Transportation Master Plan

November 2013

Building a Liveable Ottawa 2031

Stage / Étape 2

Transit / Transport en commun
Cycling / Vélo
Roads / Routes
Pedestrian / Piétons
Light Rail / Train léger

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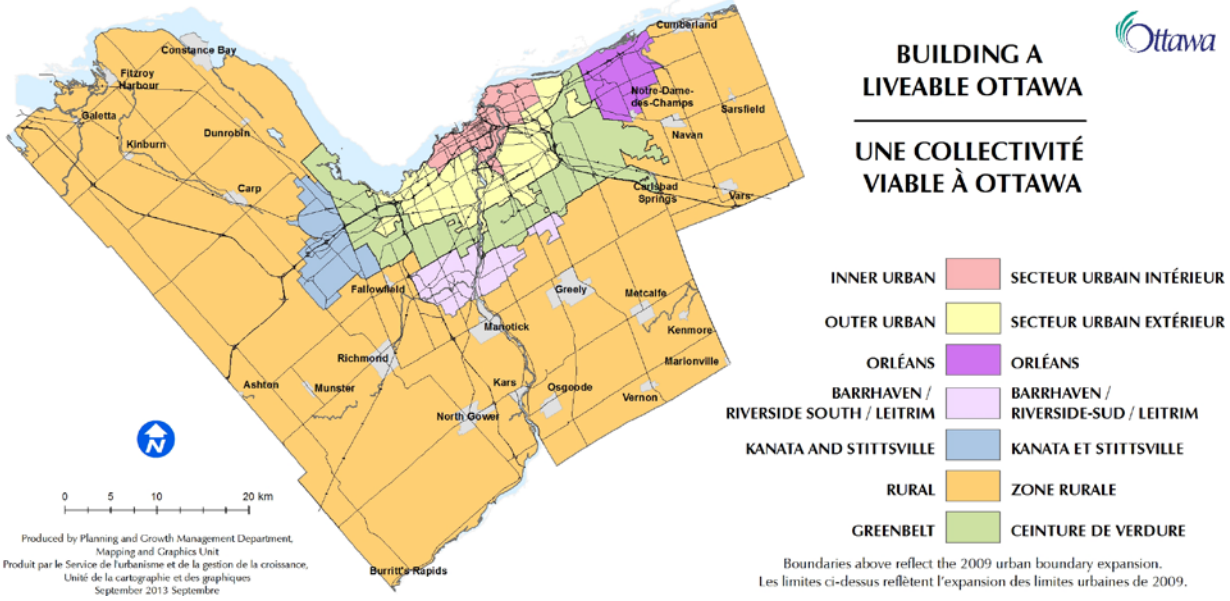
1. Introduction

Building a Liveable Ottawa 2031 has set out a process to guide the completion of a five-year update of the City's Official Plan, Transportation Master Plan, Infrastructure Master Plan, Cycling Plan and Pedestrian Plan. The process supports Council's vision of a sustainable, resilient and liveable Ottawa. It incorporates the City's goals for economic prosperity, environmental and social well-being, vibrant culture and identity. Transportation is essential to meet these goals because it both accommodates and helps shape growth.

The 2013 Transportation Master Plan (TMP) builds on the work of previous plans carried out in 2003 and 2008. It is the City's blueprint for planning, developing and operating its walking, cycling, transit and road networks over the next two decades. Key areas of focus for the current plan include integrating the concept of complete streets, updating modal share targets, advancing strategies to improve walking and cycling, and supporting transit-oriented development. The plan also identifies a number of modifications to road and transit infrastructure priorities to account for adjustments in growth patterns, emerging issues and strategic opportunities. More so than in previous plans, the current TMP places a strong emphasis on the concept of affordability, including prioritizing projects based on financial criteria and fiscal constraints.

Exhibit 1.1 The City of Ottawa



The TMP identifies transportation facilities and services that will meet the needs of residents and businesses, and support the development policies of the City's *Official Plan*. The actions and policies in the TMP will guide day-to-day transportation programs and provide a basis for future capital and operating budgets; they will remain flexible over time as Council's intentions and priorities evolve. The intention of the TMP is not to address all the details of Ottawa's highly complex transportation system; rather, where possible, it directs readers to supporting plans and strategies, such as the *Ottawa Pedestrian Plan* and *Ottawa Cycling Plan*, that provide additional information on specific functional or geographic areas.

1.1 What's Inside

Chapter 1: Introduction shows how this TMP supports the City's overall principles for growth management, presents a transportation vision for 2031, explains how this Plan should be interpreted and how it will be updated, and comments on the environmental assessment status of its various components.

Chapter 2: Transportation in Ottawa – Today and Tomorrow gives an overview of today's transportation system and the key trends and factors that influence it, then provides facts and figures on expected future changes in land use and demographics, travel behaviour and transportation system performance.

Chapter 3: Create a Supportive Built Environment addresses how the City will shape land use to support its transportation objectives through planning tools, development around rapid transit stations, and parking management.

Chapter 4: Maximize Walkability identifies the City's approach to expanding its pedestrian network in response to evolving travel patterns, thereby creating more supportive environments for walking, improving pedestrian safety and promoting walking.

Chapter 5: Develop a Great Cycling City discusses how the City will strengthen and expand its cycling facility network, make cycling a part of more multimodal trips, expand supportive parking facilities for bicycles, improve cyclist safety and promote cycling.

Chapter 6: Transform Ottawa's Transit System describes how the City will expand Ottawa's rapid transit and transit priority network and more tightly integrate stations into the urban fabric, in order to attract even higher levels of ridership.

Chapter 7: Provide Safe and Efficient Roads addresses the importance of complete streets, identifies how the road network will expand while making it safer and more efficient to move people and goods, and lastly describes ways that the City will work to reduce the impact of roads and traffic on neighbourhoods and the environment.

Chapter 8: Encourage Sustainable Mobility Choices describes how the City will work to help residents make more sustainable travel choices such as active transportation, transit and carpooling, through measures like incentives, promotion and management of public parking.

Chapter 9: Invest Responsibly identifies the affordability framework of this Plan, the overall implementation costs by mode and phase, the City's approach to reducing asset life cycle costs, and a framework for measuring performance.

Annex A: Infrastructure Projects lists the road, rapid transit and transit priority projects that the City requires to fully implement this Plan.

Annex B: Maps contains eleven maps identifying future transportation infrastructure needs for pedestrians, cycling, transit, and roads.

Annex C: Glossary defines key terms.

1.2 Key Themes for 2013 Update

Early in the *Building a Liveable Ottawa 2031* planning process, the City consulted with residents and key stakeholders about a number of critical issues, and about possible policy directions. Each of the following transportation-related issues led this Plan to contain significant differences from the 2008 TMP:

- *Affordability* – This update will focus on the need to limit growth in automobile use, the use of peak period (rather than peak hour) road capacity to plan future infrastructure, the prioritization of capital projects, the use of best practices in establishing capital project estimates, and limiting future investments to those that are reasonably affordable for the City to fund
- *Safe and efficient transportation infrastructure* – The Plan puts emphasis on road safety for all users, transportation system management tools that maximize people-moving rather than vehicle-moving capacity to make better use of transportation infrastructure, and parking management
- *Sustainable transportation* – The 2013 TMP proposes new targets for travel behaviour (e.g. mode shares), and suggests incentives for changing to sustainable modes, and discusses user-pay approaches
- *Complete streets* – The Plan pursues an integrated approach that provides safety, comfort and convenience for all road users throughout the day and not only during the peak hours
- *Active transportation* – This update focuses on future goals and objectives, principles for facility safety and attractiveness, measuring levels of service, sidewalk requirements, and considerations around different types of cycling facilities
- *Public transit* – The plan refines the rapid transit and transit priority networks, and defines operational performance measures for rapid transit and transit priority corridors
- *Transit-oriented development* – This update outlines the benefits of growth near rapid transit stations, and discusses strategies to encourage and guide transit-oriented development

1.3 Building a Liveable Ottawa 2031

Building a Liveable Ottawa 2031 is the process that the City has followed to complete a five-year update of its *Official Plan*, *Transportation Master Plan*, *Infrastructure Master Plan*, *Ottawa Cycling Plan* and *Ottawa Pedestrian Plan*. The process supports Council's vision of a sustainable, resilient and liveable Ottawa, as expressed through a number of goals in the City's *Strategic Plan*. These goals guide planning and decision-making so that they take into account their long-term impacts on Ottawa's economic prosperity, environment, and social well-being, culture and identity. Exhibit 1.2 identifies some ways in which this Plan directly supports those sustainability goals.

Exhibit 1.2 TMP Support for the Sustainability Goals of the City's *Strategic Plan*

Sustainability Goal	TMP Directions
Health and Quality of Life	
All residents enjoy a high quality of life and contribute to community well-being	• Maximizing transportation options for residents of all ages and abilities • Maximizing access to community services and facilities by walking, cycling and transit • Managing traffic volumes and speeds in residential neighbourhoods • Improving road safety
Economic Prosperity	
Economic prosperity supports local people, community well-being, and ecological health	• Supporting a vibrant downtown by preserving transportation access with a focus on walking, cycling and transit • Helping businesses and institutions remain accessible to clients and patrons, including those from outside Ottawa • Helping employers remain competitive by improving travel choices for commuters • Linking community cores and employment areas with rapid transit • Managing public parking to support local businesses • Enabling the efficient movement of goods and services • Reducing public and private costs by promoting efficient modes of transportation

Exhibit 1.2 TMP Support for the Sustainability Goals of the City's *Strategic Plan*	
Sustainability Goal	**TMP Directions**
Culture and Identity	
Cultural vitality and diversity contribute to the City's strong identity	• Acknowledging the different transportation needs of urban and rural areas • Providing a range of travel options to suit different cultures and lifestyles
Biodiversity and Ecosystem Health	
Ecosystems are healthy, protected and support biodiversity	• Reducing impacts of transportation on air, water and land
Governance and Decision-Making	
Decision-making is open, informed and inclusive	• Monitoring progress toward transportation objectives • Consulting with stakeholders in the implementation of projects and programs • Preserving flexibility in actions and policies to reflect changes in Council's intentions and priorities
Climate Change	
The region adapts to a changing climate	• Maintaining guidelines for infrastructure design and operation that reflect best practices
Energy	
Energy is used efficiently and supplied from green, renewable sources	• Maximizing the use of more energy-efficient modes (walking, cycling, public transit and carpooling) • Converting the core rapid transit network to electric propulsion
Connectivity and Mobility	
Walking, cycling and transit are residents' first choices for transportation	• Providing comprehensive, high-quality facilities and services for walking, cycling and public transit • Using transportation demand management and supply management to make travel by walking, cycling and transit more attractive • Promoting active transportation as a component of healthy lifestyles
Materials and Solid Waste	
Waste is reduced towards zero	• Asset management strategies to minimize life cycle costs will reduce waste from construction, operation and renewal

Exhibit 1.2 TMP Support for the Sustainability Goals of the City's *Strategic Plan*	
Sustainability Goal	**TMP Directions**
Water and Wastewater	
Water resources are cherished, conserved and protected	• Recognizing the importance of water resources when planning infrastructure
Housing	
Housing options are green, healthy and meet the needs of the whole community	• Maximizing travel choice in a range of neighbourhoods to support housing choice and aging in place
Food and Agriculture	
The local food system is sustainable and provides residents with healthy and affordable food	• Acknowledging the link between sustainable transportation and other components of a sustainable lifestyle

1.4 Transportation Vision

Ottawa's 2008 Transportation Master Plan included a transportation vision that expressed how a future transportation system would benefit residents. That vision has been maintained in this TMP with a few minor modifications (see Exhibit 1.3). The transportation vision continues to recognize that transportation is a means to an end—namely, the protection and improvement of quality of life for residents. It is intended to be a lasting expression of critical directions and outcomes—what the City wishes to achieve through transportation, and why. The remainder of the Transportation Master Plan details the when, where and how of specific projects or services that are intended to lead toward the vision.

Exhibit 1.3 Transportation Vision

In 2031, Ottawa's transportation system will enhance our quality of life by supporting social, environmental and economic sustainability in an accountable and responsive manner.

Element	Principles
Elements 1 to 6: Support for social, environmental and economic sustainability	
1. Reduce automobile dependence	• Give priority to public transit in accommodating future travel demand • Make walking and cycling more attractive than driving for short trips • Motivate sustainable travel choices through education, promotion, incentives and disincentives • Encourage shorter trips and travel alternatives like telework
2. Meet mobility needs	• Provide an integrated system of multimodal facilities and services • Aim to provide an acceptable level of service for each mode • Balance mobility and accessibility needs in higher and lower density areas • Balance the needs of public transit customers, pedestrians, cyclists and motor vehicle users when resolving conflicts • Provide barrier-free transportation facilities and services
3. Integrate transportation and land use	• Build communities that are accessible by active transportation • Provide rapid transit and other quality transit services to community cores and employment areas • Foster transit-oriented development in transit nodes and corridors • Support intensification where transit, walking and cycling can be made most attractive • Foster a vibrant downtown by improving transit, walking and cycling access • Recognize the distinct transportation needs of rural communities
4. Protect public health and safety	• Give priority to safety and security when planning, designing and operating transportation systems • Promote safe walking, cycling and driving through education, engineering and enforcement • Support active and healthy living by promoting walking, cycling and transit for daily travel • Minimize the community impacts of truck and automobile traffic • Minimize air pollution from transportation sources
5. Protect the environment	• Minimize the need for new infrastructure through transportation demand management programs • Minimize transportation energy use, greenhouse gas emissions and other impacts on air, water and land • Maximize greening within transportation rights of way

Exhibit 1.3 Transportation Vision

In 2031, Ottawa's transportation system will enhance our quality of life by supporting social, environmental and economic sustainability in an accountable and responsive manner.

Element	Principles
6. Enhance the economy	• Maximize access to businesses and institutions by employees, clients and visitors • Support efficient freight movement to, from and within the City • Respect Council's taxation targets
Elements 7 to 12: Accountability and responsiveness	
7. Deliver cost-effective services	• Make the best possible use of existing facilities before adding new infrastructure • Integrate the consideration of life cycle capital and operating costs into decision-making processes • Support appropriate roles for the private sector in delivering infrastructure and services
8. Measure performance	• Identify transportation performance objectives and indicators • Regularly measure and evaluate performance • Integrate performance evaluation results by adapting transportation plans and strategies
9. Protect the public interest	• Encourage public input and informed decision making by reporting on transportation activities and results and providing opportunities for dialogue • Consult with the public when planning budgets, programs and projects
10. Provide adequate and equitable funding	• Seek and/or establish funding sources that are stable and predictable
11. Cooperate with other governments	• Liaise with provincial and federal governments to align plans and policies, and to attract financial, legislative and regulatory assistance • Work with the National Capital Commission, Ontario Ministry of Transportation, Ministère des transports du Québec, City of Gatineau and other adjacent municipalities to develop balanced solutions
12. Lead by example	• Minimize energy use and environmental impacts of City transportation facilities, fleets, operations and services • Foster walking, cycling and transit use by employees and visitors to City facilities • Forge constructive partnerships with the private sector, institutions and community organizations

Exhibit 1.4 summarizes how Chapters 3 through 9 of this Plan (i.e. those that identify guiding policies and future actions) support the 12 elements of the transportation vision, as expressed the previous exhibit.

Exhibit 1.4 TMP Chapters: Support for the Transportation Vision

Transportation Vision Elements	Strength of Support ●Major •Minor						
	Chapter 3: Create a Supportive Built Environment	Chapter 4: Maximize Walkability	Chapter 5: Develop a Great Cycling City	Chapter 6: Transform Ottawa's Transit System	Chapter 7: Provide Safe and Efficient Roads	Chapter 8: Encourage Sustainable Mobility Choices	Chapter 9: Invest Responsibly
Support for social, environmental and economic sustainability							
1. Reduce automobile dependence	●	●	●	●	•	●	•
2. Meet mobility needs	●	●	●	●	●	●	•
3. Integrate transportation and land use	●	●	•	●	●	•	•
4. Protect public health and safety	•	●	●	•	●	•	•
5. Protect the environment	•	•	•	•	●	•	•
6. Enhance the economy	•	•	•	•	●	●	•
Accountability and responsiveness							
7. Deliver cost-effective services	•	•	•	•	●	●	●
8. Measure performance	•	•	•	•	•	•	●
9. Protect the public interest	•	•	•	•	•	•	●
10. Provide adequate and equitable funding	•	•	•	•	•	•	●
11. Cooperate with other governments	•	•	•	•	●	●	●
12. Lead by example	•	•	•	•	•	●	•

1.5 Interpreting and Updating this Plan

This Plan represents Council's stated intentions, and will guide day-to-day transportation decisions. It will come to life through mechanisms such as:

- Development charge by-law studies and updates, and annual budgets that identify priorities and resources for a range of transportation programs
- Strategies and action plans for individual transportation programs that detail undertakings, timeframes and resource needs
- Environmental assessment processes to obtain provincial or federal consent for projects like rapid transit systems, major roads and bridges
- Community design plans and transit-oriented development plans for areas designated in the *Official Plan*
- Guidelines such as those for design specifications or operational procedures

As time passes, changes in the assumptions behind this Plan's policies and actions—such as the pace, location or magnitude of residential, commercial and institutional development—may require adjustments to the plan and its elements, including the nature and timing of transportation facilities and services. It is important to note that the phasing of infrastructure projects recommended in this Plan is structured by time horizons; however, it is population and employment levels and traveller preferences that determine transportation needs, rather than the simple passage of time. The indicated time horizon must therefore be viewed as approximate and subject to change. Other possible external factors that could influence implementation include changes to the City of Gatineau's land use or transportation systems, changes to provincial or federal transportation facilities, ongoing technological advances, changes in travel behaviour, or changes in national or international circumstances.

The City will update this Plan when it undertakes a review of the *Official Plan*, an event required by the Province within five years of an *Official Plan* or comprehensive amendment coming into effect. In the intervening period, Council decisions on transportation issues will effectively amend, override or elaborate some of the TMP's intentions. For this reason, readers must consider this Plan in conjunction with the record of subsequent Council decisions, in order to fully grasp current City transportation policy at any given point in time.

1.6 Environmental Assessment

Environmental assessment (EA) legislation requires the City to identify and mitigate the impacts of transportation construction projects on all aspects of the environment. All projects identified in the TMP are subject to various EA legislation and processes:

- Ontario Environmental Assessment Act, 1990
- Ontario Regulation 231/08 - Transit Project Assessment Process, 2008
- Municipal Engineers Association Municipal Class Environmental Assessment, October 2000 (Class EA) as amended in 2007, 2011 and 2013
- *Canadian Environmental Assessment Act*, 2012 (CEAA)
- National Capital Commission (NCC) Framework for the Harmonization of EAs, which applies to projects affecting Commission lands and fulfills the requirements of both CEAA and the NCC's Environmental Assessment Policy

Provincial legislation requires roadway modification projects to follow the Class EA process. All major road projects remain subject to a requirement to complete a Class EA or Individual EA if one has not yet been completed. Transit infrastructure is subject to the provisions of O.Reg. 231/08 and, if not considered exempt under this regulation, must follow the Transit Project Assessment Process. A transit project may proceed under the Class EA if the City chooses to use this process and provides required notification to the Ontario Ministry of the Environment. However, any project involving federal land is subject to the requirements of the CEAA.

The update of the TMP has followed the Municipal Class EA Master Plan process thereby fulfilling the requirements of Phases I and II of this EA process for roads, which includes the identification of problems and opportunities, and the selection of preferred solutions. Annex A includes a description of the EA status of the identified road and rapid transit infrastructure projects. The TMP and its background technical reports will become supporting documents for future EA work. Projects that have not completed the EA process will require additional work including public and stakeholder consultation before design and construction can proceed. As discussed in Section 7.7, future EA processes will make reference to a study undertaken jointly by the City and NCC on the cumulative effects of transportation infrastructure on the Greenbelt.

2. Transportation in Ottawa – Today and Tomorrow

2.1 Transportation System Overview

The City. The City of Ottawa is the largest municipality in the National Capital Region (NCR). Urban development covers 10% of its 2,760 square kilometres, while the remainder is rural and contains villages, agricultural lands, woodlands, wetlands and valleylands. Ottawa was home to about 923,000 people in 2011, while the City of Gatineau and its surrounding rural area, across the Ottawa River in the Province of Quebec, were home to 314,500 people. The NCR is the fourth-most populous metropolitan area in Canada after Toronto, Montréal and Vancouver.

Jurisdictional scope. Ottawa's transportation system lies within three government jurisdictions, each of which has specific interests with respect to the planning, design, construction and maintenance of its own facilities. Most of the road, transit and pathway networks are owned and maintained by the City, but major intercity highways (Highways 416, 417 and 7) are the responsibility of the provincial government, and the NCC's roads and multi-use pathways as well as five interprovincial road bridges are under federal jurisdiction. The city is also served by a taxi industry, one international airport, three general aviation airports, two passenger railway stations, an intercity bus terminal, two ferries and a freight rail yard.

Transportation features. The City is responsible for a multimodal transportation system with facilities and services for walking, cycling, public transit, roads and parking:

- About 6,000 kilometres of roads, including 1,400 km of arterials, 4,600 km of collectors, local streets and a freeway
- About 1,890 km of sidewalks and 340 km of on-road bicycle lanes;
- City operated off-street parking lots with 2,824 spaces, and 3,965 paid on-street parking spaces
- 936 standard, articulated and double-decker buses, a Transitway system (with 57 stations, 35.4 km of dedicated busway, 4.5 km of arterial road bus lanes, 12.7 km of freeway shoulder bus lanes, and 14 urban park-and-ride lots with 7,254 parking spaces) and the O-Train rail line (8 km long with five stations)

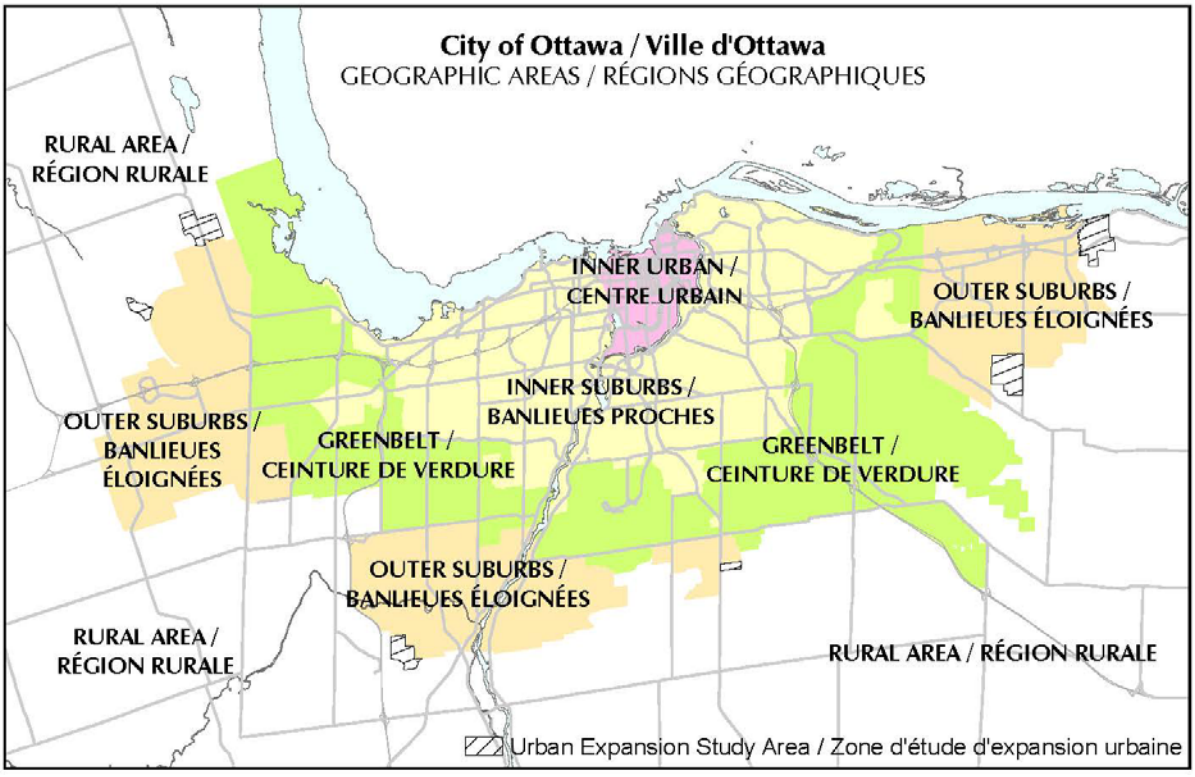
- 89 lift-operated minibuses and 80 contracted taxi vehicles (50 sedans and 30 accessible vans) providing specialized transit service for persons with disabilities

It is worth noting that OC Transpo, Ottawa's transit service, provides some service to and from the City of Gatineau across the Ottawa River, and that the Société de transport de l'Outaouais (STO) as well as other transit services in adjacent Ontario municipalities provide some service to and from Ottawa.

Exhibit 2.1 illustrates some of the key geographic terms used in this chapter, namely:

- *Inner Area* – Ottawa's downtown core and its adjacent neighbourhoods, bounded by the Ottawa River, Rideau River and O-Train line
- *Inner Suburbs* – the remaining urban area inside the Greenbelt, but outside the Inner Area
- *Outer Suburbs* – Ottawa's urban areas lying outside the Greenbelt, including the communities of Kanata/Stittsville, South Nepean, Riverside South/Leitrim, and Orléans

Exhibit 2.1 Location of Inner Area, Inner Suburbs and Outer Suburbs

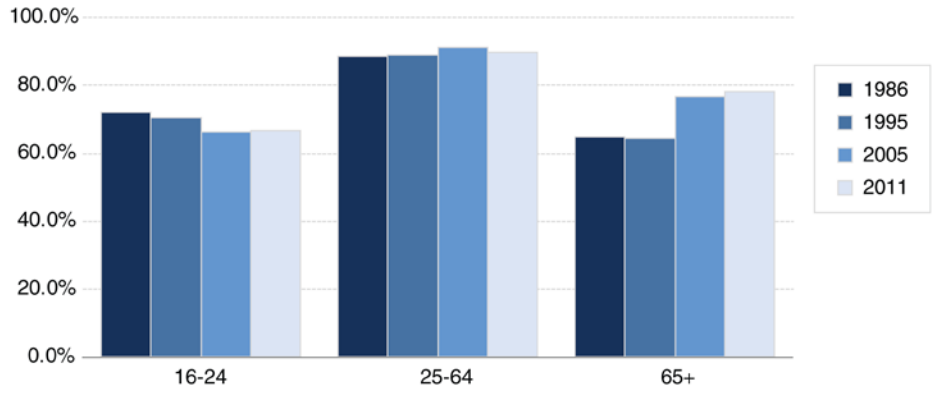


2.2 Key Travel Trends and Influences

Since 1986, four major household travel surveys in the National Capital Region have collected information on residents' daily trips, choice of travel mode, trip origins and destinations, and other information. The latest survey in the fall of 2011 collected data on 153,000 trips from 25,000 households in the region (a 5% sample). These travel surveys help the City understand when, where, why and how National Capital Region residents get around. This section identifies some key trends over the last 25 years.

Personal access to an automobile. Individuals who own a car are far more likely to use it to travel than they are to use another mode. Ottawa residents owned 508,000 vehicles in 2011, up from 482,000 in 2005. However, between 2005 and 2011, the average number of vehicles per household decreased from 1.39 to 1.34, and the proportion of households that owned at least one vehicle decreased from 87% to 84%. Exhibit 2.2 shows that while the overall proportion of residents with a driver's licence has been relatively constant since 1986, the likelihood of having a licence is decreasing among young adults and increasing among seniors.

Exhibit 2.2 Residents Holding a Driver's Licence (% by age)



Travel within suburban communities. Communities that have a good balance between homes, jobs, schools, shopping and recreation typically have high rates of trip internalization—that is, a high proportion of all trips that begin in the community also end there. Exhibit 2.3 shows the rate of trip internalization for suburban communities outside of the Greenbelt in 2005 and 2011 for the AM peak period (6:30–8:59 AM), as

well as the percentage of trips leaving the community and the percentage of those arriving from elsewhere. The data show a marked increase in the rate of trip internalization for all suburban communities, while the rates of trips departing or arriving have decreased. This is indicative of the fact that Ottawa's suburban communities are maturing—they are becoming less reliant on Ottawa's older communities for employment, education, retail service and recreation opportunities.

Exhibit 2.3 Internal, Departing and Arriving Trip Rates (% of all trips to/from the community in the morning peak period)

Community	Trips staying in the community		Trips departing the community		Trips arriving in the community	
	2005	2011	2005	2011	2005	2011
Kanata/Stittsville	36%	42%	37%	36%	28%	22%
South Nepean	25%	36%	61%	51%	14%	13%
Riverside South/Leitrim	5%	26%	68%	52%	27%	22%
Orléans	36%	41%	50%	48%	14%	12%

Trip lengths. Exhibit 2.4 illustrates the number of daily trips of varying lengths that Ottawa residents make using different modes of travel. The average trip lengths are 10.7 km for automobile drivers, 9.1 km for automobile passengers, 13.4 km for transit customers, 5.1 km for cyclists, and 1.3 km for pedestrians. The exhibit shows that many auto driver and passenger trips are shorter than 2 km (which is often cited as a practical distance limit for many walking trips), and that an even more substantial number are shorter than 4 km (i.e. the average length of cycling trips). This confirms that the objective of attracting more pedestrians and cyclists is feasible, assuming that suitable facilities are in place.

Travel by different modes – overall. Ottawa residents' choice of travel mode is one of the most important aspects of travel behaviour. Exhibit 2.5 presents the morning peak period and 24-hour shares of travel using the five main travel modes in Ottawa in 2005 and 2011. During the morning peak period, the sustainable mode share (i.e. walking, cycling, transit and automobile passenger) decreased slightly (from 45.7% to 45.3%) due to declines in walking and automobile passengers. However, on a 24-hour basis the sustainable mode share increased slightly (from 41.5% to 42.1%) due to growing transit and cycling travel.

