An Active and Sustainable Transportation Strategy for the New Providence Care Hospital

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EXECUTIVE SUMMARY

INTRODUCTION

The purpose of this report is to provide a comprehensive strategy to promote active and sustainable travel (AST) to and from the new Providence Care Hospital in Kingston, Ontario. The report is intended for use by a range of stakeholders and organizations, including Providence Care, the City of Kingston, and Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health. The strategy is targeted towards employees, visitors, and patients of Providence Care Hospital, and focuses on policies, infrastructure, and programming to encourage the use of active and sustainable travel modes. Some of the recommendations in this strategy extend beyond the immediate context of the hospital, and could benefit the wider Kingston community. Similarly, many of the recommendations are transferable to other large employers in Kingston and the surrounding region, including other Providence Care facilities.

The aims of this strategy are:

- To improve existing conditions for AST to and from the Providence Care Hospital site so that these activities are made more safe, enjoyable, and convenient;
- To encourage the use of AST by employees, patients, and visitors to and from Providence Care Hospital; and
- To improve existing conditions for AST in the wider community through the implementation of policies, programming, and infrastructure at the municipal level.

In order to provide an effective AST strategy, the objectives of this report are:

- To identify existing conditions that act as barriers or facilitators to using AST to and from the Providence Care Hospital site at the scale of the Kingston Provincial Campus (KPC), as well as the wider community;
- To identify successful AST case studies and best practices implemented in Canada and internationally; and
- To provide recommendations and an implementation strategy to improve conditions for AST to and from the Providence Care Hospital site.

BACKGROUND INFORMATION

Defining Active and Sustainable Transportation (AST)

Active transportation is any form of human-powered transportation, and includes modes as diverse as walking, cycling, using a wheelchair, skateboarding, and even skiing or snowshoeing[1]. Active transportation is normally conceived in terms of using an active mode for the entire journey. However, motorized trips, such as those taken by car, can become more 'active' when people park farther away from their destination and use an active mode for the remainder of the distance. Sustainable transportation is any travel mode that benefits users and the community socially, economically, and/or environmentally; which encompasses active modes. Sometimes active transportation is not feasible for certain trips, however, these trips can often be made in a more sustainable manner than with a private automobile. For this reason, this strategy includes sustainable trips, such as those taken by public transit or by carpooling.

This strategy recognizes that, due to various constraints, AST is not always a convenient or feasible choice for all trips or all individuals. Rather than restricting the use of motor vehicles, this strategy focuses on providing enabling conditions for AST, so that individuals who wish to engage in AST, or have no other option, can do so in an enjoyable and safe manner.

Benefits of AST

Promoting and investing in AST produces benefits in terms of health and social well-being, the natural environment, and economics. Many of these benefits accrue to the general public, and not just to people who participate in AST. For example, engaging in active modes like walking or cycling can be an effective way for people to acquire recommended levels of daily physical activity. This results in health benefits for people who engage in these modes, and produces financial savings for the public by reducing strains on the health care system related to physical inactivity. The initial costs associated with implementing AST-supportive infrastructure and programs are generally outweighed by the comprehensive long-term benefits. As such, Canadian municipalities are increasingly recognizing the value of investing in AST, and almost all new transportation plans contain measures to increase AST[2].

Determinants of AST

A number of factors, or determinants, influence an individual's choice of transportation mode. The relative influence of these factors varies from individual to individual, and situation to situation. Understanding why people make the travel choices they do is the first step in developing an effective AST strategy. Determinants of travel choice discussed in this strategy fall into two general categories: the built environment and personal characteristics. Components of the built environment that influence behaviour include large-scale development patterns like density, connectivity, and land-use mix, as well as finer-scale features like the presence or absence of AST-supportive infrastructure. Personal characteristics discussed in this report include gender, mobility level, knowledge and skills, having a driver's licence, and values and habits. Personal characteristics interact with the built environment to produce the travel choice determinants of convenience and perceived safety.

Current Projects and Recent Achievements of AST in Kingston

A number of organizations in Kingston continue to work towards promoting AST such as Cycle Kingston, VRTUCAR (a car share service), and the Kingston Coalition for Active Transportation (KCAT), an organization that advocates for improved cycling infrastructure and the implementation of walking and biking initiatives. Kingston Transit has implemented various programs to improve ridership, such as increased peak service schedules, school and college bus pass programs, and employee transit programs[3]. The municipal leadership has expressed its desire to encourage AST in such documents as the On-Road Bikeway Implementation Plan and the Active Living Charter[4,5]. To achieve this vision, several measures have been implemented in Kingston in recent years to facilitate AST such as sidewalk improvements and cycling lanes.

