enough crosswalks
- **24%** — Bike lanes that are disconnected from each other, are too narrow, and/or not separated from traffic
- **17%** — Not enough bike lanes
- **13%** — Not enough sidewalks
- **11%** — Poor weather

Would you consider changing your transportation habits to incorporate more active transportation in your daily life if the City addressed the difficulties you mentioned above?



Please explain why you would not consider changing your transportation habits to incorporate more active transportation in your daily life if the City addressed the difficulties you mentioned above.

> *"We are in our 80's and not very mobile."*

> *"Time constraints and distance needed to travel. As well, when walking or biking to appointments I would take into consideration my attire and personal hygiene."*

> *"City doesn't provide e-bikes for rent like Montreal."*

> *"Don't have a bike."*

> *"Widen the sidewalks and put the cyclists up there."*

Questions for both Users and Non-Users

On which of the above cycling infrastructure options do you feel most comfortable riding a bike?

Multi-use pathway, off-street

Multi-use pathway next to a street

Dedicated cycle lane

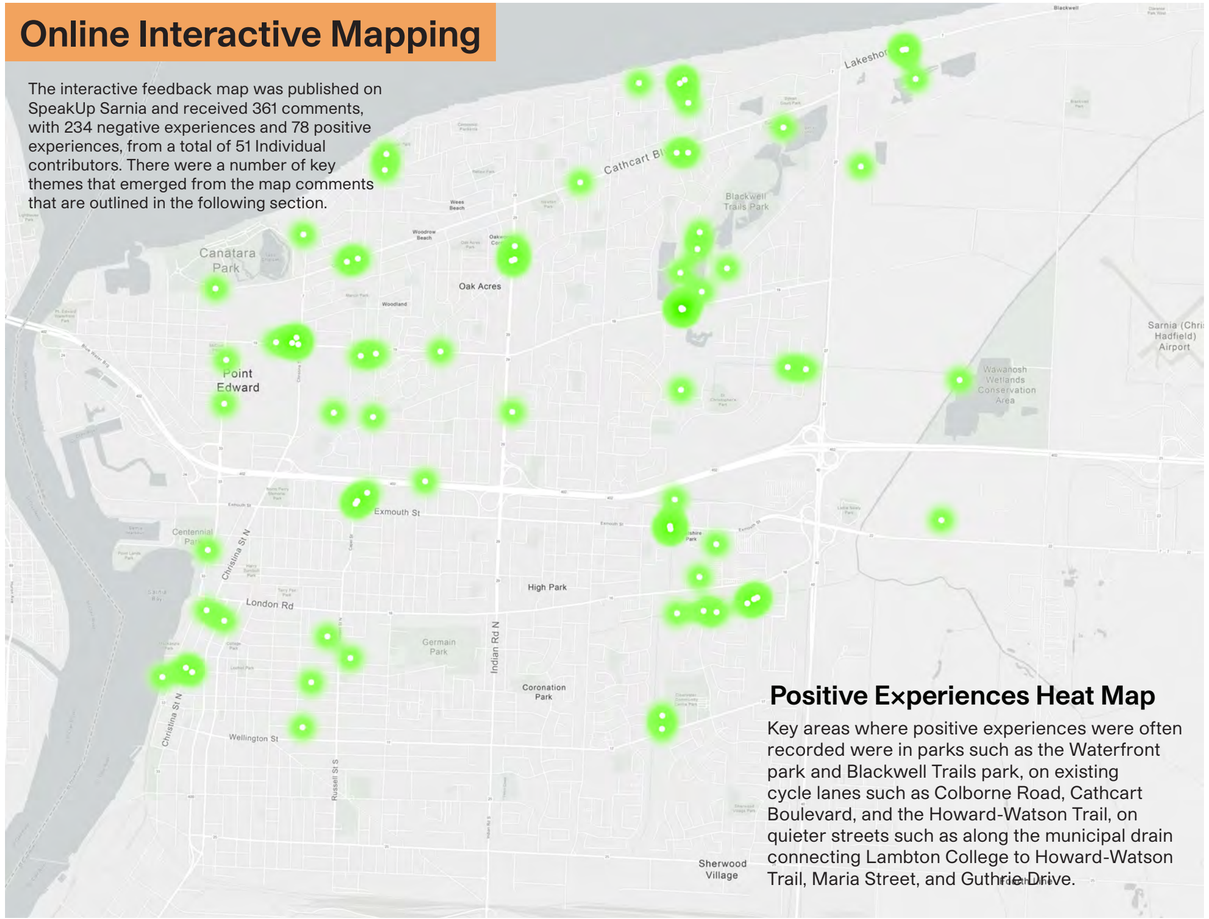
Separated cycle lane with parking lane

Marked cycle lane

Shared street

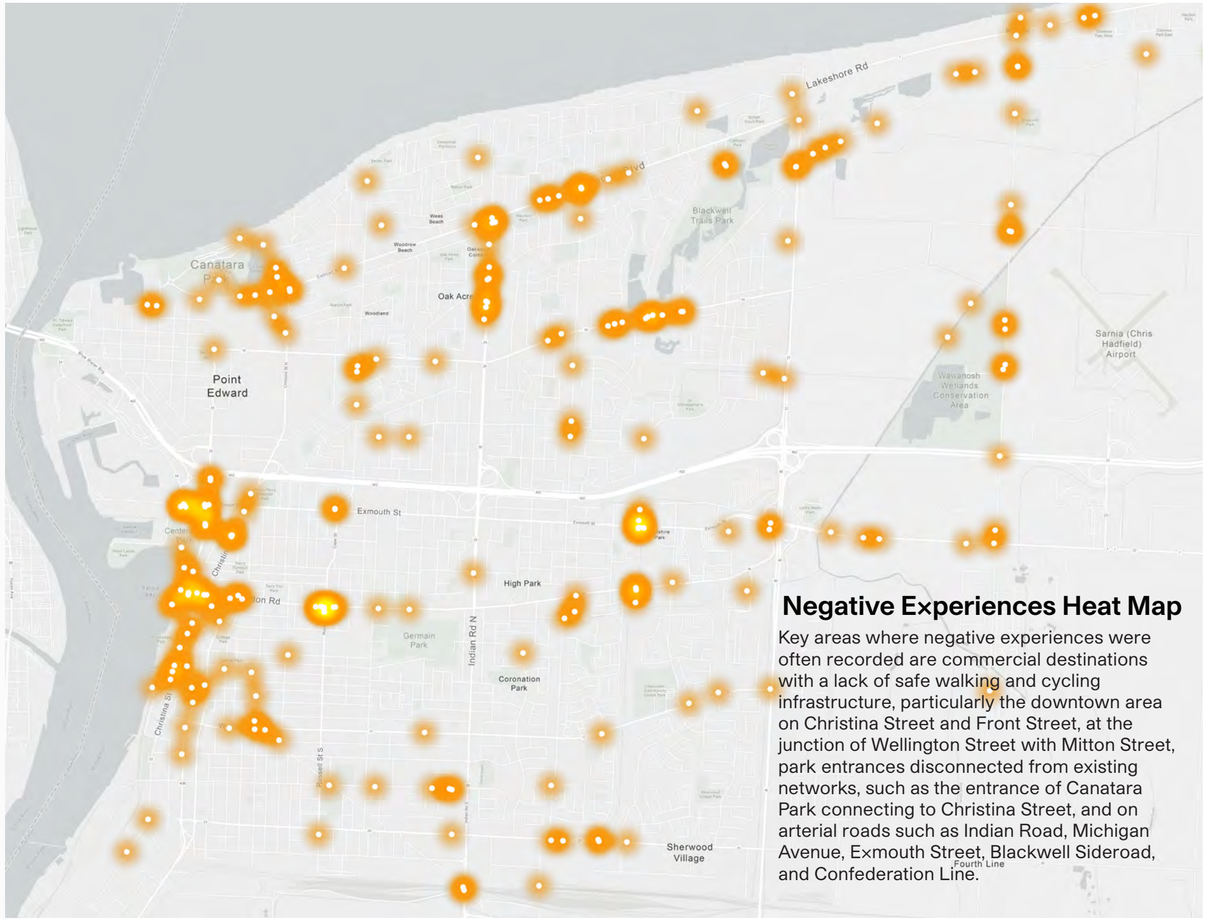
Online Interactive Mapping

The interactive feedback map was published on SpeakUp Sarnia and received 361 comments, with 234 negative experiences and 78 positive experiences, from a total of 51 Individual contributors. There were a number of key themes that emerged from the map comments that are outlined in the following section.



