

HEALTHY BUILT
ENVIRONMENT TOOLKIT:

Linking

PLANNING & HEALTH

IN OTTAWA



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Healthy Built Environment Toolkit: Linking Planning and Health in Ottawa

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STANDARDS LIMITATIONS

This report was prepared by graduate students at Queen's University in the School of Urban and Regional Planning, enrolled in SURP 823: Health and Social Planning Project Course for the project client Ottawa Public Health.

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EXECUTIVE SUMMARY

Project Objective

The objective of this project is to develop a policy toolkit to support healthy built environments in Ottawa, Ontario. Specifically, this toolkit is intended to assist staff at Ottawa Public Health and the City of Ottawa in the following ways:

- In highlighting the linkages between the built environment and health;
- In identifying existing local policies that promote healthy built environments; and,
- In identifying opportunities to strengthen local policies to further support healthy built environments.

Health Implications of the Built Environment

Evidence shows that elements of the built environment such as urban form and community design, transportation and mobility, and access to natural environments can affect health outcomes. Depending on its structure and organization, the built environment may have the following health implications:

Decreased physical activity: Only 10% of Ottawans walk or cycle to work and only 19% of children use active transportation to get to school (Ottawa Public Health [OPH], 2013).



Increased prevalence of obesity: In 2012, 47% of Ottawans were overweight or obese (OPH, 2014).



Increased prevalence of asthma and respiratory diseases: 10% of Ottawans over the age of 12 have asthma, making it one of the top five chronic conditions reported by Ottawans (OPH, 2014).



Increased risk of heat exposure: Every year in Ottawa, there are approximately 41 premature deaths related to heat exposure (Pengelly, Cheng, & Campbell, 2005).



Increased risk of injuries and unintended fatalities: Every year in Ottawa there are approximately 350 pedestrian injuries (OPH, 2013).



Increased risk for mental illness: In 2011-2012, 9% of Ottawans reported an anxiety disorder (OPH, 2014).



Research Process

The team completed a series of steps to identify policy opportunities and develop a toolkit. These included:

1. Scoping review;
2. Reviewed relevant literature;
3. Consolidated/ defined the elements;
4. Environmental scan of existing toolkits;
5. Policy analysis; and,
6. Develop recommendations.

Healthy Built Environment Elements

There are many elements that constitute a healthy built environment. Our team focused on elements through which Ottawa Public Health has historically had the most opportunity to influence, namely:

- Urban Form and Community Design;
- Multimodal Transportation and Mobility; and,
- Natural Environment and Open Spaces.

These elements were amplified by planning principles that address specific topics within the broader elements. Fifteen planning principles are listed, followed by a brief explanation of each principle and direct connections to health outcomes. The elements and principles are listed in no particular order.

Existing Healthy Built Environment Toolkits

Public health professionals have become increasingly involved in providing input on planning policy, as well as reviewing development applications at different levels of government. Additionally, planning institutions have increasingly recognized the impact of planning and the built environment on health outcomes. With this recognition of the connections between public health and planning, municipalities and regions have been developing guidelines and toolkits that provide a framework for conceptualizing the impact of the built environment on health and for incorporating health considerations into planning decisions. Our team reviewed five documents to demonstrate the varied approaches being used to influence health outcomes through the planning process. These toolkits were selected based on their geographic similarity and relevance to the Ottawa policy context:

- *Region of Peel Health Background Study User Guide (2011)*
- *The Halton Healthy Community Guidelines (2012)*
- *The Middlesex-London Active Community Toolkit for Reviewing Development Plans (2013)*
- *Building Complete and Sustainable Communities: Healthy Policies for Official Plans (2012)*
- *The British Columbia Healthy Linkages Toolkit (2014)*

Policy Framework

To better understand the policy context guiding planning and decision-making in the City of Ottawa, a range of policy documents were reviewed. This policy framework was then evaluated against criteria collected from our environmental scan of existing healthy community toolkits.

Provincial:

- *Provincial Policy Statement*, 2014

City of Ottawa:

- *Ottawa Official Plan*, 2003, and *Official Plan Amendment #150*, 2014
- *Infrastructure Master Plan*, 2013
- *Transportation Master Plan*, 2013
- *Pedestrian Plan*, 2013
- *Cycling Plan*, 2013
- *Municipal Parking Management Strategy*, 2009
- *Greenspaces Master Plan*, 2006
- *Urban Forest Management Plan*, in progress
- *Community Design Plans*
- *Building Better and Smarter Suburbs*, 2015
- *Complete Streets Implementation Framework*, 2013
- *Zoning By-law*, 2008

Toolkit

The criteria were borrowed from existing toolkits and used to evaluate existing Ottawa policies to determine if there was potential for policies to further support the development of healthy built environments.

We identified 89 opportunities across 15 principles and 3 elements for strengthening City of Ottawa's policies to facilitate healthier built environments in the region. Where the City of Ottawa's policies meet or exceed the criteria, we have suggested ensuring that implementation continues to meet the high standards set out in the policy.

Recommendations

We distilled the 89 policy opportunities in our toolkit into 15 cogent recommendations for policy changes that represent the full spectrum of principles within our three elements of the healthy built environment. These recommendations, found in the following tables, offer opportunities for Ottawa Public Health to provide input in policy review, both in the short and long term.

Urban Form and Community Design		
Principle	Current	Potential
Encourage Mixed Land Use	The City of Ottawa <i>Official Plan</i> and Community Design Plans do not set targets for land use types to ensure an appropriate mix.	Explore setting targets for land use mixes. Suburban areas could have a mix of: 10-15% of area allocated to public space, 30-70% of area allocated to commercial and employment uses, 50-80% of area allocated to housing.
Promote Compact Development	The <i>Official Plan</i> currently states “overall residential development will meet a minimum average density target of 34 units per net hectare” for areas in Developing Community Designations (OP 3.12.3).	Explore the implementation of a density range for proposed residential developments between 34-85 units per net hectare.
Create a Safe Street Network with High Connectivity	Inconsistencies in the maximum range of block lengths have been identified in different City of Ottawa policies.	Blocks in proposed developments could consider not exceeding a certain size, such as 80 m x 150 m.
Diversify Housing	The <i>Official Plan</i> states that secondary dwelling units are “permitted in all parts of the city” (OP 2.5.2.10).	Strengthen language regarding secondary dwelling units and coach house units to encourage their development and improve housing affordability.
Prioritize Service Proximity	The <i>Official Plan</i> does not differentiate between school types.	Policies could consider the benefits of differentiating between elementary schools, secondary schools, and post-secondary schools.
Promote an Inclusive and Accessible Public Realm	The <i>Official Plan</i> is limited and inconsistent in its considerations for public realm features.	Strengthen language to ensure neighbourhoods are designed to include meeting spaces and common areas that address residents’ needs, regardless of age and physical ability.

Multimodal Transportation and Mobility		
Principle	Current	Potential
Prioritize Pedestrian Safety	The <i>Official Plan</i> does not require sidewalks on a portion of its streets (OP 4.3.9).	Ensure equal consideration for pedestrians on all roads by reducing speed limits and installing traffic calming measures where sidewalks do not exist.
Encourage Use of Public Transit	The <i>Transportation Master Plan</i> has limited policies to address crime prevention and security.	Incorporate Crime Prevention Through Environmental Design (CPTED) principles more explicitly into transit development and redevelopment plans.
Promote Walkability and Accessible Pedestrian Infrastructure	Currently, the <i>Official Plan</i> prioritizes traffic calming only in select areas and in general terms (OP 2.2.2.13N).	Strengthen traffic calming policies by establishing criteria for specific traffic calming measures by roadway and zoning type.
Promote Bicycle Connectivity and Infrastructure	While the <i>OP</i> , <i>TMP</i> , and <i>Cycling Plan</i> encourage and support cycling infrastructure, they could be more specific regarding contexts and tradeoffs with respect to sharrows.	Emphasize that while sharrows are an important step in developing robust cycling infrastructure, higher orders of cycling infrastructure should be encouraged.
Control Parking Supply	The <i>Official Plan</i> discusses the management of carpools through the Parking Management Strategy, though the final version of the <i>Parking Management Strategy</i> lacks provisions for carpooling (OP 2.3.1.47).	Encourage the designation of parking spaces for the exclusive use of rideshare vehicles.

Natural Environment and Open Spaces		
Principle	Current	Potential
Preserve and Connect Open Spaces	Many of Ottawa's policies regarding the Natural Heritage System are considered to be best practices.	Continue to identify, monitor, and protect environmentally sensitive areas, especially when on private property.
Maximize Opportunities to Access and Engage with the Natural Environment	The <i>Official Plan</i> and <i>Greenspace Master Plan</i> has limited policies to address safety in Parks and Leisure Areas.	Develop an <i>Official Plan</i> policy requiring the inclusion of Crime Prevention Through Environmental Design (CPTED) principles into all phases of the design, review, and approval for new Park and Leisure Areas.
Reduce Urban Air Pollution	The <i>Official Plan</i> states that "the City will maintain a target for forest cover for the entire city of 30 per cent" (OP 2.5.4.7).	Consider developing minimum canopy standards at a smaller scale (rather than city wide) such as at the neighbourhood level or for each zoned land use.
Mitigate Urban Heat Island Effect	The <i>Official Plan</i> does not adequately encourage the use of green infrastructure in new development.	Consider developing a mandatory Green Roof By-law for certain types and sizes of development.

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List of Acronyms

BBSS: Building Better and Smarter Suburbs
CDPs: Community Design Plans
CMA: Canadian Medical Association
CPTED: Crime Prevention Through Environment Design
CSIF: Complete Streets Implementation Framework
GMP: Greenspace Master Plan
HBEA: Healthy Built Environment Alliance
IMP: Infrastructure Master Plan
MMLOS: Multi-Modal Level of Service Assessment
MPMS: Municipal Parking Management Strategy
OCP: Ottawa Cycling Plan
OP: Official Plan
OPH: Ottawa Public Health
OPHS: Ontario Public Health Standards
OPP: Ottawa Pedestrian Plan
PPS: Provincial Policy Statement
TMP: Transportation Master Plan
UDGDAM: Urban Design Guidelines for Development along Arterial Mainstreams
UGDGN: Urban Design Guidelines for Greenfield Neighbourhoods
UFMP: Urban Forest Management Plan
UHI: Urban Heat Island



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Chapter 1: Introduction

CHAPTER 1. INTRODUCTION

1.1 PROJECT OVERVIEW

The creation of healthy built environments requires robust rationale, coordinated planning, and physical modifications to existing built forms that can be costly, challenging to implement, and fiercely resisted by different stakeholders. These processes can be better facilitated when decision makers are equipped with the information they need about how health is impacted by built forms, what policies exist that can promote the changes that are required, and what policies need modification to ensure such changes can take place. Healthy built environment toolkits exist in Canada, but none of these are specific to the Ottawa context. **Thus, the objective of this project was to develop a policy toolkit to support advancing healthy built environments in Ottawa, Ontario.** Specifically, the goals for this toolkit are to assist staff at Ottawa Public Health (OPH) and the City of Ottawa with:

- Highlighting the linkages between the built environments and health in Ottawa;
- Identifying local policies that can promote healthier built environments; and,
- Identifying opportunities to strength local policies to further support healthy built environments.