Sources of Information and Consultation

Information for this strategy was obtained from a variety of sources. The report was guided by Canadian and international case studies, academic literature, government documents, reports from various organizations, and precedents already implemented in other areas of Kingston. The team conducted 14 interviews with 17 individuals, including City of Kingston staff, community members, planning consultants, provincial employees, and representatives from Providence Care. A workshop was conducted with community stakeholders from the wider Portsmouth Community, and an electronic survey was sent out to all Providence Care employees. Qualitative data was also gathered at the site during a number of visits over the project length.

Project Scope

Although this strategy offers comprehensive recommendations, it was developed to increase the use of AST to and from Providence Care Hospital and is targeted towards AST in the context of transportation, and not recreation. Therefore, the strategy does not address recreational uses on the pathways that will surround the future Providence Care Hospital. Due to the time frame of the project, it was not feasible to conduct detailed audits of the site for walkability, bikability, or safety. Although substantial consideration was given to accessibility for individuals of abilities, this project did not review technical requirements under the Accessibility for Ontarians with Disabilities Act (AODA). Finally, costs were not calculated for the recommendations proposed in this report. However, recommendations were chosen with consideration given to feasibility of implementation and the potential for impact.

STRATEGY CONTEXT

Providence Care

Providence Care is a provincial health care provider that operates three facilities within the City of Kingston: St. Mary's of the Lake Hospital, Mental Health Services (MHS), and Providence Manor. Providence Care employs approximately 1,700 people and provides a variety of health care services, including continuing care, mental health services, and physical rehabilitation. In May 2014 construction began on a new hospital facility, known as Providence Care Hospital, which will consolidate services currently offered by St. Mary's of the Lake Hospital and Mental Health Services. Travel to and from this future facility, located south of King Street West at Portsmouth Avenue (see **Figure 1**), is the focus of this strategy.

The redevelopment of Providence Care's facilities is occurring at the same time that planning is underway for the redevelopment of the Kingston Provincial Campus (KPC), a 49 hectare site on which Providence Care Hospital will be located (see **Figure 1)**. A Master Plan and Block Plan, both of which are comprehensive long range plans, have been produced to guide future development of the campus and accommodate the needs of Providence Care Hospital. These plans indicate that medium and high density residential development is planned for new blocks on the campus, further demonstrating the timeliness of developing and implementing an AST strategy.

Figure 1: The Kingston Provincial Campus (shaded with red) where Mental Health Services will be replaced by the new Providence Care Hospital (Adapted from Google Maps, 2014).

Current Access to Providence Care Mental Health Services

Mental Health Services and the site of the future Providence Care Hospital can be accessed by a number of transportation modes.

Motorists (see **Figure 2**):

- Site is accessed from King Street at Portsmouth Avenue;
- Parking is provided free of charge at MHS and elsewhere on the campus;
- Traffic congestion is common on King Street near the KPC during peak hours;
- Congestion occurs throughout the day at the intersection of King Street, Union Street, and Mowat Avenue, immediately east of the campus.

Figure 2: Illustration of current motorist access to MHS (Adapted from City of Kingston, 2013).

Pedestrians (see **Figure 3**):

- Can access site via newly replaced sidewalk from King Street at Portsmouth Avenue and a path which terminates near King Street and McDonald Avenue;
- An informal pathway at King Street and Mowat Avenue connects the KPC to an adjacent restaurant;
- The Waterfront Trail, which crosses the south end of the KPC, is an indirect route for most residents;
- Lighting around the Waterfront Trail is limited at night;
- Lighting is adequate around MHS building, but findings suggest the isolated location causes some employees to feel unsafe walking to or from their vehicle at night.

Figure 3: Illustration of current pedestrian access to MHS (Adapted from City of Kingston, 2013).

Cyclists (see **Figure 4**):

- Can access site with vehicles from King Street and, less directly, with pedestrians from the Waterfront Trail;
- Findings indicate that, due to traffic congestion, limited presence of cycling lanes, and intersections without designated cycling infrastructure, cyclists feel unsafe navigating the portion of King Street near the KPC;
- One outdoor rack is provided for bicycle storage at MHS, though many employees feel the location is not secure and choose to store their bicycles informally within the building.