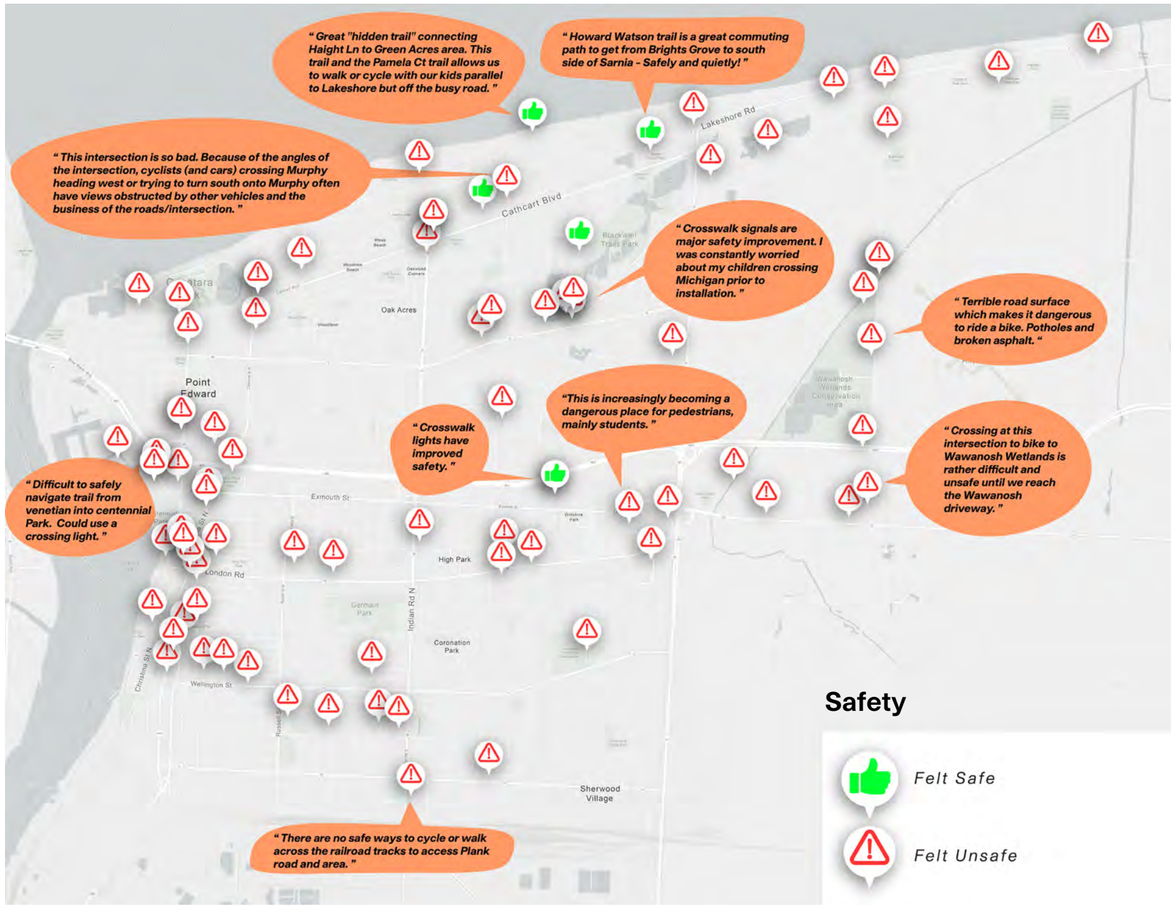
Positive Experiences Heat Map

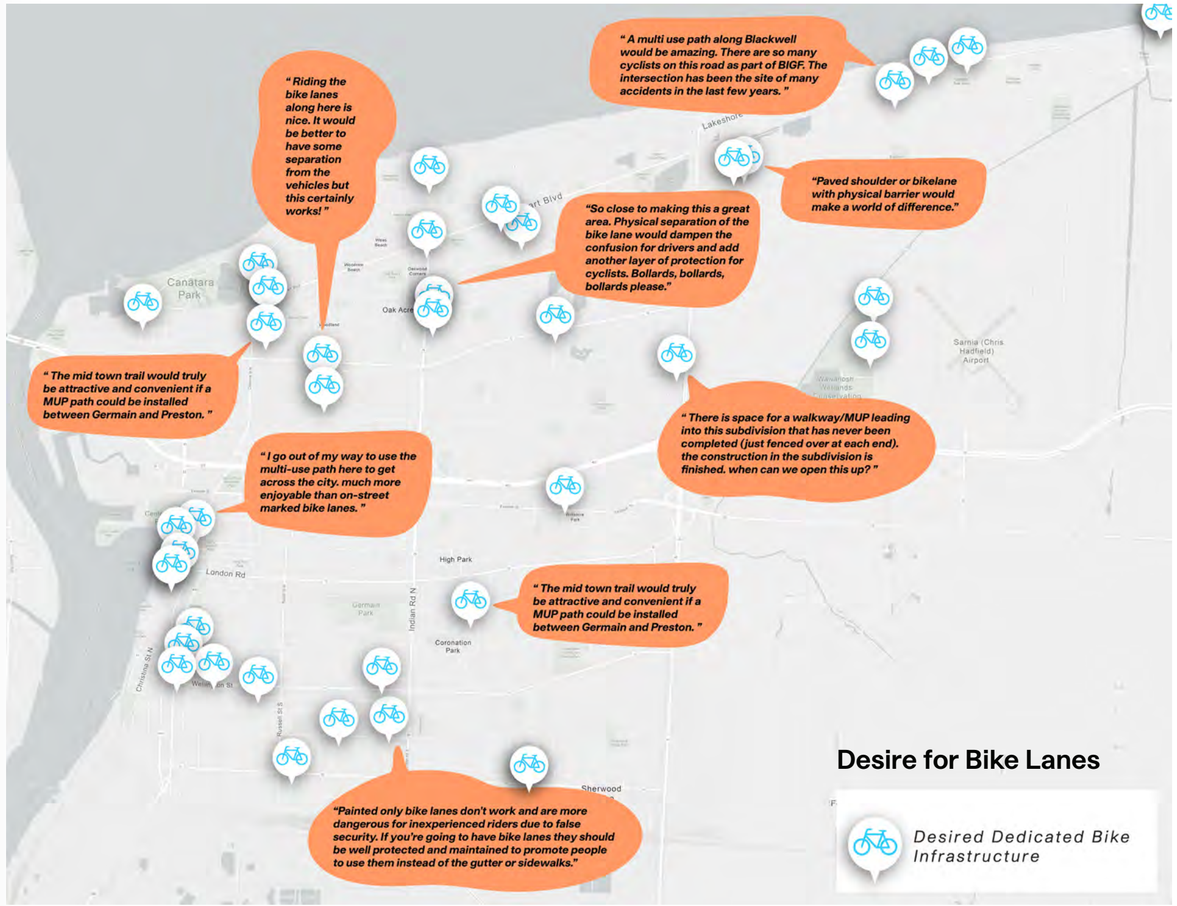
Key areas where positive experiences were often recorded were in parks such as the Waterfront park and Blackwell Trails park, on existing cycle lanes such as Colborne Road, Cathcart Boulevard, and the Howard-Watson Trail, on quieter streets such as along the municipal drain connecting Lambton College to Howard-Watson Trail, Maria Street, and Guthrie Drive.