Exhibit 2.4 Trip Volumes by Length and Mode (2011, morning peak period)

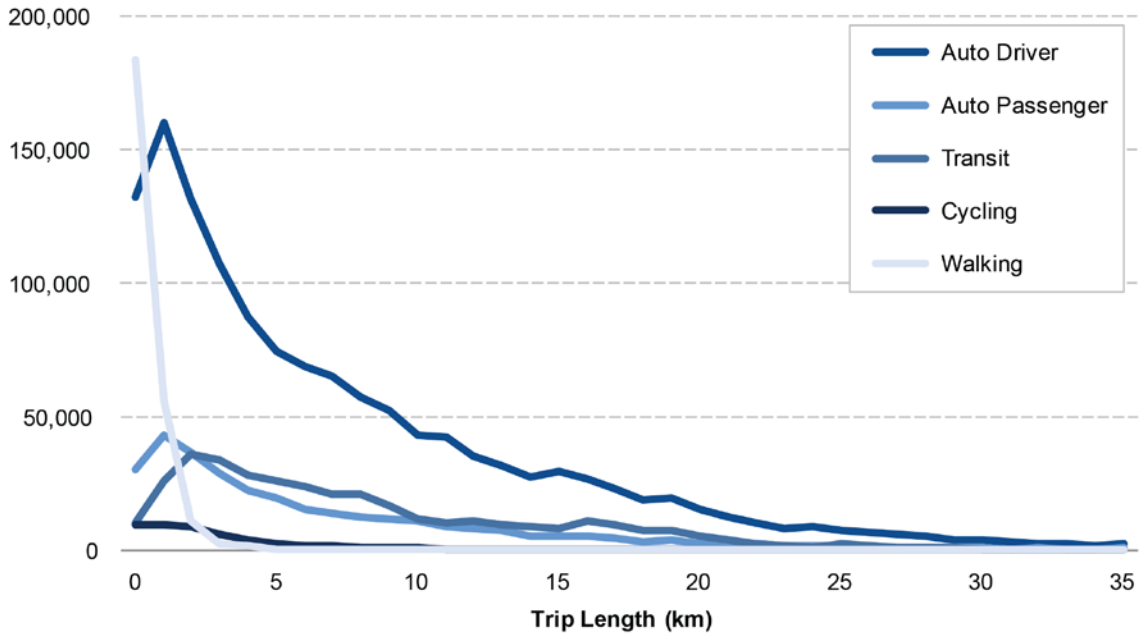
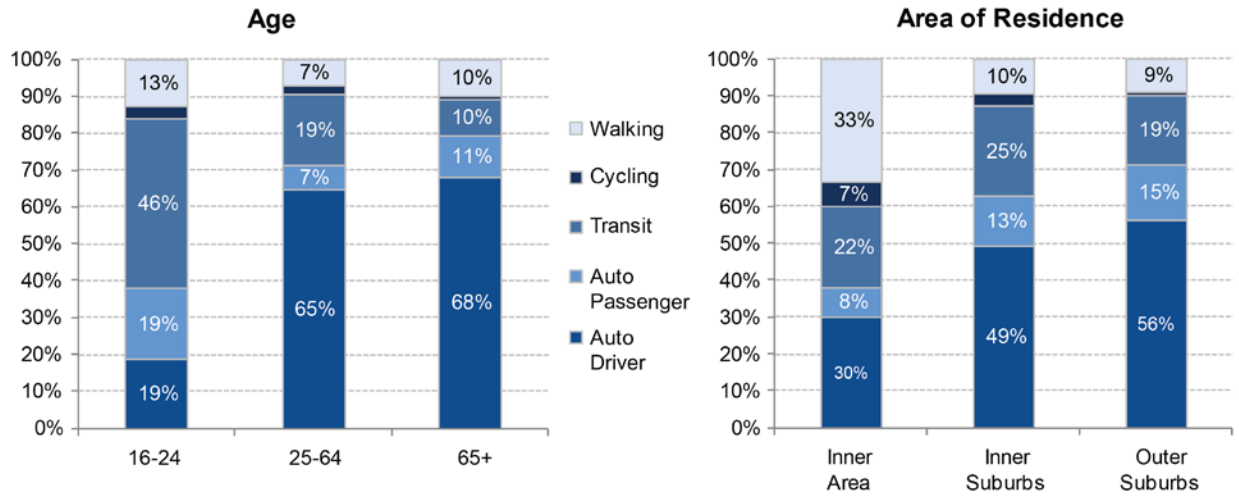


Exhibit 2.5 Mode Shares in 2005 and 2011

Travel mode	Morning peak period		24-hour	
	2005	2011	2005	2011
Walking	9.9%	9.5%	11.4%	11.0%
Cycling	1.9%	2.7%	1.5%	2.0%
Transit	22.4%	22.4%	15.0%	15.5%
Automobile passenger	11.5%	10.7%	13.6%	13.6%
Subtotal	*45.7%*	*45.3%*	*41.5%*	*42.1%*
Automobile driver	54.3%	54.6%	58.6%	57.9%
Total	***100.0%***	***100.0%***	***100.0%***	***100.0%***

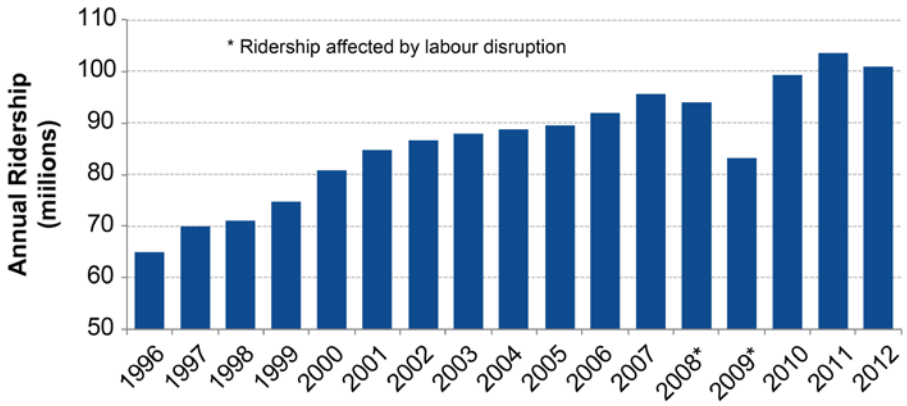
Travel by different modes – by age and area. Exhibit 2.6 shows how mode shares varied by the age and home location of residents in 2011. Younger adults are far less likely than others to drive, possibly because they lack the financial means to own a car, they live in areas where driving is less convenient, or they are more conscious of the environmental impacts of car use. Residents of Ottawa's Inner Area are also much less likely than other residents to travel by car—in fact, they have the same rate of car use (38%) in the morning peak period as young adults aged 16 to 24 across Ottawa.
An interesting note is that residents of Inner Suburbs are more likely to travel by transit than residents of either the Inner Area or the Outer Suburbs.

Exhibit 2.6 Mode Choice by Age and Area of Residence (2011, morning peak period)



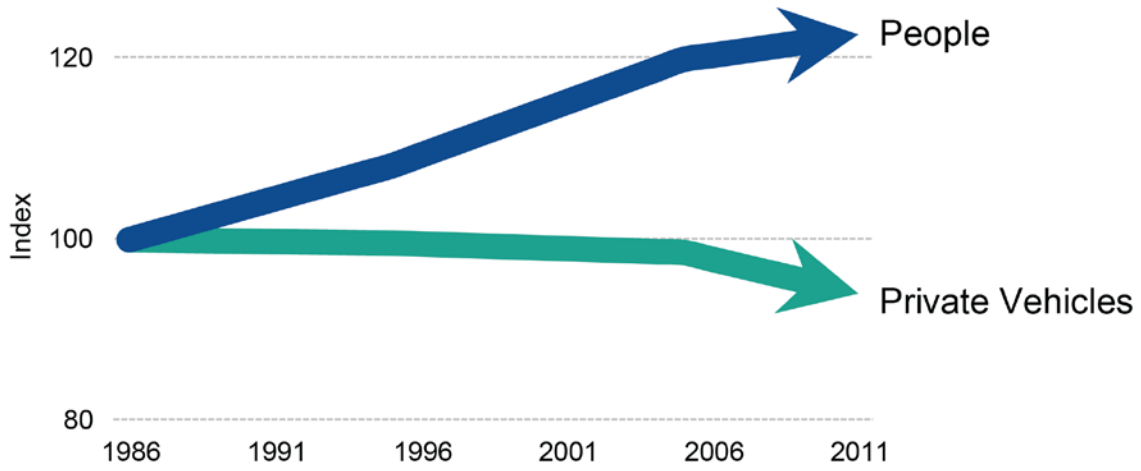
Transit travel. On a typical weekday in 2011, Ottawa residents made 325,000 transit trips, with more than half occurring in the morning and afternoon peak periods (note this figure would be higher if it included Gatineau residents and visitors). The downtown core attracted a significant portion of transit trips because of its high levels of transit service, limited road capacity, and dense concentration of employment. In the morning peak period, about one-third of all transit trips made by Ottawa residents are to the downtown core, and about 50% of all trips arriving downtown are by transit. Except for 2008 and 2009, which were both affected by a labour disruption, transit ridership has increased fairly steadily for more than 15 years (see Exhibit 2.7). In 2012, OC Transpo carried 101 million riders—making its annual average of about 110 rides per capita the highest of any comparably-sized city in North America.

Exhibit 2.7 Annual OC Transpo Ridership



Downtown travel. In 2013, Council approved *Downtown Moves*, an urban design and transportation study of ways to support increasing demand for walking, cycling and transit in the downtown core, and to integrate future light rail stations into the streetscape. This focus on walking, cycling and transit reflects the changing preferences of downtown travellers. Since 1986, the number of cars arriving downtown in the morning peak period has decreased while the number of people arriving downtown has increased (see Exhibit 2.8). For this reason, future planning of the downtown transportation system will focus on improving the capacity and quality of service for people, rather than private vehicles. This goal supports the reallocation of limited rights of way from private vehicles to other uses.

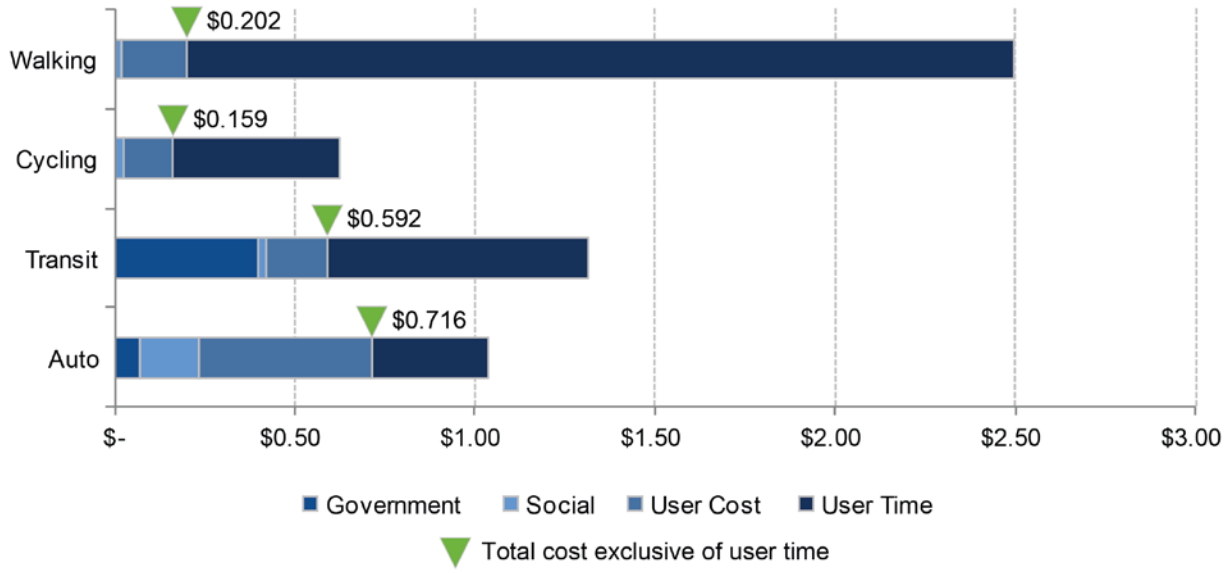
Exhibit 2.8 Trips Entering the Downtown Core (1986-2011, morning peak period, 1986=100)



Walking and cycling travel. Ottawa residents made 296,000 daily walking or cycling trips in 2011, an increase of about 6% from 280,000 in 2005. Most of those trips were made by foot, but the number of daily bicycle trips grew sharply from 30,350 to 43,350 in six years (an increase of 43%). Walking and cycling trips usually cover short distances, with 88% of all trips beginning or ending in the same area of the city. The Inner Area is home to a disproportionate share of walking and cycling, with 44% of all active trips starting and/or ending there.

Cost of travel. A recent update to Ottawa's cost of travel model identified the average cost to carry one person one kilometre by different modes throughout the city (see Exhibit 2.9). It shows that, considering government costs, users' financial costs, and the social costs of collisions and pollution (but excluding the cost of user time), the average cost per person-km is $0.159 for cycling, $0.202 for walking, $0.592 for transit, and $0.716 for cars. Cycling and walking are the most affordable options for moving people if the cost of user time is excluded, and cycling is the cheapest option even if user time is included. For these reasons, and because the affordability of travel is a major concern, it is desirable to minimize growth in automobile use and maximize growth in other modes—particularly walking and cycling, which also offer health benefits. Transit use is also important, because even though it has higher government costs (all levels) than automobile use, it is more affordable for individuals and society as a whole.

Exhibit 2.9 Cost of Travel in Ottawa ($/person-km)

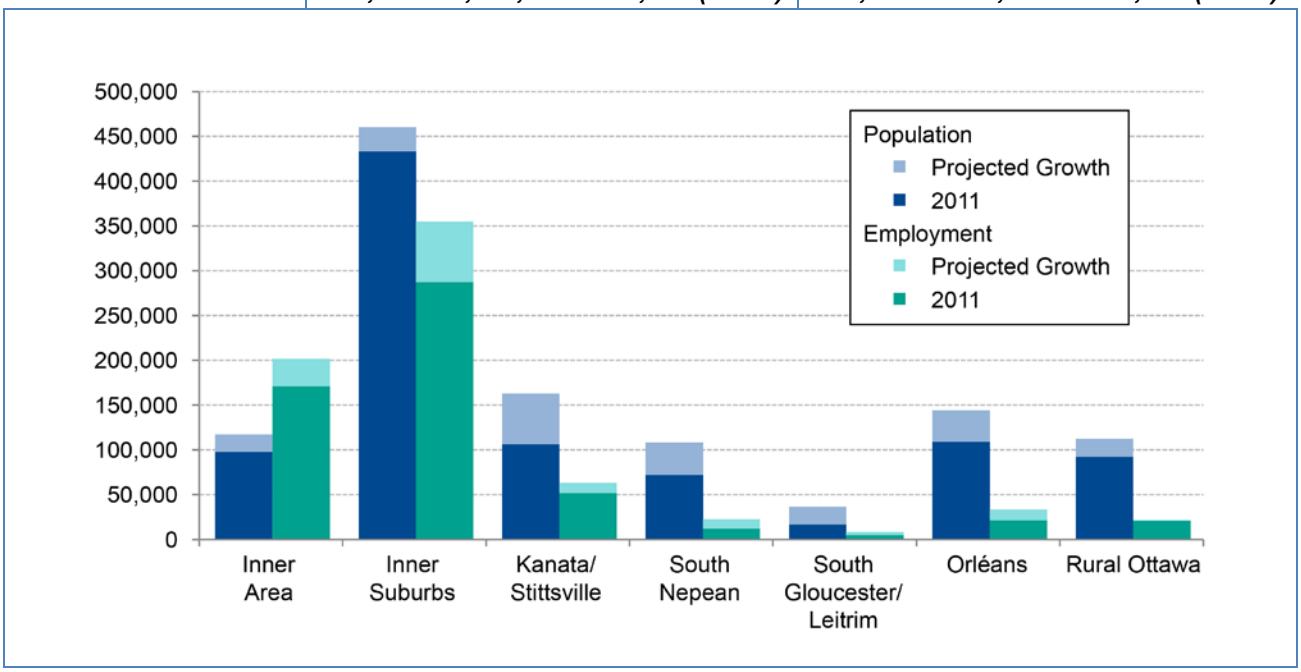


2.3 Population and Employment in 2031

Where growth will occur. The City has prepared population and employment growth projections for the period from 2011 to 2031 (see Exhibit 2.10). The City expects a 23% increase in population from 922,000 to 1.14 million people, and a 24% increase in employment from 565,000 to 703,000 jobs. Although infill development and intensification are forecast to increase the population of Ottawa's Inner Area and Inner Suburbs by about 46,000 people over the next 18 years, most growth (about 168,000 people) will occur in the Outer Suburbs. In contrast, 72% of employment growth will occur inside the Greenbelt.

Exhibit 2.10 Population and Employment: 2011 Actual and 2031 Projections

Area	Population			Employment		
	2011	2031	Growth and distribution	2011	2031	Growth & distribution
Inner Area	97,200	116,400	19,200 (9%)	170,600	201,800	31,200 (23%)
Inner Suburbs	432,500	459,300	26,800 (13%)	287,400	355,300	67,900 (49%)
Kanata/Stittsville	105,200	162,000	56,800 (27%)	51,300	62,500	11,200 (8%)
Barrhaven	71,200	107,400	36,200 (17%)	11,100	21,800	10,700 (8%)
Riverside South/Leitrim	15,900	35,800	19,900 (9%)	4,000	7,800	3,800 (3%)
Orléans	108,200	143,400	35,200 (16%)	20,600	33,000	12,400 (9%)
Rural Ottawa	91,400	111,700	20,300 (9%)	20,000	20,900	900 (1%)
Total	***922,000***	***1,135,900***	***213,900 (100%)***	***564,900***	***703,200***	***138,100 (100%)***



2.4 Travel Demand in 2031

The projections in this section were made using a transportation demand model that estimates how future residents of Ottawa will travel in the morning peak period on a typical weekday, given projected changes in land use, population, employment, transportation infrastructure, transit fares and service levels, and fuel and parking costs. These modelling results help the City identify how to meet the needs of pedestrians, cyclists, transit users, automobile drivers and passengers, and commercial vehicles.

Time-shifting of travel within the peak period. Over recent decades in Ottawa and other major cities, travel demand within peak periods (the busiest two- to three-hour periods each weekday morning and afternoon) has slowly become less concentrated within a single peak hour; this phenomenon is referred to as "peak spreading." Conventional transportation planning and design have accommodated a single peak hour of demand, which does not account for unused capacity in the shoulders of the peak, to the extent that it exists. This practice is both costly and inefficient, and this TMP update is based on a desire for a more efficient, "flattened" peak period travel demand in 2031—that is, for a level of demand that remains more or less constant throughout the morning peak period (7:00 to 9:30 a.m.). This will lead to planning for fewer new or widened roads than would be warranted to serve a single peak hour of more concentrated demand like the one Ottawa has today, but it will also have the effect of encouraging automobile users to travel at less busy times (i.e. a little earlier or later), thus using the transportation network more efficiently. Transportation Demand Management (TDM) programs such as encouraging flexible work hours will help to facilitate this.

Growth in trips. Exhibit 2.11 illustrates the projected growth in travel demand between key areas of Ottawa from 2011 to 2031. It shows that the Inner Area will continue to attract a decreasing proportion of all trips during the morning peak period, following the trend of recent decades as Ottawa's suburbs have added jobs as well as population. Exhibit 2.11 also shows significant growth in travel across the Greenbelt from outer suburban communities, particularly Kanata and Stittsville. Several other key observations can be made:

- The greatest growth in trips occur within the Outer Suburbs (35% of all new trips), then trips from the Outer Suburbs to Inner Suburbs (19% of all new trips) and then from the Outer Suburbs to the Inner Area (9% of all trips)
- The focus of new trip origins will be the Outer Suburbs (67% of new trips), followed by the Inner Suburbs (12% of new trips) and Inner Area (7% of new trips)
- The focus of new trip destinations will be the Outer Suburbs (39% of new trips), followed by the Inner Suburbs (32% of new trips) and Inner Area (21% of new trips)

Based on current assumptions, the Outer Suburbs will be the dominant force behind city-wide travel growth between 2011 and 2031. This poses a challenge to the goal of increasing transit, walking and cycling trips because it is more difficult to provide efficient and cost-effective facilities and services for those modes in lower-density suburban environments.

Travel by mode – city-wide. Mode share is the proportion of all trips that people make using a given mode. In Ottawa in 2011, the share of morning peak period travel by sustainable modes (walking, cycling, transit and automobile passenger) was about 45% (9.5% for walking, 2.7% for cycling, 22.4% for transit, 10.7% for automobile passenger). This updated TMP proposes a 2031 target of 50% (10% for walking, 5% for cycling, 26% for transit, 9% for automobile passenger). Exhibit 2.12 illustrates these changes. The implication is that the proportion of all trips made by automobile drivers will decrease from about 55% in 2011 to 50% in 2031. Because the the total number of trips is projected to grow by 32% over the same period, the total number of driving trips will also increase (by 21%).

There are several important notes on the mode share targets:

- *Walking* – The new target (10%) is the same as in the 2008 TMP
- *Cycling* – The new target (5% city-wide, including a sub-target of 8% within the Greenbelt) is a substantial increase over the 2008 TMP of 3%
- *Transit* – The 26% mode share target is equivalent to the target in the 2008 TMP[1]
- *Automobile passenger and automobile driver* – The 9% automobile passenger and 50% automobile driver targets had no direct precedent in the 2008 TMP, although that plan did project that about 61% of morning peak hour travel demand would be

[1] The 2008 TMP used an equivalent target of 30% of trips by motorized modes, which was the same as 26% of trips by all modes.

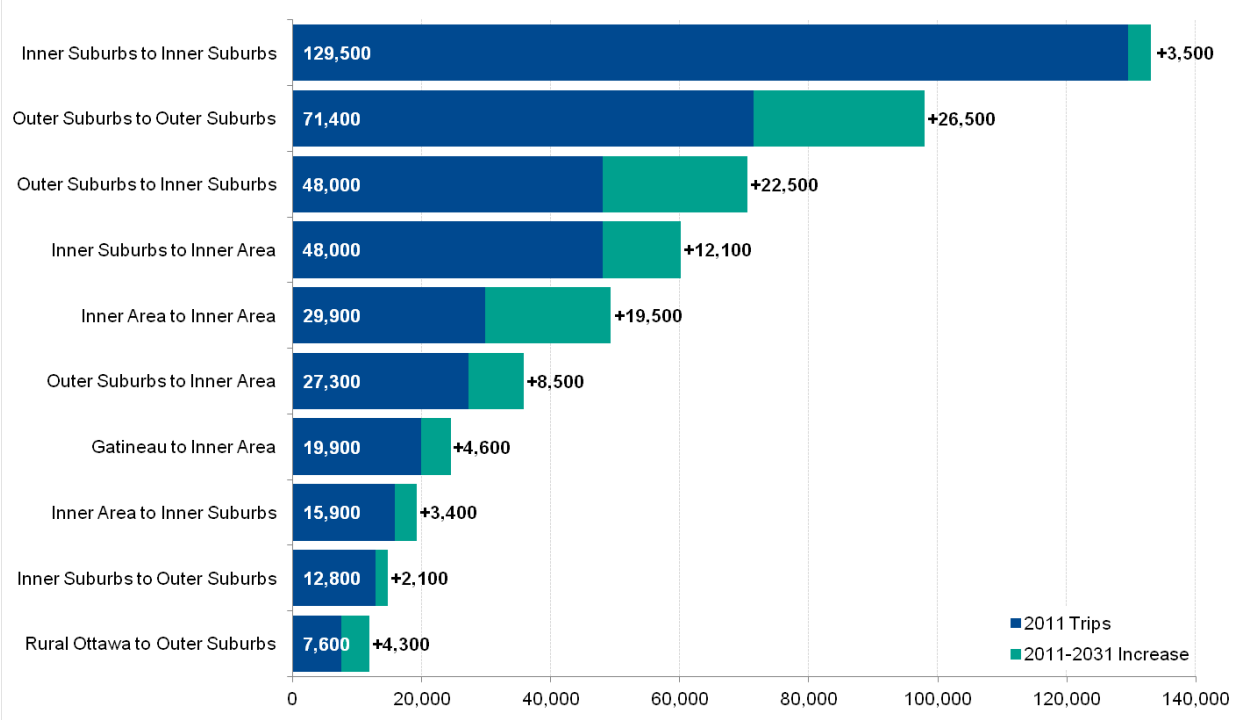
met by automobile (i.e. drivers and passengers, combined). Therefore, the new target represents a more ambitious objective with respect to managing the growth in automobile trips.

- *Seasonality* – The demand for all modes varies from one season to another, and this Plan uses autumn as the baseline for travel demand observations and projections. In the summer, cycling and walking shares rise and transit use drops; in the winter, the reverse is true. Surveys show that 70% of Ottawa's summer cyclists either continue to bicycle in winter (16%) or shift to walking or transit (54%). The aggregation of walking, cycling and transit shares into a single "sustainable mode" target of 50% (versus a 2011 observed level of 45%) is, in part, an attempt to set a target that is relatively independent of season.

Travel by mode – key areas and corridors. The average mode shares shown in Exhibit 2.12 will not apply for trips to and from all areas of Ottawa. The actual transit use in any area will depend on the quality of service, land use densities, and other factors. Some areas will exceed the average, and others will not. Exhibit 2.13 shows how the the overall target transit mode share would vary for trips between different areas in 2031; these diverse transit mode shares will, in total, yield the overall target of 26%. This exhibit clearly highlights the importance of Ottawa's downtown in achieving the overall transit target. With substantial planned improvements to transit service downtown and limited planned increases to road capacity, transit's share of the travel market will continue to increase. High transit ridership to, from and within the inner suburbs is expected to continue.

The share of travel by walking and cycling (with a combined city-wide target of 15%) will also vary across Ottawa. These trips are usually made over shorter distances than automobile and transit trips, so areas of high densities with mixed land uses typically achieve higher mode shares. This is clearly illustrated in Exhibit 2.14, which shows walking and cycling mode shares for internal trips—that is, those that start and end in the same district—in different parts of the city that are consistent with the city-wide targets. It shows, for instance, that the combined walking and cycling mode share in the Inner Area—which includes the downtown core, Centretown, Lowertown, Sandy Hill, and other older neighbourhoods—would be nearly four times higher than in other parts of the city.

Exhibit 2.11 Projected Growth in Key Travel Markets (morning peak period)



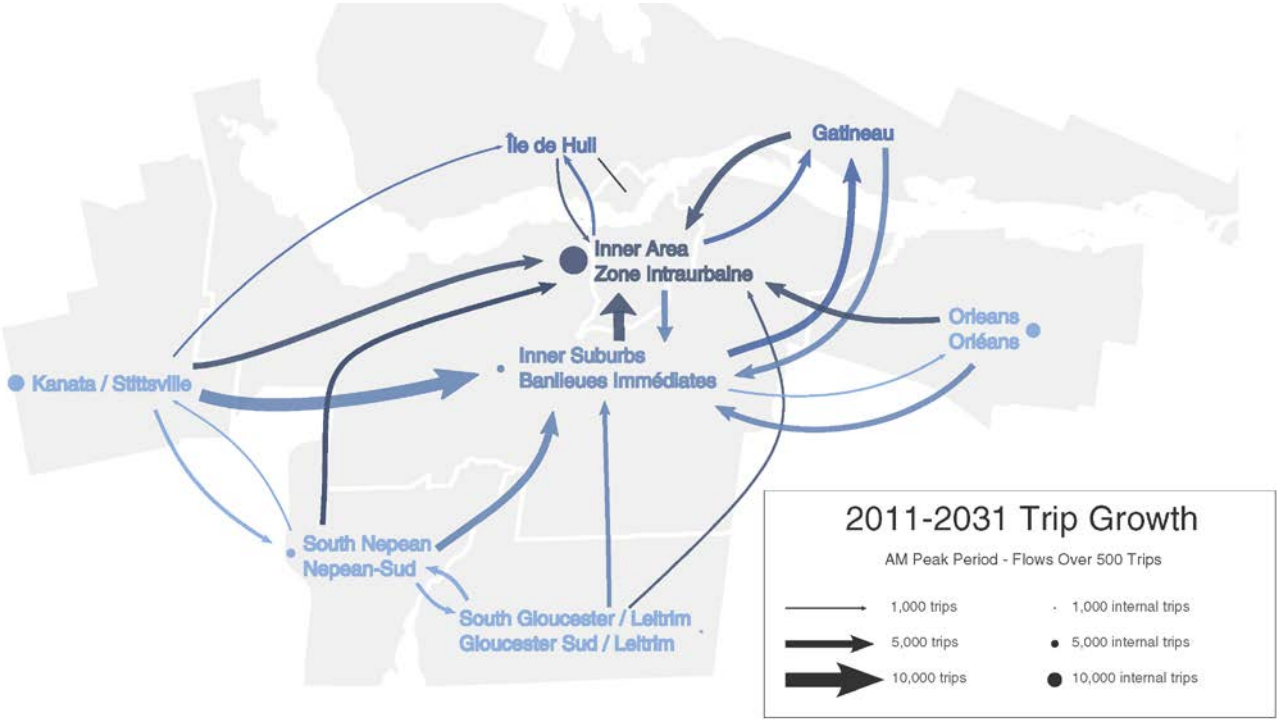


Exhibit 2.12 Mode Shares and Person-trip Volumes: 2011 Observations and 2031 Targets (morning peak period)

Travel mode	Mode share		Person-trips		
	2011	2031	2011	2031	Growth
Walking	9.5%	10.0%	43,200	60,100	39%
Cycling	2.7%	5.0%	12,300	30,100	145%
Transit	22.4%	26.0%	101,900	156,300	53%
Automobile passenger	10.7%	9.0%	48,700	54,100	11%
Automobile driver	54.6%	50.0%	248,400	300,500	21%
Total	***100.0%***	***100.0%***	**455,000**	**601,000**	**32%**

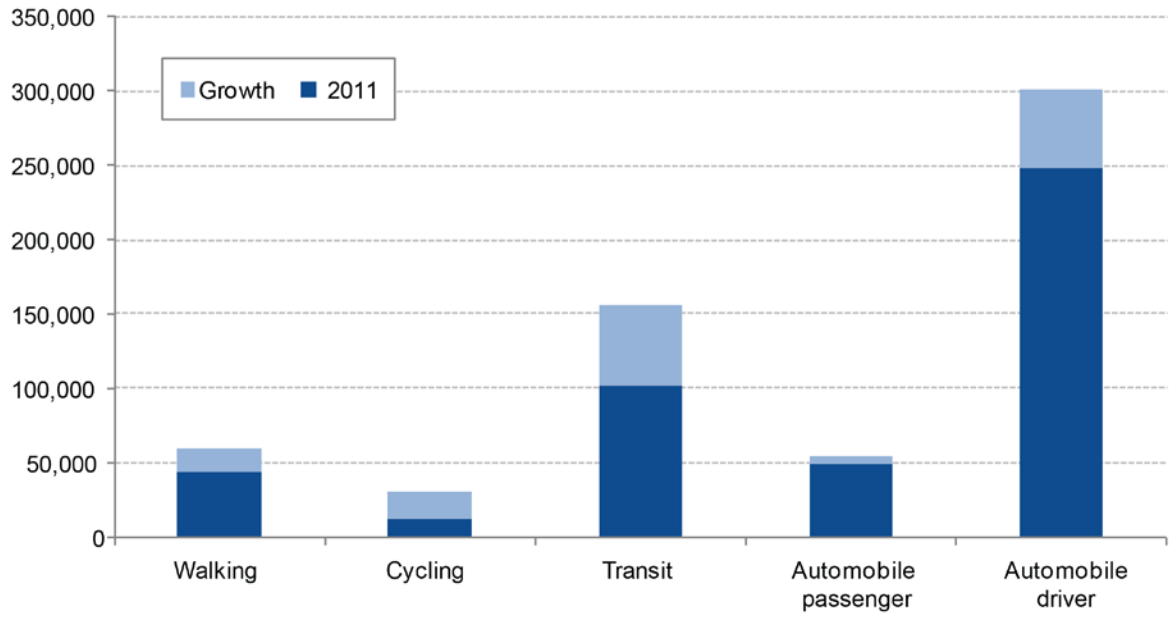


Exhibit 2.13 Transit Mode Shares Within and Between Areas: 2011 Observations and 2031 Targets (morning peak period)

Mode shares for 2011 (top) and 2031 (bottom)									
Trips to / Trips from	Inner Area	Inner Suburbs	Orléans	Riverside South/ Leitrim	Barr-haven	Kanata/ Stittsville	Rural Ottawa	Gatineau	*All areas*
Inner Area	15% 20%	28% 35%	28% 30%	9% 15%	5% 15%	31% 35%	1% 2%	29% 32%	***20%*** ***22%***
Inner Suburbs	49% 54%	16% 22%	12% 16%	5% 18%	8% 12%	13% 15%	1% 2%	30% 33%	***24%*** ***28%***
Orléans	61% 65%	19% 22%	8% 11%	4% 7%	10% 12%	6% 7%	0% 0%	27% 30%	***24%*** ***26%***
Riverside South/Leitrim	36% 40%	7% 16%	0% 2%	0% 10%	0% 10%	0% 5%	0% 2%	0% 13%	***9%*** ***16%***
Barrhaven	62% 70%	16% 20%	5% 7%	0% 5%	5% 10%	1% 6%	0% 2%	53% 55%	***20%*** ***26%***
Kanata/ Stittsville	53% 56%	12% 20%	6% 6%	0% 4%	3% 4%	5% 10%	2% 2%	36% 40%	***15%*** ***21%***
Rural Ottawa	31% 39%	4% 8%	3% 10%	0% 2%	2% 3%	1% 3%	1% 1%	7% 8%	***6%*** ***11%***
Gatineau	47% 50%	13% 14%	0% 7%	0% 3%	0% 5%	3% 7%	0% 1%	-	***32%*** ***33%***
All areas	***42%*** ***44%***	***16%*** ***21%***	***9%*** ***13%***	***2%*** ***9%***	***6%*** ***11%***	***6%*** ***11%***	***1%*** ***2%***	***31%*** ***32%***	***22%*** ***26%***

Exhibit 2.14 Walking and Cycling Mode Shares for Internal Trips: 2011 Observations and 2031 Targets (morning peak period)

Mode	Mode shares for 2011 (top) and 2031 (bottom)					
	Inner Area	Inner Suburbs	Orléans	Riverside South/Leitrim	Barr-haven	Kanata/ Stittsville
Walking	51% 52%	14% 16%	19% 20%	18% 21%	23% 24%	22% 23%
Cycling	8% 12%	3% 6%	2% 3%	0% 3%	2% 4%	1% 4%
Total	***59%*** ***64%***	***17%*** ***22%***	***21%*** ***23%***	***18%*** ***24%***	***25%*** ***28%***	***23%*** ***27%***

Note: The relatively low walking mode share for internal trips within the Inner Suburbs reflects the large size of that district. Division of the Inner Suburbs into smaller sub-areas would yield a higher walking mode share for each.