Figure 4: Illustration of current cyclist access to MHS (Adapted from City of Kingston, 2013).

Transit Riders (see **Figure 5**):

- No transit route enters the KPC. The closest bus stop to MHS is located on the southwest corner of King Street and Portsmouth Avenue;
- Five standard transit routes provide service on King Street every 15-30 minutes during the daytime, Monday to Saturday, and offer connection to the St. Lawrence College transfer point;
- One express route also serves King Street;
- Service is at reduced frequency for evenings and Sundays;
- There is no service from 11:30 PM to 6:15 AM, which poses a challenge for some shift workers.

Figure 5: Illustration of current transit access to MHS (Adapted from City of Kingston, 2013).

Policy Context

This report contains an overview of relevant provincial and municipal policies. These policies informed the direction of the strategy, outlined support for current and future AST projects, and identified opportunities for improvement.

Best Practice Case Studies

In order to create an effective AST strategy, a case study analysis was conducted by the team prior to developing recommendations. A total of 11 case studies were reviewed, of which six are Canadian and five are international. The analysis included case studies and best practices focused on policy, programming, and infrastructure modifications. Each case study focuses on at least one mode of travel - walking, cycling, transit, and/or carpooling - but does not necessarily provide best practices for all modes discussed in this AST strategy. A summary of the findings of the case study research is shown on the following page, in **Table 1**.

Primary Research Findings

Spatial Analysis

A spatial analysis of the geographic distribution of Providence Care employees was completed by plotting employee postal codes which were provided by Providence Care. This spatial analysis was able to illustrate the percentage of employees who live within a reasonable walking and cycling distance from Providence Care Hospital. According to Larsen *et al.* (2010), individuals who walk to work generally travel two km or less, whereas individuals who cycle may travel up to five km. These measurements were used to create the buffers for the spatial analysis. The findings from this analysis concluded that 76% of employees live further than five km from the hospital, 22% between two and five km, and 4% of employees live within two km. Although people may choose to walk to cycle farther than these distances, the results indicates that active transportation, at least for the full length of the work commute, is not feasible for many employees due to trip distance.

Survey

A 21-question survey was distributed to all Providence Care employees to gather information about their commuting patterns. Over a 25-day period, 264 people completed the survey, giving a response rate of approximately 16%. The survey covered a number of topics, including the personal characteristics of respondents, commuting patterns, willingness to try new modes, and factors that would make walking, cycling, and taking transit more attractive commuting options.

The majority of survey respondents drive to work, both in the summer months (81%) and winter months (87%) (see **Figure 6**). Winter conditions cause commuting patterns to shift, when more employees choose to drive and fewer elect to cycle. This suggests that winter conditions in Kingston are less conducive to cycling than other modes, a finding that was supported by our interviews and workshop.

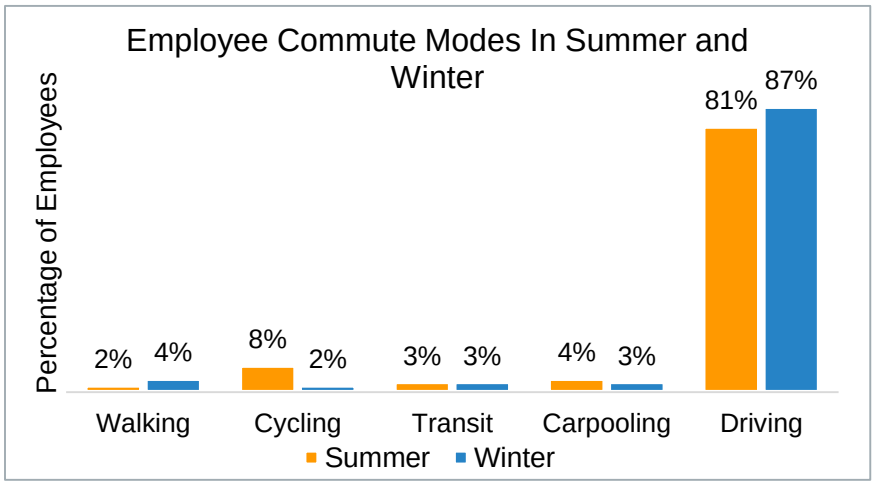

Figure 6: Comparison of Providence Care employee commute modes in the summer and winter months.

Table 1: A summary of the key points from each of the case studies analyzed.