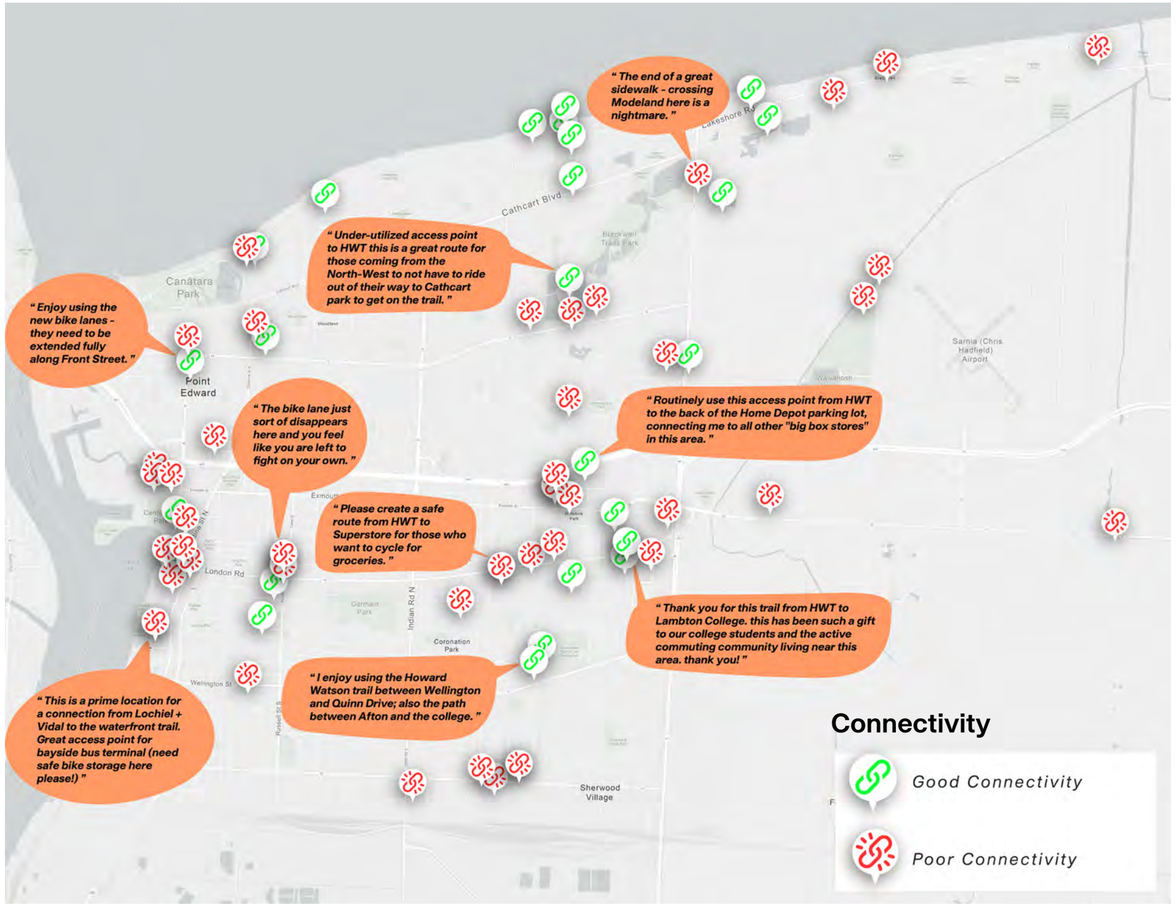


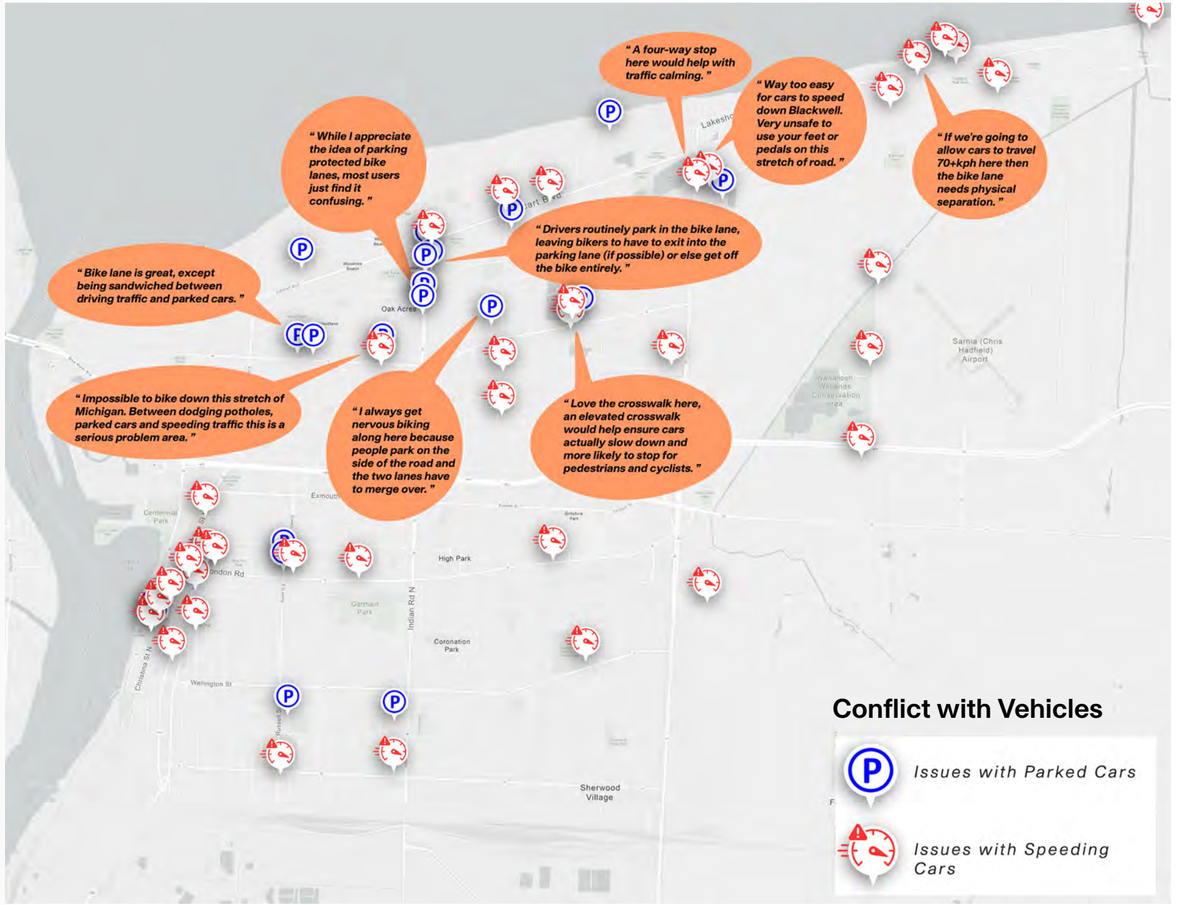
Negative Experiences Heat Map

Key areas where negative experiences were often recorded are commercial destinations with a lack of safe walking and cycling infrastructure, particularly the downtown area on Christina Street and Front Street, at the junction of Wellington Street with Mitton Street, park entrances disconnected from existing networks, such as the entrance of Canatara Park connecting to Christina Street, and on arterial roads such as Indian Road, Michigan Avenue, Exmouth Street, Blackwell Sideroad, and Confederation Line.