Travel by automobile – vehicle-kilometres travelled. Vehicle-kilometres travelled (VKT) is one way to measure motor vehicle use in a given time period. It is important because it is directly correlated to personal travel costs, environmental impacts, social costs and public health. Modelling conducted for the TMP update suggests that, on average, Ottawa residents drove 18.6 km/day/person in 2011, and that the mode share targets for 2031 would yield a lower average driving distance of 17.4 km/day/person (a decrease of 6.5%). When this change was considered with future population growth, the model estimated a 16% increase in total daily VKT between 2011 and 2031, from 17.1 million VKT to 19.8 million VKT.

Performance of 2031 Network Concepts and the Affordable Network. Section 6.1 and Section 7.2 identify two versions of future rapid transit, transit priority and road networks for Ottawa in 2031: the 2031 Network Concepts include the infrastructure that achieves the TMP's targets for travel behaviour and level of service for roads and transit; the Affordable Networks include a strategic subset of the 2031 Network Concept that are affordable. Models of the Affordable Networks showed that, in combination, they would achieve similar overall mode shares as the 2031 Network Concept (although with some differences, such as a higher share of automobile drivers to and from the outer suburbs with the Affordable Networks). The main performance difference between the 2031 Network Concept and the Affordable Network is that the Affordable Network would have slower average speeds for automobile and transit travel (10% slower for automobiles, and 3% slower for transit).

Exhibit 2.15 2031 Mode Shares and Person-trips: Network Concept vs. Affordable Network (morning peak period)

Travel mode	Mode share		Person-trips	
	Network Concept	Affordable Network	Network Concept	Affordable Network
Walking	10.3%	10.2%	62,000	61,000
Cycling	5.0%	4.8%	30,000	29,000
Transit	25.6%	24.6%	154,000	148,000
Automobile passenger	11.2%	12.0%	67,000	72,000
Automobile driver	47.9%	48.4%	288,000	291,000
Total	***100.0%***	***100.0%***	***601,000***	***601,000***

Note: The values presented in this table are the results of network simulations. The values presented in Exhibit 2.12 represent mode share targets for 2031.

Environmental performance – greenhouse gas emissions. Transport Canada's Urban Transportation Emissions Calculator (UTEC) was used to estimate Ottawa's greenhouse gas emissions from automobile and transit travel for 2011, and for 2031 with the Affordable Road and Transit Networks. The UTEC model bases forecasts on vehicle-kilometres of travel, an output of Ottawa's TRANS Mode, and incorporates information on vehicle technologies and fuel types. It is a high-level model and therefore does not explicitly account for congestion at the corridor level. The model estimated that per-capita greenhouse gas emissions per person from transportation would decrease by 14%, from 3.6 tonnes/person/year in 2011 to 3.1 tonnes/person/year in 2031. However, population growth over that period would lead overall emissions to rise by 6%, from 3.3 megatonnes/year to 3.5 megatonnes/year. Even when more efficient technologies are assumed, Ottawa's targeted shift from automobile trips to walking, cycling and transit trips will not compensate for the impact of population growth. It should be noted, however, that the UTEC model includes assumptions about future changes in vehicle and fuel technologies; these assumptions are approximate, and faster improvements could yield significant reductions in both per-capita and total emissions.

3. Create a Supportive Built Environment

Chapter Overview	
Recommended actions	
Section 3.1	**Use planning processes to support sustainable choices**
Action 3-1	Enable walking, cycling and transit through community design plans and development review
Action 3-2	Reduce the impacts of surface parking
Section 3.2	**Foster development to support higher-order transit**
Action 3-3	Motivate supportive development around rapid transit stations and transit priority corridors

The *Official Plan* recognizes that land use and transportation systems strongly influence each other, and emphasizes the development of compact, integrated land uses to encourage a shift from automobile travel to walking, cycling and public transit use. Compact communities and mixed land uses are important because they bring trip origins and destinations closer together, thereby reducing trip lengths and making walking and cycling more practical. Higher densities also enable more efficient transit service, and can attract higher ridership without increasing resources. Furthermore, mixing of land uses adds a vibrancy to communities that simply makes it more enjoyable for people to walk (e.g. along main streets and in the urban core and rural villages). As such, the *Official Plan* targets intensification in the Central Area, as well as designated Town Centres, Mixed Use Centres, and Mainstreets where higher densities of population and employment can be well served by transit. These areas receive design priority and are subject to density targets.

Chapters 4, 5 and 6 of this Plan identify key land use outcomes—in other words, the features or characteristics of future development that will support walking, cycling, and transit. This chapter concisely identifies the most important processes and tools the City will use to achieve those outcomes. The *Official Plan* contains more detailed direction on both desirable land use outcomes and processes, and accordingly that detail is not repeated here.

3.1 Use Planning Processes to Support Sustainable Choices

Action 3-1: Enable walking, cycling and transit through community design plans and development review

Community Design Plans. The development of community design plans (CDPs) for villages and urban communities will provide an opportunity for the City to identify important walking and cycling routes, including linkages to greenway systems, neighbouring communities and transit facilities. CDPs will also identify supportive strategies such as streetscape improvement and traffic management measures to limit vehicular speeds and traffic infiltration, and ensure that developments on transit routes face the street and provide frequent pedestrian linkages to the street.

Development review. One of the City's critical roles in the planning process is to review and approve new proposed site and subdivision developments. The review process is an opportunity to ensure that developments conform to various key planning requirements, including:

- The provision of sidewalks, walking and cycling links to public areas, and on-site bicycle parking required by the City's Zoning By-law
- The provision of a road network in developing communities that offers direct and convenient walking and cycling routes, and that enables efficient transit routes to bring all dwellings within a 400-metre walking distance of a bus stop
- Completion of reports, in accordance with the City's *Transportation Impact Assessment Guidelines*, that identify road and parking needs as well as other desirable features such as shower and change facilities for active commuters, and preferential parking spaces for carpoolers
- The possible need for large commercial buildings, institutional developments and hotels to provide taxi stands on-site to avoid disrupting on-street operations

Particularly in locations where the City wishes to emphasize sustainable travel choices (e.g. downtown, main streets, transit oriented development zones and other areas of intensification), the use of established roadway performance measures (e.g. the ratio of volume to capacity for motor vehicles) will be accompanied by new performance measures for transit, walking and cycling as discussed in Section 7.1.

Action 3-2: Reduce the impacts of surface parking

Parking supply and management. Surface parking is an inefficient use of land. It reduces the effective density of developments, it can challenge or complicate safe and convenient walking routes between buildings or from buildings to transit stops, and when oversupplied it can favour car use over transit, walking and cycling. Through the planning and development review process, the City will seek opportunities for shared parking among land uses (e.g. where peak demands occur at different times), and will encourage the private sector to contain parking in multi-level structures rather than on surface lots. It will also periodically review the Zoning By-law to ensure that minimum and maximum parking requirements for new developments (particularly commercial, retail and multi-unit residential uses) support municipal objectives for compact development and more sustainable travel choices; among other provisions, the By-law already reduces minimum parking requirements by 10% where all on-site parking is underground. Furthermore, the City will discourage the temporary use of vacant lands for all-day parking where zoning does not permit such use, especially in areas where redevelopment and intensification is a priority.

In developing and redeveloping sites, emphasis should be placed on minimizing the number of access points in order to maintain continuity of sidewalks, as well as maximize the length of curb space available for public parking, loading and other purposes.

3.2 Foster Development to Support Higher-order Transit

Action 3-3: Motivate supportive development around rapid transit stations and transit priority corridors

Rapid transit stations. Development around rapid transit stations can provide vital support to transit in several ways. First, the City promotes intensification near most stations, as described in the *Official Plan*. It will establish maximum parking limits and reduced minimum parking requirements for developments within an 800-metre walking distance of rapid transit stations. It will also seek to ensure that developments at transit

stations situate the highest densities nearest the station, provide high-quality pedestrian access to and between buildings and through parking areas, do not situate large parking facilities between the street and building, and provide clear and direct access to transit stops and stations for pedestrians and cyclists. Additional detail on these directions is provided in the City's *Transit-Oriented Development Guidelines* that apply to all developments within 600 metres of rapid transit stations.

Transit-oriented development plans. In anticipation of land development pressure near stations along the Confederation Line, Council established priority areas for the creation of transit-oriented development (TOD) plans. At these locations, Council wishes to foster well-designed, compact neighbourhoods where residents can live, work, shop and play close by, complete daily activities easily, access transit, and support local businesses. Primary goals of the TOD plans include improving pedestrian and cycling access to the stations, and providing opportunities for additional development at transit-supportive densities—for example, apartments, office and/or mixed-use buildings may be added to zoning if they are not currently permitted. Permitted building heights may be increased or decreased depending on proximity to the light rail station and to provide transition to surrounding areas. The TOD will result in changes to the Zoning By-law and/or *Official Plan* to enable implementation. The first three TOD studies for land surrounding the future Tremblay, St. Laurent and Cyrville LRT stations were approved in 2012, and three more are in progress for Lees, Hurdman and Blair stations. The City will also support efforts by the federal government in their review of campus locations at Tunney's Pasture and Confederation Heights.

Transit priority corridors. The *Official Plan* promotes modest intensification in the form of mid-rise buildings in most transit priority corridors, having consideration for compatibility, road classification, mix of uses, and opportunities for redevelopment. The City may also apply maximum parking limits and reduced minimum parking requirements for developments within 400 metres of transit priority corridors, as described in the *Official Plan*.

4. Maximize Walkability

Chapter Overview	
Recommended actions	
Action 4-1	Implement the *Ottawa Pedestrian Plan*
Section 4.1	**Build a continuous, well connected pedestrian network**
Action 4-2	Expand the pedestrian network
Section 4.2	**Create a walkable environment**
Action 4-3	Maximize pedestrian level of service in selected areas
Action 4-4	Provide quality design
Action 4-5	Deliver supportive winter maintenance
Section 4.3	**Improve pedestrian safety and promotion**
Action 4-6	Deliver pedestrian safety programs
Action 4-7	Raise awareness and visibility of walking

The popularity of walking is one indicator of a vibrant, sustainable city. Along with cycling, transit and carpooling, walking conserves natural resources and reduces pressure on the road network while improving health, preserving the environment and supporting economic activity. Key factors that can motivate more people to walk include:

- Suitable distances from trip origins to destinations
- Pleasant, direct and barrier-free walking routes
- Convenient connections to public transit, schools, parks and community facilities
- Safe and frequent opportunities to cross major roads and other barriers
- Outdoor spaces, both public and private, designed with personal security in mind
- Adequate maintenance practices for walking facilities, particularly in winter
- Positive individual attitudes towards walking

An updated version of the *Ottawa Pedestrian Plan* was prepared in concert with this Transportation Master Plan, and addresses improvements in all of these key areas. Readers are referred to it for more comprehensive details on how Ottawa will become a truly walkable city.

Action 4-1: Implement the *Ottawa Pedestrian Plan*

Pedestrian Charter. In 2011, the City of Ottawa signed the *International Charter for Walking*. Using that document as a starting point, the updated *Ottawa Pedestrian Plan* includes a customized City of Ottawa Pedestrian Charter establishing the City's vision, goals and objectives for walking. The Charter articulates a commitment to creating a city where people walk because they want to, and it defines a series of guiding principles to create a supportive urban environment.

Strategies. The *Ottawa Pedestrian Plan* contains a number of policies and actions for the City to implement. These elements represent an integrated, multi-disciplinary approach to increasing the safety, convenience and comfort of walking in Ottawa over the next two decades. They address land use, walking network development, street and pedestrian facility design, maintenance, safety programs, information, promotion, stakeholder engagement, interjurisdictional cooperation, and performance measurement. This chapter focuses on three key elements, namely pedestrian network development (Section 4.1), creation and maintenance of a walkable environment (Section 4.2), and walking safety and promotion (Section 4.3).

Targets. Section 2.4 of this Plan sets a 2031 target for morning peak period walking mode share of 10% across the entire city. This objective represents a marginal increase above current levels, and is the same as the target set in the 2008 TMP. Given that new development in the City is expected to occur primarily in suburban areas outside the Greenbelt, and given the lower rates of walking in those areas, maintaining current levels of walking is considered to be reasonably ambitious, and will require improvements in walking facilities and environments across the city.

4.1 Build a Continuous, Well Connected Pedestrian Network

Action 4-2: Expand the pedestrian network

Approaches to expansion. The City will strategically expand its network of pedestrian facilities using three different approaches:

- As part of *new development* through the development review process, representing about 60% of new sidewalks from 2010 to 2012
- As part of *road construction and reconstruction projects*, representing about 30% of recent new sidewalks
- As *retrofit projects* to fill "missing links" in the existing pedestrian network, representing about 10% of recent new sidewalks

The first two approaches are the most cost-effective, have the least community disruption, and lead to the best overall streetscape. The third approach is an important tool for the City to correct network deficiencies, although it is less efficient and may not be able to meet all design standards where physical constraints exist. The City will regularly identify, evaluate and prioritize candidate retrofit projects (using criteria discussed in the updated Ottawa Pedestrian Plan), and implement them as resources permit.

Pedestrian facilities on roads. During its review of development applications and during road construction projects, the City will require the provision of pedestrian facilities on all existing, new and reconstructed roads, as follows:

- On both sides of arterial and collector roads in the urban area and rural villages
- On at least one side of all arterial and collector roads passing through the Greenbelt if deemed appropriate for the urban context
- On both sides of all roads that carry transit service in the urban area and rural villages
- On local roads that lead directly to transit stations and bus stops, schools, public parks, recreation centres, public buildings and institutions, neighbourhood and regional commercial, retail or employment centres
- Within and between neighbourhoods, and from local roads to arterial and collector roads at sufficient intervals to create permeable walkable communities

- Wherever identified by the Ottawa Pedestrian Plan, Secondary Plan or a Community Design Plan

In road corridors where the context is appropriate, a multiuse pathway may be used in lieu of a sidewalk and should be maintained year-round, subject to winter maintenance policies (See Action 4-5).

Pedestrian facilities accessing transit or linking neighbourhoods. The City will require the provision of pedestrian facilities as follows:

- Direct connections to rapid transit stations (see Section 6.2), bus stops and other major walking destinations
- Multi-use pathways in or adjacent to rapid transit corridors where physical constraints allow, constructed as part of rapid transit projects (see Section 6.1)
- Pedestrian crossings of rapid transit corridors, considering the nature of demand and alternative crossing opportunities (see Section 6.1)
- Pedestrian crossings to link neighbourhoods that are separated by roads or other physical barriers, where safety considerations permit

This Plan does not identify a definitive listing of pedestrian facility projects. Rather, Exhibit 4.1 identifies the capital budget envelopes for several different types of pedestrian projects.

Exhibit 4.1 Pedestrian Projects – Capital Costs by Facility Type ($ millions)

Facility type	Phase 1: 2014-2019	Phase 2: 2020-2025	Phase 3: 2026-2031	*Total*
General community links including links in transit-oriented development areas	8.25	9.0	9.0	***26.3***
Multi-use pathway structures[1]	13.0	13.0	14.0	***40.0***
Total	***21.25***	***22.0***	***23.0***	***66.3***

Note:[1] Includes Rideau River Footbridge, Rideau Canal Footbridge and other major structures. All costs are in 2013 dollars.

4.2 Create a Walkable Environment

The creation of a truly walkable environment is an objective that requires attention in many different activities that the City undertakes such as zoning, development review, Community Design Plans, TOD plans, road designs and streetscaping plans. It also requires attention to many different factors including buildings and public spaces as well as transportation infrastructure. This section discusses some of the most important elements of walkability.

Action 4-3: Maximize pedestrian level of service in selected areas

Maximizing level of service. One major barrier to walking is the distance that pedestrians must travel across signalized intersections. Simply providing a pedestrian crossing may not be sufficient to provide an adequate level of service. Multiple traffic lanes (whether for through, left or right turn movements), free-flowing channelized right-turn lanes, and large curb radii that might be required for large trucks but enable motor vehicles to turn at higher speeds—all of these can impact on the achievement of a walkable, pedestrian-friendly environment. Particularly in locations where the City wishes to emphasize walking (e.g. downtown, main streets, mixed use centres, and other areas of intensification), the use of double left-turn lanes, three or more straight through lanes, separate right-turn lanes, and deceleration/acceleration lanes should be avoided. Plans will seek to improve levels of service in locations where barriers to walking are high.

Level of service indicator. The *Ottawa Pedestrian Plan* recommends a quantitative method for evaluating pedestrian level of service at intersections. This indicator will be a tool for measuring the level of service for walking. It will help to facilitate the decision making process when trade-offs are required, which typically occurs along main streets, downtown, and in transit-oriented development areas, mixed use centres and areas of intensification. Its main objectives are:

- To capture the most important factors that influence the physical design and control of intersections, from the pedestrian's perspective
- To be relatively simple to implement
- To reflect local conditions and expectations

Action 4-4: Provide quality design

Pedestrian-oriented design guidelines. The *Ottawa Pedestrian Plan* recommends the development of new pedestrian-oriented design guidelines for use in designing new walking facilities and road construction or reconstruction projects, reviewing development applications, and preparing community design plans or secondary plans. The guidelines would be applied where demand warrants enhanced design elements. Examples include:

- Facilities – sidewalk width and material, pathway location, intersection geometry and alignment, intersection and mid-block crossings, pedestrian signal priority, pedestrian routes to transit
- Wayfinding – signage, mapping and paving patterns to enable navigation by residents and visitors
- Accessibility – conformance with the City's *Accessibility Design Standards* and consideration of the *Accessibility for Ontarians with Disabilities Act*, to address grades, slopes, surface treatments, gates, bollards, intersection curb ramps and depressions with tactile warnings, and pathway seating
- Lighting – consistency with the City's street, park and pathway lighting policies, and incorporation of the principles of crime prevention through environmental design (CPTED) to support safety and personal security objectives
- Landscape and environment – boulevards between street curbs and sidewalks that permit stormwater infiltration, use of trees and plantings, sunlight penetration
- Amenities and aesthetics – seating, bicycle parking, waste receptacles, views, public art, connections to open space, and site furniture providing year-round comfort and ease of maintenance

Action 4-5: Deliver supportive winter maintenance

Enhanced winter maintenance for key pedestrian linkages. In the City of Ottawa's 2013 Commuter Attitude Survey, snow and ice control on walking facilities emerged as a key concern of residents; 32% of respondents identified snow removal as the pedestrian-related service most in need of improvement. The City's Maintenance Quality Standards set winter maintenance service levels for pedestrian facilities (e.g. minimum snow accumulation to trigger a response, and speed of response from

the end of accumulation). They call for the fastest response (Priority 1) to sidewalks in the downtown core and large employment centres, and give lesser priority to other pedestrian facilities. Section 9.1 of this TMP outlines the allocation of additional funds to cost-effectively increase the winter maintenance priority of pedestrian linkages within 600 metres of rapid transit stations, 200 metres of high-frequency transit corridors, and 300 metres of schools. This enhancement would provide an especially important benefit for customers accessing light rail, Transitway and O-Train services, and for students walking to school.

4.3 Improve Pedestrian Safety and Promotion

This Plan's overall framework for road safety (see Section 7.4) identifies pedestrians as one group of vulnerable road users that warrants special action, and the framework for transportation demand management (see Section 8.1) also considers existing and potential pedestrians as key market segments. Below, this section provides an integrated, holistic review of the ways in which the City will work to promote walking and make it safer.

Action 4-6: Deliver pedestrian safety programs

Road crossings. The City will continue to improve pedestrian crossings at signalized and non-signalized intersections, with the goal of reducing the frequency and severity of preventable collisions involving pedestrians. The current Pedestrian Safety Evaluation Program pilot project enables cost-effective countermeasures.

Audible pedestrian signals and pedestrian countdown signals. The City will continue to implement audible pedestrian signals that help pedestrians with hearing impairments know when they may cross safely in which direction, beyond the more than 640 already in place. The City will also continue to implement pedestrian countdown signals that reduce uncertainty about safe crossing times, beyond the more than 415 currently in place.

Safe Routes to School. In Ottawa, a number of partners work together to promote cycling and other modes of safe, healthy travel to school. The City will continue its support for special events and school travel planning, which is an intensive, multi-disciplinary initiative that collaborates with area schools.

Crossing guards and safety patrols. The City currently has 153 adult crossing guards to help children walk to and from school, and will continue to review requests for adult crossing guards and support their provision, including the installation of signs and pavement markings, where they are warranted and resources permit. The Ottawa Police Service also works with schools to train students for safety patrol duties, with the City installing the necessary signage.

Winter walking safety. The City will continue to deliver programs that make it safer to walk in winter. Currently, these include the Snow Go Program that matches seniors and persons with disabilities (and may provide them with financial assistance) with service providers who will clear snow from private driveways and walkways. They also include the Grit Box Program that locates “do-it-yourself” sidewalk grit boxes near staircases and steep hills, and where there are many pedestrians, especially seniors or persons using mobility devices.

Action 4-7: Raise awareness and visibility of walking

Promotion. Consistent with the discussion of workplace engagement in Section 8.1 of this Plan, the City will continue to promote walking to work through various communication channels and in partnership with employers, schools and community organizations. A key message will continue to be not only the practicality of walking as a mode of transportation, but as its importance as part of a healthy and active lifestyle.

Public health outreach. Ottawa Public Health will continue to promote walking as part of its Healthy Eating, Active Living Strategy. Related initiatives include community outreach, special events, web-based information, promotion of walking groups, support for the Ottawa Public Library pedometer lending program, and direct engagement with workplaces and schools to promote active transportation and other forms of physical activity.

5. Develop A Great Cycling City

Chapter Overview	
Recommended actions	
Action 5-1	Implement the *Ottawa Cycling Plan*
Section 5.1	**Build and maintain a network of quality cycling facilities**
Action 5-2	Implement the Cycling Network by 2031
Action 5-3	Introduce new level of service measures for cycling facilities
Action 5-4	Maintain cycling facilities
Action 5-5	Maintain a basic winter cycling network
Section 5.2	**Offer attractive intermodal connections and trip-end facilities**
Action 5-6	Provide cycling connections to transit
Action 5-7	Provide public bicycle parking
Action 5-8	Require bicycle parking and end-of-trip facilities in new developments
Section 5.3	**Improve cycling safety and promotion**
Action 5-9	Deliver cycling safety programs
Action 5-10	Raise awareness and visibility of cycling

The popularity of cycling is one indicator of a vibrant, sustainable city. Along with walking, transit and carpooling, cycling conserves natural resources and reduces pressure on the road network while improving health, supporting more compact development, preserving the environment and supporting economic activity. It offers speed and convenience for shorter trips, and for many people it can also be attractive for longer trips. Key factors that can motivate more people to cycle include:

- Suitable distances from trip origins to destinations
- Pleasant, direct, safe, well-maintained cycling routes that provide as much separation from traffic as possible
- Convenient, secure bicycle parking, shower and change facilities at destinations
- Convenient, secure connections between cycling and transit facilities
- Individual cycling skills appropriate for the routes available
- Positive social attitudes towards cycling

An updated version of the *Ottawa Cycling Plan* was prepared in concert with this Transportation Master Plan, and addresses improvements in all of these key areas.

Readers are referred to it for more comprehensive details on how Ottawa will become a truly great city for cycling.

Action 5-1: Implement the Ottawa Cycling Plan

Strategies. The *Ottawa Cycling Plan* contains a number of policies and actions for the City to implement. These elements represent an integrated, multi-disciplinary approach to increasing the safety, convenience and comfort of cycling in Ottawa over the next two decades. They address land use, cycling network development, street and cycling facility design, bicycle parking, cycling-transit integration, funding, maintenance, safety programs, wayfinding assistance, information, promotion, stakeholder engagement, inter-jurisdictional cooperation, and performance measurement. This chapter focuses on three key elements, namely cycling facility development and maintenance (Section 5.1), intermodal connections and trip-end facilities (Section 5.2), and cycling safety and promotion (Section 5.3). As future budgets are struck, the City will focus on these fundamental infrastructure and program needs, while also supporting key partners in their initiatives (e.g. the Capital BIXI bike sharing program initiated by the NCC).

Targets. Section 2.4 of this Plan sets a 2031 target for morning peak period cycling mode share of 5% across the entire city, and a more refined target of 8% for travel inside the Greenbelt. These objectives represent significant increases above current levels (i.e. the 2011 city-wide morning peak period mode share of 2.7%) as well as the targets set in the 2008 Transportation Master Plan, and will require a more continuous and connected network of quality cycling routes and programs.

5.1 Build and Maintain a Network of Quality Cycling Facilities

The existence of safe, direct and well maintained facilities for cycling is a major factor in motivating people to ride their bicycles. A range of facility types is available to address different situations. The Cycling Network includes facilities on roads or within road rights of way, as well as off-road multi-use pathway facilities for cycling and walking, for both utilitarian and recreational purposes. Multi-use pathways are generally constructed in rapid transit and arterial road rights of way (primarily in suburban areas), abandoned rail corridors, utility corridors, along rivers and in parks, and they may be surfaced with asphalt or stone dust. Their development is closely coordinated with the NCC's comprehensive network of multi-use pathways.

Action 5-2: Implement the Cycling Network by 2031

The networks. Maps 1 and 2 show the designated routes contained in the Cycling Network. The networks are based on those in the 2008 TMP, as revised and augmented based on additional work such as:

- The *Downtown Moves* study, which identified an extensive future network of quality cycling routes in the urban core
- Community Design Plans, TOD plans and other planning studies
- An analysis, conducted for the *Ottawa Cycling Plan* update, of five large employment nodes that have a high number of short trips

Ongoing changes to the networks shown on Maps 1 and 2 will not require Council approval, provided that any changes maintain continuity in the same general location and preserve access to key destinations. Note that many multi-use pathways are owned and maintained by the NCC.

Cycling route connectivity and quality. The Cycling Network reflects the need for better cycling *connectivity*—the ability of residents to cycle from their homes to work, school, errands, transit and recreational opportunities—across the city, including:

- Where there are gaps (or missing links) in its existing cycling route infrastructure

- In suburban areas and rural villages where there will be a growing number of local trips
- Around future light rail stations, enabling residents to combine cycling and transit in a single convenient trip

However, it is the need to provide routes of higher *quality* that will lead to the most visible changes in Ottawa's cycling routes. The goal of a dramatically higher mode share for cycling means that new types of cycling facilities will be needed to attract novice cyclists and others who are concerned about cycling in mixed traffic. On-street cycling facilities that are separated from vehicular traffic are required to increase cycling safety (both actual and perceived), especially on streets with high traffic volumes and/or speeds. Examples of these types of facilities include Laurier Avenue as well as approved designs for Churchill Avenue and Main Street.

Cycling route types. The Cycling Network shown on Maps 1 and 2 includes several types of routes:

- *Cross-Town Bikeways* are continuous on-road or off-road links over long distances. They serve as major connecting routes between more distant parts of the city, and provide a consistently high level of comfort with cycling-friendly features such as bike boxes, coloured intersection crossings, route signage, and signal timing adjustments. Cross-town bikeways are a priority for both implementation funding and maintenance.
- *Neighbourhood Bikeways* are generally found on low-traffic roads and neighbourhood pathways. They provide quiet, comfortable cycling routes in local communities, giving residents access to institutions, parks, natural areas, historic sites, transit, amenities and businesses. A greenway might have pavement markings to show lane configurations, cycling signage, traffic diverters at intersections that block motor vehicles but not cyclists, traffic calming measures such as road narrowings or curb extensions, and bike/walk-only pathways or bridges that provide continuity.
- *Spine routes* provide access along major road corridors, connecting cross-town bikeways and major multi-use pathways to neighbourhood bikeways and feeder routes. Spine routes will generally provide dedicated on-road cycling space (subject to localized constraints), ideally either a cycling track or a buffered bike lane.

- *Feeder routes* typically provide access from residential streets and shopping areas to the spine routes and cross-town bikeways that serve longer-distance cycling trips. They are typically on-road, and could be either painted bicycle lanes or shared lanes.
- *Multi-use pathways and recreational routes* serve a mix of cyclists and pedestrians, and are typically three- to four-metre wide asphalt paths with a solid yellow line separating two-way traffic. They are ideal in continuous corridors with few intersections, such as in NCC lands along the Rideau River, Ottawa River and Rideau Canal, and through the Central Experimental Farm. Multi-use pathways also exist in more urban settings where they provide short connections between roads, or along rapid transit and hydro transmission corridors, such as the O-Train corridor.

Prioritization and funding of projects. The City will follow a three-phase implementation of projects toward development of the Cycling Network shown on Maps 1 and 2. Exhibit 5.1 summarizes the capital costs of projects for each type of cycling facility, by phase. Total capital costs for each phase fit within this Plan's affordability criteria. Other projects will also be enabled through external sources of funding such as road construction or reconstruction projects, repaving of rural roads, and land developments.