1.2 OPPORTUNITIES FOR ENGAGEMENT FROM OTTAWA PUBLIC HEALTH ON BUILT ENVIRONMENTS

The Ontario Public Health Standards (OPHS), mandated by the Ministry of Health and Long-Term Care, establish the minimum requirements for the fundamental programs and services that are delivered by Ontario's 36 Boards of Health. The OPHS explicitly instruct and authorize public health professionals to support the development of healthy public policies in relation to the built environment.

The OPHS, Chronic Disease and Injuries Program Standard subsection Chronic Disease Prevention, states that:

"The board of health shall work with municipalities to support healthy public policies and the creation or enhancement of supportive environments in recreational settings and the built environment regarding the following topics: healthy eating; healthy weights; comprehensive tobacco control; physical activity; alcohol use; and exposure to ultraviolet radiation" (Ministry of Health and Long-Term Care, 2016, p. 26).

Additionally, the Environmental Health Program Standards, subsection Health Hazards Prevention and Management, states that:

“The Board of Health shall assist community partners to develop healthy policies related to reducing exposure to health hazards. Topics may include, but are not limited to: indoor air quality; outdoor air quality; extreme weather; and built environments” (Ministry of Health and Long-Term Care, 2016, p. 66-67).

Ottawa Public Health is governed by a semi-autonomous board of health, consisting of City of Ottawa city councillors and local citizens. OPH's Strategic Plan for 2015-2018 outlines a vision, that “all Ottawa's communities and people are healthy, safe and actively engaged in their well-being” (OPH, 2015, p. 3). Furthermore, OPH outlines a mission, that “in partnership with the people and communities of Ottawa, Ottawa Public Health improves and advocates for health and well-being through prevention, promotion and protection” (OPH, 2015, p.3). OPH plans to meet its vision and mission through five strategic directions. The first strategic direction of the 2015-2018 plan aims to “contribute to building healthy, complete communities” (OPH, 2015 p. 5). This demonstrates OPH's commitment to building healthy, complete communities and also represents an important opportunity for OPH to shape collaborations with municipal and community partners in the development of healthy public policy.

1.3 HISTORICAL LINKS BETWEEN HEALTH AND PLANNING

In the 19th century, issues of overcrowding, poor sanitation, and poor housing conditions led to devastating outbreaks of infectious diseases, such as cholera and typhoid (Melosi, 2000). These outbreaks led to the establishment of the sanitary reform era, which provided the framework for the development of municipal infrastructure (e.g., water filtration and sewerage systems) that would ensure more sanitary living conditions. Indeed, following these local investments, rates of infectious diseases and premature mortality plummeted, and life expectancy steadily increased. The sanitation era was a pivotal moment in history, as it required coordination between health and built environment experts, and it effectively launched the professions of public health and urban planning (Corburn, 2004).

Following the dramatic improvements in population health and widespread adoption of such sanitation-related infrastructure across North America, urban planning and public health became less integrated with one another. By the end of World War II, cities began to expand geographically through the creation of suburban communities, which increased reliance on the personal automobile. Suburbs became more and more popular, which in turn, produced more sedentary lifestyles (Frumkin, Frank, & Jackson, 2004). Meanwhile, the public

health profession turned its attention to developing vaccines in the early 1900s, and upon realizing their effectiveness at controlling the spread of diseases, to administration of mass immunization programs by the 1930s (Corburn, 2004). Consequently, the public health profession was paying little attention to the built form that new communities were taking, and may have lacked the foresight to recognize how the built form would impact population health in the future.

To combat the cumulative consequences of this cultural shift, a growing number of health professionals and planners are working towards a reintegration of public health and urban planning. Presently, the public health and urban planning professions in Ontario share a common vision for communities that support healthy, active, and sustainable lifestyles. The Government of Ontario has responded by promoting the creation of strong healthy communities in the *Provincial Policy Statement* (2014), which ultimately guides policies on land use planning in the province. Municipalities have responded by beginning to integrate health considerations into planning decisions in a progressive and evidence-based manner. However, the barriers to advancing healthy built environments can be significant, and there is always room for positive improvements and change. As such, the linkages between public health and planning can continue to be strengthened.

1.4 HEALTH IMPLICATIONS OF THE BUILT ENVIRONMENT

Ottawa Public Health defines the built environment as “the structure and layout of streets, buildings and communities” (2013, p.3). There is a large body of evidence that illustrates how elements of the built environment, such as urban form and community design, multimodal transportation and mobility, and access to the natural environment and open spaces can affect health outcomes. In 2013, the Canadian Medical Association (CMA) reported that, depending on its structure and organization, the built environment may have the following negative health implications:

- Decreased physical activity;
- Increased prevalence of obesity;
- Increased prevalence of asthma and other respiratory diseases;
- Injuries and unintended fatalities; and,
- Heat exposure.

There is also a growing body of evidence highlighting the influence of the built environment on mental health (Renalds, Smith, & Hale, 2010). For example, access to greenspaces has been shown to improve self-esteem and quality of life (Barton & Pretty, 2010; Lee & Maheswaran, 2011).

1.4.1 Physical Activity

The built environment and walkability of communities can significantly influence how active people are, as features such as sidewalks can promote both recreational and active transportation (Thielman, Manson, Chiu, Copes, & Rosella, 2016; McCormack & Shiell, 2011). In Ottawa, only 10% of residents walk or cycle to work and only 19% of children use active transportation to get to school (OPH, 2013). Participation in regular physical activity has significant health benefits: it promotes positive self-esteem, it can lengthen and improve quality of life, and it helps reduce the risk for many physical and mental health conditions and chronic diseases (Warburton, Nicol, & Bredin, 2006).

1.4.2 Obesity

The built environment can produce automobile dependent environments through the separation of land uses, which can result in more sedentary lifestyles which have been correlated with increased body weight and obesity. In Ontario, higher neighbourhood walkability is associated with decreased prevalence overweight or obesity and decreased incidence of diabetes between 2001 and 2012 (Creatore, et al., 2016). Sedentary lifestyles combined with high-calorie, high-fat, and high-sugar diets have contributed to an increase in obesity rates in recent decades (Katzmarzuk & Mason, 2006). In 2012, 47% of Ottawans were overweight or obese (OPH, 2014).

Obesity is associated with high blood pressure, increased risk of stroke, and heart disease, which are among the leading causes of disability and death (Statistics Canada, 2008). The combined cost of obesity and these related conditions in Canada was estimated to be \$4.3 billion dollars in 2005 (Public Health Agency of Canada, 2012).

1.4.3 Asthma & Respiratory Diseases

Airborne toxins, such as nitrogen oxides, ozone, small particulate matter, and volatile organic compounds have been associated with heart disease, cancer, acute respiratory illness, and the aggravation of asthma and other respiratory illnesses (Frank, 2009). Ten percent of Ottawans over the age of 12 have asthma, making asthma one of the top five chronic conditions reported by Ottawans (OPH, 2014). Land use planning and community design can help guide where these toxins are emitted, concentrated, and produced (CMA, 2013).

1.4.4 Injuries and Unintentional Fatalities

In 2009, Canadian transport-related injuries totaled \$3.7 billion dollars in healthcare costs (SmartRisk, 2009). This financial burden was mostly related to motor vehicle, pedestrian, and cycling accidents. In 2012, Ottawa's youth had the highest rate of Emergency Room visits due to motor vehicle traffic collisions and pedestrian injuries (OPH, 2014). There are approximately 350 pedestrian

injuries annually in Ottawa (OPH, 2013). Older adults accounted for 36% of pedestrian fatalities in 2012, however, they made up only 13% of the total population, demonstrating the necessity to improve pedestrian safety for more vulnerable users (OPH, 2013).

Community design that promotes high traffic volume and speed and has less pedestrian and cyclist infrastructure can lead to increased incidence of injuries and fatalities (Surface Transportation Policy Partnership, 2002).

1.4.5 Heat Exposure

Due to a variety of commercial, residential, and industrial activities, urban areas experience increased surface air temperature compared to their surrounding rural areas. This phenomenon is known as the 'urban heat island effect' and is correlated with areas that are primarily comprised of concrete and asphalt. This can lead to higher levels of illness and death related to heat exposure (Frumkin, 2002). Every year in Ottawa, there are approximately 41 premature deaths related to heat exposure (Pengelly, Cheng, & Campbell, 2005).

1.4.6 Mental Illness

Mental illness is a growing concern in Canadian cities, as it is essential for overall health and well-being. In 2011 to 2012, 10% of Ottawa residents age 19 and over reported

having been diagnosed with a mood disorder; 9% reported an anxiety disorder; 1 in 4 students in grades 7-12 reported visiting a mental health professional at least once, and there were nearly 1,200 emergency room visits due to self harm (OPH, 2014).

There is a growing body of evidence that connects urban green spaces and mental well-being. Access to green spaces has been shown to improve mood, self-esteem, and quality of life while lowering stress (Barton & Pretty, 2010; Lee & Maheswaran, 2011). Green spaces may also improve social capital, which has been linked to an improved sense of well-being, by providing spaces to meet and develop ties to other community residents (Renalds, Smith, & Hale, 2010; Lee & Maheswaran, 2011). Having a greater degree of community investment, connection, and feelings of safety can help to contribute to better perceptions of social capital which can be enhanced through community design features like a mix of land uses, street connectivity, and walkability (Renalds, Smith, & Hale, 2010). All of these features can help to enhance a sense of well-being and can help improve perceptions of mental health (Renalds, Smith, & Hale, 2010). This is a growing field and further research is needed to strengthen the evidence of the relationship between the built environment and mental health.