" Great "hidden trail" connecting Haight Ln to Green Acres area. This trail and the Pamela Ct trail allows us to walk or cycle with our kids parallel to Lakeshore but off the busy road. "
" Howard Watson trail is a great commuting path to get from Brights Grove to south side of Sarnia - Safely and quietly! "
" This intersection is so bad. Because of the angles of the intersection, cyclists (and cars) crossing Murphy heading west or trying to turn south onto Murphy often have views obstructed by other vehicles and the business of the roads/intersection. "
" Crosswalk signals are major safety improvement. I was constantly worried about my children crossing Michigan prior to installation. "
" Terrible road surface which makes it dangerous to ride a bike. Potholes and broken asphalt. "
" Crosswalk lights have improved safety. "
"This is increasingly becoming a dangerous place for pedestrians, mainly students. "
" Crossing at this intersection to bike to Wawanosh Wetlands is rather difficult and unsafe until we reach the Wawanosh driveway. "
" Difficult to safely navigate trail from venetian into centennial Park. Could use a crossing light. "
" There are no safe ways to cycle or walk across the railroad tracks to access Plank road and area. "
Lakeshore Rd
Cathcart Blvd
Oak Acres
Point Edward
Exmouth St
London Rd
High Park
Indian Rd N
Coronation Park
Wellington St
Sherwood Village
Safety
Felt Safe
Felt Unsafe


" A multi use path along Blackwell would be amazing. There are so many cyclists on this road as part of BIGF. The intersection has been the site of many accidents in the last few years. "
" Riding the bike lanes along here is nice. It would be better to have some separation from the vehicles but this certainly works! "
"Paved shoulder or bikelane with physical barrier would make a world of difference."
"So close to making this a great area. Physical separation of the bike lane would dampen the confusion for drivers and add another layer of protection for cyclists. Bollards, bollards, bollards please."
" The mid town trail would truly be attractive and convenient if a MUP path could be installed between Germain and Preston. "
" There is space for a walkway/MUP leading into this subdivision that has never been completed (just fenced over at each end). the construction in the subdivision is finished. when can we open this up? "
" I go out of my way to use the multi-use path here to get across the city. much more enjoyable than on-street marked bike lanes. "
" The mid town trail would truly be attractive and convenient if a MUP path could be installed between Germain and Preston. "
"Painted only bike lanes don't work and are more dangerous for inexperienced riders due to false security. If you're going to have bike lanes they should be well protected and maintained to promote people to use them instead of the gutter or sidewalks."
Lakeshore
Oak Acres
London Rd
High Park
Indian Rd N
Coronation Park
Sherwood
Sarnia (Chris Hadfield) Airport
Desire for Bike Lanes
Desired Dedicated Bike Infrastructure


" The end of a great sidewalk - crossing Modeland here is a nightmare. "
" Under-utilized access point to HWT this is a great route for those coming from the North-West to not have to ride out of their way to Cathcart park to get on the trail. "
" Enjoy using the new bike lanes - they need to be extended fully along Front Street. "
" The bike lane just sort of disappears here and you feel like you are left to fight on your own. "
" Routinely use this access point from HWT to the back of the Home Depot parking lot, connecting me to all other "big box stores" in this area. "
" Please create a safe route from HWT to Superstore for those who want to cycle for groceries. "
" Thank you for this trail from HWT to Lambton College. this has been such a gift to our college students and the active commuting community living near this area. thank you! "
" This is a prime location for a connection from Lochiel + Vidal to the waterfront trail. Great access point for bayside bus terminal (need safe bike storage here please!) "
" I enjoy using the Howard Watson trail between Wellington and Quinn Drive; also the path between Afton and the college. "
Cathcart Blvd
Canatara Park
Point Edward
Lakeshore Rd
London Rd
Indian Rd N
Wellington St
Coronation Park
Germain Park
Sherwood Village
Sarnia (Chris Hadfield) Airport
Connectivity
Good Connectivity
Poor Connectivity


" A four-way stop here would help with traffic calming. "
" Way too easy for cars to speed down Blackwell. Very unsafe to use your feet or pedals on this stretch of road. "
" If we're going to allow cars to travel 70+kph here then the bike lane needs physical separation. "
" While I appreciate the idea of parking protected bike lanes, most users just find it confusing. "
" Drivers routinely park in the bike lane, leaving bikers to have to exit into the parking lane (if possible) or else get off the bike entirely. "
" Bike lane is great, except being sandwiched between driving traffic and parked cars. "
" Impossible to bike down this stretch of Michigan. Between dodging potholes, parked cars and speeding traffic this is a serious problem area. "
" I always get nervous biking along here because people park on the side of the road and the two lanes have to merge over. "
" Love the crosswalk here, an elevated crosswalk would help ensure cars actually slow down and more likely to stop for pedestrians and cyclists. "
Oak Acres
Exmouth
London Rd
High Park
Indian Rd N
Coronation Park
Wellington St
Sherwood Village
Sarnia (Chris Hadfield) Airport
Conflict with Vehicles
Issues with Parked Cars
Issues with Speeding Cars

Part 2: Public Engagement May 15-16th, 2023

The second part of public engagement reached out to more than 80 residents through various interactive events, such as outdoor pop-ups, an Open House, a session with Great Lakes Secondary School, and cycling and walking tours. The valuable input received from these activities has been summarized in the following section and will be utilized to guide the development of Sarnia's Active Transportation Master Plan.

Outdoor Pop-ups

During the public engagement process, the project team organized outdoor pop-up events at two strategic locations to engage with residents and facilitate discussions on active transportation. The first location was the waterfront trail, a popular destination for pedestrians and cyclists. The second location was at the intersection of the Howard Watson Trail and London Road, providing an opportunity to connect with individuals involved in recreational and commuter travel. These carefully chosen sites allowed us to interact with a diverse range of community members and gather valuable insights and feedback on active transportation initiatives.

At these outdoor pop-ups, our team set up interactive booths where community members could approach our team and share their thoughts, ideas, and concerns regarding active transportation. Our team of enthusiastic representatives was present to facilitate discussions, answer questions, and provide information about the benefits and possibilities of active transportation. The following is a summary of the key points we heard from participants at the sessions:

Waterfront Pathway Pop-up

1. **Accessibility for the Elderly:** Concerns were expressed regarding the need for properly adapted transportation and mobility measures to cater to the growing proportion of elderly individuals who are losing their vision. There was also a stated lack of adequate access to the park for elderly residents in new developments.
2. **Improved Pedestrian and Cyclist Access:** Participants highlighted the need for enhanced pedestrian and cyclist access along the waterfront. They emphasized the importance of creating more pathways and routes to facilitate safe and convenient movement for pedestrians and cyclists.
3. **Increased Amenities:** There was a desire for more restaurants and programmed activities along the waterfront. Participants expressed the need for additional recreational options to enhance the overall experience for residents and visitors.
4. **Downtown Grocery Stores:** It was noted that the downtown area lacks proper grocery stores, indicating the need for improved access to fresh food and essential supplies.
5. **Addressing Cyclist Behavior:** Several complaints were raised regarding cyclists' behavior on the Multi-Use Path (MUP). Participants emphasized the importance of addressing these concerns to ensure a harmonious coexistence between cyclists and pedestrians.
6. **Pedestrianization of Streets:** The idea of pedestrianizing Christina Street for the summer was well-received by participants. They also suggested exploring the pedestrianization of other streets, such as Lochiel, due to their low traffic volume and downtown location.
7. **Security Issues:** Security concerns, particularly at night, were discussed during the pop-up session.