Case Study	Key Points
Manitoba Hydro	• Employee relocation creates an ideal opportunity to change employee commuting habits. • Flexible work schedules make it possible for employees to use alternate modes of transportation.
International Institute for Sustainable Development	• Emergency ride home programs, like taxi vouchers, provide employees with the peace of mind to choose AST. • Subsidized transit passes provide an incentive for employees to switch from driving.
Mount Royal University	• Providing resources like informative websites and bike repair kits makes using AST more convenient. • Providing designated parking spots and a guaranteed ride home in case of emergency makes carpooling an attractive choice of travel.
Active Transportation Network	• Comprehensive and thoughtfully designed active transportation networks connect employees to their workplaces, making active commuting more likely to occur, as well as safer and more enjoyable for users.
Short Street Project	• Reduced parking space availability provides an incentive for people to travel by other modes, and sharing parking with other users reduces the need for large parking lots.
City of Richmond	• Providing education and extensive easily accessible information to both pedestrians and motorists promotes safety and use of walking as an alternative to driving. • Investing in crosswalk infrastructure such as overhead lighting and audible crosswalk signals makes the perception of walking safer thereby encouraging more people to use this form of AST.
Texas Instruments	• Employer car-pooling programs can benefit from making use of regional ride-matching services.
Pacific Northwest National Laboratory	• Online resources for employees can provide information on the benefits of alternative transportation modes, connect carpool participants, and raise awareness about special events and programs. • Employee commuting is an area that employers can demonstrate corporate responsibility by facilitating the reduction of greenhouse gas emissions.
BP	• Ease of access to transit can be improved with the strategic location of bus routes and stops and a free shuttle service to nearby transfer locations. • On-site infrastructure such as paths, changing areas, and showers can encourage more employees to choose cycling.
ST Microelectronics	• Shuttle service between employer location and transit service provides incentive for employees to use AST. • End-of-trip facilities like sheltered and secure bike storage, change rooms, and showers can make cycling a more attractive commuting option.
Lake Region Healthcare	• Sheltered bicycle racks in convenient locations make cycling to work and bicycle maintenance easier.

When respondents were asked if there were incentives that would encourage them to try new modes, the following factors were the top three most popular responses by mode:

Walking

1. Better snow clearance in the winter months
2. A free, guaranteed ride home in case of emergency
3. Safer and/or more road crossings

Cycling

1. Improved cycling lanes and pathways
2. Secure and sheltered bicycle parking at work
3. Better snow clearance in the winter months

Taking Transit

1. Direct transit route to and from my workplace
2. Bus stop very close to main work entrance
3. A free, guaranteed ride home in case of emergency

Workshop

A workshop was held in Portsmouth Village with 14 community members. The purpose of this workshop was to record community perspectives on AST within the area surrounding Providence Care Hospital.

Workshop participants identified existing barriers to AST such as unsafe intersections and high traffic speeds and volumes on King Street, insufficient lighting around MHS, inadequate bike storage at MHS, and the long distance between King Street transit stops and the MHS entrance. Facilitators identified by the participants included the scenic Waterfront Trail, the potential for commercial land uses on KPC, and the personal health benefits of AST. Participants also engaged in facilitated discussions regarding best practices for cycling, walking, and public transit. These discussions informed the selection and prioritization of recommendations for the strategy.

Interviews

A total of 14 interviews were conducted with 17 participants that included planning professionals from the City of Kingston and Infrastructure Ontario, a planning consultant for the KPC, representatives of patients and staff at Providence Care, representatives from the Portsmouth District Community Association, and the Kingston Seniors Association. Interview findings provided valuable insight into Kingston AST initiatives, as well as barriers and facilitators for taking AST to the hospital site and in the surrounding area.

Key Challenges

Encouraging the use of AST to Providence Care Hospital involves three key challenges that were identified through our research. These issues require attention and careful thought as they represent crucial factors for the success of the strategy. The three challenges, which will be discussed in detail, are:

1. **Distance from hospital entrance to transit service**. The pathway that will connect the hospital to the nearest transit stop is 740 m long. This distance is inconvenient, especially for those facing mobility challenges.
2. **Implications of introducing paid parking**. The future paid parking system at the hospital presents an opportunity to promote AST. However, Providence Care needs to consider surrounding land uses and fair pricing when planning this system.
3. **Required intersection improvements along King Street**. King Street is the main commuter route for people to access the KPC. Three intersections along King Street have been identified as hazardous for pedestrians and cyclists: Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue.