1.5 HEALTH EQUITY

This toolkit has been developed with health equity in mind. Health equity pertains to disparities in health outcomes that can be associated with unequal economic and social conditions (Healthy Canada by Design, 2012). From a healthy community planning perspective, these unequal conditions can include access to places to work, learn, access to healthy food, and unequal access to transit or active transportation networks (Healthy Canada by Design, 2012).

According to OPH (2016), health equity exists when “all people can reach their full health potential regardless of their income, education, gender, age, ethnic background, or other social, economic, or environmental conditions (i.e. the social determinants of health).”

When using this toolkit, health professionals should consider the impacts of the built environment for all populations. Toolkit users should frame suggestions to address and reflect the needs and concerns of: children, older adults, people of lower socioeconomic status, racialized groups, and people with disabilities. Such a lens can ensure that OPH is actively encouraging City of Ottawa decision-makers to make equity an explicit consideration in planning decisions.

1.6 RESEARCH PROCESS

The information presented in this report and toolkit was produced through six research stages. These stages were as follows:

Stage 1: An initial scoping review to develop an understanding of healthy community planning and to identify relevant elements. These initial elements were:

1. Land use and community design;
2. Mobility and transportation;
3. Housing;
4. Age friendly planning;
5. Natural environment and open spaces;
6. Sustainable design;
7. Food security;
8. Air quality;
9. Climate change;
10. Safety and injury prevention; and,
11. Community development.

Stage 2: An extensive literature review for each identified element and planning principle.

Stage 3: A consolidation of healthy community elements following consultation with Ottawa Public Health. The toolkit was scoped to focus on elements of a healthy built environment. These elements include:

1. Urban Form and Community Design;
2. Multimodal Transportation and Mobility; and,
3. Natural Environments and Open Spaces.

Stage 4: An environmental scan of existing healthy community toolkits in Canada to synthesize the criteria against which the City of Ottawa's policies were evaluated.

Stage 5: A policy analysis to determine existing policy strengths and opportunities for supporting healthy community planning. City of Ottawa policies were cross referenced with existing healthy community toolkits.

Stage 5: A policy gap analysis to determine strengths and weaknesses of existing City of Ottawa policies as they pertain to the healthy built environment.

Stage 6: Develop recommendations for strengthening City of Ottawa's policies to create healthier built environments.

1.6.1 Scope and Limitations

The development of this report and toolkit was limited to elements of the built environment that Ottawa Public Health has traditionally had the most influence on. The team only examined publicly available policy documents. Lastly, technical feasibility was not fully considered for the policy opportunities that were identified, nor were the local policy interpretations and recommendations vetted for accuracy with Planning staff due to time limitations.

1.7 REPORT STRUCTURE

Chapter One provides an introduction and context to the project, including the purpose and research process.

Chapter Two provides an explanation of the healthy built environment elements, including specific planning principles and related health implications.

Chapter Three presents the existing healthy community toolkits that were used to guide the development of this report and toolkit.

Chapter Four provides a framework and description of existing City of Ottawa policies that were utilized in the policy analysis.

Chapter Five (the toolkit) provides suggestions based on criteria from existing healthy community toolkits, compares and analyzes them with existing policy, and provides recommendations to further improve policy.

Chapter Six provides a highlight of policy opportunities that were based on limitations in the City of Ottawa policies. Existing Canadian precedents are discussed alongside references to the toolkit (Chapter 5) and this chapter concludes the report.

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2

Chapter 2: Elements

CHAPTER 2. HEALTHY BUILT ENVIRONMENT ELEMENTS

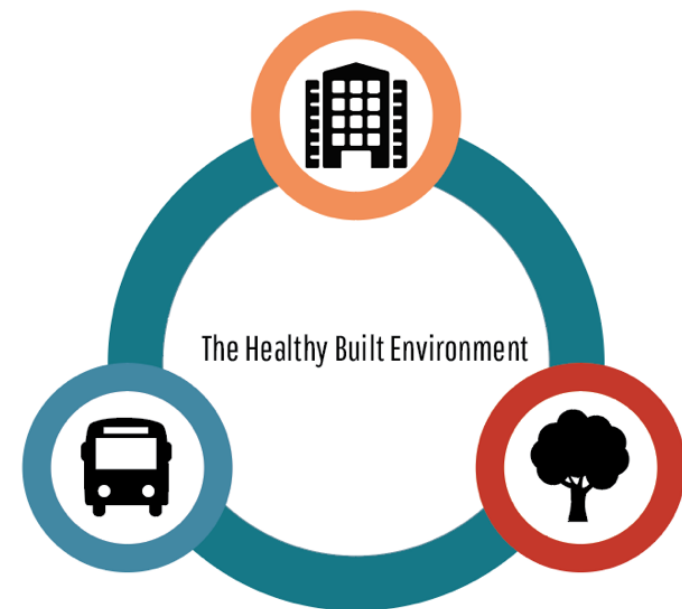
There are many elements that constitute a healthy built environment. Our team chose to focus on those elements through which Ottawa Public Health has historically had the most opportunity to influence, namely:

- Urban Form and Community Design;
- Multimodal Transportation and Mobility; and,
- Natural Environment and Open Spaces.

In the following chapter, the three elements listed above are divided into planning principles that address specific topics within the broader elements. Taken together, 15 planning principles are listed, followed by a brief explanation of the individual principles and direct connections to health outcomes. The elements and principles are listed in no particular order of priority.

The elements and principles discussed in this chapter have been derived from the *'Healthy Built Environment Linkages: A Toolkit for Design, Planning, and Health'*, produced by the Provincial Health Services Authority (PHSA) of British Columbia (PHSA, 2014). This evidence-

based and expert informed resource is unique from other healthy built environment toolkits as it was not developed for a specific municipality, but rather intended to serve as a guide linking planning, community design and health at a conceptual and theoretical level. This will be further discussed in Chapter 3 of this report.





2.1 URBAN FORM AND COMMUNITY DESIGN

The City of Ottawa is growing, with the population projected to surpass one million by 2021. Urban form and community design are vitally important to the future health and well-being of current and future Ottawans. Recent trends favouring **sustainable planning** have been pressuring Canadian municipalities to effectively and efficiently manage growth while curbing excessive urban sprawl. Furthermore, aligned with the trend of sustainable planning, healthy built environments are also being promoted through growth management.



Figure 1: Wellington West neighbourhood in Ottawa, ON (Libera, 2016).

Planning Principle:

1. Encourage Mixed Land Use



Mixed land use refers to a blending of complementary land uses in a balanced mix. Complementary land uses may include commercial, residential, and parks and open space. A balanced mix of land uses helps to create a complete community that provides a range of local services and amenities for people at all stages of life.

- Mixed land uses are associated with increased levels of physical activity with corresponding health gains such as reduced obesity rates (Papas et al., 2007; Feng et al., 2010; Rodriguez et al., 2006; Croucher et al., 2012).
- A limited variety of land uses within a neighbourhood has been related to a less walkable neighbourhood and increased motor vehicle dependence (Clarke and George, 2005; Renalds, Smith, & Hale, 2010).
- There is an increase in community cohesion among residents when there are parks and a mix of uses that are pedestrian friendly (Cohen et al., 2008; Renalds, Smith, & Hale, 2010).

Planning Principle:

2. Promote Compact Development



Compact development refers to the level of density within the urban form and the concentration of housing and jobs that creates the necessary critical mass to support transit and retail, ultimately reducing car dependence and traffic congestion and helping to contribute to a more walkable and vibrant community.

- Walking increases within a neighbourhood when there are smaller blocks and an increase in residential density (Berke et al., 2009; Renalds et al., 2010).
- Individuals who live in areas with higher population density, a mix of residential and commercial land uses, and better access to public transit have significantly lower **Body Mass Index (BMI)** when compared to other participants (Renalds et al., 2010; Rundle et al., 2007).
- There is a reduction in trip length and vehicular dependence in high density areas (Feng et al., 2010; Frank, 2000; Cervero & Kockleman, 1997).

Planning Principle:

3. Create a Safe Street Network with High Connectivity



Connectivity refers to the 'directness' of travel between destinations. As such, street design is highly linked to connectivity. Providing a highly connected street network can encourage active transportation by providing more direct routes to destinations.

- **Social capital** is more likely to be cultivated in neighbourhoods that have traditional street design (grid pattern) than in new conventional street design (cul-de-sac street network) (Renalds et al., 2010; Wood et al., 2008).
- Walking is significantly associated with perceived safety, number of recreational facilities, and street intersections (Li et al., 2005; Renalds et al., 2010).
- Well-connected streets can reduce trip distances and provide alternative routes, which encourages active transportation (Hajna, Ross, Brazeau, Belisle, Joseph, & Dasgupta, 2015; Saelens et al., 2003; Frank et al., 2004; Ewing and Cervero, 2001).

Planning Principle:
4. Diversify Housing



Housing diversity refers to providing a mix of dwelling types such as: townhouses, apartment buildings, single family detached homes, semi-detached homes, secondary dwelling units, and coach houses within a community to allow for a range of choice and the opportunity for residents to remain in the community for their life cycle and age in place.

- Providing a variety of housing forms and tenure types can increase access to affordable housing. Having access to affordable housing that provides a stable and decent living situation has been linked to positive health outcomes (Maqbool, Viveiros, & Ault, 2015).
- A variety of housing forms can help make communities more diverse and inclusive for different age groups and economic statuses (Landcom, 2011).
- Increased housing diversity can help increase residential density, which has a positive impact on neighbourhood walkability (Berke et al., 2009; Renalds et al., 2010).

Planning Principle:
5. Prioritize Service Proximity



Service Proximity refers to residents' access to key amenities such as: schools, playing fields, parks, grocery stores, community gardens, libraries, community centres, pharmacies, and post offices. Amenities located in proximity to residents can encourage the use of active transportation over the personal automobile in accessing amenities.

- Physical activity in children is positively correlated to the distance to schools, parks, playgrounds, and other recreational facilities like gyms and swimming centers (Davison & Lawson, 2006).
- Increased proximity to grocery stores and supermarkets has been shown to improve fruit and vegetable consumption and overall nutrition which can lower obesity rates (Croucher et al., 2012; Larson, Story, & Nelson, 2009; Sallis & Glanz, 2009; Wang & Beydoun, 2007).
- Increased levels of physical activity are associated with residential proximity to green spaces (Lee & Maheswaran, 2011).

Planning Principle:

6. Promote a Vibrant and Inclusive Public Realm



The public realm refers to all public streets, public open spaces, and public buildings. A vibrant and inclusive public realm can foster social connections with the goal of creating a strong sense of place at the neighbourhood and city scale.