The Howard Watson Trail Pop-up

The Howard Watson Trail Pop-up

1. **Future Trail Modifications:** Participants expressed concerns about the clear cutting of trees for the new roadway under Highway 402. They sought clarification on what would happen and desired a better understanding of the plans for tree replacement or preservation.
2. **Bike Theft and Parking:** Concerns were raised regarding bike theft and the need for adequate bike parking facilities at the stores along London Road. Participants emphasized the importance of addressing these issues to ensure the safety and convenience of cyclists.
3. **Cycling on the Sidewalk:** Many residents expressed their belief that riding along the street on London Road was too dangerous and preferred using the sidewalk for cycling. Safety concerns were a primary factor influencing their choice of riding location.
4. **Desire for More 'Natural' Separated Trails:** Numerous participants expressed their wish for the creation of additional trails similar to the Howard Watson Trail throughout the city. The presence of more trails was seen as an opportunity to enhance active transportation options and encourage outdoor activities.
5. **Safety in the Evening:** Concerns were raised about safety during evening hours due to a lack of adequate lighting. Participants highlighted the need for improved lighting infrastructure to ensure the safety of pedestrians and cyclists during darker hours.
6. **Access from Heritage Park Area:** Two participants residing in the Heritage Park area expressed their dissatisfaction with the lack of a "safe" way to walk or cycle out of their neighborhood. It was stated that the only available option is to walk on the road up Confederation Street.

The Open House

The Open House, held at Pat Stapleton Arena, took place from 6-8pm. With a strong turnout of over 20 guests, the evening commenced with a brief presentation to provide an overview of the Active Transportation Master Plan process and current standing. Following the presentation, the event transitioned to an open format room where attendees could share their thoughts, concerns, and ideas regarding active transportation in the community. The following summarizes the valuable insights and discussions taking place at the Open House:

1. **Representation for Non-Users:** Participants stressed the need for increased representation from individuals who do not bike or actively engage in active transportation. This would help identify the barriers they face and ensure a comprehensive understanding of the community's needs.

2. **Representation in Data:** Concerns were expressed regarding the use of Strava data, as it was considered insufficient to accurately represent the quantity of trips. Participants suggested incorporating counters to provide a more robust analysis. Additionally, participants emphasized the importance of surveying employers to enhance the analysis of commuting trips.

3. Participants pointed out that Strava data alone did not capture the biking habits of lower-income communities, particularly on Exmouth Street and Wellington Street. Additional data collection was recommended to provide a better understanding of usage patterns.

4. **Back-Alleys Connectivity:** Attendees proposed considering back-alleys as potential routes for active transportation, highlighting the need for improved connectivity and alternative pathways.

5. **Long-term and Short-term Bike Parking:** The issue of bike theft and the need for both long-term and short-term bike parking solutions were discussed. A local business owner had already installed mobile lockers for bike parking as a proactive measure.

6. **Michigan Avenue as a Missing Link:** Michigan Avenue was identified as a significant missing link between the east and west, with participants suggesting the removal of space for traffic. However, it was acknowledged that this proposal could be controversial.

7. **Unsafe Corridors:** Several streets were identified as major unsafe corridors with high

cycling activity. Participants raised questions about the possibility of proposing protected bike lanes and infrastructure to address safety concerns on the following roads:

- Murphy Road
- Lakeshore Boulevard
- London Road
- Exmouth Street
- Wellington Street

8. **Permanent Bicycle Counters:** Attendees suggested the installation of permanent bicycle counters in the city, visible to motorists, to provide accurate and ongoing counts of cyclists.

9. **Improved Integration with Transit:** Integration between active transportation and transit systems was deemed crucial. Participants suggested equipping all bus routes with bike-carrying bars to facilitate intermodal transit.

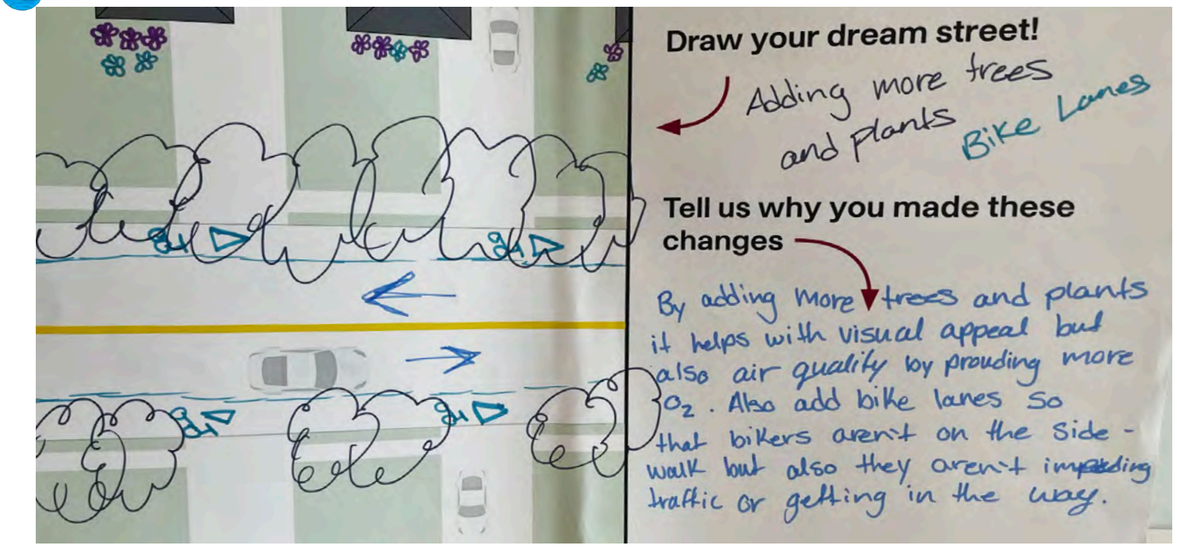
10. **Challenges around North Gate Plaza:** The presence of senior homes and residential areas on the other side of the Colborne Road intersection posed a significant challenge for active transportation planning.

