

7. Provide Safe and Efficient Roads

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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 complete 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
<i>Currently under construction or funding secured</i>		
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
<i>Phase 1: 2014-2019</i>		
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
<i>Phase 1 (continued)</i>		
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
<i>Phase 2: 2020-2025</i>		
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
<i>Phase 3: 2026-2031</i>		
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
<i>Federal (NCC) Projects</i>	
Ottawa River bridge crossing	Location to be determined
<i>Provincial Projects</i>	
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.