Exhibit 5.1 2031 Cycling Network projects – Capital Costs by Facility Type ($ millions)

Facility type	Phase 1: 2014-2019	Phase 2: 2020-2025	Phase 3: 2026-2031	*Total*
Cross-town bikeways	7.8	11.7	2.0	***21.5***
Transit-oriented development links	1.8	1.5	2.3	***5.6***
Institutional and employment links (outside downtown)	1.9	2.5	0.0	***4.4***
Community links (neighbourhood bikeways, missing links)	9.7	7.5	17.0	***34.2***
Bicycle parking and city-wide enhancements	0.4	0.8	2.8	***4.0***
Recreational links	0.3	0.0	0.0	***0.3***
Total	***22.0***	***24.0***	***24.0***	***70.0***

Note: All costs are in 2013 dollars.

Action 5-3: Introduce new level of service measures for cycling facilities.

Facility pre-selection. As part of the Ottawa Cycling Plan update, the City developed a facility pre-selection tool that, for any combination of average daily traffic volume and 85th percentile traffic speed on a road, will identify a preliminary preferred type of cycling facility for that road: a shared curb lane, a painted bicycle lane, or a separate bicycle facility (such as a buffered bicycle lane or cycle track; and if one of these is preferred but not feasible, then the tool recommends picking an alternate route). The facility pre-selection tool has been used to help estimate the costs summarized in Exhibit 5.1.

Level of service measures for cycling facilities. To assess the quality of different cycling facilities, new level of service performance measures will be introduced. This concept, based on a recent paper from the Mineta Transportation Institute, is related to the safety (both actual and perceived) of different cycling facilities and uses basic road characteristics (e.g. vehicle speed, number of lanes, presence of parking) to determine the level of service. In general, a low level of perceived safety (e.g. cycling next to fast-moving traffic) leads to a high level of traffic stress, and a high level of perceived safety (e.g. cycling in a segregated bike lane) leads to a low level of traffic stress. Four different levels are identified (Levels 1-4) with Level 1 having the lowest level of traffic stress and thus the highest level of service which appeals to the widest range of residents. As a new performance measure, the City will continue to assess and refine this methodology as required.

Action 5-4: Maintain cycling facilities

The importance of maintenance. Proper maintenance of on-road and off-road facilities is fundamental to safe and comfortable cycling. Cyclists are more susceptible than motor vehicles to surface irregularities, and they risk injury from cycling over potholes, road cuts and cracks, and debris. Experience elsewhere has shown that reorganizing existing maintenance priorities, even though it may delay service in other areas or add time and operating costs, can contribute to the safety and popularity of cycling.

As part of the continued updating of maintenance practices, the City will pursue updates to the Maintenance Quality Standards (MQS) to include the new definitions for the cycling route types described in Section 5.2.

Seasonal maintenance activities. The City carries out a spring street clean-up from the end of winter until mid-May, and then continues to sweep roads throughout the summer based on roadway classification. Cyclists are the road users most affected by any delay in spring street sweeping because motor vehicles push road debris—including grit and sand used for winter maintenance—toward the curb, which can adversely affect cyclists. For this reason, the City will endeavour to give greater priority to springtime street sweeping on cross-town bikeways, followed by spine routes. The spring clean-up on key cycling routes should be initiated as early as possible each year, and re-prioritization need not impact operating costs although services in other areas of the City may be delayed.

Action 5-5: Maintain a basic winter cycling network

The network. Because cycling volumes tend to decrease dramatically during winter, the City has not previously designated and maintained a network of winter cycling routes. To support winter cycling, the updated *Ottawa Cycling Plan* identifies a network of cycling routes that are proposed to be maintained to bare pavement throughout the year. In identifying winter routes, consideration was given to feasibility issues such as the type of surface (paved vs. stone dust) and presence of sufficient space for snow storage. The winter cycling network includes 37 km of routes along roads and pathways (including those owned by both the City and the NCC), and is focused in the core area and along the East-West Bikeway where cycling rates are highest. About 21 km of the network routes are on roads or multi-use pathways where no changes to current winter maintenance practice would be required.

Testing and expansion. The winter cycling network is proposed to be implemented in the winter of 2014-2015, and will be reviewed during the next *Ottawa Cycling Plan* update. The network may ultimately be expanded as winter cyclist volumes increase, and as the City builds more separated or buffered cycling facilities to provide winter cyclists with separation from vehicular traffic.

5.2 Offer Attractive Intermodal Connections and Trip-end Facilities

Facilities for the movement of bicycles are a vital component of a cycling-friendly city, but facilities to store bicycles securely at the start and end of trips, and facilities to allow cyclists to transfer conveniently to other modes, are also critical.

Action 5-6: Provide cycling connections to transit

Bike-ride-walk and bike-ride-bike. As light rail is implemented in Ottawa, customer transfers between buses and trains will be common. However, cycling to light rail stations could be more attractive for many transit customers, allowing them to reduce waiting delays and get some daily exercise. The updated *Ottawa Cycling Plan* places a special emphasis on enabling such "bike-ride-walk" trips. It will take advantage of new bicycle parking spaces at light rail stations, comfortable neighbourhood cycling routes to rapid transit stations, and customer promotions. Continued expansion of the Rack and Roll program, which offers bicycle racks on-board OC Transpo buses, will make bike-ride-bike an equally feasible travel option for many transit customers. It is also expected that the City's new light rail line will permit a limited number of bicycles on-board, outside peak periods; bicycles are already welcome on the O-Train.

Action 5-7: Provide public bicycle parking

Short-term public bicycle parking. The City provides 2,000 short-term public bicycle parking spaces in public rights of way through a contractual agreement with an advertising company. Recently over 1,150 parking meters were converted to ring-and-post bicycle parking spaces along with customized art racks as part of streetscaping projects. As recommended in the updated *Ottawa Cycling Plan*, the City will also consider the creation of seasonal bicycle corrals, which convert on-street motor vehicle parking spaces to ten or so bicycle parking spaces in locations where bicycle parking demand cannot be met elsewhere in the public right of way.

Long-term public bicycle parking. In places where cyclists leave their bicycles for longer periods of time, security and weather protection are important. Examples include rapid transit stations and municipal buildings. In the downtown core there may also be sufficient demand to warrant a secure, weather-protected public bicycle parking facility, and the City will investigate the need for and feasibility of such a service.

Action 5-8: Require bicycle parking and end-of-trip facilities in new developments

Zoning and promotion. The City's Zoning By-law currently requires developers to provide a specified capacity of bicycle parking spaces, based on the size and type of land use. To provide more effective guidance, the City endeavour to update the Zoning By-law to identify separate requirements for short-term and long-term bicycle parking, where appropriate. The City will also provide guidance on the location and design of bicycle parking facilities—for example, that they be provided in highly visible and lighted areas, and be sheltered from the weather as much as possible—and promote the inclusion of shower and change facilities for active commuters in new workplace developments. It will encourage owners and managers of existing buildings, especially workplaces and multiple-unit residential buildings, to provide quality bicycle parking and end-of-trip facilities.

5.3 Improve Cycling Safety and Promotion

The City's overall framework for road safety (see Section 7.4) identifies cyclists as one group of vulnerable road users that warrants special action, and the framework for transportation demand management (see Section 8.1) also considers existing and potential cyclists as key market segments. Below, this section provides an integrated, holistic review of the ways in which the City will work to improve cycling safety and promotion.

Action 5-9: Deliver cycling safety programs

New roadway treatments. In coming years, the City pursue new roadway markings and bicycle-specific traffic signals (once approved by the Ministry of Transportation) to support the operation of cycling lanes that are separated from traffic. It will conduct campaigns to inform cyclists and other road users about these treatments.

Fixing problem locations. The City will continue to address road environments that pose hazards to cyclists. Currently, the Cycling Safety Improvement Program (CSIP) applies measures such as signs and pavement markings to improve locations where cycling safety issues are identified through collision records and stakeholder input.

Building skills and awareness. The City will continue to improve safety by directly addressing cyclists and other road users. Currently, elements of the Cycling Safety Awareness Program (CSAP) include safety messaging (e.g. posters, videos, public service announcements, bus boards, new driver training information), cycling skills training (e.g. full and abbreviated CAN-BIKE courses, primary school outreach), workplace outreach, and helmet use promotion for youth.

Safe routes to school. In Ottawa, a number of partners work together to promote cycling and other modes of safe, healthy travel to school. The City will continue its support for special events and school travel planning, which is an intensive, multi-disciplinary initiative that involves a number of area schools.

Action 5-10: Raise awareness and visibility of cycling

Promotion. Consistent with the discussion of workplace engagement in Section 8.1 of this Plan, the City will continue to promote cycling to work through campaigns such as the month-long Bike to Work event, and through targeted promotions in areas around new or improved cycling facilities. As discussed in Section 5.2 of this Plan, the City will promote multimodal cycling-transit trips, both bike-ride-walk and bike-ride-bike. The City will also promote its cycling facilities and services to residents of new developments through channels such as builders' welcome packages.

Route advice and wayfinding. The City will continue to update its cycling network maps, and will pursue an interactive online cycling route planner. It will also develop a policy for the implementation of wayfinding signage to help cyclists identify and follow new cross-town bikeways and neighbourhood bikeways. The Tourism and Public Service Sign Policy (June 2003) will be amended to include wayfinding for cyclists to provide network and route advice for cross-town and neighbourhood bikeways.

6. Transform Ottawa's Transit System

Chapter Overview	
Recommended actions	
Section 6.1	**Expand the rapid transit and transit priority (RTTP) network**
Action 6-1	Implement the Affordable RTTP Network by 2031, while protecting opportunities to develop the 2031 RTTP Network Concept
Section 6.2	**Integrate the rapid transit and transit priority network into the community**
Action 6-2	Provide walking and cycling opportunities within and across rapid transit corridors
Action 6-3	Encourage quality development close to rapid transit stations
Action 6-4	Make rapid transit stations convenient, comfortable and accessible to all users including pedestrians and cyclists
Action 6-5	Meet or exceed municipal, provincial, and federal guidelines and legislation for people with disabilities

Ottawa enjoys a higher level of transit ridership than any other Canadian city of a similar size. OC Transpo's share of travel in the morning peak period was just over 22% in 2011, and this Plan aims to increase that mode share to 26% by 2031. This will require the City to continue making transit more attractive than automobile use for an even greater number of residents. Ongoing efforts to improve the availability, reliability, speed, accessibility and comfort of transit service will improve the transit customer experience and make transit a more viable transportation choice.

In the last five years, City Council made a number of major decisions that have set the stage for an unprecedented transformation of Ottawa's transit system. Council approved construction of the Confederation Line and O-Train expansion, double-decker bus acquisition, PRESTO card implementation, and access to real-time customer information—all of which have either been started or fully implemented as of 2013, and which together constitute a huge positive change for transit customers in a short few years. At the same time, OC Transpo has also maintained a number of shorter-term priorities, including efforts to improve safety and security, engage employees, upgrade transit facilities, replace the Para Transpo fleet, enhance accessibility, strengthen

community partnerships, increase operational efficiencies and improve service reliability.

From a planning perspective, this Plan addresses two major themes of Ottawa's long-term transit system transformation: the expansion of rapid transit and transit priority networks, and the development of rapid transit stations into multimodal hubs integrated with the surrounding community. These subjects are discussed in more detail in the following sections.

6.1 Expand the Rapid Transit and Transit Priority Network

The successful implementation of an expanded rapid transit and transit priority (RTTP) network—which will include light rail transit (LRT), bus rapid transit (BRT) and O-Train facilities plus on-road transit priority measures—will be a critical element in the achievement of the City's transit objectives. Expansion of the RTTP network will significantly increase the ease of mobility and attractiveness of transit use for residents. The City has developed a strategic approach to expanding its RTTP network in response to future transportation needs and towards the goal of achieving an ultimate RTTP network (see Map 3).

Action 6-1: Implement the Affordable RTTP Network by 2031, while protecting opportunities to develop the 2031 RTTP Network Concept

2031 RTTP Network Concept. Chapter 2 identified an expected growth in peak period transit trips by 2031, and a 2031 RTTP Network Concept was developed to both accommodate this growing demand and provide a level of service that will attract it. The 2031 RTTP Network Concept (see Map 4) includes several currently approved and funded projects, and its component projects are listed in Annex A. While the 2031 RTTP Network Concept may not be fully implemented by 2031, it is important for the City to protect lands that would be required for its eventual implementation, such as through the transfer of transit corridor rights of way through planning application approvals, or the purchase of surplus railway rights of way and selected utility corridors (e.g. hydro lines) as they become available.

Affordable RTTP Network. The City recognizes that capital investment must be affordable. For that reason, this Plan recommends the implementation of a subset of the 2031 RTTP Network Concept, called the Affordable RTTP Network (see Map 5), that will provide as many of the 2031 RTTP Network Concept's benefits (e.g. ridership gains, opportunities for land use intensification, operating cost savings) as possible within the City's projected funding envelope. The projects of the Affordable Network were strategically selected to maximize gains in transit ridership within available funds.

Implementation of projects. The Affordable RTTP Network includes LRT, BRT and O-Train projects that are listed (generally in order of declining priority) with their capital construction costs in Exhibit 6.1 and shown on Map 5. It also includes a number of transit priority projects, listed in Exhibit 6.2 and shown on Map 5. Instead of phasing these extensions over time to 2031, a single project, dubbed Stage 2, is proposed that will bring LRT rail west, south and east to Orléans along with resulting operational savings well in advance of the previous schedule proposed in the 2008 TMP.

The prioritization of rapid transit projects resulted from a complex exercise that considered each project using factors such as ridership gains, opportunities for land use intensification, congestion reduction, and operating cost savings. It should be noted that several projects identified in the Affordable RTTP Network are intended to serve growing communities. If those communities do not develop at the pace projected, some of these projects may be required later than expected. Conversely, if communities are developed faster, then some projects may be required sooner. Ongoing monitoring of performance measures that describe transit levels of service in key corridors, as described in Section 7.1, could also identify emerging needs that warrant adjustments to the proposed prioritization. Future updates of the Transportation Master Plan will review and confirm these project priorities.

In the staging of rapid transit corridor development, the City will provide enhanced transit service elements as early as possible. These may take the form of surface transit routes with accelerated frequencies, accompanied by transit priority measures. While the City is protecting the eventual opportunity for complete grade-separation of all elements of the rapid transit network (i.e. intersections where rapid transit corridors intersect with streets, or pedestrian crossings at rapid transit stations), where practical,

it will defer the costs of grade-separation by using transit priority measures that reduce delay and improve service reliability by isolating transit from mixed traffic. Section 1.6 addresses the environmental assessment requirements for new RTTP Network infrastructure, and Section 7.7 identifies objectives and actions to minimize the environmental effects.

Transit priority measures. A majority of Ottawa's transit service is delivered on roads, where traffic congestion increases delay and reduces the reliability and efficiency of transit services. Transit priority can improve the competitiveness of transit by reducing travel times and improving service reliability, while allowing more transit service to be delivered with the same resources. Transit priority measures (e.g. dedicated bus lanes, transit signal priority treatments, bus queue jumps, special bus stop arrangements, and traffic management techniques such as queue relocation) are intended to eliminate delay to transit services caused by congestion, and to minimize delay caused by traffic signals. Equipping road corridors with a set of coordinated transit priority measures can substantially improve the quality of service enjoyed by transit customers without incurring the costs of a fully grade-separated rapid transit corridor. In addition to the transit priority corridors identified as part of the RTTP Network, transit priority measures may be implemented at other locations across the transit network, such as at intersections near rapid transit stations, or intersections of roads with at-grade BRT corridors.

In some locations, transit priority measures can be introduced without significant impacts on other road users, although in many other cases (e.g. busy arterial corridors and other roads with limited rights of way) they will require a decrease in the level of service for other road users. For example, the introduction of a bus-only green phase at a traffic signal may reduce green time for mixed traffic and may reduce the capacity available for other modes. The City will strive to identify and mitigate such impacts; one important tool in this regard is education and promotion, which can build public awareness and a positive attitude toward transit priority measures.

Exhibit 6.1 2031 Affordable RTTP Network Projects – LRT, BRT and O-Train

Type	Project	Description
Currently under construction or funding secured		
LRT	Confederation Line	Conversion of Transitway to light rail between Tunney's Pasture and Blair stations
2014-2031		
BRT	West Transitway: Bayshore Station to west of Moodie Drive	Extension of the Transitway to bypass congestion on Highway 417
LRT/ O-Train	O-Train: Greenboro Station to Bowesville/ Riverside South Station	Extension of the O-Train from Greenboro Station to Bowesville Road, including new stations at Gladstone, Walkley, South Keys and Leitrim
	Western LRT (1): Tunney's to Baseline Stations	Extension of the LRT line now under construction, from its western terminus at Tunney's Station to Baseline Station
	Western LRT (2): Lincoln Fields to Bayshore Stations	Extension of the Western LRT to join the West Transitway (at Bayshore) and the Phase 2 Western LRT extension (at Lincoln Fields)
	Eastern LRT: Blair to Place d'Orléans Stations	Extension of the LRT line now under construction, from its eastern terminus at Blair Station to Place d'Orléans
BRT (at-grade)	Baseline Transit Corridor: Baseline to Heron Stations	New BRT corridor in the road right of way with at-grade intersections, connecting the Southwest and Southeast Transitways
BRT	West Transitway: March Road to Terry Fox Station	New Transitway segment to bypass congestion on Highway 417
BRT (at-grade)	Kanata North Transitway: Corkstown Road to Solandt Road	New BRT corridor following March Road connecting the West Transitway with the Kanata North employment node
Total Infrastructure Costs (2013 dollars)		***$2,267M***

Exhibit 6.2 2031 Affordable RTTP Network Projects – Transit Priority

Project	Limits	Description
Airport Parkway	Hunt Club Road to MacDonald-Cartier Intl. Airport	Peak period bus lanes made available by road widening project
Bank Street	Billings Bridge Station to Wellington Street	Transit signal priority at select intersections
Baseline Road	Baseline Station to Bayshore Station	Transit signal priority and queue jump lanes at select intersections
Blackburn Hamlet Bypass / Brian Coburn Boulevard	Innes Road (west) to Tenth Line Road	Peak period bus lanes made available by new road projects and reallocation of lanes
Beechwood Avenue/ Hemlock Road	St. Laurent Boulevard to Vanier Parkway	Transit signal priority at select intersections
Carling Avenue (1)	Lincoln Fields Station to Carling O-train Station	Exclusive bus lanes made available via reallocation of existing traffic lane
Carling Avenue (2)	Carling O-train Station to Bronson Avenue	Transit signal priority and queue jump lanes at select intersections
Carling Avenue / Richmond Road	Bayshore Station to Lincoln Fields	Transit signal priority and queue jump lanes at select intersections
Chapman Mills / Strandherd / Earl Armstrong	Barrhaven Centre Station to Bowesville/ Riverside South Station	Transit signal priority and queue jump lanes at select intersections
Eagleson Road	Hazeldean Road to Highway 417	Transit signal priority and queue jump lanes at select intersections
Elgin Street	Gladstone Avenue to Wellington	Transit signal priority at select intersections
Fisher Avenue / Holland Avenue	Prince of Wales Drive to the Confederation Line	Transit signal priority at select intersections
Gladstone Avenue	Gladstone O-train Station to Elgin	Transit signal priority at select intersections
Hazeldean Road	Stittsville Main Street to Eagleson Road	Transit signal priority and queue jump lanes at select intersections
Hemlock Road / Codd's Road	St. Laurent Bl to Montreal Road	Exclusive bus lanes made available via new lanes
Hunt Club Road	Albion Road to Uplands Drive	Exclusive bus lanes made available via new lanes
Innes / Blair	Millennium Station to Blair Station	Transit signal priority and queue jump lanes at select intersections

Exhibit 6.2 2031 Affordable RTTP Network Projects – Transit Priority

Project	Limits	Description
Jeanne d'Arc Boulevard	Innes Road to Jeanne d'Arc Station	Transit signal priority and queue jump lanes at select intersections
March Road	Corkstown Road to Solandt Road	Transit signal priority and queue jump lanes at select intersections
Merivale Road	Baseline Road to Carling Avenue	Transit signal priority and queue jump lanes at select intersections
Montreal Road / Blair Road	Blair Station to Rideau Station	Extension of bus-only hours on existing priority lanes and new exclusive lanes east of St. Laurent
Murray Street / St. Patrick Street / Dalhousie Street	Rideau Street to Vanier Parkway	Transit signal priority at select intersections
Orléans Boulevard	Jeanne d'Arc to Orléans Boulevard Station	Transit signal priority and queue jump lanes at select intersections
Richmond Road / Wellington Street W. Somerset Street	Woodroffe Avenue to Bank Street	Transit signal priority and queue jump lanes at select intersections
Robertson Road / Richmond Road	Eagleson Road to Baseline Road	Transit signal priority and queue jump lanes at select intersections
St. Laurent Boulevard	Montreal Road to Innes Road	Transit signal priority and queue jump lanes at select intersections
Stittsville North-South Arterial	Palladium Road to Fernbank Road	Transit signal priority and queue jump lanes at select intersections
Tenth Line Road	Charlemagne Boulevard to Ottawa 174	Transit signal priority and queue jump lanes at select intersections
Total Infrastructure Costs (2013 dollars)		***$199M***

6.2 Integrate the Rapid Transit and Transit Priority Network into the Community

Action 6-2: Provide walking and cycling opportunities along and across rapid transit corridors

Pathways and crossings. The implementation of rapid transit corridors can present both opportunities for, and obstacles to, walking and cycling. To take advantage of long, linear rapid transit corridors that are separated from busy roads, the City will provide multi-use pathways in or adjacent to those corridors where physical constraints allow, and will aim to construct those pathways as part of rapid transit projects. Furthermore, rapid transit station designs will focus on connectivity to pathways in the immediate vicinity. The City will also provide grade-separated opportunities for pedestrians and cyclists to cross rapid transit corridors, where physical constraints allow, considering the nature of demand and the existence of alternative crossing opportunities.

Action 6-3: Encourage quality development close to rapid transit stations

Intensification. Intensifying development around rapid transit stations is the best way to bring as many potential transit riders as possible within easy walking distance of high-quality service. Employment, educational, and commercial densities are more reliable generators of transit ridership than residential density, although they are all beneficial. The City's land use policies, as contained in the *Official Plan* and summarized in Chapter 3, outline strategies to encourage integrated office and commercial developments at selected rapid transit stations. The *Official Plan* also sets out intensification and density targets for key areas, which include many rapid transit stations.

Design. The quality of the built environment around stations is also critical to transit customers arriving from or heading to nearby homes, workplaces, schools, stores and other destinations. Good planning and design practices can help customers reach the station with convenience, safety, security, accessibility and comfort. The City will strive to reduce the impacts of surface parking on pedestrian routes around stations, as discussed in Chapter 3.

Action 6-4: Make rapid transit stations convenient, comfortable and accessible to all users including pedestrians and cyclists

Walking and cycling access. At all rapid transit stations, but particularly those with significant nearby development, the quality of access for pedestrians and cyclists is of the utmost importance. The City will pursue opportunities, alone or in partnership with developers and landowners, to provide and improve pedestrian and cycling connections between rapid transit stations and adjacent developments. The City will limit pedestrian crossing distances at intersections that transit customers must cross. It will also work to improve the quantity, security and weather protection of bicycle parking at rapid transit stations. Sections 4.1 and 5.2 of this Plan also discuss these important measures.

Customer amenities. At rapid transit stations, high customer volumes pass through and also spend time waiting for their bus or rail vehicle to arrive. The experience of customers within all stations should be as comfortable, secure and convenient as possible, and the design of heavily-used transfer stations (such as those at the ends of the light rail and O-Train lines) will provide a superior level of comfort and convenience. Valuable measures will include shelter from the elements, seating, heating, wayfinding signage, accessibility for people with disabilities, natural surveillance for customer safety, and possible convenience retail and service uses. The City will also take steps to enable convenient transfers by transit customers to and from other modes (in addition to walking and cycling, as discussed above) through features such as direct telephone access to taxi companies, taxi loading areas, customer drop-off and pick-up areas, and connections with regional and intercity buses and trains.

Park-and-ride lots. Park-and-ride lots are an important feature at selected rapid transit stations. They serve transit customers arriving by car who live in the urban area and drive to transit in order to meet other needs en route (e.g. childcare, shopping, appointments), as well as customers who live in the rural area. The City will build or expand several park-and-ride lots as part of the 2031 Affordable RTTP Network (see Map 5). New park-and-ride lots will encourage commuters to transfer to transit at the edge of the urban area or at the outer edge of the Greenbelt, thereby minimizing automobile travel across the Greenbelt and towards the centre of Ottawa. The design of park-and-ride lots will provide safe, convenient and comfortable connections for pedestrians and cyclists to travel through them, as needed, to and from the adjacent community.

Intercity passenger terminals. VIA Rail's two stations at Tremblay Road and Fallowfield Road are both co-located with existing Transitway stations, with Tremblay Station currently being upgraded to rail as part of the Confederation Line project. Macdonald-Cartier International Airport is currently served by a Transitway bus route and would be served by a light rail station in the 2031 RTTP Network Concept (see Map 4) and by an improved bus service in the Affordable Network (see Map 5). Only the Greyhound Bus Terminal on Catherine Street in the downtown is not served by a rapid transit bus route. If the terminal is to be moved in future, the City would prefer that it be located at a rapid transit station, especially as sections of the LRT network are completed and put into service.

While there are no formal plans to implement High Speed Rail (HSR) in the Quebec-Windsor corridor, any HSR line in the corridor would need to include Ottawa. Ottawa's station(s), should be connected by rapid transit, subject to land use compatibility of the line with adjacent uses and appropriate setbacks.

Action 6-5: Meet or exceed municipal, provincial, and federal guidelines and legislation for people with disabilities

Accessibility. Over the life of this plan, there will be an increased demand for accessible transit, as Ottawa's population of seniors continues to rise and medical advances increasingly allow persons with disabilities to lead fully independent lives. All Transitway, O-Train and Confederation Line stations have been designed as barrier-free as possible, and all buses are low-floor models able to carry customers who use mobility devices such as wheelchairs.

An important strategic objective of Ottawa's transit service is to continue to offer full accessibility to transit for residents and visitors who have permanent or temporary disabilities, through both specialized services (Para Transpo) and barrier-free conventional services that meet or exceed legislative requirements and guidelines.

7. Provide Safe and Efficient Roads

Chapter Overview	
Recommended actions	
Section 7.1	**Design and build complete streets**
Action 7-1	Adopt a "complete streets" policy for road design, operation and maintenance
Action 7-2	Update road design guidelines, standards and processes to reflect complete street principles
Action 7-3	Use multimodal levels of service to assess road designs and allocate right of way
Section 7.2	**Strategically modify road network**
Action 7-4	Adopt the designated network of roads
Action 7-5	Implement the Affordable Road Network by 2031
Action 7-6	Obtain and protect rights of way required for future road projects
Action 7-7	Collaborate on federal and provincial road projects
Section 7.3	**Maximize road network efficiency**
Action 7-8	Implement the *Transportation System Management Strategy*
Action 7-9	Use advanced traffic management systems (ATMS)
Action 7-10	Offer streamlined and accessible traveller information
Action 7-11	Monitor and adopt useful technologies for data management
Section 7.4	**Maximize road safety for all users**
Action 7-12	Implement the *Strategic Road Safety Action Plan*
Action 7-13	Combat distracted driving
Action 7-14	Protect vulnerable road users
Action 7-15	Reduce aggressive driving
Action 7-16	Target issues affecting population segments by age
Section 7.5	**Enable efficient goods movement**
Action 7-17	Designate truck routes to serve industry and protect neighbourhoods
Action 7-18	Consider freight needs in road planning, design and construction
Action 7-19	Monitor and consult with the freight industry for mutual benefit
Section 7.6	**Protect neighbourhoods from undesirable impacts**
Action 7-20	Use area traffic management to resolve public concerns
Section 7.7	**Minimize environmental effects**
Action 7-21	Minimize effects on land, water and vegetation
Action 7-22	Minimize greenhouse gases and other air emissions
Action 7-23	Control noise levels

7.1 Design and Build Complete Streets

The role of streets. Ottawa's streets are fundamentally important public spaces: they are social places where residents can explore their community, meet friends, or enjoy a sidewalk café, and they also act as entry points to businesses, parks, schools and homes. At the same time, streets are the backbone of Ottawa's transportation system and its economy: they serve pedestrians, cyclists, public transit, trucks, automobiles and emergency services, while also providing space for utilities. Within the realm of road planning, design and operation, the needs of these various users compete for the scarce resources of time, space and money. In managing its road network for the greatest public benefit, the City frequently must make difficult trade-offs.

Action 7-1: Adopt a "complete streets" policy for road design, operation and maintenance

Description of complete streets. The concept of complete streets is a framework for balancing the multiple roles of roads, and ensuring the best possible outcome to their management as a public resource. A complete street accommodates all of its expected functions and serves all of the people who use it throughout the course of a day. Complete streets do not result from "cookie cutter" design, because different streets have different functions, users and contexts. The overriding principle of complete streets is to offer safety, comfort and convenience to all users (i.e. pedestrians, cyclists, transit riders and motorists) regardless of their age or ability. However, the consideration given to different users will vary by location. For example, where the City wishes to emphasize sustainable travel choices (e.g. downtown, main streets, transit oriented development zones and other areas of intensification), the needs of the most vulnerable street users—pedestrians and cyclists—will be considered first, followed by the needs of transit users and motorists. Where high demands from multiple modes exist, the City will seek to balance the needs of all users in a sustainable way. It should be noted that this is not a new concept for the City, and represents an evolution of best practices. Local examples of complete streets that serve all modes of transportation include Sussex Drive in the ByWard Market area, and West Hunt Club Road west of Merivale Road.

Local context. Since the 1990s, Ottawa has been an early adopter of many innovative practices such as traffic calming, on-road bikeways, audible pedestrian signals, pedestrian countdown signals, protected crossings of major roads, pedestrian-friendly streetscapes, and measures to give transit priority over cars. Guidelines such as the *Regional Road Corridor Design Guidelines* (2000) and *Road Corridor Planning and Design Guidelines: Urban and Village Collectors, Rural Arterials and Collectors* (2008) embrace many of the concepts included in complete streets. The City's *Downtown Moves* study, approved by City Council in 2013, also developed a comprehensive suite of complete street designs for a variety of corridors in downtown Ottawa.

A comprehensive view. The design of new or rebuilt streets is just a beginning, though, and the idea of complete streets also requires support from operations and maintenance activities. Similarly, a complete street in isolation is much less effective than a connected network of complete streets that provide freedom of movement to all users by the travel mode of their choice. The successful creation of complete streets is as much a result of effective processes, and an outcome of a community's culture, as it is a product of design standards and engineering tools. This section is a first step towards the creation of a robust framework that will make complete streets an integral part of the City's day-to-day transportation decisions and operations.

Action 7-2: Update road design guidelines, standards and processes to reflect complete street principles

Current guidelines. The City has long intended that each road should reflect its functions and expected users, and its urban or rural setting. While some roads function as scenic routes, parkways, or urban or village mainstreets, others pass through the Greenbelt or heritage districts. Each setting requires a road to perform different functions, and for this reason each road must be sensitive to its immediate context. In that spirit, the City follows guidelines such as its *Regional Road Corridor Design Guidelines* for urban arterial roads and village mainstreets, and *Road Corridor Planning and Design Guidelines: Urban and Village Collectors, Rural Arterials and Collectors* for rural arterial roads and urban, rural and village collector roads. It also has a range of potential design illustrations to be used as a guide for the planning and design of improvements for core area streets from the *Downtown Moves* study.