- Environments that are more aesthetically pleasing or attractive has been associated with increased walking, particularly recreational walking (Saelens & Handy, 2008).
- Proximity, **accessibility**, attractive scenery, good lighting, and well-designed and maintained paths all encourage physical activity (Frumkin, 2003).
- Public places are important venues for many activities including physical activity and social interaction both of these activities can improve health (Frumkin, 2003).
- Distance between public open spaces is a factor correlated with poorer physical health behaviours and outcomes (Dunton et al., 2009; Galvez et al., 2010; Pont et al., 2009; Sallis & Glanz, 2006).



2.2 MULTIMODAL TRANSPORTATION AND MOBILITY

Transportation networks are what keep cities moving. They are fundamental to our daily lives and have direct implications for population health. People make decisions about how to travel based on a number of variables, including route safety, travel time, travel distance, and parking availability. Through thoughtful urban form and land use decisions, we can facilitate modes of travel that promote good mental and physical health. Planning principles such as prioritizing safety, encouraging use of public transit, promoting walkability and accessible pedestrian infrastructure, and promoting bicycle connectivity and infrastructure all influence health outcomes.



Figure 2: Bike lanes in Ottawa, ON (Libera, 2016).

Planning Principle:
1. Prioritize Safety



Prioritizing safety means ensuring that all road users, including pedestrians, and are adequately protected by both street design and infrastructure.

- A **reduction of speed limits** by even 10 km/h can reduce the risk of a pedestrian fatality by 40% (Archer, 2008). Refer to Figure 1 for the relationship between impact speed and fatality risk (Rosén & Sander, 2009).
- Improvements in **cycling infrastructure** (i.e. separated lanes) have been shown to reduce injuries by up to 90% (Teschke, 2012).
- **Children are vulnerable** road users and the built environment has significant implications on their likelihood of using active transportation. High traffic volumes, major street crossings, and perception of neighbourhood safety significantly lessen the rate of active transportation among youth (Canadian Institute of Planners, 2011).

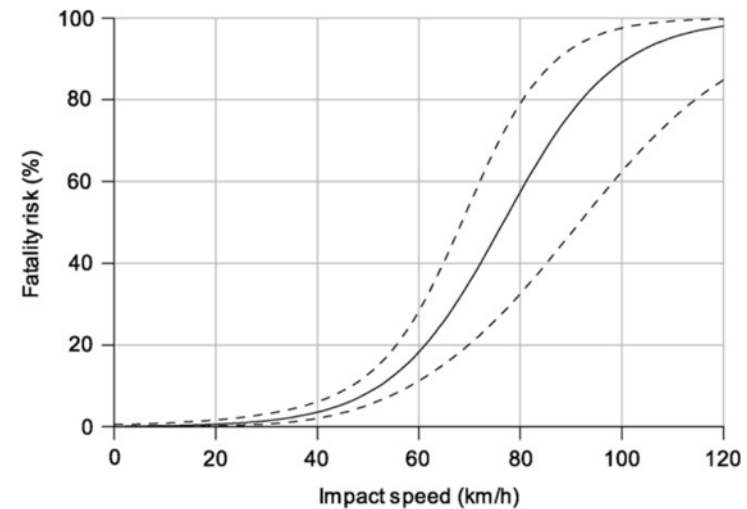


Figure 3: Fatality risk as a function of impact speed (Rosén & Sander, 2009).

Planning Principle:

2. Encourage Use of Public Transit



Encouraging the use of public transit means creating an environment that enables individuals to access reliable public transit. Transit use is an easy way to incorporate physical activity into the daily routine, which has positive impacts on health.

- Locating bus stops in dense population centres has been shown to increase utilization of public transit (Ryan et al., 2009).
- Providing adequate and secure **bicycle parking** at major public transit stations increases both bicycle usage and transit usage (Pucher et al., 2010).
- Public transit that is not designed to accommodate people with different levels of mobility (elderly, disabled, children) will not be accessed by these people. Designing public transit with the “**8 to 80**” principle in mind ensures that it will be accessible to all people, regardless of mobility (Mercato et al., 2010; Burns et al., 2009).

Planning Principle:

3. Promote Walkability and Accessible Pedestrian Infrastructure



Promoting walkability and accessible pedestrian infrastructure means designing environments that encourage walking for all levels of mobility and allows for easy access to retail, transportation, and green spaces.

- Walking is desirable from an **equity lens**: it is low-impact, free, and appropriate for all age groups given the low risk of incurring injury (Lee & Buchner, 2008).
- Walking 30 to 60 minutes daily can reduce the risk of chronic illnesses as well as improve mental health (Lee & Buchner, 2008).
- The addition of accessible, traffic-free and well-designed pedestrian routes can increase physical activity levels among the local population, thereby contributing to the prevention of chronic disease (Goodman et al., 2014).

Planning Principle:

4. Promote Bicycle Connectivity and Infrastructure



Promoting bicycling connectivity and infrastructure means deploying cycling facilities in a context-appropriate manner and expanding the current cycling network in a coherent, connected way that makes cycling appealing to all, regardless of confidence or proficiency.

- Cycling has been found to have a positive effect in reducing illnesses, obesity, cardiovascular disease, cancer, diabetes, arthritis as well as improvements in mental health (Rojas-Rueda et al., 2011).
- The risks of cycling (i.e. accidents, exposure to air pollution) are outweighed by the health benefits (Rojas-Rueda et al., 2011).
- Improving **cycling networks** and installing safer infrastructure has been shown to **improve ridership**. This is notable from an equity perspective as women, children, and the elderly are significantly less likely to cycle in a less safe environment (Fraser & Lock, 2010).

Planning Principle:

5. Control Parking Supply



Discouraging automobile use means making driving less appealing by reducing minimum parking requirements, minimizing the impact of parking on the area, and providing financial incentives that encourage alternative modes of transportation.

- Reducing **parking minimums** can encourage compact design and an environment that is supportive of active transportation (Manville, 2013).
- Encouraging parking cash-out programs (financial incentives as an alternative to subsidized parking) and a reduced transit fare can increase ridesharing, transit use and active transportation as well as **reduce automobile usage** (Inci, 2015).
- **On-street parking** also acts as a barrier between pedestrians and moving vehicles. It also serves to reduce the speed of traffic (Marshall, 2008).



2.3 NATURAL ENVIRONMENT AND OPEN SPACES

The natural environment and open spaces are essential components of a healthy built environment. Community planning that incorporates elements of the natural environment, such as urban forests and parks, that are accessible, well maintained, and safe provide significant health benefits. An open space network that connects communities to the natural environment can encourage residents to be physically active and can also have positive impacts on mental health. **Designing with nature** also helps clean the air and mitigate the urban heat island effect.



Figure 4: Major's Hill Park, Ottawa, ON (National Capital Commission, 2016).

Planning Principle:

1. Preserve and Connect Open Spaces and Environmentally Sensitive Areas



This element pertains to the importance of preserving environmentally sensitive areas, in order to protect biodiversity and the ecosystem.

- Natural environments provide humanity with a broad array of vital ecosystem services, such as pollination and water filtration, which generate substantial ecological, social and economic benefits (de Groot et al., 2010).
- Evidence supports a relationship between biodiversity and measures of ecosystem functioning, such as improved water quality, soil health, and pollination (Harrison et al., 2014).
- A loss in biodiversity and biological productivity can result in direct negative impacts on physical and mental health, (Lovell et al., 2014).

Planning Principle:

2. Maximize Opportunities to Access and Engage with the Natural Environment



Ensure that there is adequate and easily accessible green space for all to use, as there are many health benefits associated with engaging with the natural environment

- The natural environment provides a setting for activity and exercise, thus **promoting physical activity** (Kaczynski & Henderson, 2007).
- There is evidence of an association between limited access to greenspace and **obesity**-related illnesses (Lachowycz & Jones, 2011).
- The provision of and access to greenspace reduces **stress** and improves quality of life, leading to improved mental health and well-being (Lee & Maheswaran, 2010).
- Greenspace can have a positive impact on creating spaces that encourage **social interaction** and connections, thus helping foster a sense of place and belonging (Barton, Griffin & Pretty, 2012).

Planning Principle:

3. Reduce Urban Air Pollution



Reducing urban air pollution means utilizing adequate and appropriate vegetation to clean the air of pollutants, such as small particulate matter.

- In Canada, about 10 million people live in areas where they are exposed to **traffic-related air pollution** (Brauer, Reynolds & Hystad, 2013).
- Estimates suggest that approximately 21,000 premature deaths are related to air pollution in Canada each year (Brauer et al., 2013).
- Increasing the tree **urban tree canopy** leads to greater absorption of pollution and helps improve air quality in urban areas (Roy, Byrne & Pickering, 2012).
- **Tree diversity** is important as trees have a varying capacity to capture and/or filter air pollution, depending on the maturity and species (Zupancic, Westmacott, & Bulthuis, 2015).

Planning Principle:

4. Mitigate Urban Heat Island Effect



Urban heat island (UHI) effect refers to the difference in temperature between urban and rural areas, due to increased urbanization. As urban populations grow, the impact of the UHI effect becomes more dangerous, especially to vulnerable populations such as children and older adults. This phenomenon can be mitigated through urban greening and the use of green infrastructure.

- In Toronto, Ontario (2005), for every one-degree increase in mean temperature, there was a 32 per cent increase in ambulance response calls for heat-related health impacts (HRI) (Bassil et al., 2010).
- Heat-related mobility is positively associated with a growing aging population (Hajat & Kosatky, 2010).
- **Street trees** have the ability to lower temperatures while adding to the aesthetics of the streetscape (Bowler, Buyung-Ali, Knight & Pullin, 2010).
- **Green roofs** and cool roofs can help combat urban heat island effect through the combined effect of evapotranspiration of plants and the

surface albedo (Zupancic, Westmacott, & Bulthuis, 2015).

- Urban trees have a superior ability to provide thermal relief from heat when compared to artificial shade structures or open green spaces (Zupancic, Westmacott, & Bulthuis, 2015).

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Chapter 3: Existing Toolkits

CHAPTER 3. EXISTING HEALTHY BUILT ENVIRONMENT TOOLKITS

Public health professionals have become increasingly engaged in providing input on planning policy as well as reviewing planning development applications at different levels of government. Additionally, the Canadian Institute of Planners, as well as provincial planning organizations, have increasingly recognized the role of planning and the built environment on health outcomes (Canadian Institute of Planners, 2012; Ontario Professional Planners Institute, 2007). With this recognition of the connections between public health and planning, municipalities and regions have been developing guidelines and toolkits that provide a framework to assist planners, public health professionals, and policy-makers in realizing the impact of the built environment on health, as well as helping to inform health perspective and impacts of built environment decision-making.