RECOMMENDATIONS

Based on the primary findings gathered throughout this process, various recommendations were developed for the different modes AST. These recommendations may be policy-oriented, or take the form of new and improved programming or infrastructure. Furthermore, these recommendations vary with respect to the key stakeholder(s) required for their implementation.

General Recommendations

Providence Care

G-1: Establish flexible work hours, as job duties allow, so employees can adjust their start and finish times to suit transportation needs

G-2: Create a comprehensive AST webpage to provide information regarding AST options and services at PCH

G-3: Implement financial awards and incentives for employees who choose AST modes

G-4: Offer a free, guaranteed ride home program for employees who use AST, in case of emergency

G-5: Establish an institution-wide sustainability policy, in which one priority objective is to encourage the use of AST

City of Kingston

G-6: Create an easily-accessible and comprehensive webpage related to AST for use by residents and visitors

Collaborative

G-7: Improve way-finding on a municipal scale for pedestrians, cyclists, and motorists; allowing for adoption on non-municipal land such as KPC

G-8: Maintain AST infrastructure to a high standard, including snow and debris removal and timely repairs

G-9: Create a Transportation Management Association to promote AST

Walking Recommendations

Providence Care

W-1: Create an AST Committee to promote walking

City of Kingston

W-2: Prioritize sidewalk clearance near healthcare facilities to minimize snow and ice as barriers to AST participation

W-3: Widen sidewalks around KPC to improve safety and comfort of pedestrians

W-4: Improve and provide more signalized pedestrian crossings along King Street

W-5: Provide more courtesy crossings near the KPC on streets with slower moving traffic

Collaborative

W-6: Improve quality of walking paths on KPC and surrounding area to create consistent and connected paths

W-7: Implement heated sidewalks to eliminate snow and ice buildup in key areas such as the PCH main entrance and pathway connecting to transit

Bicycling Recommendations

Providence Care

B-1: Establish comprehensive end-of-trip facilities such as short- and long-term parking; showers, change rooms, lockers, and bathrooms; and bicycle maintenance facilities

B-2: Create a bike-to-work club and host awareness activities to provide information to employees about the benefits of cycling

B-3: Implement a bike share program to allow employees to utilize bikes for short trips and to participate in cycling activities and events, without requiring ownership of a bike

City of Kingston

B-4: Implement bike boxes on Portsmouth Avenue at King Street and Johnson Street to make navigating these intersections safer for cyclists

B-5: Increase bike lane presence and improve connectivity of King Street cycling infrastructure

B-6: Paint sharrows on roads where implementing bike lanes is not feasible or necessary

B-7: Introduce traffic calming measures on local streets and along Front Road to ensure posted speed limits are adhered to, making cyclists more comfortable and safe

Transit Recommendations

Providence Care

T-1: Provide Kingston Transit's Employer Transpass Program to allow employees to purchase and renew Kingston transit passes at a discounted rate

City of Kingston

T-2: Upgrade existing bus stops and shelters to improve accessibility and comfort

T-3: Install user-activated heating systems at priority bus shelters to increase comfort for people waiting for the bus

T-4: Install infrastructure and technology to reduce transit delays and trip time

T-5: Enhance and promote Park and Ride facilities

Collaborative

T-6: Provide real-time transit information to enable users to accurately plan their transit trips and minimize time spent outdoors in inclement weather

T-7: Promote Kingston's Rack and Roll program with instruction in workplace AST seminars

T-8: Develop well-connected transit linkages for pedestrians and cyclists to allow people to access transit stops without compromising their safety

Carpooling Recommendations

Providence Care

C-1: Charge a reduced fee for carpool parking spots as an incentive to carpool

C-2: Provide dedicated parking spaces for carpooling employees

Collaborative

C-3: Implement a workplace and/or regional carpooling program to facilitate finding a compatible commuting party

Strategies to Address Key Challenges

Challenge 1: Distance from hospital entrance to transit service

Offer a shuttle from the hospital to King Street

- Providence Care should investigate providing a shuttle service to nearby transit stop locations along King Street and/or at SLC during peak hours

Enhance the walking route from hospital entrance to King Street

Providence Care should collaborate with Infrastructure Ontario to make the following improvements to the walking route:

- Provide a more direct pedestrian route to King Street
- Apply general and walking recommendations made in this strategy to improve the planned pathway
- Install heated sidewalks on the route, with priority being near the hospital entrance
- Improve user experience with interpretive signs