Scope of update. To more fully reflect the spirit of a complete streets approach to road design, the City will update these existing guideline documents to incorporate recent advances in design for walking and cycling, and to reflect lessons learned through actual design processes and the results of their implementation. The guidelines will integrate current best practices in separated bicycle lanes, low-level lighting, on-street parking, streetscaping, transit amenities and traffic control measures such as traffic calming and roundabouts, and are provided to illustrate ways to rebalance street space distribution within the right of way among the various uses (motor vehicles, transit, pedestrians and cyclists) where demand exists and implementation is practical. They will also identify situations where an exception to the use of complete street design elements might be warranted, and what process would be followed to make a decision in those cases.

Stakeholder engagement. The City will continue to consult with and involve a full range of stakeholders on road design projects, so that their interests are considered in trade-offs that are fundamental to the success of complete streets. Important stakeholders include local community and merchant groups, schools and other institutions, and road users including those who live elsewhere in Ottawa. Emergency responders will also be involved; for example, the ability of Ottawa Fire Services to meet its target response times can be affected by road design changes, and impacts may require mitigation measures such as traffic signal pre-emption systems.

Identification of Opportunities. The focus of implementation of compete streets will be on new construction, renewal projects, on streets where high accident and safety issues remain prominent, and as part of other construction projects (e.g. transit priority/rapid transit). This ensures a cost effective approach to implementation.

Action 7-3: Use multimodal levels of service to assess road designs and allocate right of way

A focus on moving people. In road design, a key element of trade-offs among different objectives is an understanding of how different design choices would affect the journey quality of each user—pedestrian, cyclist, transit customer, motorist or truck driver. Level of service measures for motorized traffic are well established and they have guided many road design decisions for decades. However, level of service

measures for pedestrians, cyclists and transit customers have not been similarly used in street design. The importance of a focus on moving people is illustrated by the fact that a bus can carry many times the number of people that would be in automobiles occupying the same road space; minimizing delay for buses should be a primary concern.

Level of service measures. The City, over time, will integrate into its road planning and design processes the following level of service measures:

- *For pedestrians* – at intersections, quality of service measures will include exposure and delay to pedestrians crossing the street (see Section 4.2)
- *For cyclists* – on roads and at intersections, quality of service measures will reflect the level of traffic stress (see Section 5.1)
- *For transit customers* – along roadway segments and corridors, level of service measures will be based on delay to transit customers/vehicles, with the guiding principle being to minimize signal and congestion delay; and will include the ratio of average transit travel time to average automobile travel time along a given corridor
- For *motor vehicles* –motor vehicle delay and the ratio of motor vehicle volumes to capacity will remain the level of service indicators. Subject to locational context, planning level studies will adopt a peak period analysis approach while operational level studies will continue to rely on peak hour assessments.
- In general, the City will endeavour to integrate into its road design processes the goal of maximizing the transportation system's person capacity

Context. It is expected that these level of service measures would be assigned different weights in different locations and contexts (e.g. urban, suburban, rural). For example, achieving a high level of service for cyclists will be more important on roads that are part of the cycling network (where demand is highest), and achieving a high level of service for pedestrians will be more important in the downtown core and near schools, parks and shopping areas.

Transportation impact assessment. Multimodal levels of service will be reflected in the City's process for requiring, reviewing and approving the transportation impact assessments that are submitted by development applicants. These assessments identify multimodal impacts of new developments on the transportation system at both a site and neighbourhood level, and are the basis for developer-funded measures that the City may require to mitigate negative impacts on pedestrians, cyclists and transit customers as well as automobile users.

7.2 Strategically Modify Road Network

Action 7-4: Adopt the designated network of roads

Road classification. Maps 6, 7, 8 and 9 illustrate the roads (excluding lanes) for which the City will protect rights of way to accommodate expected roadway elements. These roads are classified by their function, as shown in Exhibit 7.1. Roads of a similar function may vary in terms of their physical characteristics, and roads may also be reclassified as land uses and transportation systems change.

Road layout. In development areas, the City will use its powers through the *Official Plan*, Community Design Plan and application review processes to ensure that arterial and collector road alignments permit efficient transit routes, and that local road and pathway layouts minimize the impacts of culs-de-sac and crescents on connectivity and trip lengths for pedestrians and cyclists. The City's objective is for all building sites in the urban area to be within a 400-metre walking distance of a transit stop or station.

Exhibit 7.1 City Road Classification Framework

Classification	Primary function	Secondary function
City freeway	Serve "through" travel between points not accessed directly from the road itself	None — direct access to adjacent lands is prohibited
Arterial road	Serve travel through the city in conjunction with other roads	Provide access to adjacent lands, subject to restrictions
Major collector road	Serve travel between collector and arterial roads	Provide direct access to adjacent lands
Collector road	Serve neighbourhood travel between local and major collector or arterial roads	
Local road	Provide direct access to adjacent lands	Serve neighbourhood travel to and from collector or arterial roads
Lane	Provide secondary access from public road to abutting lot	None

Note: This classification framework refers to the transportation functions of roads only, and only as they pertain to motor vehicles.

Action 7-5: Implement the Affordable Road Network by 2031

The 2031 Road Network Concept. Chapter 2 identified an expected growth in peak period automobile trips by 2031, despite increases in mode shares for walking, cycling and transit use. To accommodate this growth, a 2031 Road Network Concept was developed that would provide 10% spare capacity above projected demand levels on arterial roads in key travel corridors during the morning peak period (i.e. a volume-to-capacity ratio of 0.9, including commercial vehicles; in the urban core of Ottawa a volume-to-capacity ratio of 1.0 was used). The 2031 Road Network Concept, which includes currently approved and funded projects, is shown on Map 10 and specific projects are listed in Annex A.

The Affordable Road Network. Given restrictions to the availability of funds for the construction, operations, and rehabilitation of the road network, the City recognizes that it must be financially prudent in constructing new infrastructure. For that reason, this Plan recommends the implementation of a subset of the 2031 Road Network Concept, referred to as the Affordable Road Network. The Affordable Road Network includes projects that emerged from a complex screening and prioritization exercise. It is shown on Map 11 and the required projects (in three implementation phases) with their capital costs are listed in Exhibit 7.2. Elements of the 2031 Road Network Concept that are not included in the Affordable Road Network are a lesser priority. As well, several projects identified in the Affordable Road Network are intended to give access to new developments; if land is not developed at the pace projected, some of these projects may be required later than expected; conversely, if land is developed faster, then some projects may be required sooner (including projects not currently identified as affordable).

Other possible road modifications. The City's desire to provide sufficient motor vehicle capacity to fully accommodate future demand is constrained not only by social, economic and environmental factors, but by a lack of right of way in locations such as the downtown core, main streets, transit-oriented development zones and other areas of intensification. In those places, where desirable and practical, the City will instead identify roadway modifications that focus on increasing person-capacity, which may result in taking pavement now used by motor vehicles and reallocating it to other modes

with the goal of facilitating alternative transportation choices. In addition to this reallocation of paved surface, the City will continue to identify and assess opportunities for roadway modifications that manage traffic congestion (e.g. at intersection bottlenecks) while avoiding or mitigating any reduction in safety or the quality of service to other modes. New high-quality connections for pedestrians and cyclists will be included where demand is demonstrated.

Exhibit 7.2 2031 Affordable Road Network – Projects by Phase

Sector	Project	Description
Currently under construction or funding secured		
Southeast	Alta Vista Transportation Corridor	New two-lane road between Riverside Drive and the Ottawa Hospital
Southwest	Greenbank Road	Widening from two to four lanes between Malvern Drive and Strandherd Drive
Southeast	Hunt Club Road Extension	Eastward extension of Hunt Club road to Highway 417
East	St. Joseph Boulevard	Widening from two to four lanes between Old Tenth Line Road and Trim Road
Southwest	Strandherd-Earl Armstrong Bridge	New bridge crossing between Strandherd Drive and Earl Armstrong Road
East	Trim Road	Widening from two to four lanes between North Service Road and Innes Road
Phase 1: 2014-2019		
Southeast	Airport Parkway (1)	Widen from two to four lanes between Brookfield Road and Hunt Club Road
East	Blackburn Hamlet Bypass Extension (1)	New four-lane road between Orléans Boulevard and Navan Road
East	Brian Coburn Boulevard Extension	New two-lane road (ultimately four-lane) between Navan Road and Mer Bleue Road
West	Campeau Drive	New four-lane road between Didsbury Road and Huntmar Drive
Rural	Country Club Road	New two-lane road between eastern terminus of Golf Club Way and Jenkinson Road
West	Earl Grey Drive Underpass	New underpass of Terry Fox Drive
Southwest	Greenbank Road Extension	New four-lane road between Cambrian Road and Jockvale Road
West	Old Richmond/West Hunt Club	Widen Old Richmond Road/ West Hunt Club Road from two to four lanes between Hope Side and Highway 416

Exhibit 7.2	2031 Affordable Road Network – Projects by Phase	
Sector	**Project**	**Description**
Phase 1 (continued)		
West	Stittsville North-South Arterial (1)	New two-lane road between Fernbank Road and Abbott Street
West	Klondike Road	Urbanize existing two-lane rural cross section between March Road and Sandhill Road
East	Mer Bleue Road	Widen from two to four lanes between Brian Coburn Boulevard and Renaud Road
West	Palladium Drive Realignment	Realign in vicinity of Huntmar Road to new north-south arterial
Southwest	Strandherd Drive (1)	Widen from two to four lanes between Fallowfield Road and Maravista Drive
Subtotal – Phase 1 (2013 dollars)		***$240.1M***
Phase 2: 2020-2025		
Southeast	Bank Street	Widen from two to four lanes between Earl Armstrong Road extension and south of Leitrim
East	Blackburn Hamlet Bypass Extension (2)	New four-lane road between Innes Road and Orléans Boulevard
West	Carp Road	Widen from two to four lanes between Highway 417 and Hazeldean Road
Southwest	Chapman Mills Drive	New four-lane road between Strandherd Drive and Longfields Drive
West	Eagleson Road	Widen from two to four lanes between Cadence Gate and Hope Side Road
Southwest	Jockvale Road	Widen from two to four lanes between Cambrian Road and Prince of Wales Drive
West	Kanata Avenue	Widen from two to four lanes between Highway 417 and Campeau Drive
West	Stittsville North-South Arterial (2)	New four-lane road between Palladium Drive (at Huntmar) and Abbott Street
Southeast	Lester Road	Widen from two to four lanes between Airport Parkway and Bank Street
Southwest	Strandherd Drive (2)	Widen from two to four lanes between Maravista Drive and Jockvale Road
East	Tenth Line Road	Widen from two to four lanes between Harvest Valley Road and Wall Road
Subtotal – Phase 2 (2013 dollars)		***$240.1M***

Exhibit 7.2	2031 Affordable Road Network – Projects by Phase	
Sector	**Project**	**Description**
Phase 3: 2026-2031		
Southeast	Airport Parkway (2)	Widen from two to four lanes between Hunt Club Road and MacDonald-Cartier International Airport
Rural	Bank Street (2)	Widen from two to four lanes between Earl Armstrong Road extension and Rideau Road
Outer Urban	Blair Road	Widen from two to four lanes between Meadowbrook Road and Innes Road
Outer Urban	Coventry Road	Widen from two to four lanes between Belfast Road and St. Laurent Centre
Outer Urban	Cyrville Road	Urbanize existing two-lane rural cross-section between Belfast Road and St. Laurent Centre
Southeast	Earl Armstrong Road	Widen from two to four lanes between Limebank Road and Bowesville Road
West	Hope Side Road	Widen from two to four lanes between Eagleson Road and Richmond Road
West	Huntmar Drive	Widen from two to four lanes between Campeau Drive extension and Cyclone Taylor Boulevard; widen from two to four lanes between Palladium Drive and Maple Grove Road
West	Stittsville Main Street Extension	New two-lane road between Palladium Drive and Maple Grove Road
Inner Urban	Preston Street	Extend existing two-lane urban roadway Albert Street to Vimy Place (at John A. McDonald Parkway)
Southwest	Prince of Wales Drive	Widen from two to four lanes between Hunt Club Road and Merivale Road
Outer Urban	Tremblay Road	Widen from two to four lanes between Pickering Place and St. Laurent Boulevard
Subtotal – Phase 3 (2013 dollars)		***$244.5M***
Total – Phases 1 to 3 (2013 dollars)		***$724.7M***

Action 7-6: Obtain and protect rights of way required for future road projects

Protecting road rights of way. The *Official Plan* identifies right of way widths the City will protect for the road network discussed in this section, and identifies the mechanisms for doing so. For example, the City can secure right of way for new roadways or the widening of an existing right of way from adjacent lands as a condition of development approval for a subdivision, severance or site plan. This includes the acquisition of lands required for corner triangles at intersections and railway crossings, for auxiliary lanes (including turn lanes) where warranted by site traffic, and for roundabouts where they are the preferred design solution at intersections. It is important to note that, in some road corridors, the City will protect a right of way wider than strictly required to accommodate the road projects identified in Annex A. In other words, it may protect right of way for a four-lane road when only a two-lane road is identified for 2031; this is because some areas of Ottawa will not have reached "community build-out" status by that time.

Additional right of way for transit. The City may require the exclusive use of a portion of certain road rights of way for transit priority operations, reserved bus lanes or light rail transit. In such cases, right of way requirements may increase and would be identified through future study.

Action 7-7: Collaborate on federal and provincial road projects

Active projects. Provincial highways are a major part of Ottawa's transportation system, and federal roads owned by the NCC also play an important role in Ottawa's transportation system, both from a functional perspective and as key scenic routes and tourist attractions. Exhibit 7.3 identifies several road projects that are being implemented or considered by provincial or federal governments; the City is consulted on such projects, but does not hold decision-making or implementation authority. The future road network discussed in this section was developed under the assumption that currently approved changes will be implemented, and the City may have to revise its analysis if the provincial or federal governments cancel projects, approve additional projects, or undertake new studies. The City will support provincial or federal projects

that improve the overall sustainability of Ottawa's transportation system, such as by enhancing safety or reducing emissions.

Interprovincial bridges. The Ottawa River is spanned by five roadway bridges under federal jurisdiction. This Plan projects a substantial increase in total peak period travel demand across these bridges by 2031. A primary consideration in responding to this increase is as the provision of a new truck route, because restrictions on existing bridges have concentrated trucks on Waller Street, Rideau Street, King Edward Avenue, and the Macdonald-Cartier Bridge, leading to industry inefficiencies, public safety concerns and negative community and environmental impacts along King Edward Avenue and elsewhere in the Central Area.

Toward a new bridge. The federal government, in conjunction with both provincial governments and affected municipalities, undertook a comprehensive evaluation of possible crossing locations but without reaching a consensus recommendation among the partnering agencies. Until a new Ottawa River crossing is built, the City will continue to prohibit development in locations that could hinder the implementation of a potential crossing.

The City will work with provincial and federal governments to develop a transportation system that supports the City's growth management objectives. The City will explore alternative ways to accommodate interprovincial truck travel. Once a safe and efficient alternative to the downtown truck route is found, the City will remove Rideau Street and King Edward Avenue from the City's identified truck route system.

Exhibit 7.3 Key Provincial and Federal Road Projects	
Project	**Description**
Federal (NCC) Projects	
Ottawa River bridge crossing	Location to be determined
Provincial Projects	
Highway 417	Widening from four to six lanes between Highway 7/417 and Palladium Drive
	Widening from four to six lanes plus two HOV lanes between Palladium Drive and Eagleson Road
	Widening from six to eight lanes between Highway 416 and Carling Avenue
	Widening from six to eight lanes between Nicholas Street and Ottawa Road 174
	Widening from four to six lanes between Ottawa Road 174 and the new Hunt Club Road interchange
	Interchange at Hunt Club Road extension

Note: Implementation timing for these projects will depend on the responsible agency.

7.3 Maximize Road Network Efficiency

Action 7-8: Implement the *Transportation System Management Strategy*

The need for efficiency. Although the automobile is currently the dominant mode of travel in many areas of Ottawa, the potential to accommodate future growth in motor vehicle demand (even when maximizing the number of people who choose not to drive) faces real physical, financial and social constraints. In planning and operating transportation infrastructure, the City must focus on using existing right of way and other resources more efficiently. As traffic volumes rise and approach the capacity of roads, action is required to manage congestion while also maximizing the person-carrying capacity of the roadway network. Transportation system management (TSM) strategies optimize the efficiency of existing transportation infrastructure, thereby reducing the need to construct new facilities that can have substantial costs and undesirable impacts. TSM measures can be applied across the entire transportation system, in major corridors, or at individual locations.

The strategy. In 2012 the City adopted a new *TSM Strategy and Action Plan*, a detailed blueprint for actions in several areas over the next decade. It calls for strategies that can reduce delay and emissions, reduce operating costs, and improve safety and community liveability. It aims for durable outcomes including a positive user experience and a high level of customer service, with the goals of improving safety and convenience for pedestrians and cyclists and preserving reliability for transit users. These will lead to smarter travel choices and support the City's mode shift objectives. The City will continue to pursue implementation of the *TSM Strategy and Action Plan*, which reflects three main areas of emphasis as described below.

Action 7-9: Use advanced traffic management systems (ATMS)

Putting technology to work. ATMS applies emerging technologies (e.g. computers, sensors, communications) to improve efficiency, save money, and reduce safety risks and environmental impacts. The City will use these measures to:

- Improve safety and convenience for pedestrians and cyclists through countdown timers, audible signals, and bicycle detection
- Improve transit service reliability through priority measures at traffic signals and congested intersections
- Continue to provide effective traffic management strategies by improving central monitoring, synchronization and real-time adjustment of traffic control signals
- Improve detection of incidents, and timely responses to them
- Improve emergency response times through vehicle pre-emption

Action 7-10: Offer streamlined and accessible traveller information

Enabling better travel decisions. Comprehensive traveller information services allow people to plan trips based on full knowledge of their options and current construction or weather conditions, thereby improving efficiency and safety, and encouraging mode shift where viable options exist. The City will use information tools to:

- Improve communication with travellers through websites, mobile applications, variable message signs and the media

- Offer an interactive, web-based traveller information service addressing multiple modes (e.g. walking, cycling, transit, carpooling, as well as intercity options), and information on weather, incidents, construction projects and emergency detours
- Support an integrated travel information system for the National Capital Region involving municipal, provincial and federal authorities on both sides of the Ottawa River

Action 7-11: Monitor and adopt useful technologies for data management

Innovation and collaboration. The City recognizes the importance of identifying and selecting technologies that are affordable, scalable and proven in real-world applications, with recognized standards and low costs for operation and maintenance. The City will continue to collaborate and partner with academia and the private sector to research and evaluate new technologies, leading to products and services that can benefit users of Ottawa's transportation system.

7.4 Maximize Road Safety for All Users

Action 7-12: Implement the *Strategic Road Safety Action Plan*

Approaches to improving road safety. Maximizing the safety and security of all road users is a fundamental objective of the City. While transportation facilities are initially built to optimize safety, operating environments and user expectations can change over time. Without additional preventative measures, undesirable conditions and behaviours can lead to property damage, injury and death. These risks can be mitigated through multidisciplinary road safety strategies that use infrastructure, operations and services to address road users, road environments and vehicles. Facilities and services for walking, cycling and transit can also be made safer and more secure for users. Outreach can help travellers reduce their exposure to risk by shifting to a safer mode, or by adopting safer behaviour. Perceptions related to safety can influence individuals' choice of travel modes, and safety initiatives can help the City achieve its objectives for walking, cycling and transit use.

The Action Plan. In 2012, the City of Ottawa approved a *Strategic Road Safety Action Plan* developed with key partners including the Public Works Department, Ottawa Public Health, Ottawa Police Service, Ottawa Paramedic Service and Ottawa Fire Services. The action plan identifies key focus areas, initiatives, roles and responsibilities, goals and performance measures. It is based on a "4E" approach to road safety—engineering, education, enforcement and emergency response—and frames the delivery of the City's core road safety programs, namely the Safer Roads Ottawa Program, Pedestrian Safety Evaluation Program, Cycling Safety Improvement Program, Safety Improvement Program, and In-service Safety Reviews. The four primary areas of emphasis of the action plan are discussed in the following sections.

Action 7-13: Combat distracted driving

Inattentive drivers. From 2008 to 2012, 21% of collisions causing serious injury or death in Ottawa were caused by inattentive driving; it is possible that even more were similarly caused but unreported as such. The City includes detailed strategies to reduce non-intersection single vehicle collisions, such as those involving vehicles that simply leave the road.

Action 7-14: Protect vulnerable road users

Pedestrians, cyclists and motorcyclists. From 2008 to 2012, 48% of Ottawa's collisions leading to serious injury or death involved vulnerable road users who lack the protective enclosure and supplemental safety features (e.g. air bags) enjoyed by motor vehicle drivers and passengers. The *Strategic Road Safety Action Plan* includes detailed strategies to enhance the safety of pedestrians, cyclists and motorcyclists.

Action 7-15: Reduce aggressive driving

Proper driver behaviour. From 2008 to 2012, 46% of collisions causing serious injury or death were caused by aggressive driving such as failure to obey traffic controls or yield to other traffic, speeding, or improper passing, turning or lane changing. The action plan includes detailed strategies that target angle collisions, turning movement collisions, speed-related collisions, and rear-end collisions. In addition, the City is supportive of initiatives at the provincial level to reduce the default speed limit from 50km/h to 40km/h.

Action 7-16: Target issues affecting population segments by age

Young drivers, senior drivers and children. From 2008 to 2012, 25% of serious injuries and deaths from collisions involved young drivers aged 16 to 24 years, 6% involved senior drivers, and 2% involved children. The action plan includes detailed strategies for each of those demographic groups.

7.5 Enable Efficient Goods Movement

Trucks are virtually the only mode of local freight transportation in Ottawa, while intercity freight by truck, rail and air helps support the city's economic livelihood and competitiveness.

Action 7-17: Designate truck routes to serve industry and protect neighbourhoods

Truck route designation. Ottawa maintains a comprehensive truck route system that consists of freeways, highways and arterial roads giving access to industrial and commercial areas. These roads can withstand use by heavy trucks, the sizes of which are legislated by the Province of Ontario. The City's designation of truck routes takes into account noise, vibrations, emissions and safety impacts. In general, the City minimizes trucking impacts on residential areas by designating several alternative routes so that impacts are not concentrated in one area. With the addition of new infrastructure, the City will undertake a review of the truck route network as appropriate. The issue of hazardous materials movement will be considered as part of the truck route network review.

Truck route restrictions. Because reduced routing options also increase costs for freight providers, truck restrictions on arterial roads should be considered only where community impacts are significant, where the road in question serves exclusively non-commercial land uses, and where adequate alternative routes are available.

Reducing impacts in the Central Area. As discussed in Section 7.2, the volume of truck traffic passing through Ottawa's downtown to and from the Macdonald-Cartier Bridge has substantial negative impacts on local neighbourhoods and businesses. The City will work with other governments and the private sector to explore ways that through truck traffic in the Central Area, particularly on King Edward Avenue, can be reduced while ensuring the safe and efficient movement of goods. This may include efforts to develop a tunnel solution for connecting the Macdonald-Cartier Bridge with Highway 417, or other measures.

Action 7-18: Consider freight needs in road planning, design and construction

Providing adequate facilities for trucks. When building or rehabilitating roads, the City will consider trucking needs through the use of appropriate design standards and the inclusion of features such as on-street loading areas. The City will also monitor opportunities to enhance the truck route network through road rehabilitation, enabling the adjustment or removal of seasonal weight restrictions.

Action 7-19: Monitor and consult with the freight industry for mutual benefit

Supporting knowledge and innovation. The City will participate in surveys of goods movement on a regular basis to quantify freight demand characteristics, the use of arterial roads by trucks, and the congestion, noise and safety impacts of truck movements. The City will also encourage industry to explore goods movement technologies and practices that can reduce community impacts, improve efficiency and enhance regional competitiveness. These could include intermodal terminals that enable a transfer of freight tonnage from road to rail.

7.6 Protect Neighbourhoods from Undesirable Impacts

Action 7-20: Use area traffic management to resolve public concerns

About area traffic management. Motor vehicle use in neighbourhoods can have undesirable effects including excessive traffic volumes and speeds, aggressive driver behaviour and the creation of hostile conditions for walking and cycling. The City's Area Traffic Management program works to preserve neighbourhood quality of life by mitigating these problems in a way that addresses the needs of residents and businesses, while also respecting the obligations, rights and desires of road users.

Area Traffic Management Guidelines. The City's *Area Traffic Management Guidelines* outline a process for consistently and equitably resolving public concerns about traffic in neighbourhoods. The guidelines discuss the prioritization of study requests, techniques for public consultation, and approaches to analysis and monitoring. The document also offers guidance for applying the City's area traffic management "toolbox" which includes a wide range of options such as road network modifications, traffic control devices, traffic calming measures, streetscaping, enforcement, transportation demand management and public education.

7.7 Minimize Environmental Effects

Ottawa's transportation infrastructure and operations directly influence the quality of our air and water, the integrity of our land, the vitality of our flora and fauna, and the depletion of our resources. Minimizing the environmental effects of growth will be vital to the future quality of life for Ottawa's residents. This section discusses how the City intends to do so; it should also be noted that environmental assessment requirements for transportation projects are discussed in Section 1.6 of this Plan.

Action 7-21: Minimize effects on land, water and vegetation

Land consumption. To minimize the consumption of valuable agricultural and natural resource lands by transportation infrastructure expansion, the City will continue to maximize the efficient operation of existing facilities before adding new ones. It will also work to increase walking, cycling and transit use, which are more space-efficient than motor vehicle use.

Water quality. Pavement prevents water from soaking into the ground, and surface pollutants contaminate the resulting runoff. To improve runoff quality and reduce its volume (thus favouring ground water recharge), the City will support a reduction in paved areas by reducing parking requirements, encouraging shared parking and driveway accesses, promoting permeable surfaces, and following erosion control guidelines for construction. Transportation facilities will provide adequate snow storage, incorporate best practices in stormwater management, and allow surface water runoff to be treated using methods specified by the Ministry of the Environment before it is released into open waterways.

Vegetation. Some trees and plants are removed when transportation infrastructure is built, and others are affected by road use and maintenance. Particulate matter, sulphur dioxide, nitrous oxides and volatile organic compounds emitted by vehicles can harm vegetation, and the use of road salt in winter also impacts plant health. The City is protecting and enhancing urban forests within transportation corridors by reducing road salt use and greening its roadways (e.g. new planting), guided by its *Salt Management Strategy* and *Greening Guidelines*. This Plan's intent to minimize growth in automobile use will moderate future needs for new infrastructure, and limit air emissions.

Cumulative effects on the Greenbelt. The NCC and the City of Ottawa undertook a joint study to assess the cumulative effects of existing, planned and reasonably foreseeable municipal transportation projects on Greenbelt lands. The results of this study along with a list and categorization of 30 projects are documented in a November 27, 2012 staff report to Transportation Committee. A key guiding principle of the study was to examine how transportation infrastructure could be managed while seeking to minimize encroachment and landscape fragmentation. The City will have regard to this study when undertaking environmental assessments for transportation projects in the

Greenbelt and will work with the NCC to implement mutually agreeable environmental mitigation measures for projects crossing the Greenbelt.

Action 7-22: Minimize greenhouse gases and other air emissions

Efficient technologies and behaviours. Despite population and traffic growth, future transportation emissions can be limited through strategies to minimize vehicle-kilometres travelled per person, and through advances in vehicle technologies and low-carbon fuel sources. The City will continue to promote fuel-efficient vehicles and driving techniques, discourage idling, and pursue reductions in carbon emissions from transit and other fleet vehicles. The City's *Air Quality and Climate Change Management Plan* (2004) recommended ways to reduce emissions from transportation, most importantly by reducing private motor vehicle use.

Action 7-23: Control noise levels

Protecting residents. The City aims to protect residents from unacceptable levels of noise from transportation sources including roads, public transit, aircraft and heavy rail. The City's *Environmental Noise Control Guidelines*, which are consistent with regulations and guidelines of the Ontario Ministry of the Environment, identify different noise sources and design criteria, and regulate noise control measures. Readers may refer to the *Official Plan* for policies on acceptable noise levels for land uses including outdoor residential areas.

Noise control measures. The City will implement noise control measures through the planning process for new communities and transportation facilities, emphasizing the use of design and landscaping measures rather than noise attenuation barriers. To ensure conformance with the *Environmental Noise Control Guidelines*, the City will review developments with residential or other noise-sensitive land uses near transportation corridors, and will examine the noise impacts of major modifications to arterial or major collector roads and transit corridors, and identify attenuation, if required. When occupants of developments near roads or rapid transit facilities raise noise concerns, the City follow these guidelines.

8. Encourage Sustainable Mobility Choices

Chapter Overview	
Recommended actions	
Section 8.1	**Offer incentives, promotion and education**
Action 8-1	Implement the *Transportation Demand Management Strategy*
Action 8-2	Improve and promote travel options for City employees
Action 8-3	Use communication and promotion to raise awareness, understanding and motivation
Action 8-4	Build community partnerships to extend the City's reach and resources
Action 8-5	Support the success of related City initiatives
Section 8.2	**Make carpooling more attractive**
Action 8-6	Develop and implement a ridesharing strategy
Action 8-7	Help carpoolers find each other
Action 8-8	Provide and/or promote carpool lanes and parking lots in collaboration with MTO
Section 8.3	**Enhance City parking facilities and services**
Action 8-9	Implement the *Municipal Parking Management Strategy*
Action 8-10	Set off-street and on-street parking rates based on local parking studies and stakeholder consultation
Action 8-11	Conduct parking studies and monitoring in designated local areas
Action 8-12	Provide parking facilities for more sustainable modes of travel

8.1 Offer Incentives, Promotion and Education

Action 8-1: Implement the *Transportation Demand Management Strategy*

About transportation demand management. Transportation demand management (TDM) measures allow communities to shape the economic, social and physical factors behind individuals' travel choices. TDM tools use incentives (monetary and non-monetary), promotion and education to influence whether, why, when, where and how people travel, and can support key goals for changing travel behaviour:

- Mode shift – more people walk, cycle, take transit or carpool
- Trip reductions – more people telework, shop online or conduct business by telephone

- Driving reductions – more drivers make fewer trips by car and to closer destinations
- Time and route shifting – more drivers avoid congestion by changing the time or route of their trip

The Strategy. In 2012 the City adopted a *Transportation Demand Management Strategy* that recognized the importance of TDM in pursuing sustainable transportation goals in general, but also in supporting and building on the impacts of light rail implementation on the travel choices of Ottawa residents. That strategy identified a framework of four long-term goals that are summarized below, a short-term action plan, partner and stakeholder roles, and a performance measurement framework.

Action 8-2: Improve and promote travel options for City employees

Leading by example. The City will act as a role model for other employers in motivating more sustainable travel choices by its employees for both commuting and local business trips. It will do so by enhancing infrastructure, promotion, incentives and monitoring in City workplaces. A recent example of this leadership is the adoption of the WORKshift program, an initiative designed to facilitate flexible work hours and teleworking among employees.

Action 8-3: Use communication and promotion to raise awareness, understanding and motivation

Removing barriers to sustainable choices. The City will develop a strategic communication framework for TDM, building on market research and the TravelWise program identity that has been in use since 2000. A key element of this framework will be a comprehensive, user-friendly Web portal that offers multimodal trip planning tools, access the City's ridematching service, educational materials and social media links. Focused campaigns and special events will help raise awareness, attract partners and community participation, and reward achievements.