The following initiatives are highlighted to demonstrate the varied approaches being used to influence health outcomes through the planning process. The examples provided below are by no means a complete inventory of approaches supportive of healthy built environments, but rather a reflection of evolving practices. The initiatives below were selected to be reviewed during the

development of this report and toolkit based on their geographical similarity and relevance to the Ottawa policy context:

- *Region of Peel Health Background Study User Guide* (Region of Peel, 2011)
- *The Halton Healthy Community Guidelines* (Halton Region, 2012)
- *The Middlesex-London Active Community Toolkit for Reviewing Development Plans* (Middlesex-London, 2013)
- *Building Complete and Sustainable Communities: Healthy Policies for Official Plans* (Hastings & Prince Edward Counties Health Unit, 2012)
- *The British Columbia Healthy Linkages Toolkit* (PHSA, 2014)

3.1 REGION OF PEEL

The Region of Peel *Health Background Study User Guide* was developed in 2011 as part of their commitment to healthy, active communities and design quality. *The User Guide* is intended to be used in evaluating new developments' successes in achieving minimum standards of community health and to encourage development applicants to consider health when developing their proposals. The guide was designed to be used by a variety of planning stakeholders including: developers, planners, built environment professionals, financiers, the municipality, and community (Peel, 2011).

After conducting research consulting with expert planners, the *Health Background Study User Guide* was divided into six "Core Elements":

- Density;
- Service Proximity;
- Land Use Mix;
- Street Connectivity;
- Streetscape Characteristics; and,
- Parking.

The *User Guide* emphasizes that all of these elements are interrelated and together promote healthy communities.

In 2011, the Region of Peel had a population of almost 1.3 million people, which is larger than the City of Ottawa that had a population of approximately 883,000 people. The Region of Peel is an upper-tier municipal government composed of three municipalities: Mississauga, Brampton, and Caledon. These areas are urban, suburban, and rural areas making it a good comparison to Ottawa since it also has all these areas. The policy considerations from Peel's User Guide influenced Ottawa's Toolkit.



Figure 5: Bike lanes in Brampton, ON (City of Brampton, 2016).

3.2 HALTON REGION

The *Halton Healthy Communities Guideline* was developed in 2012 to ensure consistent healthy and sustainable development at both the municipal and regional level (Halton Region, 2012). It was created in coordination with Regional Official Plan Amendment No. 38, which outlines six healthy community components, and is a response to the *Places to Grow Act* (2006). The *Guideline* seeks to address both private and public sector development through a series of recommendations at a range of scales.

The *Healthy Communities Guideline* is organized into seven 'attributes' that work in conjunction to ensure healthy, sustainable planning. These include:

- Built Environment;
- Mobility;
- Natural Environment and Open Spaces;
- Human Services;
- Sustainable Design;
- Economy; and,
- Community Food Security.

Each of the seven attributes has several corresponding elements that address more specific issues within a

theme. The *Halton Healthy Communities Guideline* has influenced this toolkit through its organization of elements and attributes.

In drafting the *Guideline*, Halton referenced several municipal sustainable design guidelines, including the Town of Markham's Greenprint Sustainability Plan, as well as the Toronto Green Standard, and LEED for Neighbourhood Development (Halton Region, 2012). The area of coverage for the Toolkit includes Burlington, Oakville, and Milton, as well as the Town of Halton Hills. Halton is a regional municipality with a population of approximately 500,000.



Figure 6: Bronte Waterfront Park, Town of Oakville, ON (Halton Region, 2012).

3.3 MIDDLESEX-LONDON HEALTH UNIT

The Middlesex-London *Active Community Toolkit for Reviewing Development Plans* was developed in 2013. The toolkit was developed for the purpose of assisting public health professionals in providing valid and reliable input supporting active community design when reviewing development plans submitted to municipalities. The Toolkit's coverage area includes the City of London and all other municipalities located within Middlesex County and comprises a total population of approximately 440,000.

The toolkit is divided into four design categories aimed to support healthy communities. These include: mixed land use, mixed housing, complete streets, and high quality public realms. The categories are then divided into multiple sub-topics that are associated with specific policy considerations. In order to review development plans, the policy considerations make up several user friendly charts with which health professionals can document the level of active community design elements in a specific development plan. The Middlesex-London *Active Community Toolkit for Reviewing Development Plans* charts design influenced the design of the charts in this toolkit.



Figure 7: Stoney Creek Community Centre (YMCA, 2016).

3.4 HASTINGS & PRINCE EDWARD HEALTH UNIT

Building Complete and Sustainable Communities: Healthy Policies for Official Plans was developed in 2012 by Hastings & Prince Edward Counties Health Unit. The document was developed in order to provide Official Plan policy statement suggestions aimed at fostering environments that enhance and sustain the health of citizens. The document applies to all municipalities within the County of Prince Edward, Hastings County, Quinte West, and Belleville with a total population of approximately 150,000.

The document is broken down into five major elements with related goals, objectives and policies to achieve the goals. The major elements include:

- Sustainable & Active Transportation;
- Access to Recreation in Built and Natural Environments;
- Preserve and Protect the Local Food System from Production to Waste Management;
- Access & Exposure to Tobacco and Alcohol Products; and,
- Social Interaction & Sense of Community.

The *Official Plan* policies suggested in the document are rooted in the policy directions of the 2005 *Provincial*

Policy Statement. Many of the policy suggestions discussed in the Hastings & Prince Edward County Toolkit acted as inspiration for the criteria that can be found in this toolkit (Chapter 5).



Figure 8: Downtown Belleville, ON (ORE, 2016).

3.5 BRITISH COLUMBIA HEALTHY BUILT ENVIRONMENT ALLIANCE

The British Columbia *Healthy Linkages Toolkit* was developed in 2014 by British Columbia's Healthy Built Environment Alliance (HBEA) and is intended to serve as a guide to linking planning, community design, and health for planners and public health professionals (PHSA, 2014). It emphasizes an evidence/expert-informed, equitable approach to making decisions about planning and health. The Toolkit sets out five core elements of a healthy built environment:

1. Neighbourhood Design;
2. Transportation Networks;
3. Natural Environments;
4. Food Systems; and
5. Housing.

For each element a systematic literature review was completed, best planning principles for each element elucidated, and an aspirational vision for each element articulated. Each planning principle is supplemented with connections between relevant planning/design choices and positive health outcomes.

This report and toolkit are structured in a similar manner to the *BC Healthy Linkages Toolkit*, though adapted for

the Ottawa context. Instead of using their five core elements, we focus on three, integrating food systems and housing into the other elements where appropriate.



Figure 9: Built environment that supports active transportation over vehicle use in Kimberley, BC (Picture BC, 2016).

3.6 SUMMARY OF FINDINGS

While all the toolkits reviewed in this chapter are concerned with the impacts of the built environment on health, each toolkit has specific strengths and weaknesses. These strengths and weaknesses stem from their respective formulations and conceptualizations or, more literally, what tools they include in their box. For example, the Region of Peel *Health Background Study User Guide* and the Middlesex-London *Active Community Toolkit for Reviewing Development Plans* include charts to assist planners, health professionals, and developers in evaluating successes and shortcomings in evaluating developments – a very useful tool to have in one’s toolkit.

Others, like the British Columbia *Healthy Linkage Toolkit* provide no such charts; instead, it provides a more abstract conceptualization of the elements of the built environment that planners and health practitioners should seek to influence to positively influence health outcomes. While not as immediately useful in the evaluation of developments, such an abstract approach assists in the development of toolkits designed to assist municipalities and address specific contexts. In this way, it promotes a more proactive approach to incorporating health implications into the design and construction of the built environment. Other toolkits, like the Hastings and Prince Edward Health Unit *Building Complete and Sustainable*

Communities: Healthy Policies for Official Plans, distinguish themselves by incorporating equity considerations into their policy objectives and recommendations.

The scale at which a toolkit is designed for also informs its strengths and weaknesses. Toolkits like the Region of Peel’s and the Halton *Healthy Community Guidelines* are created at the regional level, meaning that they must be sensitive to the qualities and character of their constituent municipalities. Unfortunately, this means that some of their recommendations are generalized, as they must be widely applicable. This is not to suggest that municipalities cannot alter recommendations to better address their circumstances, but rather that toolkits that cover such large, diverse contexts sacrifice specificity in their suggestions.

The commonalities amongst the toolkits reviewed highlights the growing push to consider health outcomes as part of the planning process. The respective contexts for which they were developed mean that their recommendations are not identical in numerical or statistical terms, but the underlying message is the same: the built environment has significant implications for health, and considering health outcomes must become proactive, rather than reactive.

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Chapter 4: Policy Framework

CHAPTER 4. POLICY FRAMEWORK

To better understand the policy context guiding planning and decision-making in the City of Ottawa, a range of policy documents were reviewed. The policies reviewed in this section make up the policy framework, which was then evaluated against the criteria collected from our environmental scan of existing healthy community toolkits. The purpose of this chapter is to briefly summarize the relevant policy documents and their proposed actions for realizing a healthy built environment. It is important to note that many of the City of Ottawa policies reviewed already incorporate health considerations into planning decisions in a progressive and evidence-based fashion.

The following policies were reviewed during the development of this report and toolkit:

Provincial:

- *Provincial Policy Statement*, 2014

City of Ottawa:

- *Ottawa Official Plan*, 2003, and *Official Plan Amendment #150*, 2014
- *Infrastructure Master Plan*, 2013
- *Transportation Master Plan*, 2013
- *Pedestrian Plan*, 2013

- *Cycling Plan*, 2013
- *Municipal Parking Management Strategy*, 2009
- *Greenspaces Master Plan*, 2006
- *Urban Forest Management Plan*, in progress
- *Community Design Plans*
- *Building Better and Smarter Suburbs*, 2015
- *Complete Streets Implementation Framework*, 2013
- *Zoning By-law*, 2008

4.1 PROVINCIAL POLICY STATEMENT

The 2014 *Provincial Policy Statement* (PPS), issued under the *Ontario Planning Act*, contains policies on land use planning that set out the provincial government's vision for the the built environment. Section 1.0 of the *PPS* specifically relates to building strong, healthy communities through “efficient land use and development patterns that support sustainability by promoting strong, liveable, healthy and resilient communities, protecting the environment and public health and safety, and facilitating economic growth.” The *PPS* also lists several components that sustain healthy communities including accommodating an appropriate range and mix of housing, discouraging land use patterns that threaten public health, improving accessibility for persons with disabilities and older persons, and promoting development and land use patterns that consider the impacts of climate change.