Improve the experience of waiting for transit

- Provide real-time transit information
- Install a passenger activated heating system in the bus shelter at King Street and Portsmouth Avenue

Challenge 2: The implications of introducing paid parking

Providence Care should:

- Provide a flexible parking pass to encourage staff to use AST modes while still having the flexibility to drive when necessary
- Lease excess parking spaces to nearby institutions, if increased AST usage results in unused spaces
- Set employee parking rates to no less than $83/month, given market rates and the cost of Transpass
- Consider a lower than average ($9/day) price for patients and visitors, consistent with patient-centred healthcare
- Lease spaces to long-term visitors at a rate lower than employees

To address potential for PCH employees to find free or less-expensive parking nearby, stakeholders should consider the following:

- The City of Kingston should implement a permit system for nearby residential streets and a pay-by-plate system at Lake Ontario Park, to maintain free access for park users while being able to enforce paid parking for others
- St. Lawrence College should increase their monthly parking rate to be more comparable to other institutions
- The Ontario ministry offices should proactively implement permit parking for their employees

Challenge 3: Required intersection improvements along King Street

Key intersections identified for improvement along King Street include Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue. Recommendations were drawn from the Ontario Traffic Manual to demonstrate improvements which align with the Ontario Ministry of Transportation design guidelines. Detailed recommendations and intersection diagrams are presented in the body of the report.

IMPLEMENTATION

Implementation of this AST strategy will have to be done with consideration of surrounding land uses and relevant stakeholders; therefore, partnerships must be established to improve AST commuting options beyond just the site of the hospital itself. Collaboration between Providence Care, IO, and the several departments within the City of Kingston is necessary. As well, connecting with community stakeholders is critical for gathering widespread support and also means that changes will benefit as many people as possible.

Strategy Implementation Timeline

Tables in Chapter 11 provide a brief overview of all the recommendations presented in this report which are grouped into one of three categories with respect to the timeframe. The three categories are as follows:

Quick Win Recommendations: Recommendations which can be easily implemented in a timely manner and provide an almost immediate benefit at a low financial cost.

Short-term Recommendations: Recommendations to be implemented within the next five years.

Long-term Recommendations: Recommendations which may take over five years to be fully implemented.

DISCUSSION AND CONCLUSION

The goal of this active and sustainable transportation (AST) strategy is to improve conditions for using AST both to and from the new Providence Care Hospital and in the wider community, as well as to encourage employees, patients, and visitors of the new hospital to choose active and sustainable commuting modes. Research was conducted through policy and document analyses, academic research, case study analyses, interviews with planning professionals and community members, and through a community workshop. Three key challenges, or major themes, for creating and implementing a successful AST strategy included key intersection improvements, a comprehensive parking strategy by Providence Care, and the distance from the hospital front doors to the nearby transit stops. Recommendations encompass changes to policies, programs, and infrastructure and are targeted towards Providence Care, the City of Kingston, or multiple stakeholders. There are several recommendations that can be implemented relatively quickly with minimal cost; while other recommendations will require intensive planning and partnerships between stakeholders.

[1] Transport Canada. (2011). *Active transportation in Canada: A resource and planning guide.* Retrieved October 20, 2014 from http://www.tc.gc.ca/media/documents/programs/atge.pdf.

[2] Transport Canada. (2011). *Transportation in Canada 2011: Comprehensive review*. Retrieved October 20, 2014 from http://www.tc.gc.ca/eng/policy/report-aca-anre2011-index-3010.htm.

[3]City of Kingston. (2011). *Kingston Transit redevelopment plan 2011-2015*. Retrieved September 30, 2014 from https://www.cityofkingston.ca/documents/10180/19838/Transit+Redevelopment+Plan/54fd3026-8fc8-4015-abf3-764dbb802f2a

[4] City of Kingston. (2009). *Report to Environment, Infrastructure & Transportation Policies Committee: On-road bikeway implementation plan*. Retrieved November 3, 2014 from http://archive.cityofkingston.ca/pdf/transportation/Cycling_On-RoadBikewayImplementationPlan.pdf

[5] City of Kingston. (n.d.). *Active living charter of the City of Kingston.* Retrieved December 9, 2014 from http://www.kingstongetsactive.ca/wp-content/uploads/2012/08/Active-Living-Charter-Kingston.pdf