Action 8-4: Build community partnerships to extend the City's reach and resources

Engaging workplaces. The City will support and work with employers and post-secondary institutions to offer attractive services and incentives for commuters. In this endeavour there are significant opportunities to support and leverage other City activities, from light rail implementation to cycling skills training and public health outreach.

Engaging schools. The City will continue to champion and support a local school travel planning project, while it works to expand services to schools outside the framework of that particular initiative.

Engaging neighbourhoods. The City is now undertaking a neighbourhood-based personal travel planning pilot project, and will carry lessons forward to future social marketing efforts. There are many other opportunities to partner with groups ranging from festivals to farmers' markets, business groups, community associations and service groups.

Action 8-5: Support the success of related City initiatives

Community services. The City's TDM program will work with other City staff groups to integrate TDM messages and tools into other services and products being delivered to the community. These could include cycling skills training, community grants, and public health or social services.

Other City initiatives. Many things the City does are consistent with the goals of TDM—these include transit fare systems and marketing, traveller information systems, public parking services, development review and approvals, and neighbourhood planning.

8.2 Make Carpooling More Attractive

Demographic shifts and growing personal wealth have led North American automobile occupancies to decline for several decades. In Ottawa, the average automobile occupancy in the morning peak hour has declined from about 1.4 persons per vehicle in the 1960s, to 1.28 persons per vehicle in 1995, to 1.22 persons per vehicle in 2011. Looking more specifically at carpooling by people going to work, the 2011 National Household Survey found an average occupancy of 1.11 workers per car in Ottawa (given that 61.2% of commuters drove and 6.5% were passengers), lower than the average occupancy of 1.13 workers per car in 2006.

In Ottawa's downtown and other areas that enjoy high-quality transit service, ridesharing is unlikely to compete well with transit because it does not offer carpoolers the same independence as transit riders. However, there will continue to be commuters who do not have attractive transit options and who have long commutes for which walking and cycling are impractical. The City will encourage these commuters to carpool rather than drive alone, and they will be the focus of City efforts to improve and promote carpooling.

Action 8-6: Develop and implement a ridesharing strategy

Partnerships. The City will invite the Province of Ontario, Province of Quebec, City of Gatineau and NCC to develop a ridesharing strategy for the National Capital Region. Including the Ontario Ministry of Transportation is suggested because of the Ministry's past investments in carpool parking lots around Ottawa and high-occupancy vehicle (HOV) lanes on parts of Highway 417. Including Quebec agencies would be valuable because of the growing demands on interprovincial bridges (including the Champlain Bridge and Portage Bridge, which already have HOV lanes). Ottawa's other neighbouring municipalities may be interested in participating due to the long distances that many of their residents must travel (almost exclusively by car) to jobs in Ottawa.

Scope. The purpose of a ridesharing strategy would be to jointly identify, coordinate and support ridesharing facilities and services across the region, with a focus on carpooling to workplaces and educational institutions in areas that are less well served

by public transit. A number of measures that could arise from the strategy would be delivered through the City's TDM program (as discussed in Section 8.1) including ridematching services, education, promotion, individualized household marketing, and working with employers and educational institutions to provide incentives such as preferential parking to employees and students. Other measures could include HOV lanes and carpool parking lots, and perhaps vanpooling (in which commuters share a ride in a van that is owned by a third party but driven by one of the vanpool members).

Action 8-7: Help carpoolers find each other

Ridematching service. The City has offered an online public carpool ridematching service at www.ottawaridematch.ca for several years. Integration and promotion of that service with other online trip planning tools (as discussed in Section 8.1) should improve its participation levels and effectiveness. The ability of the ridematching service to provide employers with dedicated sub-sites (where employees can choose to matched only with colleagues) will provide an incentive for employers to work with the City on a wider range of TDM initiatives.

Action 8-8: Provide and/or promote carpool lanes and parking lots in collaboration with MTO

About carpool lanes. Carpool lanes are HOV lanes that are reserved for use by vehicles with a minimum of two or three occupants, as well as buses and (typically) taxis. They may be reserved 24 hours a day, or only at peak hours. They may run the length of a freeway corridor, or (in the case of queue jump lanes) be limited to one short approach to a signalized intersection. There are a few examples of these lanes in Ottawa. For example, the NCC operates a 2+ carpool lane on the Champlain Bridge and a 3+ carpool lane on the Portage Bridge, and the MTO has constructed new 2+ carpool lanes on Highway 417 west of Moodie Drive. However, there are no carpool lanes on City of Ottawa roads with the exception of a short approach to the Portage Bridge on Wellington Street. Development of the recommended ridesharing strategy (discussed previously in this section) could lead to additional carpool lanes on City, MTO or NCC roadways, and to promotional measures that increase their use.

About carpool lots. Carpool lots encourage ridesharing by letting long-distance rural commuters meet and park their vehicles for the day. The City operates one carpool parking lot on Carp Road south of Highway 417, and the Ontario Ministry of Transportation has several in the area:

- Three along Highway 417 – at Panmure Road, Limoges Road, and Upper Dwyer Hill Road
- Three along Highway 416 – at Bankfield Road, Rideau River Road and Shanly Road (near Spencerville)
- Two along Highway 7 – at Dwyer Hill Road and Cemetery Road (near Carleton Place)

Greater use of these lots may be encouraged through more effective promotion, security and other incentives. It should be noted that the City's park-and-ride lots do not permit carpool parking due to high occupancy levels. Development of the recommended ridesharing strategy (discussed previously in this section) could lead to additional carpool lots on City or MTO lands, and to promotional measures that increase their use.

8.3 Enhance City Parking Facilities and Services

Action 8-9: Implement the *Municipal Parking Management Strategy*

About parking. Public parking is a strategic tool for city building. By effectively managing its supply and price, the City can influence how people choose to travel and promote a behavioural shift from driving to walking, cycling and transit. By providing public parking, the needs of stores, services, institutions and tourism destinations where customers and visitors arrive in automobiles can be met in the most efficient manner. Public parking generally uses each parking space more efficiently than private (dedicated) parking because spaces are shared between users, and thus reduces the amount of urban land dedicated to the car. On-street parking supports businesses and helps build vibrant streetscapes.

The Strategy. In 2009 the City adopted a *Municipal Parking Management Strategy* to guide the provision, operation and control of on-street parking and City-owned off-street parking facilities. The strategy recognizes that the City has an important role in public parking provision and enforcement—one that supports the local economy, sustainable

travel choices by individuals, residential intensification, neighbourhood quality of life, and the financial sustainability of current and future parking initiatives themselves. The strategy contains details on financial management, accountabilities and performance measurement, but the issues of greatest relevance to this Plan concern the City's approach to setting municipal parking rates, conducting parking studies and monitoring, and encouraging more sustainable modes of travel, as described below.

Action 8-10: Set off-street and on-street parking rates based on local parking studies and stakeholder consultation

Approval by Council. Council will set rates, hours and locations of on-street and off-street public parking annually, when it approves the parking management program work plan and budget. These decisions will be based on the results of local area parking studies and consultation with stakeholders including business improvement associations, community associations, the local councillor, and places of worship. Where justified, the City may vary the rates and hours of on-street and off-street public parking in different areas.

Adjustments by staff. City staff may still make adjustments to public parking at other times of the year. Changes to on-street parking rates, hours, and locations should be consistent with the *Municipal Parking Management Strategy*, within the range approved by City Council as part of the annual budget, and supported by the local councillor, business improvement association, and community association. Changes to off-street parking rates to reflect seasonal and market adjustments or to encourage more sustainable modes of transportation (e.g. motorcycles, scooters, carshare vehicles) should be consistent with the Municipal Parking Management Strategy, and within the range approved by City Council as part of the annual budget.

Action 8-11: Conduct parking studies and monitoring in designated local areas

Initiating studies. The City will conduct parking studies for different areas within Ottawa based on criteria including on-street parking utilization during peak periods, potential for integration with a Community Design Plan or other local study, stakeholder

requests and readiness to participate, and City funding and resources as established through annual budgets and term of council priorities.

Monitoring. All areas with paid public parking will be monitored annually for utilization, with a demand target of 75% to 85% of capacity. Results will be communicated to stakeholders. If utilization changes unexpectedly, staff and stakeholders may consider adjusting parking rates before the next annual report to Council.

Action 8-12: Provide parking facilities for more sustainable modes of travel

Parking for bicycles and efficient vehicles. The City provides unsecured bicycle parking (e.g. standard racks) at no cost to cyclists and, where prudent and operationally feasible, will provide secured bicycle parking (e.g. cages or lockers) at a price that recovers operational costs. The City will also consider reducing parking rates for vehicles that occupy less than half a regular parking stall or that otherwise reduce the demand for parking, where practical (e.g. carshare vehicles). Furthermore, the City will encourage other parking operators to provide similar incentives bicycles and other efficient vehicles.

9. Invest Responsibly

Chapter Overview	
Recommended actions	
Section 9.1	**Respect the limits of affordability**
Action 9-1	Follow an affordable investment schedule
Action 9-2	Consider additional investments if funds become available
Section 9.2	**Minimize life cycle costs**
Action 9-3	Implement the City's *Comprehensive Asset Management Strategy*
Action 9-4	Recognize the impact of new infrastructure on maintenance activities
Section 9.3	**Measure transportation system performance**
Action 9-5	Monitor and report on progress toward this Plan's objectives

9.1 Respect the Limits of Affordability

Action 9-1: Follow an affordable investment schedule

Affordability parameters. The City defines affordability from the point of view of current and future taxpayers. Not only will current taxpayers be responsible for the capital cost of new infrastructure, but ongoing operational, maintenance, and rehabilitation costs mean that future residents will be paying for transportation projects for many years to come. To contend that a plan is affordable is to demonstrate that there is adequate funding available from identified sources to deliver planned services and infrastructure investments—that is, a funding plan has been identified with reasonable assumptions which also respects established fiscal policies. Ultimately, the City must prioritize and allocate investment among many competing demands.

The consideration of affordability is a financial practice the City has followed since amalgamation through the establishment of Long Range Financial Plans at each term of Council. These have typically been limited to a ten-year horizon but major undertakings such as the Confederation Line, in conjunction with the high levels of investment needed to maintain the City's assets in a state of good repair, mean that the City's master plans require greater consideration of long-term financial issues.

In July 2011, Council was presented with a long-range transit plan that included operating and capital needs for the bus and light rail system to 2048. That plan established that the City could afford to develop and operate the transit system in line with the strategic directions established in the 2008 TMP, including the Confederation Line; this was revisited in December 2012 when the final Confederation Line report and recommendation was put before Council.

The affordability parameters and modelling efforts used in the analysis behind the long-range transit plan have been updated to guide the recommendations of this Plan, and a review of funding sources for roads, cycling, pedestrian facilities, and structures (which are funded through development charges and contributions to capital secured through the annual tax levy) has been conducted. These issues will be documented by the City Treasurer under separate cover.

Implementation costs. The importance of accounting for the lifecycle costs of new transportation infrastructure should not be understated. Protecting existing and future assets with sufficient operations, maintenance and renewal funds as part of the Long Range Financial Plan will ensure that the City can continue to provide essential infrastructure services to residents. As such, the implementation of any service changes proposed as part of this Plan should be considered as part of annual budget cycles.

Exhibit 9.1 summarizes the capital costs of implementing this Plan (with the Affordable RTTP and Road Networks). The total capital cost for all modes is approximately $4 billion. In terms of operating costs, it is estimated that there would be an annual savings of approximately $5 million per year by 2031 as a result of implementing the affordable transit network (this is the incremental cost for new infrastructure only). The net savings largely is a result of the implementation of LRT and the savings in bus costs. Conversely, the implementation of new road, cycling and pedestrian infrastructure will result in modest increases in operating costs.

Action 9-2: Consider additional investments if funds become available

Implementation of projects not included in the Affordable Networks. The assumptions behind projected funding levels will be monitored on a regular basis. For instance, a key assumption is that all major transit projects will be co-funded equally by all levels of government—so if anticipated funding agreements are delayed then major transit investments would need to be reconsidered. Similarly, the unanticipated availability of revenues beyond those reasonably assumed would allow additional investments to be considered.

Exhibit 9.1 Capital Costs of New Infrastructure and Services: Affordable RTTP and Road Networks, Pedestrian Facilities, Cycling Network, ($2013 millions)

Type	Capital cost
LRT+ Vehicles + Maintenance and Storage Facility	2,360
BRT	317
O-Train + Vehicles + Maintenance and Storage Facility	118
Transit priority	200
Road Network plus Intersection Modification	864
Cycling *	70
Pedestrian *	66**
Total	***$3,995M***

* *Road project costs include the costs of integral cycling and pedestrian facilities.*
** *Includes major multi-use pathway structures*

9.2 Affordable Life Cycle Costs

The estimated replacement value of the City's transportation infrastructure—including roads, bridges, walkways and rapid transit facilities—was about $13 billion in 2012. These assets are continuously deteriorating, and will eventually require rehabilitation or replacement. With limited budgets and increasing demands on the transportation network, the City is challenged to manage its assets in a way that minimizes total life cycle costs and sustains expected levels of service.

In addition, the life cycle costing approach adopted for this plan includes the incremental costs of renewing and rehabilitating new transportation infrastructure, which are estimated to be between $70 and $90 million for the period to 2031. The full life cycle costs of new infrastructure have been incorporated into the City's financial model.

Through the adoption of the Comprehensive Asset Management Strategy in October 2012, Council confirmed the required investment levels to keep the City's assets in a state of good repair. In light of this, the funds required to maintain this state were the first priority in the determination of affordable funding envelopes for new infrastructure.

Action 9-3: Implement the City's Comprehensive Asset Management Strategy

About Comprehensive Asset Management. Comprehensive Asset Management (CAM) is the effective management of all tangible capital (physical) assets that the City uses, directly or indirectly, to deliver services to its customers. Key objectives of the City's CAM program include reducing life cycle costs while maintaining assets in a safe condition, improving service to customers, and delivering agreed-upon levels of service. The CAM program will enhance the justification of infrastructure investment decisions, demonstrate the long-term impact of short-term decisions, and link infrastructure decisions to service outcomes.

The Strategy. The City adopted a guiding CAM policy and an implementation-focused *CAM Strategy* in 2012. The CAM policy defines Council's expectations around the management of the City's physical assets, and is expected to remain relatively constant over time. The *CAM Strategy* articulates senior management's commitment to implementing the CAM policy including the necessary resources and timescales for implementation, and will evolve in response to internal and external changes or challenges faced by the City. This CAM approach allows the City to define:

- The inventory and value of the assets needed to support the delivery of services
- The asset condition and expected remaining service life
- The level of service expectations, costs, and what needs to be done to achieve those levels

- The interventions required on the assets, and when these are most appropriate to ensure assets remain safe for sustained the service
- The cost to acquire, operate, maintain and renew while maintaining an acceptable level of risk
- The appropriate investment levels to ensure long-term affordability

In the CAM program's 2012 *State of the Asset Report*, Ottawa's transit assets were assigned a replacement value of $1.95 billion, and were rated as being in good to fair condition overall. Ottawa's roads, bridges, pathways and other transportation facilities were assigned a replacement value of $11.1 billion, and were rated as being in fair condition overall.

Action 9-4: Recognize the impact of new infrastructure on maintenance activities

About maintenance activities. Infrastructure maintenance services reduce life cycle costs while they improve safety, sustain desired levels of service and protect the natural environment. The City delivers maintenance services—asphalt and concrete repairs, winter snow and ice control, and sweeping and litter control—to its paved or surface-treated roads, gravel roads, sidewalks and pathways, bridges and the Transitway. In doing so, it must consider public expectations, budget constraints and best practices in risk management. The City's maintenance service level standards, which define the extent and timing of related activities, are categorized into the following groups:

- *Public safety services and standards* – that impact the safety of pedestrians, cyclists and vehicles. The City's Maintenance Quality Standards are based on the provincial *Minimum Maintenance Standards for Municipal Highways*
- *Infrastructure preservation services and standards* – that reflect the City's need to protect capital assets, and that are financially justified by life cycle cost impacts
- *Quality of life services and standards* – that enhance the quality of life for Ottawa residents and visitors (such as street sweeping, and sidewalk maintenance), and offer some flexibility with regard to performance standards

New infrastructure decisions. The effectiveness and efficiency of maintenance can be helped or hindered by the design of infrastructure, from the structural underpinnings to functional elements like catch basins and decorative elements like public art or heritage-style lighting. Therefore, the City will plan and implement new infrastructure and infrastructure modifications, in a way that recognizes the implications for maintenance service level standards, practices and costs. For example, it will preserve an acceptable right of way (i.e. of sufficient clear width) for maintenance services, wherever possible, when enhancing rights of way with elements like street furniture, lighting, and planters.

9.3 Measure Transportation System Performance

The success of long-range plans depends on the ongoing monitoring of relevant conditions, actions and impacts. The City must remain aware of its progress toward key objectives so that it can add, modify or delete priorities as needed.

Action 9-5: Monitor and report on progress toward this Plan's objectives

Performance measurement framework. The City will develop a framework of performance indicators that reflects the goals and objectives of this Plan and its component strategies. That framework will provide the structure for regular reports on the City's progress.

Benchmarking against other municipalities. Through the Ontario Municipal Benchmarking Initiative, Ottawa will continue to work with 15 other municipalities to measure, compare and analyze performance in transit, road and parking services. Regular reports demonstrate the value that Ottawa residents receive for their tax dollars, and identify areas where improvements may be sought.

ANNEX A: Rapid Transit, Transit Priority, and Road Projects

Table A1 Rapid Transit Projects

Project	General Description	Rationale	EA Status
Light Rail Transit Projects			
North-South LRT (Network Concept)	New LRT right of way between Boulevard Alexandre-Taché in Gatineau and Riverside South Town Centre. Includes airport link	Provides new rapid transit service between Gatineau / downtown Ottawa and the south urban community. Also promotes development in the corridor at Confederation Heights and between Carling Avenue and Bayview Stations.	Partially complete (Riverside South to Bayview)
O-train Extension (Affordable Network)	Extension of existing O-train to Bowesville/Riverside South Station and construction of new stations at Gladstone and Walkley	Provides new rapid transit between downtown Ottawa and the south urban community.	Requires amendment
Eastern LRT (Affordable Network and Network Concept)	**Affordable:** Eastern extension of LRT service following Ottawa Road 174 between Blair Station and Place d'Orléans Station **Concept:** Eastern extension of LRT service following Ottawa Road 174 between Blair Station and Trim Station	Provides fast, reliable service between Place d'Orléans and downtown Ottawa and reduces bus vehicle hours on Ottawa 174	Not started
Western LRT (Affordable Network and Network Concept)	Conversion of the West Transitway to LRT between Tunney's Pasture Station and Baseline Station	Provides fast, reliable service between downtown and communities to the west, including major employment, shopping and educational destinations at Tunney's Pasture, Lincoln Fields and Baseline Stations	In progress
	Construction of new LRT right of way between existing West Transitway and Pinecrest and conversion of West Transitway to LRT from Pinecrest to Bayshore Station	Improves transit service between Kanata and the Inner Area and reduces the number of bus hours along the West Transitway and Highway 174	Requires amendment
Carling LRT (Network Concept)	At-grade LRT corridor between Lincoln Fields Station and Carling O-train Station	Provides enhanced transit service for businesses and residents adjacent to Carling Avenue and promotes redevelopment in the corridor.	Not started

Table A1 Rapid Transit Projects

Project	General Description	Rationale	EA Status
Bus Rapid Transit Projects			
Baseline / Heron / Walkley / St. Laurent (Affordable Network and Network Concept)	**Affordable:** At-grade BRT connecting Baseline Station to Heron Station **Concept:** At-grade BRT connecting Bayshore Station to St. Laurent Station	Provides high quality city-wide transit access to employment, commercial and institutional land uses adjacent to Baseline Road, and fast, reliable service to major rapid transit lines for corridor residents. Also, provides key link between Southwest and Southeast rapid transit network segments and promotes corridor redevelopment particularly at Confederation Heights.	In progress
Cumberland Transitway (Network Concept)	Fully exclusive transitway between Blair Station and Frank Kenny Road	Provides fast, reliable service to/from downtown for south Orléans and Blackburn Hamlet residents.	Complete
Kanata North Transitway (Affordable Network and Network Concept)	**Affordable:** At-grade BRT between Solandt Road and Hwy. 417 **Concept:** At-grade BRT between Maxwell Bridge Road and Highway 417	Provides high quality transit access to major employment area in Kanata North along March Road.	Complete
South Transitway (Network Concept)	At-grade BRT between the Southwest Transitway and Riverside South Town Centre	Provides high quality transit access between town centres of Barrhaven and Riverside South and connects the North-South LRT to the Southwest Transitway	Complete
Southwest Transitway Extension (Network Concept)	Fully exclusive BRT between Baseline Station and Hunt Club Road	Fills the "gap" in the Southwest Transitway, thereby reducing travel time and improving service reliability to South Nepean	Complete
	At-grade BRT following the Greenbank Road extension between Barrhaven Town Centre and Cambrian Road, with the possibility of a future extension to Barnsdale Road	Provides fast, reliable service for South Nepean residents and Woodroffe corridor	In progress (south of Cambrian Road)
West Transitway Extension (Affordable Network and Network Concept)	Fully exclusive BRT between Bayshore Station and west of Moodie Drive	Provides fast, reliable service to/from downtown for Kanata, Stittsville and Bayshore area residents	Complete
	Affordable: Exclusive and at-grade BRT between Terry Fox and Eagleson stations **Concept:** Exclusive BRT between Fernbank Road and Eagleson Station	Provides fast, reliable service to/from downtown for Kanata, Stittsville and Bayshore area residents	Complete

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Airport Parkway (Affordable Network only)	Bus / high occupancy vehicle (HOV) lanes between Hunt Club Road and MacDonald-Cartier International Airport. With the widening of the Airport Parkway to 4 lanes, the outside lanes will be used for transit, taxis, and HOV's	In lieu of rapid transit, improves transit access to MacDonald-Cartier International Airport
Alta Vista Drive (Network Concept)	Transit signal priority and queue jump lanes at selected intersections between Smyth Road and Industrial Avenue	Reduces travel time and improves reliability for OC Transpo routes 8 and 86
Alta Vista Transportation Corridor (Network Concept)	Bus / high occupancy vehicle lanes and transit signal priority between Riverside Drive and the Ottawa Health Sciences Centre	Improves transit access to the Ottawa Hospital, CHEO, and the Canadian Forces Health Care Centre. Also improves access between Hurdman Station and Ottawa's south end
	Transit signal priority and queue jump lanes between the Ottawa Health Sciences Centre and Walkley Road	Improves transit access to the Ottawa Hospital, CHEO, the Canadian Forces Health Care Centre and Ottawa's south end
Bank Street (Affordable Network and Network Concept)	**Affordable:** Transit signal priority between Wellington Street and Highway 417. May also include parking lane conversion in the immediate vicinity of selected intersections	Reduces travel time and improves reliability on some of OC Transpo's busiest local routes: 1, 2, 7, 9, and 12
	Affordable: Transit signal priority between Highway 417 and Billings Bridge Station, including limited installation of queue jump lanes (in one direction only) at selected intersections	Reduces travel time and improves reliability on OC Transpo's routes 1 and 7
	Concept: Transit signal priority and queue jump lanes between Billings Bridge Station and Hunt Club Road	Reduces travel time and improves reliability on OC Transpo's route 1
Baseline Road (Affordable Network only)	Transit signal priority and queue jump lanes between Baseline Station and Richmond Road	In lieu of rapid transit, facilitates transit connections between Baseline Station and Kanata, Also reduces travel time and increases reliability on OC Transpo routes 97, 118, and 152.
Beechwood Avenue and Hemlock Road (Affordable Network and Network Concept)	Transit signal priority between St. Laurent Boulevard and Vanier Parkway. May also include parking lane conversion in the immediate vicinity of selected intersections	Accommodates proposed development at the former CFB Rockcliffe and improves service on OC Transpo routes 1, 5, and 7

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Belfast Road / Terminal Avenue (Network Concept)	Exclusive bus lanes and transit signal priority between Hurdman Station and St. Laurent Boulevard (provided through road widening)	Facilitates transit travel to and from some of Ottawa's primary industrial areas
Blackburn Hamlet Bypass / Brian Coburn Boulevard (Affordable Network only)	Peak period bus lanes and transit signal priority on the Blackburn Hamlet Bypass between Innes Road and Brian Coburn Boulevard which may include the repurposing of general purpose lanes. Transit signal priority and queue jump lanes on Brian Coburn Boulevard between the Blackburn Hamlet Bypass and Tenth Line Road	In lieu of rapid transit, improves transit service between Orléans South and the Inner Area
Blair Road (Affordable Network only)	Transit signal priority and queue jump lanes between Innes Road and Blair Station	In lieu of rapid transit, improves transit service between Orléans South and the Inner Area
Blair Road (Affordable Network and Network Concept)	Exclusive bus lanes and transit signal priority between Blair Station and Montreal Road. Bus lanes to be provided through a combination of road widening (north of Ogilvie Road) and conversion of existing traffic lanes (south of Ogilvie Road)	Improves transit service between the eastern suburbs and Vanier
Bronson Avenue (Affordable Network and Network Concept)	**Affordable:** Transit signal priority between the Southeast Transitway and Carling Avenue	Reduces travel time and improves reliability on OC Transpo's route 4, thereby enhancing transit access to Carleton University
	Concept: Transit signal priority and queue jump lanes between Carling Avenue and the Confederation Line	Reduces travel time and improves reliability on OC Transpo's route 4
Carling Avenue (Affordable Network only)	Exclusive bus lanes and transit signal priority between Lincoln Fields Station and Carling O-Train Station. Bus lanes to be provided through conversion of existing traffic lanes. Note that some transit signal priority already exists along the corridor	In lieu of at-grade LRT, reduces travel time and improves reliability on existing OC Transpo routes and any future bus service on Carling Avenue
Carling Avenue (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Carling O-Train Station and Bronson Avenue	Complements existing bus lanes between Preston Street and Cambridge Street (EB) between Bronson Avenue and Booth Street (WB)

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Carling Avenue / Richmond Road (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Holly Acres Road and Lincoln Fields Station	Provides connecting line between Bayshore Station and Lincoln Fields Station, improving transit service prior to the completion of the Western LRT.
Catherine Street / Chamberlain Avenue / Isabella Street (Network Concept)	Transit signal priority between Bronson Avenue and Lees Station	Reduces travel time and improves reliability for transit trips bypassing the downtown core
Chapman Mills / Strandherd Drive / Earl Armstrong Road (Affordable Network only)	Transit signal priority and queue jump lanes between Barrhaven Town Centre Station and Bowesville/Riverside South Station. Also includes some road reconstruction to accommodate buses. Partial implementation slated for 2014 (Chapman Mills segment)	In lieu of rapid transit, facilitates transit travel between Barrhaven and Riverside South
Codd's Road (Affordable Network and Network Concept)	Exclusive bus lanes and transit signal priority between Montreal Road and Hemlock Road (provided through road widening)	Accommodates proposed development at the former CFB Rockcliffe
Conroy Road (Network Concept)	Transit signal priority and queue jump lanes between Walkley Road and Hunt Club Road	Improves transit service to new Alta Vista Transportation Corridor, the Ottawa Hospital Campus, and Hurdman Station
Eagleson Road (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Hazeldean Road and Eagleson Station	Reduces travel time and improves reliability on OC Transpo routes accessing the West Transitway and the west light rail extension at Bayshore
Elgin Street (Affordable Network and Network Concept)	Transit signal priority between Gladstone Avenue and Wellington Street	Reduces travel time and improves reliability on OC Transpo routes 5, 6, and 14
Fisher Avenue (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Prince of Wales Drive and Baseline Road	Reduces travel time and improves reliability on OC Transpo routes 14 and 86
	Transit signal priority and queue jump lanes between Baseline Road and Carling Avenue	Reduces travel time and improves reliability on OC Transpo routes 14 and 86

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Gladstone Avenue (Affordable Network and Network Concept)	Transit signal priority between future Gladstone O-Train Station and Elgin Street. May also include parking lane conversion in the immediate vicinity of selected intersections	Reduces travel time and improves reliability on OC Transpo route 14
Hazeldean Road (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Stittsville Main Street and Eagleson Road	Reduces travel time and improves reliability on OC Transpo routes 96 and 118 and enhances transit service between Stittsville, Kanata and Bells Corners
Hemlock Road (Affordable Network and Network Concept)	Exclusive bus lanes and transit signal priority between Codd's Road and St. Laurent Boulevard (provided through road widening)	Accommodates proposed development at the former CFB Rockcliffe
Holland Avenue (Affordable Network and Network Concept)	**Affordable:** Transit signal priority between Carling Avenue and Confederation Line. May also include parking lane conversion in the immediate vicinity of selected intersections **Concept:** Exclusive bus lanes and transit signal priority between Carling Avenue and the Confederation Line. Will require removal of existing parking lanes and minor road widening	Reduces travel time and improves reliability on OC Transpo routes 16, 86, 102, and 176
Hunt Club Road (Affordable Network and Network Concept)	**Concept:** Transit signal priority and queue jump lanes at selected intersections between Conroy Road and Albion Road	Provides connecting link between South Keys Station and Alta Vista Transportation Corridor
	Affordable: Road widening to provide exclusive bus lanes and transit signal priority between Albion Road and Uplands Drive. Current budget includes funding for improvements at Bank Street	Reduces travel time and improves reliability over a congested segment of Hunt Club Road
	Concept: Transit signal priority and queue jump lanes at selected intersections between Uplands Drive and Riverside Drive	Reduces travel time and improves reliability on OC Transpo routes 116 and 147

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Innes Road / Trim Road (partially implemented) (Affordable Network and Network Concept)	Queue jump lanes between Millennium Station and Jeanne d'Arc Boulevard. Transit signal priority already in place	Reduces travel time and improves reliability between Orléans South and points west
Innes Road (partially implemented) (Affordable Network and Network Concept)	Queue jump lanes between Jeanne d'Arc Boulevard and Blackburn Hamlet Bypass (west). Transit signal priority already in place	Reduces travel time and improves reliability between Orléans South/Blackburn Hamlet and points west
	Affordable (only): Transit signal priority and queue jump lanes between Blackburn Hamlet Bypass (west) and Blair Road (Affordable Network)	Reduces travel time and improves reliability between Orléans South/Blackburn Hamlet and points west
	Concept: Transit signal priority and queue jump lanes between Blair Road and rail corridor east of St. Laurent Boulevard	Facilitates transit travel to and from some of Ottawa's primary industrial areas
Jeanne d'Arc Boulevard (Affordable Network and Network Concept)	**Affordable:** Transit signal priority and queue jump lanes between Innes Road and Ottawa Road 174 **Concept:** Transit signal priority and queue jump lanes between the Cumberland Transitway and Innes Road. Road widening to provide exclusive bus lanes and transit signal priority between Innes Road and Ottawa Road 174.	Provides connecting link between Orléans South and the Orléans LRT extension
King Edward Avenue (Network Concept)	Transit signal priority to complement the existing southbound bus lane between Sussex Drive and Rideau Street.	Accommodates the large number of STO buses preparing to turn onto Rideau Street
March Road (Affordable Network only)	Transit signal priority and queue jump lanes between Maxwell Bridge Road and Carling Avenue. Allows for future conversion to BRT at a later time to connect with planned BRT south of Carling Avenue	In lieu of rapid transit, provides improved transit service to Kanata North
McArthur Avenue / North River Road (Network Concept)	Transit signal priority and queue jump lanes between Montreal Road and St. Laurent Boulevard	Reduces travel time and improves reliability on OC Transpo route 14