4.2 OFFICIAL PLAN

The City of Ottawa *Official Plan* (OP), adopted in 2003, provides the policy framework guiding the City's vision for growth to the year 2021. The *Official Plan* was developed within the broader context of the Ottawa 20/20 initiative which strives for sustainable development over a period of 20 years. The Ottawa 20/20 initiative is divided into seven guiding principles that guide Ottawa's growth management plans and day-to-day decision making. Several guiding principles are linked to fostering a healthy built environment. Chiefly, the guiding principles linked to the healthy built environment aim to ensure:

- A Caring and Inclusive City;
- A Green and Environmentally-Sensitive City;
- A City of Distinct, Liveable Communities; and,
- A Healthy and Active City.

The *Official Plan* is also divided into four strategic directions:

- Managing Growth;
- Providing Infrastructure;
- Maintaining Environmental Integrity; and,
- Creating Liveable Communities.

The strategic directions include a multitude of components related to fostering healthy built

environments. Notably, the City aims to accommodate compact mixed-use development in urban areas, support infrastructure for walking, cycling, and transit, protect green spaces, and offer a variety of services to communities.

In 2014, as a part of the of a 5-year comprehensive review, the *Official Plan Amendment #150* was approved by the Minister of Municipal Affairs and Housing. *Amendment #150* features several major changes to each section of the *Official Plan*. Important to note, appeals to *Amendment #150* are currently being reviewed by the Ontario Municipal Board (OMB). As a result, *Amendment #150* is not currently in full force.

In 2016, the OMB further required the City of Ottawa to include three matters, prior to the OMB's consideration of *Official Plan Amendment #150*. The three matters related to Growth Projections, Employment Lands, and Agricultural Lands (LEAR) Review.

4.3 INFRASTRUCTURE MASTER PLAN

The purpose of the 2013 *Infrastructure Master Plan* (IMP) is to support the goals and objectives outlined in Ottawa's *Official Plan*, specifically those that pertain to creating more vibrant, healthy and complete neighbourhoods, while ensuring long-term affordability. The *IMP* assists in achieving these goals through efficient management,

responsible operation and judiciously targeted provision of infrastructure for water, wastewater, and stormwater. Oriented towards the year 2031, when the City's population is expected to reach 1.14 million, the *IMP* aims to ensure that adequate infrastructure exists to support intensification in and outside the urban boundary.

The 2013 version of the *IMP* has as its guiding directions,

1. Intensification: increasing infrastructure capacity where intensification is to take place.
2. Employment Land: addressing infrastructure needs for identified employment lands, particularly in the rural area.
3. Village Servicing: the OP envisions that 50% of rural growth will happen in villages, meaning that planning for expansion must begin now.
4. Affordability: assessing needs and costs, along with the costs of growth and renewal, priorities have been set with the objective of keeping investment affordable.

The *IMP* works in conjunction with other plans like the *Transportation Master Plan*, *Cycling Plan*, and *Community Design Plans* to ensure that these plans are mutually supportive and that their collective goals and objectives are realized.

4.4 TRANSPORTATION MASTER PLAN

The City of Ottawa's 2013 *Transportation Master Plan* (TMP) provides a framework and serves as a guide for expanding the City's transportation networks to meet short and long-term demand. Moreover, it outlines the direction and priorities for the expansion of transportation networks (i.e. an increase in the number of people who cycle or take public transportation). The *TMP* works in conjunction with the City of Ottawa's *Official Plan* growth management policies to ensure that targets are reached in a sustainable way.

The *TMP* outlines the elements of the Plan's 2031 Vision:

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;
7. Deliver cost-effective services;
8. Measure performance;
9. Protect the public interest;
10. Provide adequate and equitable funding;
11. Cooperate with other governments; and,
12. Lead by example.

The first six elements are intended to support social, environmental and economic sustainability – all of which have connections and implications for healthy built environments. The final six are designed to improve the accountability and responsiveness of the transportation system.

The *TMP* spans nine chapters, with chapters three through eight addressing physical elements and policy components necessary to realize the Plan's 2031 vision:

3. Create a supportive built environment;
4. Maximize walkability;
5. Develop a great cycling city;
6. Transform Ottawa's transit system;
7. Provide safe and efficient roads; and,
8. Encourage sustainable mobility choices.

Taken together, the chapters and their associated action points are designed to guide future City projects towards healthier and more sustainable modes of transportation - in addition to designing complete streets to support these modes. To assist in further articulating policy and guiding planning in projects relating to walkability and cycling, the City produced the *Pedestrian Plan* (2013) and the *Cycling Plan* (2013).

4.5 PEDESTRIAN PLAN

The 2013 *Ottawa Pedestrian Plan* (OPP) provides a framework for improving walkability through new infrastructure and improvements to the existing Pedestrian Network, as well as increasing the pedestrian modal share. Features of the plan include equity components, such as the audible signals program. The plan works in conjunction with the *Transportation Master Plan* and the *Cycling Plan* to improve active transportation within the city. The *Pedestrian Plan's* vision statement is predicated upon principles of equity, sustainability, safety, integration, and health. The 2013 version of the *Pedestrian Plan* expands upon the 2009 *Plan's* visions and identifies areas for further improvements and strengthens policies to achieve the City's growth targets.

4.6 CYCLING PLAN

The *Ottawa Cycling Plan* (OCP) is a long-term strategy to support and strengthen cycling in the city. The aim of the *OCP* is to create an environment that makes cycling appealing and feasible for everyone. To realize this aim, the *OCP* sets out key objectives to help realize the vision of the *Official Plan* and *Transportation Master Plan*, maps out the current network and areas for expansion, and recommends policy regarding cycling infrastructure and amenities. An update of the 2008 *Cycling Plan*, the 2013 version emphasizes the importance of integrating cycling

and transit, and acknowledges that the deployment of cycling facilities should be context appropriate.

4.7 MUNICIPAL PARKING MANAGEMENT STRATEGY

Based on the vision of the 2008 version of the *Transportation Master Plan*, the 2009 *Municipal Parking Management Strategy* (MPMS) outlines principles and objectives intended to guide the management of parking facilities and amenities in Ottawa. Its guiding principles are efficiency, transparency, accountability, and clarity. The five objectives it sets out are:

1. The Provision and maintenance of a parking supply that is appropriate for the context (aesthetically consistent, safe, accessible, large enough).
2. Offer and support short-term parking that is affordable and benefits the surrounding area.
3. Encourage the use of alternative modes of transportation (public transit, walking, cycling, carpooling) through policy and facilities.
4. Support residential intensification and mitigate parking problems within heavily-trafficked roads using a variety of tools (i.e. on-street parking privileges for local residents).
5. Make sure that the Municipal Parking Program is economically self-sustaining as well as contributing to a reserve fund for improvement/expansion

(including initiatives designed to encourage alternative modes of transportation.

The *MPMS* then outlines parking rate guidelines and performance measures for assessing the efficiency, transparency, clarity, and accountability of the Parking Management Program.

4.8 GREENSPACES MASTER PLAN

In 2006, the City of Ottawa approved the *GreenSpace Master Plan (GMP) - Strategies for Ottawa's Urban Greenspaces*. This plan articulates the City's vision for greenspace in urban Ottawa and establishes policies that work towards achieving that vision. The *GMP* outlines five objectives to guide the policies in the plan:

1. Adequacy: The City will ensure that there is enough greenspace to meet the needs of a growing and diverse community and will maintain natural systems, biodiversity and habitat.
2. Accessibility: Ottawa residents will have ready access to greenspaces in close proximity to their homes and communities.
3. Connectivity: Ottawa's greenspaces will be linked to provide improved access to a variety of greenspaces and recreational facilities, better

connections between homes and schools or workplaces, and improved biodiversity and the movement of native plants and animals.

4. Quality: Greenspaces will be attractive, safe and well-designed, serving the multiple needs of users while defining the unique identity of communities. Where greenspaces are primarily natural areas, they will be preserved in a manner that maintains or improves natural features and functions.
5. Sustainability: Greenspaces will be planned and managed in a way that minimizes human intervention and public spending over time, through reliance on natural processes as well as innovative methods for protecting greenspace.

4.9 URBAN FOREST MANAGEMENT PLAN

The City of Ottawa is currently developing an *Urban Forest Management Plan (UFMP)*. This Plan will establish a long-term strategic approach to protecting, maintaining and enhancing Ottawa's urban forest.

4.10 COMMUNITY DESIGN PLANS

Community Design Plans (CDPs) are intended to translate the principles and policies in the Official Plan to the community scale. While all CDPs focus on land use

and development, they also address other elements of the built environment, such as transportation, parks, and streetscapes. Unlike a Secondary Plan, a CDP is not a statutory document.

4.11 BUILDING BETTER AND SMARTER SUBURBS

The City of Ottawa's *Building Better and Smarter Suburbs: Strategic Directions and Action Plan* (2015), is a council approved report. This document is now in its implementation phase and solutions are being implemented as they become available. This report is not a statutory requirement.

The report provides ways to improve urban design and long-term sustainability of new suburban subdivisions. It works to realize the City's new suburban density targets in a robust, context-appropriate manner that promotes complete and walkable communities.

4.12 COMPLETE STREETS IMPLEMENTATION FRAMEWORK

The 2013 update to the *Transportation Master Plan* includes recommendations and actions designed to promote and realize complete streets in Ottawa. *The Complete Streets Implementation Framework* (CSIF) is intended to serve as a guide for the vision and objectives outlined in the *TMP*. Guiding principles are set out, designed to ensure the incremental implementation and

progressive incorporation of complete streets in the road network. It provides examples of design elements for different road users which, when implemented in an integrated, equitable manner, produce complete streets. To monitor and enhance complete streets, the CSIF recommends employing a Multi-Modal Level of Service Assessment (MMLOS). MMLOS is a progressive metric for tracking performance measures for all modes of travel. By using similar metrics for different modes of travel, MMLOS allows planners to compare usage, safety, and other criteria that affect the various modes. Finally, the CSIF outlines an Action Plan going forward. It states that the CSIF will become a standard part of City transportation projects, included from the initial stages of planning, thereby eliminating the need to debate the implementation of complete streets on a case-by-case basis.