11. **School Routes:** Participants highlighted the importance of considering school bus pick-up locations for children living beyond a 1.6km radius from schools when planning active transportation routes to schools.

12. **Safety at the East Street South and Kathleen Avenue Intersection and Housing Density:** The density of low-income housing on Kathleen Street raised concerns, particularly regarding resident's risks around the East Street South intersection.

13. **Stop Signs and Route Efficiency:** Cyclists expressed the challenge of navigating routes with multiple stop signs, which can slow down travel time. A comparison was made between Mackenzie Street (a signed route) and Russell Street, highlighting the trade-off between quieter streets and slower travel due to stop signs.

14. **Business Cycling Mode Share:** Participants suggested gathering information from businesses to understand the mode share of cycling among employees.



Session with the Great Lakes Secondary School

The high school engagement session sought to raise awareness among students about active transportation planning and gather information on students' favorite streets in Sarnia as well as locations they wished were more accessible via active transportation. The results provided valuable insights into their preferences and desired improvements in the city.

Activity 1: What is your Favourite Street in Sarnia and Why?

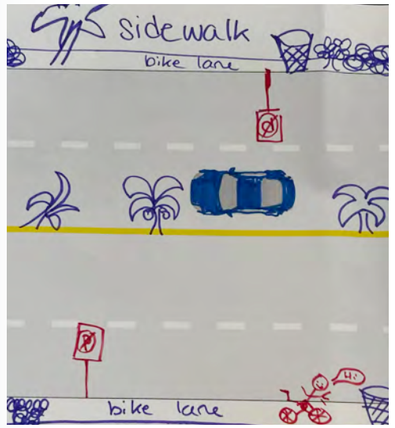
Regarding favourite streets, there were a range of responses. Russel/Capel/Colborne Road emerged as a popular choice among students. Christina Street was also highly favored due to its connectivity to various attractions such as the beach, park, stores, boat racing, concerts, and places to go out. Front Street received praise for its retail stores and scenic views along the river. Lakeshore and St. Clair Parkway were also often mentioned for their appealing aesthetics and pleasant views. Additionally, Canatara Trails and Lake Chipican Drive were cited as favorites.

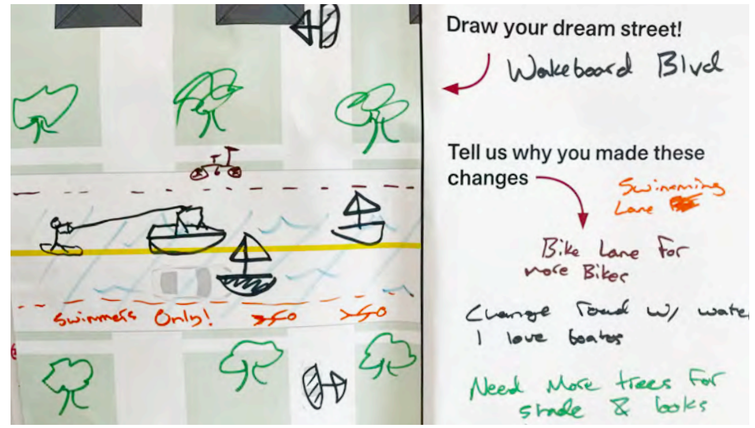
Activity 2: Where do you wish it were easier to travel to?

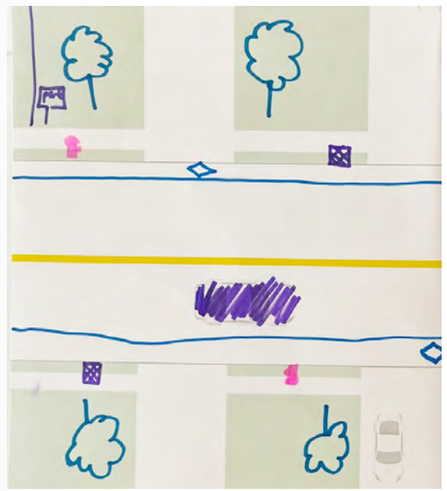
When it came to desired destinations for easier access via active transportation, students expressed a desire for an extensive network of connected trails throughout the city. These trails would facilitate easy access to the beach, water, Walmart, and the mall. Paved trails were suggested to enable additional activities such as rollerblading, scootering, and skateboarding. Canatara Park and the beach were mentioned frequently, with some students expressing difficulty in finding or accessing these areas without using GPS. The mall, the bridge, the downtown, and the Sarnia Golf and Curling Club were also identified as places students wished were more easily reachable.