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Meadowlands Drive / Prince of Wales Drive (Network Concept)	Transit signal priority and queue jump lanes between the Southwest Transitway and Heron Road	Reduces travel time and improves reliability on OC Transpo routes 86 and 111
Merivale Road (Affordable Network and Network Concept)	**Affordable:** Peak period bus lanes (peak direction only) and transit signal priority between Carling Avenue and Baseline Road (achieved by reallocating existing traffic lanes)	Reduces travel time and improves reliability on OC Transpo route 176
	Concept: Road widening to provide exclusive bus lanes and transit signal priority between Baseline Road and Slack Road	Reduces travel time and improves reliability on OC Transpo routes 116, 156, and 176
Montréal Road (Affordable Network and Network Concept)	**Affordable:** Peak period bus lanes with increased time of day coverage in both directions between Cummings Bridge and St. Laurent Boulevard. Also includes transit signal priority along the corridor	Reduces travel time and improves reliability on OC Transpo route 12 and accommodates future development at former CFB Rockcliffe
	Affordable: Road widening to provide exclusive bus lanes and transit signal priority between St. Laurent Boulevard and Blair Road	Reduces travel time and improves reliability on OC Transpo route 12 and accommodates future development at former CFB Rockcliffe
	Concept: Road widening to provide exclusive bus lanes and transit signal priority between Blair Road and Ogilvie Road	Reduces travel time and improves reliability on OC Transpo route 12 and accommodates future development at former CFB Rockcliffe
Murray Street / St. Patrick Street / Dalhousie Street (Affordable Network and Network Concept)	Transit signal priority between Vanier Parkway and Rideau Street. May also include parking lane conversion in the immediate vicinity of selected intersections	Reduces travel time and improves reliability on OC Transpo route 1
Ogilvie Road (Network Concept)	Transit signal priority between Blair Road and St. Laurent Boulevard	Reduces travel time and improves reliability on OC Transpo route 127
Orléans Boulevard (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Montreal Road and St. Laurent Boulevard	Improves transit access to the Orléans LRT extension

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Richmond Road / Wellington Street West / Somerset Street (Affordable Network and Network Concept)	Transit signal priority between Woodroffe Avenue and Bank Street	Reduces travel time and improves reliability on OC Transpo route 2
Rideau Street (Affordable Network and Network Concept)	All day bus lanes between Sussex Drive and Cumberland Street and peak period bus lanes between Cumberland Street and Charlotte Street, supported by transit signal priority (from Sussex Drive to Cummings Bridge). Bus lanes as described are already in place. Peak periods for which bus lanes are in effect to be extended.	Accommodates increasing congestion on Rideau Street outside of existing peak periods
Riverside Drive (Network Concept)	Transit signal priority and queue jump lanes between Hunt Club Road and Heron Road	Provides new transit link from Ottawa's southern suburbs to the inner area
Robertson Road / Richmond Road (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Eagleson Road and Holly Acres Road	Reduces travel time and improves reliability on OC Transpo route 118 and enhances transit service between Kanata and Bells Corners
Smyth Road (Network Concept)	Transit signal priority and queue jump lanes between Alta Vista Transportation Corridor and St. Laurent Boulevard	Reduces travel time and improves reliability on OC Transpo route 106
St. Laurent Boulevard (Affordable Network and Network Concept)	**Concept :** Transit signal priority and queue jump lanes between Hemlock Road and Montreal Road	Reduces travel time and improves reliability on OC Transpo routes 5 and 7
	Affordable: Transit signal priority and queue jump lanes between Montreal Road and St. Laurent Station	Reduces travel time and improves reliability on OC Transpo routes 5, 7, 14, and 18
	Affordable: Transit signal priority and queue jump lanes between St. Laurent Station and Innes Road	Reduces travel time and improves reliability on OC Transpo route 114
	Concept: Transit signal priority and queue jump lanes between Russell Road and Walkley Road	Reduces travel time and improves reliability on OC Transpo routes 114 and 148
Stittsville Main Street (Network Concept)	Transit signal priority and queue jump lanes between Fernbank Road and Hazeldean Road	Improves transit service between Stittsville and future West Transitway

Table A2 Transit Priority Projects[1]

Project	General Description	Rationale
Stittsville North-South Arterial (Affordable Network only)	Transit signal priority and queue jump lanes at select intersections	Improves transit service within the Fernbank community and provides improved access to the future West Transitway
Tenth Line Road (Affordable Network and Network Concept)	Transit signal priority and queue jump lanes between Charlemagne Boulevard and Ottawa 174	Improves transit access to Ottawa 174 and Place d'Orléans Station
Terry Fox Drive (Network Concept)	Transit signal priority between Hazeldean Road and the West Transitway	Improves transit access to the West Transitway
Walkley Road (Network Concept)	Transit signal priority between Heron Road and the Southeast Transitway	Reduces travel time and improves reliability on OC Transpo routes 8 and 41
Wellington Street (Network Concept)	Transit signal priority and queue jump lanes between between Sussex Drive and Bank Street	Accommodates high volume of STO buses on Wellington and reduces travel time for OC Transpo routes 1, 2, 7, 9, and 12
	Transit signal priority and queue jump lanes between Bank Street and the Portage Bridge. Provision of transit priority may be complicated by high traffic flow, frequent instances of vehicles parked in curb lanes, and other factors.	Accommodates high volume of STO buses on Wellington
West Hunt Club Road (Network Concept)	Transit signal priority and queue jump lanes between Woodroffe Avenue and Riverside Drive	Improves transit service for cross-town trips that are bypassing the inner area
Woodroffe Avenue (partially implemented) (Network Concept)	Transit signal priority and queue jump lanes between Carling Avenue and Richmond Road	Provides improved transit service to access Confederation Line Stations
	Transit signal priority and queue jump lanes between Fallowfield Road and Chapman Mills Drive	Improves transit access to the Southwest Transitway

[1] *Note: Environmental assessment processes will apply where the implementation of transit priority measures changes the function or capacity of the roadway. Most projects in this table fall under the Class A+ process.*

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Airport Parkway (Affordable Network and Network Concept)	Widen from two to four lanes between Brookfield Road and Hunt Club Road	Accommodates increasing traffic volumes and improves access to and from MacDonald-Cartier International Airport	Not started
	Widen from two to four lanes between Hunt Club Road and MacDonald-Cartier International Airport, including northern realignment south of Hunt Club Road	Accommodates growth in Riverside South and Leitrim and improves access to and from MacDonald-Cartier International Airport	Not started
Albion Road (Network Concept)	Widen from two to four lanes between Leitrim Road and Lester Road	Accommodates growth in Riverside South and Leitrim and diverts traffic from Albion Road through Blossom Park	Not started
Alta Vista Transportation Corridor (Network Concept)	New four-lane road between Nicholas Street / Highway 417 interchange and Riverside Drive	Addresses the capacity deficiency across the Smyth/Hydro screenline and diverts increasing traffic away from Main Street	Complete
	New four lane road (including two peak-period bus lanes) between the Ottawa Health Sciences Centre and Walkley Road	Addresses the capacity deficiency across the Smyth/Hydro screenline and reduces short-cutting on local streets in Alta Vista and Elmvale	Complete
Bank Street (Affordable Network and Network Concept)	**Affordable:** Widen from two to four lanes between Leitrim Road and Rideau Road	Provides capacity for growth in Leitrim	In progress
	Concept: Widen from two to four lanes between Rideau Road and Parkway Road	Provides capacity for growth in Leitrim and Greely	Not started
Barnsdale Road (Network Concept)	Widen from two to four lanes between Highway 416 and Prince of Wales Drive, requiring a new interchange	Required in conjunction with new Barnsdale Road–Highway 416 interchange (a second Highway 416 interchange to serve growing Barrhaven / Nepean South)	Not started
Belfast Road (Affordable Network and Network Concept)	Widen from two to four lanes between Coventry Road and Tremblay Road	Required to address local capacity issues associated with the implementation of Transit-Oriented Development plans at Train and St. Laurent stations	Not started
Blackburn Hamlet Bypass (Network Concept)	Widen from four to six lanes between Innes Road (west entrance to Blackburn Hamlet) and Navan Road	Addresses capacity deficiencies across the Greens Creek screenline and provides arterial road service for the growth areas in south Orléans	Not Started

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Blackburn Hamlet Bypass Extension (Affordable Network and Network Concept)	New four-lane road between Innes Road and Navan Road	Provides access to development in Orléans south of Innes Road	Complete
Blair Road (Affordable Network and Network Concept)	Widen from two to four lanes between Meadowbrook Road and Innes Road	Accommodates new bus lane and anticipated Transit-Oriented Development in the vicinity of Blair Station	Not started
Brian Coburn Boulevard Extension (Affordable Network and Network Concept)	**Affordable:** New two-lane road (ultimately four-lane) between Navan Road and Mer Bleue Road	Provides access to development in Orléans south of Innes Road	Complete
	Concept: New two-lane road (ultimately four-lane) between Trim Road to Frank Kenny Road	Provides new linkage between Trim Road and Frank Kenny Road	Complete
Cambrian Road (Network Concept)	Widen from two to four lanes between Greenbank Road extension and Jockvale Road	Provides access to development in Barrhaven South	In progress
Campeau Drive (Affordable Network and Network Concept)	**Concept:** Widen from two to four lanes between Didsbury Road and March Road	Provides continuity in the north Kanata area, and addresses capacity and parking needs in the Kanata Town Centre	Complete
	Affordable: New four-lane road between Didsbury Road and new North-South arterial in Stittsville	Accommodates Kanata West development	Complete
Carp Road (Affordable Network and Network Concept)	Widen from two to four lanes between Highway 417 and Hazeldean Road	Provides capacity for growth in Stittsville	In progress
Chapman Mills Drive (Affordable Network and Network Concept)	New four lane road between Longfields Drive and Strandherd Drive	Serves the development of the Barrhaven Town Centre	Complete
Country Club Road (Affordable Network and Network Concept)	New two-lane road between eastern terminus of Golf Club Way and Jenkinson Road	Completes access road on the south side of Highway 7	Complete

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Coventry Road (Affordable Network and Network Concept)	Widen from two to four lanes between Belfast Road and St. Laurent Centre	Continuity through commercial and industrial area between four-lane sections of Coventry Road	Not started
Cyrville Road (Affordable Network and Network Concept)	**Affordable:** Urbanize existing two-lane rural cross section between Star Top Road and St. Laurent Boulevard	Improves environment for pedestrians and cyclists	Not started
	Concept: Widen from two to four lanes between St. Laurent Boulevard and Innes Road.	Accommodates demand anticipated from transit-oriented development in the vicinity of Cyrville Station	Not started
Eagleson Road (Affordable Network and Network Concept)	Widen from two to four lanes between Cadence Gate and Hope Side Road	Provides capacity for additional travel demands from new development areas and continuity from the four-lane Eagleson Road to Hope Side Road	Complete
Earl Armstrong Road (Affordable Network and Network Concept)	**Affordable:** Widen from two to four lanes between Limebank Road and Bowesville Road	Provides capacity for growth in Riverside South	Complete
	Concept: New two-lane road between Albion Road and Bank Street	Provides capacity for growth in Riverside South and completes linkage to Bank Street	Not started
	Concept: New two-lane road between Bank Street and Hawthorne	Continuation of cross-town route between Highway 416 and Highway 417	Not started
Earl Grey Drive Underpass (Affordable Network and Network Concept)	Underpass of Terry Fox Drive	Relieves operational, safety and local development access to/from Kanata Centrum and Stittsville	See Note 1
Fallowfield Road (Network Concept)	Widen from two to four lanes between Woodroffe and Prince of Wales	Provides better access to Prince of Wales from north Barrhaven	Complete
	Widen from two to four lanes between Strandherd Drive and Greenbank Road	Provides capacity to service growth in South Nepean	Complete
Fernbank Road (Network Concept)	Widen from two to four lanes between Stittsville Main Street and Terry Fox Drive	Accommodates increasing population and employment in Stittsville	Not started

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Fisher Avenue (Network Concept)	Widen from two to four lanes between Dynes Road and Baseline Road	Provides network continuity through residential area with associated improvements to streetscaping	Not started
Frank Kenny Road Extension (Network Concept)	New four-lane road between re-aligned Trim Road and south of Innes Road	Provides network continuity and capacity for additional traffic generated by development growth in Orléans	Complete
Goulbourn Forced Road Re-alignment (Network Concept)	Re-aligned and new two-lane road between Terry Fox Drive and Kanata Avenue	Provides capacity for growth in Kanata North	Complete
Greenbank Road Extension (Affordable Network and Network Concept)	**Affordable:** New four lane road between Jockvale Road and Cambrian Road	Accommodates growth within South Nepean	Complete
	Concept: New four-lane arterial road connecting Cambrian to Greenbank	Provides access to new development lands in South Nepean	In progress
Hope Side Road (Affordable Network and Network Concept)	Widen from two to four lanes between Eagleson Road and Richmond Road	Provides capacity and network continuity for growth areas in Kanata	Complete
Hunt Club Road (Network Concept)	Widen from four to six lanes between Riverside Drive and Bank Street	Addresses capacity deficiencies at Rideau River South Manotick Screenlines, in conjunction with the Strandherd/Armstrong river crossing	Not started
Huntmar Drive (Affordable Network and Network Concept)	Widen from two to four lanes between Campeau Drive extension to Cyclone Taylor Boulevard. Widen from two to four lanes between Palladium Drive to Maple Grove Road.	Accommodates Kanata West Development	Not started
Industrial Avenue Extension (Network Concept)	New four-lane road extending westward from Terminal Avenue through the Hurdman TOD lands	Provides access for new development in the Hurdman TOD lands	Not started
Innes-Walkley-Hunt Club Link (Network Concept)	New four-lane road (initial phase two-lanes) between Hunt Club and Innes Road west of Blackburn Hamlet	Bypasses congested section of Innes Road and provides direct connection between Orléans and Hunt Club	Complete
Jockvale Road (Affordable Network and Network Concept)	Widen from two to four lanes between Jock River and Prince of Wales.	Accommodates development access and growth for development within the Nepean South Urban Community	Complete

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Kanata Avenue (Affordable Network and Network Concept)	Widen from two to four lanes between Highway 417 and Campeau Drive	Fulfills urban design initiatives ongoing in the vicinity of Kanata Town Centre	In progress
Klondike Road (Affordable Network and Network Concept)	Urbanize existing two-lane rural cross section between March Road and Sandhill Road	Provides continuity between March Road and new residential development in Kanata North	Not required
Leitrim Road (Network Concept)	Widen from two to four lanes between River Road and Limebank Road	Provides capacity for development in Riverside South	Complete
	New four-lane re-aligned road between Limebank Road and Albion Road	Provides capacity for development in Riverside South	Complete
Lester Road (Affordable Network and Network Concept)	Widen from two to four lanes between Airport Parkway and Bank Street	Accommodates growth in Riverside South and Leitrim and diverts traffic from Albion Road away from Blossom Park	Not started
Limebank Road (Network Concept)	Widen from two to four lanes between Earl Armstrong Road and Mitch Owens Road	Addresses capacity deficiencies across the Leitrim screenline, in conjunction with the widening of Riverside Drive and Bank Street	Not started
Maple Grove Road (Network Concept)	Widen from two to four lanes between Terry Fox Drive and Huntmar Drive	Accommodates Kanata West Development	Complete
March Road (Network Concept)	Widen from two to four lanes between Old Carp Road and Dunrobin Road	Provides additional vehicular capacity to growth areas in north Kanata	Not started
Mer Bleue Road (Affordable Network and Network Concept)	**Affordable:** Widen from two to four lanes between Brian Coburn Boulevard and Renaud Road	Provides capacity for the development areas south of Innes Road	Complete
	Concept: New four-lane re-alignment, west of existing Mer Bleue Road, between Renaud Road and Navan Road	Provides capacity for the development areas south of Innes Road	Complete
Navan Road (Network Concept)	Widen from two to four lanes between Brian Coburn Boulevard and Mer Bleue Road.	Provides capacity for the development areas south of Innes Road	Not started

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Old Montreal Road (Network Concept)	Widen from two to four lanes between Trim Road and the edge of the urban boundary	Provide capacity for the development areas east of Trim Road	Not started
Old Richmond/West Hunt Club (Affordable Network and Network Concept)	Widen Old Richmond Road/ West Hunt Club Road from two to four lanes between Hope Side and Highway 416	Provides capacity and network continuity for growth areas in Kanata	Complete
Ottawa Road 174 (Network Concept)	Widen from four to six lanes between Highway 417 and Trim Road	Addresses local capacity, operational and safety issues	In progress
	Widen from two to four lanes between Trim Road and the city boundary	Addresses local capacity, operational and safety issues	In progress
Perth Street (Network Concept)	Widen to four lanes between Shea Road and Eagleson Road and between Queen Charlotte Street and the village boundary	Provides continuity through Richmond Village and addresses the needs identified in the village's Community Design Plan	Not started
Palladium Drive Realignment (Affordable Network and Network Concept)	Realign in vicinity of Huntmar Road to new North-South arterial	Accommodates Kanata West Development	Complete
Preston Street (Affordable Network and Network Concept)	Extend existing 2 lane urban roadway Albert Street to Vimy Place (at John A. McDonald Parkway)	Provides connection through Lereton Flats including structure crossing of new LRT and existing aqueduct	Not started
Prince of Wales Drive (Affordable Network and Network Concept)	**Concept:** Widen from two to four lanes between Merivale Road and Hunt Club Road **Concept:** Widen from two to four lanes between Strandherd Drive and Fisher Avenue	Addresses capacity deficiencies at CNR West screenline	Complete
Richmond Road (Network Concept)	Widen from two to four lanes between Bayshore Drive and Pinecrest Road	Provides network continuity and improves bus service reliability	Not started
Richmond Village By-Pass (Network Concept)	New two-lane road between Huntley Road and Eagleson Road	Provides access to new development lands north of existing Richmond Village	Not started

Table A3 Road Projects

Project	General Description	Rationale	EA Status
Rideau River Crossing (Network Concept)	New four lane bridge and approaches between Prince of Wales Drive and Limebank Road	Provides for increased capacity across Rideau River screenline.	Not started
Riverside Drive (Network Concept)	Widen from four to six lanes between River Road and Hunt Club Road	Provides capacity for growth in Riverside South	Complete
Strandherd Drive (Affordable Network and Network Concept)	**Affordable:** Widen from two to four lanes between Fallowfield Road and Jockvale Road	Addresses capacity deficiencies at the Rideau River South and Manotick screenlines, in conjunction with a Strandherd-Earl Armstrong Rideau River Bridge and Earl Armstrong Road widening	Complete
	Concept: Widen from four to six lanes between Jockvale Road and Woodroffe Avenue		
Stittsville Main Street Extension (Affordable Network and Network Concept)	New two-lane road between Palladium Drive and Maple Grove Road	Provides capacity for development in Stittsville	Not started
Stittsville North-South Arterial (Affordable Network and Network Concept)	New two-lane road between Palladium Drive and Fernbank Road	Provides capacity for development in Stittsville and provides a bypass for Stittsville Main Street congestion	Complete
Tenth Line Road (Affordable Network and Network Concept)	Widen from two to four lanes between Harvest Valley Drive and the urban boundary	Services growth south of Innes Road	Complete
Terry Fox Drive (Network Concept)	Widen from two to four lanes between Winchester Drive and Eagleson Road	Provides access to adjacent developments	Complete
	Widen from four to six lanes between Campeau Drive and Palladium Drive	Accommodates Kanata West Development	Not started
Tremblay Road (Affordable Network and Network Concept)	Widen from two to four lanes between Pickering Place and St. Laurent Boulevard	Addresses the needs identified by the St. Laurent Station Transit-Oriented Development study and accommodates new employment land at St. Laurent Blvd at Tremblay Road	Not started
West Hunt Club Road (Network Concept)	Widen from four to six lanes between Highway 416 and Prince of Wales Drive	Services on-going development/ redevelopment along corridor and makes full use of Rideau River Bridge	Not started

ANNEX B: Maps

Map 1 Cycling Network – Primary Urban

Map 2 Cycling Network – Primary Rural (with Scenic Entry Routes)

Map 3 Rapid Transit and Transit Priority Network – Ultimate Network

Map 4 Rapid Transit and Transit Priority Network – 2031 Network Concept

Map 5 Rapid Transit and Transit Priority Network – 2031 Affordable Network

Map 6 Road Network – Urban

Map 7 Road Network – Central Area/Inner City

Map 8 Road Network – Rural

Map 9 Road Network – Select Villages

Map 10 Road Network – 2031 Network Concept

Map 11 Road Network – 2031 Affordable Network

Note: A map of the city-wide pedestrian network is not provided here due to the complexity of presenting such detailed information at the map scales provided. The pedestrian network can be viewed on-line at: http://maps.ottawa.ca/geoOttawa/

Note:
1) This map outlines the primary urban cycling network.
For the community-wide network please consult the approved Ottawa Cycling Plan.
2) This map reflects policy designation of the future cycling network.
For existing facilities, please refer to the city cycling map.
3) The Cycling Plan also identifies on and off road Community Routes that should be considered when undertaking development or public works.

Note:
1) Cette carte dresse les grandes lignes d'un réseau primaire de transport à bicyclette en région urbaine. Pour le réseau communautaire secondaire consultez le Plan sur le cyclisme d'Ottawa.
2) Ce plan illustre la désignation de politique du futur réseau de pistes cyclables. Pour avoir un aperçu des installations existantes, consultez la Carte du vélo de la ville.
3) Le Plan sur le cyclisme d'Ottawa illustre les routes « secondaires » communautaires qui sont importantes de prendre en considération lorsqu'il y a des plans d'aménagement ou travaux publiques proposés.

1

City of / Ville de GATINEAU

Rivière des Outaouais / Ottawa River

MARCH
HUNTMAR
CARP
CARLING
CAMPEAU
PALADIUM
HAZELDEAN
TERRY FOX
STITTSVILLE MAIN
FERNBANK
EAGLESON
TIMM
ROBERTSON
OLD RICHMOND
FALLOWFIELD
MOODIE
PERTH
BROPHY
BASELINE
WEST HUNT CLUB
CEDARVIEW
GREENBANK
FALLOWFIELD
BANKFIELD
SCOTT
KIRKWOOD
MERIVALE
FISHER
WOODROFFE
CARLING
BRONSON
BANK
MAIN
RIVERSIDE
PRINCE OF WALES
RIVER
EARL ARMSTRONG
HEMLOCK
MONTREAL
McARTHUR
ST LAURENT
OGILVIE
SMYTH
HERON
WALKLEY
HUNT CLUB
BLAIR
INNES
BLACKBURN BYPASS
ANDERSON
CONROY
ALBION
LEITRIM
HAWTHORNE
RAMSAYVILLE
RUSSELL
ST JOSEPH
JEANNE D'ARC
ORLEANS
INNES
TENTH LINE
MER BLEUE
NAVAN
MILTON
FRANK KENNY
RUSSELL
MITCH OWENS

Ottawa

1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

PRIMARY NETWORK / **RÉSEAU PRINCIPAL**

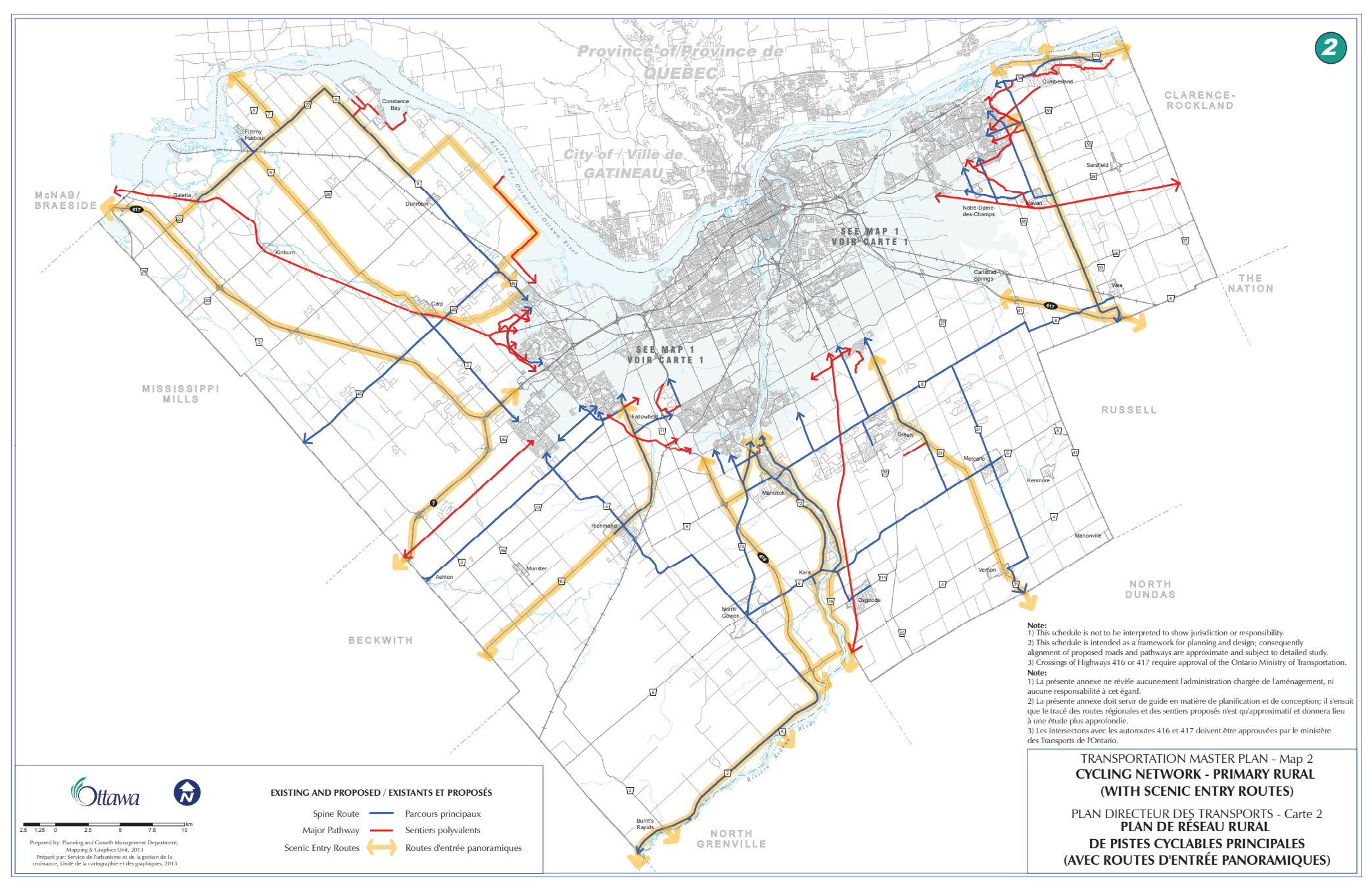
Spine Route	Circuit principal
Major Pathway	Sentier principal
Cross-town Bikeway	Voie cyclable transurbaine

TRANSPORTATION MASTER PLAN - Map 1

CYCLING NETWORK - PRIMARY URBAN

PLAN DIRECTEUR DES TRANSPORTS - Carte 1

PLAN DU RÉSEAU URBAIN DE PISTES CYCLABLES PRINCIPALES



Note:
1) This schedule is not to be interpreted to show jurisdiction or responsibility.
2) This schedule is intended as a framework for planning and design; consequently alignment of proposed roads and pathways are approximate and subject to detailed study.
3) Crossings of Highways 416 or 417 require approval of the Ontario Ministry of Transportation.

Note:
1) La présente annexe ne révèle aucunement l'administration chargée de l'aménagement, ni aucune responsabilité à cet égard.
2) La présente annexe doit servir de guide en matière de planification et de conception; il s'ensuit que le tracé des routes régionales et des sentiers proposés n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) Les intersectons avec les autoroutes 416 et 417 doivent être approuvées par le ministère des Transports de l'Ontario.

TRANSPORTATION MASTER PLAN - Map 2
CYCLING NETWORK - PRIMARY RURAL (WITH SCENIC ENTRY ROUTES)

PLAN DIRECTEUR DES TRANSPORTS - Carte 2
PLAN DE RÉSEAU RURAL DE PISTES CYCLABLES PRINCIPALES (AVEC ROUTES D'ENTRÉE PANORAMIQUES)

3

Note:
1) This schedule forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This schedule is intended as a framework for planning and design; consequently alignments of proposed corridors are approximate and subject to detailed study. Locations shown are approximate for many of the not yet built future transit stations, park and ride lots and potential rail yards. This Plan will be periodically updated to reflect changes in the finalized location of such facilities.
3) The rights-of-way to be protected for all Future Rapid Transit Corridors is 40 metres or a width as determined to be suitable by the City. Additional rights-of-way may be required at selected locations for provision of local transit terminals and other transit related infrastructure as well as pedestrian and cycling facilities as appropriate.
4) The City, in consideration of potential long-term public transit requirements, shall protect rapid transit corridors beyond those shown in this schedule to enable each of the identified rapid transit corridors to extend through to the edge of the urban boundary.

Note:
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3) L'emprise à protéger pour tous les couloirs futurs de transport en commun rapide est de 40 mètres ou d'une larguer que la ville décide est convenable. Il peut s'avérer nécessaire d'utiliser, au besoin, d'autres emprises à certains endroits afin de permettre l'installation de terminus de transport en commun local et d'autres infrastructures liées au transport en commun de même que des installations piétonnières et cyclables.
4) La Ville, compte tenu des besoins à long terme potentiels en matière de transport en commun, doit protéger les couloirs de transport en commun rapide au-delà de ce qui figure dans le présent document afin que chacun de ces couloirs puisse être prolongé jusqu'à la limite urbaine.

RAPID TRANSIT
Light Rail Transit (LRT) - Grade Separated Crossings
Light Rail Transit (LRT) - At-Grade Crossings
Bus Rapid Transit (BRT) - Grade Separated Crossings
Bus Rapid Transit (BRT) - At-Grade Crossings

TRANSPORT EN COMMUN RAPIDE
Transport en commun par train léger (TCTL) - passages étagés
Transport en commun par train léger (TCTL) - passages à niveau
Transport en commun rapide par autobus (TCRA) - passages étagés
Transport en commun rapide par autobus (TCRA) - passages à niveau

TRANSIT PRIORITY
Transit Priority Corridor (Continuous Lanes)
Transit Priority Corridor (Isolated Measures)

PRIORITÉ AU TRANSPORT EN COMMUN
Corridor donnant priorité au transport en commun (voies continues)
Corridor donnant priorité au transport en commun (mesures isolées)

Park and Ride — Parc-O-Bus
Transit Station - rail — Station du transport - train
Transit Station - bus — Station du transport - autobus
Conceptual Future Transit Corridor — Avenir conceptuel - Couloir de transport en commun
Abandoned Railway Corridor — Emprises ferrouiaires abandonnées
Inter-regional Stations — Stations interrégionales
Potential Rail Yard — Cour de tirage possible pour trains
Gatineau Rapibus — Rapibus de Gatineau

TRANSPORTATION MASTER PLAN - Map 3
RAPID TRANSIT AND TRANSIT PRIORITY NETWORK - ULTIMATE NETWORK

PLAN DIRECTEUR DES TRANSPORTS - Carte 3
RÉSEAU DE TRANSPORT EN COMMUN RAPIDE ET DE TRANSPORT EN COMMUN PRIORITAIRE – CONCEPT DE RÉSEAU ULTIME

4

Note:
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4) The City, in consideration of potential long-term public transit requirements, shall protect rapid transit corridors beyond those shown in this schedule to enable each of the identified rapid transit corridors to extend through to the edge of the urban boundary.