4.13 ZONING BY-LAW

According to the City of Ottawa, “*Zoning By-law No. 2008-250* implements many of the policies of the City’s Official Plan, which focuses growth within the urban part of the City; promotes increased transit ridership; emphasizes good urban design; preserves environmental integrity; conserves resource areas; focuses rural growth within our villages; and will achieve compact mixed-use communities”. Due to the scope of the project, the *Zoning By-law* was not thoroughly reviewed alongside the listed

policies during the development of this toolkit. The zoning-by law is nonetheless recognized as an important planning document, especially for its role in implementing the City of Ottawa’s policies.

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Chapter 5: Toolkit

CHAPTER 5. TOOLKIT

5.1 URBAN FORM AND COMMUNITY DESIGN

Encourage Mixed Land Use

Mixed land use refers to a blending of complementary land uses in a balanced mix. Complementary land uses may include commercial, residential, and parks and open space. A balanced mix of land uses helps to create a complete community that provides a range of local services and amenities for people at all stages of life. *There are 3 policy opportunities for this principle.*



Promote an Inclusive and Accessible Public Realm

The public realm refers to all public streets, public open spaces, and public buildings. A vibrant and inclusive public realm can foster social connections with the goal of creating a strong sense of place at the neighbourhood and city scale. *There are 9 policy opportunities for this principle.*



Promote Compact Development

Compact development refers to the level of density within the urban form and the concentration of housing and jobs that creates the necessary critical mass to support transit and retail, ultimately reducing car dependence and traffic congestion and helping to contribute to a more walkable and vibrant community. *There are 4 policy opportunities for this principle.*



Create a Safe Street Network With High Connectivity

Connectivity refers to the 'directness' of travel between destinations. As such, street design is highly linked to connectivity. Providing a highly connected street network can encourage active transportation by providing more direct routes to destinations. *There are 7 policy opportunities for this principle.*



Diversify Housing

Housing diversity refers to providing a mix of dwelling types such as: townhouses, apartment buildings, single family detached homes, semi-detached homes, secondary dwelling units, and coach houses within a community to allow for a range of choice and the opportunity for residents to remain in the community for their life cycle and age in place. *There are 4 policy opportunities for this principle.*



Prioritize Service Proximity

Service Proximity refers to residents' access to key amenities such as: schools, playing fields, parks, grocery stores, community gardens, libraries, community centres, pharmacies, and post offices. Amenities located in proximity to residents can encourage the use of active transportation over the personal automobile in accessing amenities. *There are 10 policy opportunities for this principle.*