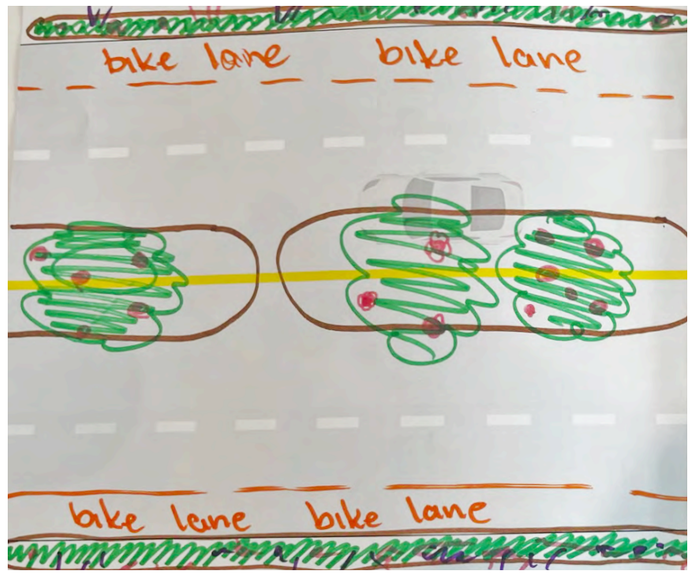
Activity 3: Draw your Dream Street

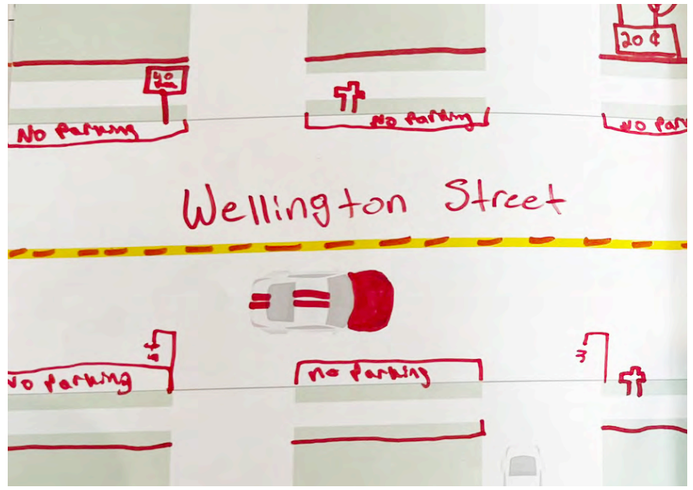
As a final exercise, the students prepared several drawings with the prompt, "Draw your dream street". Many students favored the use of plantings, medians, bike lanes, lighting, and reduction of street parking on larger streets. The safe separation of bike lanes and widened sidewalks were of clear importance throughout many of the drawings.











The Walking and Cycling Tours

The Downtown Walking Tour

1. **Nature and Gardens:** Residents expressed that they enjoy walking along the waterfront because of its trees, gardens, and flowers. They expressed interest in adding more gardens in across the city.
2. **Seating:** Some participants on the walking tour were elderly and noted they had mobility issues. They requested that more benches in the downtown area would be helpful for them.
3. **Community Safety Zones:** Participants noted that they had never noticed the community safety zone signs near London Road Public School, and that better design is needed for the zone and crossing to feel safe.
4. **Residential vs Downtown Walks:** Participants noted that they occassionally walk along the waterfront, but more often they walk in their own residential neighbourhoods. They expressed that they must drive to the downtown area to walk along the waterfront and this is a barrier.
5. **Educational Campaigns:** Participants noted that there should be some educational programs about active transport to get people, especially youth, using it.

Cycling Tour 1

1. **Access to the waterfront:** Accessing the waterfront poses challenges, both along the river and lake areas. The presence of train tracks creates difficulties, particularly in the Front Street area. Limited bike lanes and the absence of bike parking further hinder access. There is a need for improved connectivity and infrastructure, such as designated bike lanes and pedestrian-activated crosswalks.
2. **Canatara Park:** Canatara Park is highly regarded and frequently used for community gatherings and events. However, accessing the park is not without challenges. The intersection of Christina Street and Cathcart Boulevard presents safety concerns and requires potential redesign to facilitate easier access for active transportation users. Additionally, the park lacks proper bike parking, limiting convenience for cyclists.
3. **Lakeshore Road and Indian Road:** Lakeshore Road is considered suitable for cycling due to lower traffic volumes. However, there is a desire for marked bike lanes to enhance safety, particularly for children. Safety around schools remains an issue, as Community Safety Zones are perceived as ineffective. There is a suggestion to explore the concept of school streets, temporarily closing off sections of the road in front of schools to create safer spaces for pedestrians and cyclists.
4. **Intersection Challenges:** Several intersections pose difficulties for cyclists and pedestrians. Confusing signalization, inadequate bike boxes, and lack of curb infrastructure contribute to safety concerns. The need for safer right-turn movements and improved phasing for traffic lights is emphasized. Enhancements such as advanced pedestrian and bike signals are recommended to promote safer crossings at key intersections.
5. **East-west Connections:** East-west connections play a vital role in active transportation. Streets like Maria and George are identified as suitable routes; however, specific dynamics, such as parking regulations and limited wayfinding signage, need to be addressed. Ensuring clear signage and wayfinding along these routes, particularly towards the waterfront, can improve connectivity and accessibility.
6. **Colborne Road Intersection:** The Colborne Road intersection below Highway 402 is acknowledged as an improved but still challenging location for cyclists. The intersection's significance for low-income communities underscores the importance of safe and accessible pedestrian and cycling facilities. The lack of facilities within the adjacent mall limits connectivity for vulnerable users.

Cycling Tour 2

1. **Excitement for Trail Connection:** Residents expressed excitement about the continuation of the trail connection to the west, recognizing it as a positive development for active transportation in the area.
2. **Unsafe Crossings:** Concerns were raised regarding unsafe crossings along Murphy Road, Indian Road, and Russel Street North. Participants highlighted the need for improved infrastructure and measures to enhance pedestrian and cyclist safety at these crossings.
3. **Maria Street Streetscaping:** Participants were open to innovative cycling streetscaping along Maria Street. However, they noted that the street is already considered safe and suggested that funding be allocated to roads that are currently less safe for users.
4. **Bike Parking Concerns:** Bike parking was identified as an area of concern, with participants expressing the need for improved and secure bike parking facilities to address issues such as theft.
5. **Preference for Traffic Stoplights:** Participants expressed a preference for traffic stoplights over flashing crosswalk signals, indicating a stronger preference for the former in terms of safety and efficiency.

Conclusion

This report intended to capture the valuable feedback and insights gathered through various engagement activities focused on active transportation in Sarnia. Through the online survey, outdoor pop-ups, open house, and engagement with high school students, we received a range of perspectives and suggestions that shed light on the community's preferences and desires. These perspectives will all be considered in the preparation of the Active Transportation Master Plan, and have been summarized in this report to be shared with the public and stakeholders alike.

Thanks to all members of the community for participating in these engagement activities and providing their insight and expertise.

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