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4) La Ville, compte tenu des besoins à long terme potentiels en matière de transport en commun, doit protéger les couloirs de transport en commun rapide au-delà de ce qui figure dans le présent document afin que chacun de ces couloirs puisse être prolongé jusqu'à la limite urbaine.

Ottawa

1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

RAPID TRANSIT
Light Rail Transit (LRT) - Grade Separated Crossings
Light Rail Transit (LRT) - At-Grade Crossings
Bus Rapid Transit (BRT) - Grade Separated Crossings
Bus Rapid Transit (BRT) - At-Grade Crossings

TRANSIT PRIORITY
Transit Priority Corridor (Continuous Lanes)
Transit Priority Corridor (Isolated Measures)

TRANSPORT EN COMMUN RAPIDE
Transport en commun par train léger (TCTL) - passages étagés
Transport en commun par train léger (TCTL) - passages à niveau
Transport en commun rapide par autobus (TCRA) - passages étagés
Transport en commun rapide par autobus (TCRA) - passages à niveau

PRIORITÉ AU TRANSPORT EN COMMUN
Corridor donnant priorité au transport en commun (voies continues)
Corridor donnant priorité au transport en commun (mesures isolées)

Park and Ride — Parc-O-Bus
Transit Station - rail — Station du transport - train
Transit Station - bus — Station du transport - autobus
Conceptual Future Transit Corridor — Avenir conceptuel - Couloir de transport en commun
Abandoned Railway Corridor — Emprises ferrouiaires abandonnées
Inter-regional Stations — Stations interrégionales
Potential Rail Yard — Cour de tirage possible pour trains
Gatineau Rapibus — Rapibus de Gatineau

TRANSPORTATION MASTER PLAN - Map 4
RAPID TRANSIT AND TRANSIT PRIORITY NETWORK - 2031 NETWORK CONCEPT

PLAN DIRECTEUR DES TRANSPORTS - Carte 4
RÉSEAU DE TRANSPORT EN COMMUN RAPIDE ET DE TRANSPORT EN COMMUN PRIORITAIRE – CONCEPT DU RÉSEAU 2031

5

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Ottawa

1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

RAPID TRANSIT
Existing Bus Rapid Transit (BRT)
Existing Bus Lanes
Existing / Committed Rail
Future Rail
Future Bus Rapid Transit (BRT)
Future Bus Rapid Transit (BRT) - At-Grade Crossings

TRANSPORT EN COMMUN RAPIDE
Transport en commun rapide par autobus actuel
Voies actuelles réservées aux autobus
Réseau de transport ferroviaire actuel/prévu
Réseau ferroviaire futur
Transport en commun rapide par autobus (TCRA) futur
Transport en commun rapide par autobus (TCRA) - passages à niveau futur

TRANSIT PRIORITY
Transit Priority Corridor (Continuous Lanes)
Transit Priority Corridor (Isolated Measures)

PRIORITÉ AU TRANSPORT EN COMMUN
Corridor donnant priorité au transport en commun (voies continues)
Corridor donnant priorité au transport en commun (mesures isolées)

Existing Transit Station - Bus
Existing / Committed Transit Station - Rail
Future Transit Station - Rail
Future Transit Station - Bus
Inter-regional Stations
Potential Rail Yard
Gatineau Rapibus
Park and Ride

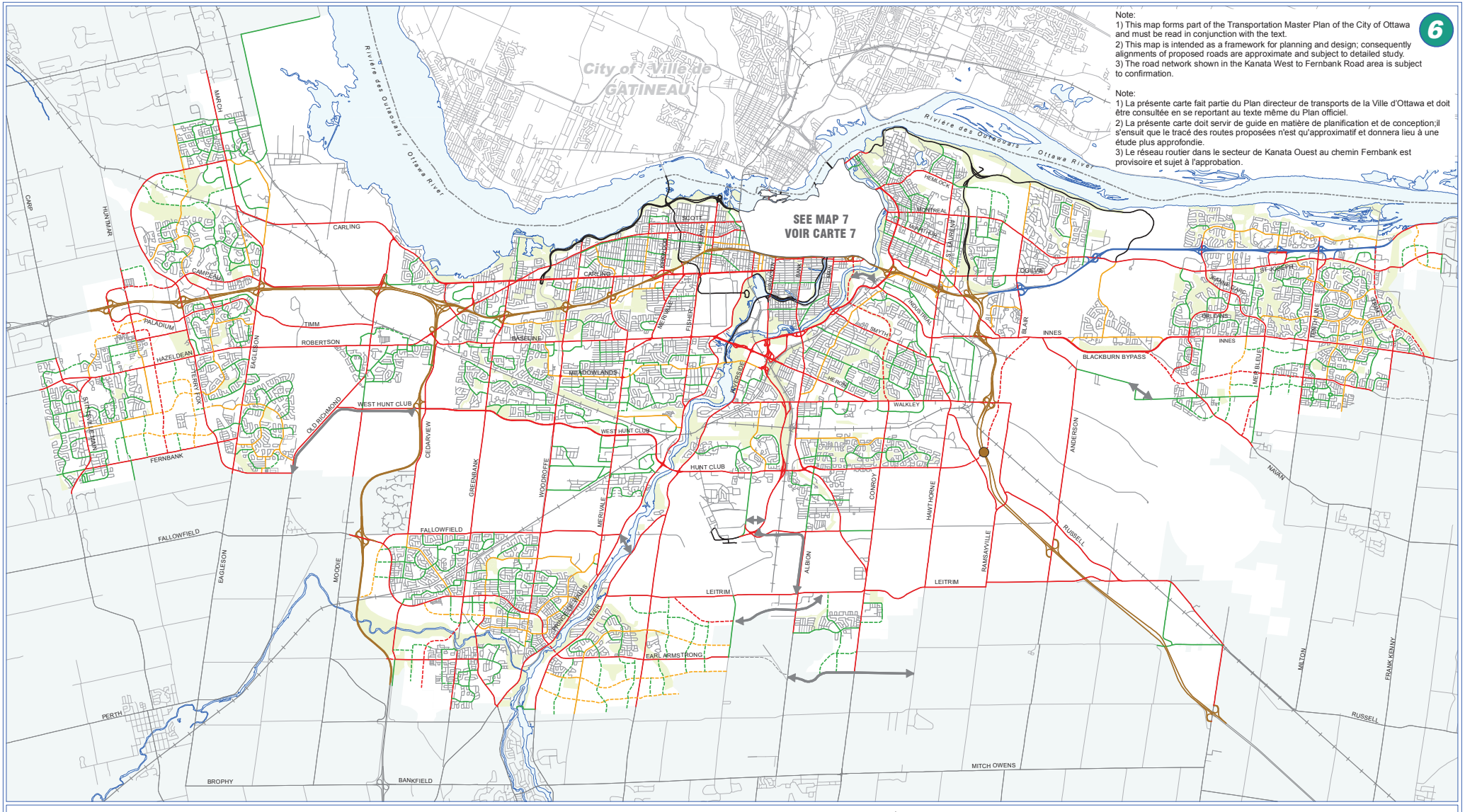
Station de transport en commun actuelle – autobus
Station de transport en commun actuelle/prévue – train
Station de transport en commun future – train
Station de transport en commun future – autobus
Stations interrégionales
Cour de tirage possible pour trains
Rapibus de Gatineau
Parc-O-Bus

TRANSPORTATION MASTER PLAN - Map 5

RAPID TRANSIT AND TRANSIT PRIORITY NETWORK - 2031 AFFORDABLE NETWORK

PLAN DIRECTEUR DES TRANSPORTS - Carte 5

RÉSEAU DE TRANSPORT EN COMMUN RAPIDE ET DE TRANSPORT EN COMMUN PRIORITAIRE – RÉSEAU ABORDABLE 2031



6

Note:
1) This map forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This map is intended as a framework for planning and design; consequently alignments of proposed roads are approximate and subject to detailed study.
3) The road network shown in the Kanata West to Fernbank Road area is subject to confirmation.

Note:
1) La présente carte fait partie du Plan directeur de transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) Le réseau routier dans le secteur de Kanata Ouest au chemin Fernbank est provisoire et sujet à l'approbation.

Provincial Highway — Chemins de propriété fédéral
Federally Owned Road — Route provinciale
City Freeway — Autoroute de ville

Arterial - Existing — Artère - Établie
Arterial - Proposed (alignment defined) — Artère - Proposé (alignement déterminée)
Arterial - Conceptual (alignment undefined) — Artère - Conceptuelle (alignement à déterminée)
Major Collector - Existing — Grande collectrice - Établie
Major Collector - Proposed — Grande collectrice - Proposé
Collector - Existing — Collectrice - Établie
Collector - Proposed — Collectrice - Proposé
New Interchange — Nouvel échangeur

TRANSPORTATION MASTER PLAN - Map 6
ROAD NETWORK - URBAN

PLAN DIRECTEUR DES TRANSPORTS - Carte 6
RÉSEAU ROUTIER - URBAIN

Note:
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2) This schedule is intended as a framework for planning and design;consequently alignments of proposed roads are approximate and subject to detailed study.
3) This schedule includes some lands adjacent to the Central Area that are designated General Urban Area.

Note:
1) La présente annexe fait partie du Plan directeur de transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente annexe doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) Cette annexe englobe des terrains contigus à l'aire centrale qui portent la désignation Aire urbaine générale.

7

City of / Ville de GATINEAU

Rivière des Outaouais / Ottawa River

Rideau River

Rideau Canal

Canal Rideau

Ottawa

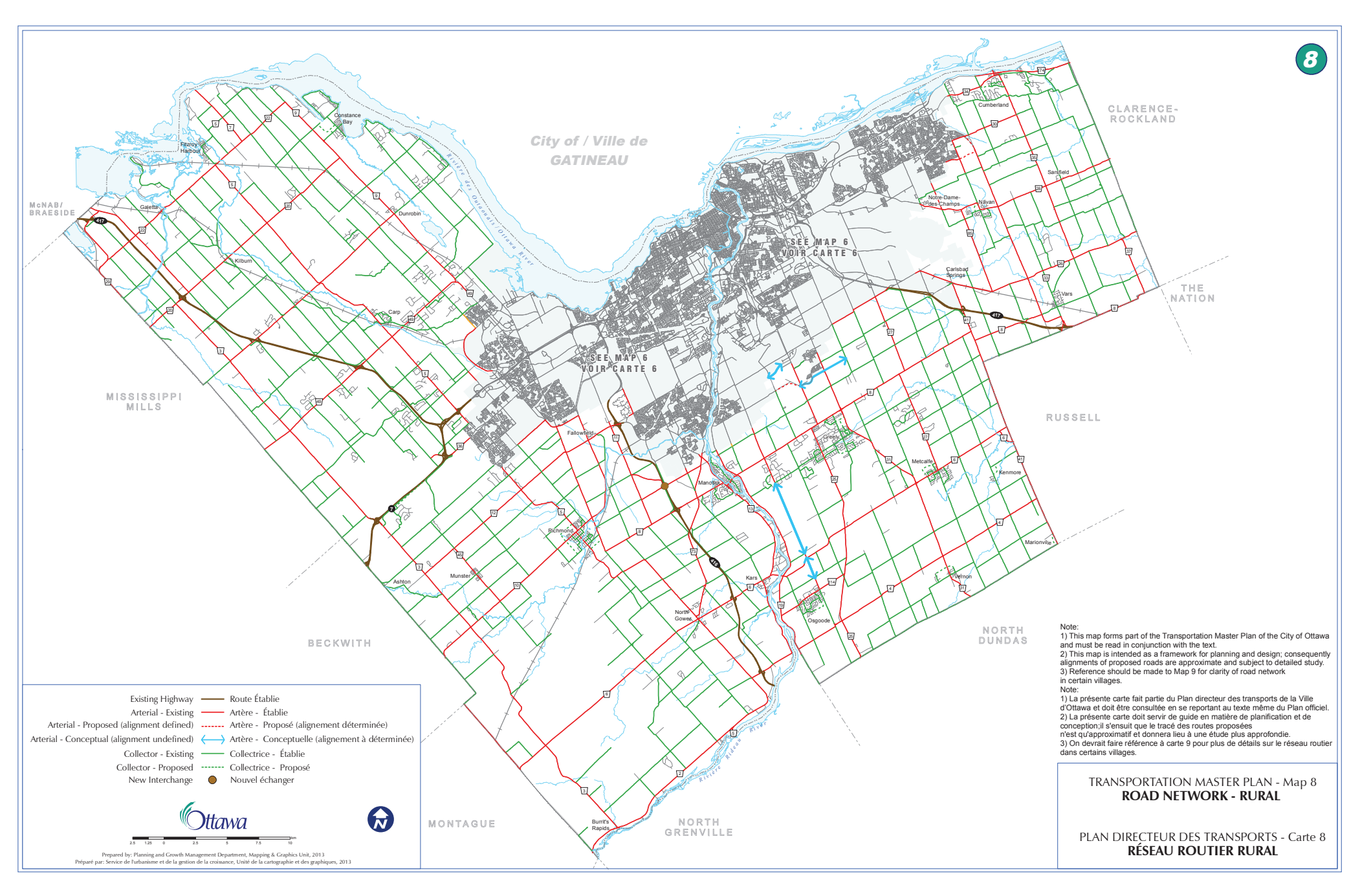
0 0.1 0.2 0.3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

Provincial Highway	Route provinciale
Federally Owned Road	Chemins de propriété fédéral
Arterial - Existing	Artère - Établie
Arterial - Proposed (alignment defined)	Artère - Proposé (alignement déterminée)
Major Collector - Existing	Grande collectrice - Établie
Collector - Existing	Collectrice - Établie

TRANSPORTATION MASTER PLAN - Map 7
ROAD NETWORK - CENTRAL AREA / INNER CITY

PLAN DIRECTEUR DES TRANSPORTS - Carte 7
AIRE CENTRALE / RÉSEAU ROUTIER DE L'HYPERCENTRE

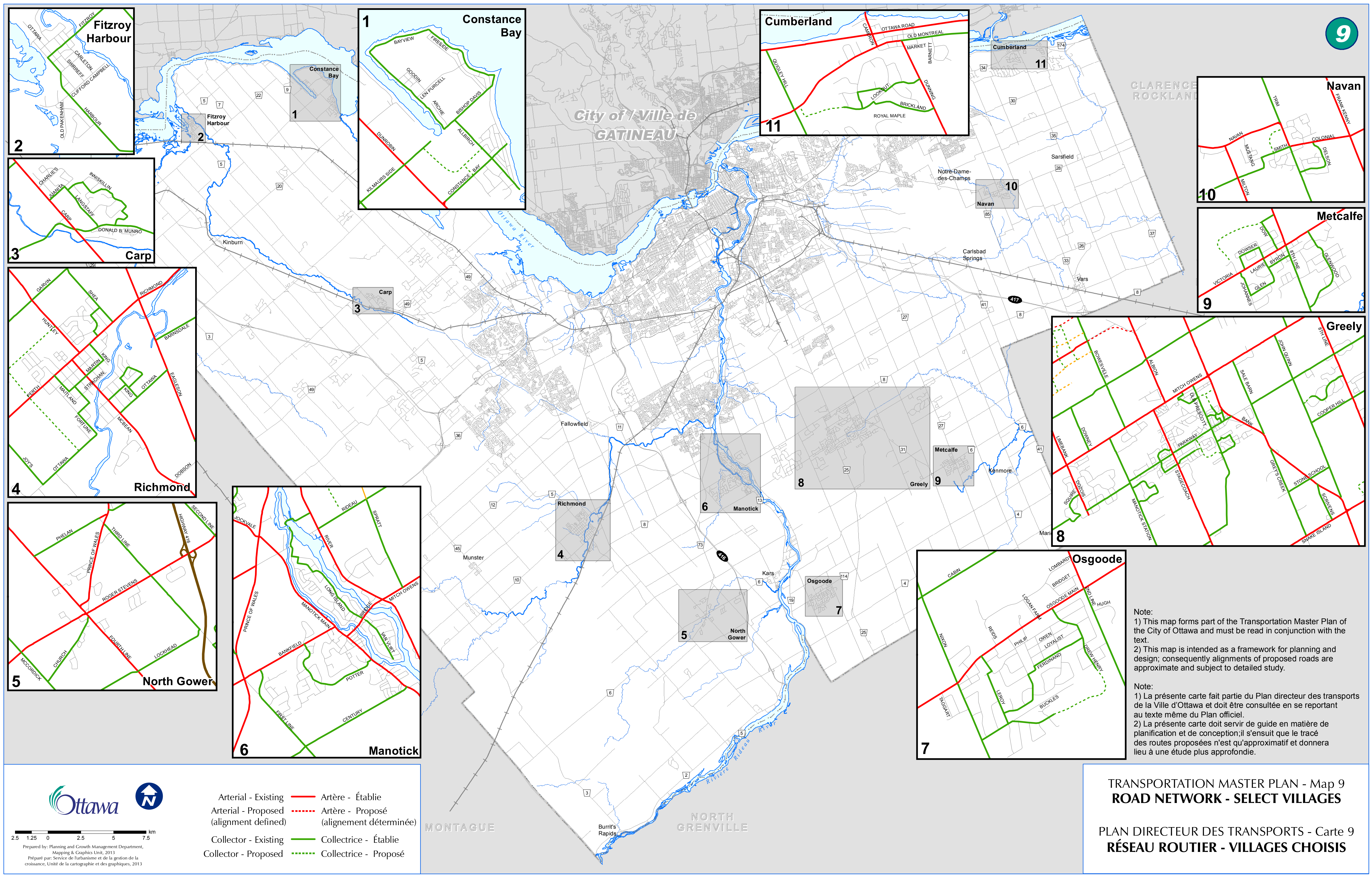


Note:
1) This map forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This map is intended as a framework for planning and design; consequently alignments of proposed roads are approximate and subject to detailed study.
3) Reference should be made to Map 9 for clarity of road network in certain villages.

Note:
1) La présente carte fait partie du Plan directeur des transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) On devrait faire référence à carte 9 pour plus de détails sur le réseau routier dans certains villages.

TRANSPORTATION MASTER PLAN - Map 8
ROAD NETWORK - RURAL

PLAN DIRECTEUR DES TRANSPORTS - Carte 8
RÉSEAU ROUTIER RURAL



Arterial - Existing / Artère - Établie
Arterial - Proposed (alignment defined) / Artère - Proposé (alignement déterminée)
Collector - Existing / Collectrice - Établie
Collector - Proposed / Collectrice - Proposé

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

Note:
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Note:
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TRANSPORTATION MASTER PLAN - Map 9
ROAD NETWORK - SELECT VILLAGES

PLAN DIRECTEUR DES TRANSPORTS - Carte 9
RÉSEAU ROUTIER - VILLAGES CHOISIS

10

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2) This map is intended as a framework for planning and design; consequently alignments of proposed roads are approximate and subject to detailed study.

Note:
1) La présente carte fait partie du Plan directeur des transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.

Rivière des Outaouais / Ottawa River

CARP
HUNTMAR
MARCH
CARLING
CAMPEAU
PALADIUM
HAZELDEAN
TIMM
ROBERTSON
EAGLESON
TERRY FOX
STITTSVILLE MAIN
FERNBANK
HOPESIDE
OLD RICHMOND
WEST HUNT CLUB
CEDARVIEW
GREENBANK
WOODROFFE
MERIVALE
FISHER
KIRKWOOD
HOLLAND
SCOTT
BRONSON
BANK
MAIN
BASELINE
MEADOWLANDS
RIVERSIDE
HERON
SMYTH
WALKLEY
INDUSTRIAL
HEMLOCK
MONTREAL
McARTHUR
ST LAURENT
OGILVIE
BLAIR
INNES
BLACKBURN BYPASS
ANDERSON
ST JOSEPH
JEANNE D'ARC
ORLEANS
TENTH LINE
TRIM
MER BLEUE
NAVAN
HUNT CLUB
AIRPORT
CONROY
HAWTHORNE
RAMSAYVILLE
RUSSELL
FALLOWFIELD
MOODIE
PRINCE OF WALES
CAMBRIAN
JOCKVALE
ALBION
LEITRIM
EARL ARMSTRONG
PERTH
BROPHY
BANKFIELD
MITCH OWENS
MILTON
FRANK KENNY

1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

New Arterials	Nouvelles artères
Widened Arterial	Artères élargies
Conceptual Arterial	Conception d'artères
New or Widened Collector	Artères élargies ou nouvelles
New Interchange	Nouvel échangeur

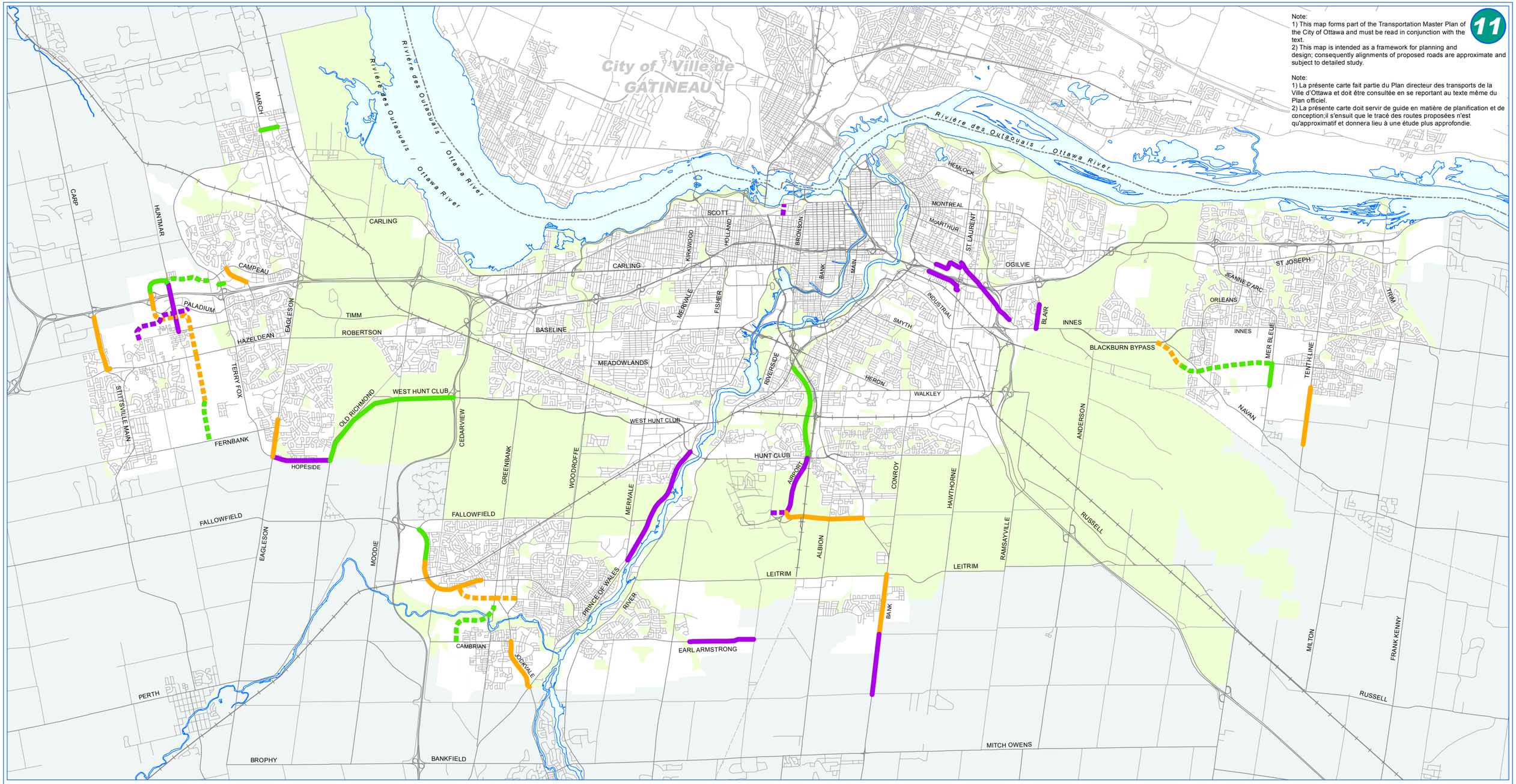
TRANSPORTATION MASTER PLAN - Map 10
ROAD NETWORK – 2031 NETWORK CONCEPT

PLAN DIRECTEUR DES TRANSPORTS - Carte 10
RÉSEAU ROUTIER - CONCEPT DU RÉSEAU 2031

11

Note:
1) This map forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This map is intended as a framework for planning and design; consequently alignments of proposed roads are approximate and subject to detailed study.

Note:
1) La présente carte fait partie du Plan directeur des transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.



1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2013
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2013

Phase 1 (2014 - 2019) Widening
Phase 1 (2014 - 2019) New Road
Phase 1 (2014 - 2019) Élargissement
Phase 1 (2014 - 2019) Nouvelle route

Phase 2 (2020 - 2025) Widening
Phase 2 (2020 - 2025) New Road
Phase 2 (2020 - 2025) Élargissement
Phase 2 (2020 - 2025) Nouvelle route

Phase 3 (2026 - 2031) Widening
Phase 3 (2026 - 2031) New Road
Phase 3 (2026 - 2031) Élargissement
Phase 3 (2026 - 2031) Nouvelle route

TRANSPORTATION MASTER PLAN - Map 11

ROAD NETWORK – 2031 AFFORDABLE NETWORK

PLAN DIRECTEUR DES TRANSPORTS - Carte 11

RÉSEAU ROUTIER - RÉSEAU ABORDABLE 2031

ANNEX C: Glossary

Affordable: In the context of the current master plan reviews, means that with the use of conservative assumptions that there is adequate funding to deliver the service and provide the related infrastructure from existing sources.

Area traffic management: Processes and techniques to preserve neighbourhood liveability by mitigating undesirable effects of vehicle travel including excessive volumes and speeds, aggressive driver behaviour and the creation of unfavourable conditions for walking and cycling

Asset management: Measures to preserve the physical integrity of infrastructure by managing its condition and determining optimal reinvestment and renewal schedules

Barrier-free: A design characteristic that maximizes accessibility for persons with disabilities

Bus lane: A roadway lane dedicated for use by public transit vehicles that may be open to mixed traffic at some hours of the day or days of the week, and that may also be open to other vehicles such as carpools, taxis or bicycles

Bus rapid transit (BRT): Fast, frequent, limited-stop bus service that operates within an exclusive right of way or with priority measures over mixed traffic in shared corridors

Carpool: A vehicle with two or more occupants who are ridesharing

Carpool lanes: A roadway lane dedicated for use by carpools (i.e. vehicles meeting minimum occupancy criteria, usually two or three persons) and buses, that may be open to mixed traffic at some hours of the day or days of the week, and that may also be open to other vehicles such as taxis or bicycles

Carpool parking lot: A location for carpool participants to park their cars and consolidate into one vehicle, usually located at or beyond the edge of the urban area

Central Area: The area defined in the City's *Official Plan* that includes LeBreton Flats, Parliament Hill and the business district to its immediate south plus the areas around the Rideau Centre and the Byward Market.

Complete Streets: A transportation system that works for everyone by balancing the multiple roles of roads and ensuring the best possible outcome to their management as a public resource. This concept of Complete Streets is a framework that ensures the

needs of all stakeholders – pedestrians, cyclists, transit riders and motor vehicle users – are adequately addressed in the design, construction, maintenance and use of the City's roadways. Different streets have different functions and the principles of Complete Streets can be used to make the City's streets safe, comfortable and convenience to all users regardless of age or ability.

Development charges: A charge levied by the City of Ottawa on new development to help pay for growth-related infrastructure development

Environmental assessment: A planning process that is mandated by provincial and federal legislation, and that requires the systematic identification and mitigation of the effects of transportation projects on all aspects of the environment

Greenbelt: A band of green space 200 square kilometres in size and generally owned by the National Capital Commission, that separates the older urban portions of Ottawa from its newer suburban communities and rural areas

Growth management strategy: A comprehensive strategy identifying long-term objectives for Ottawa's physical, social and economic development, and actions to achieve them

Inner Area: The section of the City bounded by the Ottawa River, the O-Train line, and the Rideau River

Level of service: Indicators of the quality of operating conditions that may be applied to cycling, walking, transit and car travel

Light rail transit (LRT): Rail transit technology capable of operating in a variety of physical environments, ranging from exclusive right of way to mixed traffic environments on public streets, as single vehicles or multiple-vehicle consists

Mode share: The percentage of person-trips made by one travel mode (e.g. walking) relative to the total number of person-trips made by all modes

Multi-use pathways: Off-road facilities for travel by walking, cycling and other modes such as in-line skating, that serve both recreational and utilitarian travel needs

OC Transpo: The identity of the City's public transit system

O-Train: The identity of the existing rail component of the City's public transit system

Para Transpo: Identity of the specialized door-to-door transit service provided for persons with disabilities

Park-and-ride lots: Parking lots, usually located at rapid transit stations, that allow automobile users to transfer to and from transit service in a convenient manner

Peak hour: The hour of greatest person-trip demand within a given peak period

Peak period: A period of high person-trip demand on weekday mornings and afternoons, generally measured as two-and-a-half hours long

Performance measurement: Monitoring of indicators that enable an understanding of conditions, actions and impacts that describe progress towards key objectives

Person-trip: A trip made by one person using any mode of travel

Rapid transit: Fast, frequent, high-capacity transit service provided using either bus or rail technology, operating in an exclusive right of way or otherwise not delayed by mixed traffic in shared corridors

Ridesharing: Shared use of a motor vehicle by two or more persons to make a trip, when they would otherwise travel separately

Screenline: An imaginary line that crosses all major transportation facilities in a corridor, typically drawn along a feature (such as a river or railway) having a limited number of crossing points

Transit priority corridors: Corridors equipped with a set of coordinated priority measures that give transit vehicles preferential treatment over other vehicles. These priority measures may include peak-period transit only lanes, short dedicated lane segments, queue-jumps and traffic signal priority

Transit priority measures: Strategies to increase transit operating speeds and transit travel time reliability in mixed traffic relative to car travel, such as traffic signal priority or queue jumps

Transitway: A rapid transit facility in the form of a roadway designed for the exclusive use of buses and other authorized vehicles

Transportation demand management (TDM): A range of strategies that encourage individuals to reduce the number of trips they make, to travel more often by non-driving alternatives, to travel outside peak periods and to reduce the length of their trips

Transportation system management (TSM): A range of strategies that maximize person-carrying capacity and efficiency of the road system through operational measures and localized infrastructure modifications, for the benefit of all modes of travel

Transportation vision: An expression of what a desirable future transportation system might look like, and how it can benefit residents

Truck route system: A network of designated roadways that have been designed and constructed to permit and withstand use by heavy trucks

Urban Area: The area defined in the *Official Plan* as urban, which includes all lands inside the Greenbelt, the Greenbelt itself, and the three urban communities outside it