	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Where the scale of employment lands is large enough, small scale commercial retail and services should be encouraged, where appropriate.	Region of Peel, 2011 (p. 8)	OP 3.6.5.2 (c) In employment lands a variety of ancillary uses like recreational, health and fitness uses, child care, and service commercial uses are permitted as small occupancies.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
2	Live-work units should be encouraged where appropriate.	Region of Peel, 2011 (p. 9)	BBSS 1.11 Provide flexibility in zoning to accommodate a mix of land uses within a community, such as areas that allow live-work units or local commercial land uses.	Criteria has been partially met. Although the Zoning By-laws state home-based businesses, live-work units are not included under the same considerations. The city should consider the incorporation of live-work units specifically into Zoning By-Laws and promoted in the OP.
3	Provide mixed neighbourhoods that balance residential, commercial, and institutional development and that reduce the need for residents to commute long distances to work, school, shops, and services.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 43)	OP 3.6.4 Developing Communities will have range of choice in housing, commercial, institutional and leisure activities in a development pattern that prioritizes walking, cycling and transit. OP 3.6.1.6 Small and locally-oriented convenience and service uses will be encouraged throughout the General Urban Area. OP 2.2.2.20 Balance housing and employment opportunities in urban communities outside the Central Area.	Criteria has been partially met, however, no actual numbers to suggest what an ideal balance should be. Explore setting targets for land use mixes in suburban and urban areas.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Ensure neighbourhoods are designed to include meeting spaces and common areas that address the needs of residents of all ages and physical abilities.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 19)	OP 4.11.11 (e) Lists public realm considerations for high-rise buildings proposals.	Criteria has been partially met , however the OP is limited and inconsistent in considerations for public realm features. Strengthen language to ensure neighbourhoods are designed to include meeting spaces and common areas that address the needs of residents of all ages and physical abilities.
2	Site design of auto-oriented developments, such as uses which include drive through facilities, gas bars and related uses shall make pedestrian access a priority and contribute to high quality public realm and streetscapes.	Region of Peel, 2011 (p. 9)	OP 2.2.2.13 (n) Arterial Mainstreets should carry out measure to enhance the pedestrian environment and public realm. OP 3.6.3.1 Arterial Mainstreets are planned to provide a mix of uses and can evolve over time into more pedestrian-oriented and transit friendly places. OP 3.6.3.6 New gas bars, service stations, drive-through facilities, and automobile sales will not be permitted on Traditional Mainstreets.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	A wayfinding system should be implemented on a community-wide basis to allow residents and visitors to determine their location; identify key destinations (parks, transit stations, community and cultural facilities, shopping centres, off road trails); and develop a plan to take them from their location to desired destination by walking or cycling. The wayfinding system may include maps, directional signs or other elements, and should be useful and easy to understand.	Region of Peel, 2011 (p. 12)	OP 4.6.5.5 (c) When reviewing community design plans, development proposals, and public works that include multi-use pathways, the City will ensure that pathways are designed and located to be safe and efficient transportation, recreation and environmental corridors; provide for good pathway corridor visibility, safety and way finding.	Criteria has been partially met. Only discussed in multi-use pathways and developing community designations and is lacking in considerations for adequate way finding. The City of Ottawa should consider further way finding for all locations in the City. To become a more inclusive and accessible community the City of Ottawa should also consider way finding for people with vision loss or who are blind.
4	Building step-backs to mitigate impacts of taller building elements to provide human scale.	Region of Peel, 2011 (Appendix I)	OP 4.11.12 States that set back changes should be incremental during the development and integration of taller buildings in a neighbourhood characterized by lower built form and also discusses angular planes as a method of mitigation.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
5	Requirements for ground level entrance locations and facade treatments.	Region of Peel, 2011 (Appendix I)	<p>OP 3.6.6.6 (g) Aims to ensure the provision of at-grade street-oriented uses with their principal entrances fronting on the sidewalk and providing a continuity of weather protection.</p> <p>UDGDAM (Guideline 17 & 18) Encourages facades to be to face the public street and to locate front doors to be visible, and directly accessible, from the public street.</p>	Criteria has been met using a guideline. Ensure that implementation meets the high standard set out in policy and is included in higher-order policy.
6	Landscaping standards and public realm requirements.	Region of Peel, 2011 (Appendix I)	<p>OP 2.2.2.13 (n) Considers tree planting on Arterial Mainstreets.</p> <p>OP 2.4.1.3 (d) Encourages reducing the heat island effect through tree planting and landscaping.</p> <p>OP 3.6.6.3 (f) Describes enhancing the Central Area with tree planting.</p>	Criteria has been partially met. Several landscaping considerations are listed in the OP though do not include standards for landscaping. The City should discuss landscaping standards by roadway type, zoning type and/or area of the City.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
7	The location of retail uses on the ground floor of multi-unit and mixed use buildings should be encouraged.	Region of Peel, 2011 (p. 9)	<p>OP 3.6.6 New mixed-use development and refurbishment will help to create a sense of human scale by providing retail uses at grade and additional hotel and residential uses in the Core.</p> <p>OP 3.6.1.6 Small and locally-oriented convenience and service uses will be encouraged throughout the General Urban Area.</p> <p>UDGDAM (Guideline 18) Locate active uses along the street at grade, such as restaurants, specialty in-store boutiques, food concessions, seating areas, offices and lobbies.</p>	<p>Criteria has been partially met. No explicit language to encourage retail on the ground floor of mixed-use buildings in all of the City. Ensure that implementation meets the high standard set out in policy and is included in higher-order policy.</p>
8	Create a community environment that minimizes the incidence of crime and enhances perceptions of security by applying the principles of Crime Prevention Through Environmental Design (CPTED) within the site design and development approval process.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 43)	<p>OP 4.8.8 States that the City uses the principles of Crime Prevention Through Environmental Design in its review of development applications to enhance personal security in the design of spaces that are accessible to the public.</p>	<p>Criteria has been met. Ensure that implementation meets the high standard set out in policy.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
9	Design standards should be developed to support the creation of neighbourhood hubs to provide opportunities for recreation and social interaction.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 19)	St. Joseph Blvd Corridor Study 3.5 Discusses urban design guidelines for the public realm in the context of this study.	Criteria has not been met , only acknowledged in Community Design Plans. Though urban design guidelines for the public realm have only been acknowledged in CDP's an overarching design standard for the public realm would be beneficial to guide public realm design throughout the City of Ottawa to ensure that the public realm provides equitable access and opportunities for social interactions for all Ottawans.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	All development on Designated Greenfield Areas shall achieve a minimum overall density target of 50 people and jobs per hectare.	Region of Peel, 2011 (p. 3)	<p>OP 2.2.2.18 (b) Lands outside of the Greenbelt that are included in a community design plan should have an average density of 34 units per net hectare.</p> <p>OP 3.6.4.4 (a) Designated Developing Community outside the Greenbelt will meet a minimum average density of 34 units per net hectare.</p> <p>OP 3.11.6 (e) Urban Expansion Study Area designations will meet a minimum average density of 34 units per net hectare.</p>	Criteria has been partially met. The OP states an average density target of 34 units per net hectare for areas in Developing Community designations and Urban Expansion Study Area designations, which would be higher than 50 people. In turn, the OP does not relate minimum densities with jobs. Explore the implementation of a density range for proposed residential developments between 34 - 85 units per net hectare.
2	All development in designated Urban Growth Centres in shall achieve a minimum overall density target of 200 people and jobs per hectare.	Region of Peel, 2011 (p. 3)	<p>OP 2.2.2 (Figure 2.3) Lists the 2006 density and sets density target minimums for designation areas. The Designated Central Area is targeting a minimum of 500 people per gross hectare by 2031.</p>	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Minimum and maximum densities are set out in Official Plans. In order to promote compact development and conserve land, the top end of the permitted residential densities should be encouraged within each density category.	Region of Halton, 2012 (p. 16)	OP 2.2.2 (Figure 2.3) Lists the 2006 density and sets density target minimums for designation areas.	Criteria has been partially met. Minimum densities are listed, however maximum densities are not found in the OP. Consider implementing a maximum density for all land use designations in order to maintain human scale development.
4	Promote residential intensification through the development or redevelopment of brownfield and greyfield sites, and transition corridors.	Region of Halton, 2012 (p. 26)	OP 2.2.2.1 (a) Redevelopment of brownfield sites is included as a location for residential intensification. OP 3.6.2.10 (e) The City will consider the creation of brownfield redevelopment strategies under Mixed-Use Centres.	Criteria has been partially met. Greyfield sites and transition corridors are not stated in the OP. Brownfield sites are identified as areas of redevelopment for residential intensification. The redevelopment of Greyfield sites could be promoted as areas for residential intensification.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Infill development should identify opportunities to increase street connectivity.	Region of Peel, 2011 (p. 10)	<p>OP 3.6.3.8</p> <p>Infill development is encouraged in a building format that encloses and defines the street edge and provides direct pedestrian access to the sidewalk on Traditional and Arterial Mainstreets.</p> <p>Urban Design Guidelines for Low-rise Infill Housing 2.3</p> <p>Expand the network of public sidewalks, pathways and crosswalks, to enhance pedestrian safety.</p>	Criteria has been met though only in a guideline and within certain area designations under the OP. Ensure that implementation meets the high standard set out in policy and includes all areas in the City of Ottawa.
2	<p>Street networks and on-road paths in greenfields should always:</p> <ul style="list-style-type: none"> • provide the maximum choice for how people will make trips; • take full account of the kinds of movement a development will generate; and • make clear connections to existing routes and facilities. 	Region of Peel, 2011 (p. 10)	<p>OP 3.6.4.4 (e)</p> <p>Establish a modified grid system as the preferred alignment of roads serving the area.</p> <p>BBSS 1.2</p> <p>Design the street network based on a modified or offset grid to maximize choices of travel routes and opportunities for utility connections.</p> <p>Downtown Moves: Transforming Ottawa's Streets 2.3</p> <p>Decisions on street design, space allocation, and operation address the needs of pedestrians (including transit customers) and cyclists as the first priority, followed by all other vehicles.</p>	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Cul-de-sacs are not permitted unless required for technical reasons.	Region of Peel, 2011 (p. 10)	<p>OP 3.6.4.4 (e) Establish a modified grid system as the preferred alignment of roads serving the area.</p> <p>BBSS 1.2 Design the street network based on a modified or offset grid to maximize choices of travel routes and opportunities for utility connections.</p>	<p>Criteria has been partially met. While policy does not explicitly prohibit cul-de-sacs, it does state that street networks should be designed on a modified or offset grid which does not promote the use of cul-de-sacs.</p> <p>The City of Ottawa's policies should specifically state that cul-de-sacs are not permitted unless technically unavoidable.</p>
4	Crescent streets, reverse frontage lots, and loop roads must not constitute more than 20% of total street frontage and should be discouraged.	Region of Peel, 2011 (p. 10)	<p>OP 3.6.4.4 (e) Establish a modified grid system as the preferred alignment of roads serving the area.</p> <p>BBSS 1.9 Avoid reverse frontage lots (rear yards abutting public streets) within a community.</p>	<p>Criteria has been partially met. While policy does not explicitly prohibit Crescent streets, reverse frontage lots, and loop roads, it does state that streets should be designed on a modified grid which does not promote the use of crescent or loop roads and BBSS already states avoiding reverse frontage lots.</p> <p>The City of Ottawa's policies could specifically state that crescent streets, reverse frontage lots, and loop roads should be discouraged unless technically unavoidable.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
5	Blocks in the proposed development must not exceed 80 m x 150 m in size. Exceptions are made for blocks consisting solely of Parkland or of Employment uses.	Region of Peel, 2011 (p. 10)	UDGGN – 1.13 (Guideline 13) Layout local street patterns so that development blocks are easily walkable – between 150 and 250 metres in length. Regional Road Corridor Design Guidelines 7.1.1.5 Encourage a grid street and block pattern. Design blocks with intersecting side streets every 50 to 100m and signalized intersections every 100 to 150m.	Criteria has been partially met, however the block length maximum range is inconsistent between multiple policy documents. Blocks in proposed developments should consider to not exceed 80 m x 150 m in size.
6	Intersections should be frequent, with street blocks decreasing in size as density increases.	Region of Peel, 2011 (p. 10)	Regional Road Corridor Design Guidelines 7.1.1.5 Encourage a grid street and block pattern. Design blocks with intersecting side streets every 50 to 100m and signalized intersections every 100 to 150m.	Criteria has been met though only in a guideline. Ensure that implementation meets the high standard set out in policy and is included in higher-order policy.
7	Sidewalks, bike lanes and multi-use paths should connect to street networks, major destinations and transport nodes.	Region of Peel, 2011 (p. 10)	OP 4.3.9 Describes criteria for sidewalk implementation on one or both sides of a street. TMP 5.2; Action 5-6 Provide cycling connections to transit, thereby facilitating bike-ride-walk and bike-ride-bike options for commuters. TMP 6.2; Action 6-4 Make rapid transit stations convenient, comfortable and accessible to all users including pedestrians and cyclists.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Where the scale of the community permits, it should include dwelling structures from all three of the following housing type groups, with no group making up more than 50% or fewer than 10% of total units: i. Single detached, semi-detached, and duplex ii. Townhouses and multiplex iii. Apartment building	Region of Peel, 2011 (p. 9)	OP 3.6.4.4 (a)(i) A mix of residential dwelling types will constitute a mix of no more than 55% single detached and at least 10% apartments and the remainder multiple attached dwellings other than apartments.	Criteria has been partially met. Policy allows for 55% of single detached homes, which is slightly more than Peel's recommended 50%. The City of Ottawa should look to reduce the amount of single-detached homes to encourage other forms of housing to ensure housing affordability and residential density.
2	Special housing types, such as group homes or seniors' residences, should be encouraged.	Region of Peel, 2011 (p. 9)	OP 3.1.(1-8) Many different housing types are permitted where a zoning by-law permits a dwelling.	Criteria has been partially met. There are certain dwelling types that are permitted in only certain zoning designations, not in all zoning designations. Strengthen language regarding special housing types units to encourage their development and improve service provision and promote an inclusive community.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Secondary suites should be encouraged where appropriate.	Region of Peel, 2011 (p. 9)	<p>OP 2.5.2.10 Secondary dwelling units are permitted in all parts of the city.</p> <p>BBSS 1.12 To support housing affordability, encourage developers to “rough-in” utilities in basements in order to facilitate their future conversion to second dwelling units in single, semi-detached, and townhouse units.</p>	<p>Criteria has been partially met. While secondary dwelling units are allowed it is unclear whether Ottawa encourages.</p> <p>Strengthen language regarding secondary dwelling units and coach house units to encourage their development and improve the affordability of housing.</p>
4	Adopt affordable housing targets and standards that are integrated into mixed-income neighbourhoods within complete communities.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 43)	<p>OP 2.5.2.2 The City will encourage the production of affordable housing in new residential development and redevelopment to meet an annual target.</p>	<p>Criteria has been met. Ensure that implementation meets the high standard set out in policy.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	The distance between at least 75% of the projected population and three or more of the following amenities and services must be no more than 800 m: Childcare facility, community garden, park, hospital or health clinic, public library, places of worship, adult/senior care facility, social service facility, performance or cultural space, post office or recreation centre. (Multiple services of the same type may be counted.)	Region of Peel, 2011 (p. 6)	OP 2.5.4.2 A target of 2.0 hectares per 1000 populations for parks and leisure areas in the urban areas. OP 3.6.2.2 Lists specific services aimed to encourage a transit-supportive environment under Mixed-Use Centres designation.	Criteria has been partially met. No specific distance between population and service is stated in the OP. Consider implementing targets for amounts of services and amenities per population size (similar to OP 2.5.4.2).
2	The distance between at least 25% of the projected population and a minimum of 5,000 m ² of mixed service commercial and retail space shall be no more than 800 m.	Region of Peel, 2011 (p. 6)	OP 3.6.1.9 States that a retail/commercial centre with a full range of retail uses will be considered with a maximum of 11,000 m ² of gross floor area for specific blocks in the General Urban Area. OP 3.6.2.2 Lists specific services aimed to encourage a transit-supportive environment under Mixed-Use Centres designation.	Criteria has been partially met. No specific distance between population and service is stated in the OP. Consider implementing targets for amounts of services and amenities per population size.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	The distance between at least 75% of the projected population and a minimum of 150 m ² of mixed service commercial retail space shall be no more than 800 m.	Region of Peel, 2011 (p. 6)	<p>OP 3.6.1.9 States that a retail/commercial centre with a full range of retail uses will be considered with a maximum of 11,000 m² of gross floor area for specific blocks in the General Urban Area.</p> <p>OP 3.6.2.2 Lists specific services aimed to encourage a transit-supportive environment under Mixed-Use Centres designation.</p>	<p>Criteria has been partially met. No specific distance between population and service is stated in the OP.</p> <p>Consider implementing targets for amounts of services and amenities per population size.</p>
4	The distance between at least 90% of the projected population and a playing field, park, square or natural open space should be no more than 400 m.	Region of Peel, 2011 (p. 6)	<p>OP 2.4.5.8 Open space and leisure land to be provided within 400 metres of all homes in primarily residential areas in the urban area.</p>	<p>Criteria has been met. Ensure that implementation meets the high standard set out in policy.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
5	The distance between 100% of the projected population and a planned elementary school shall be no more than 1.2 km.	Region of Peel, 2011 (p. 6)	OP 2.5.3.1 Schools to be provided in all communities. BBSS 4.1 - 4.4 Lists strategic directions for the planning and design of schools on the neighbourhood scale.	Criteria has been partially met. No specific distance between population and school is stated in the OP. Policies should consider the benefits of differentiating between elementary schools and secondary schools.
6	The distance between 100% of the projected population and a planned secondary school shall be no more than 2.4 km.	Region of Peel, 2011 (p. 7)	OP 2.5.3.1 Schools to be provided in all communities. BBSS 4.1 - 4.4 Lists strategic directions for the planning and design of schools on the neighbourhood scale.	Criteria has been partially met. No specific distance between population and school is stated in the OP. Policies could consider the benefits of differentiating between elementary schools and secondary schools.
7	Where appropriate, a new community should provide service, commercial and retail facilities that can be used by adjacent communities.	Region of Peel, 2011 (p. 7)	OP 3.6.5.2 (c) Lists a variety of permitted ancillary uses to serve the employees of Employment Areas and Enterprise Areas, the general public in the immediate vicinity, and passing traffic.	Criteria has been partially met. Does not specifically make the link between new communities and existing communities. Heavy focus on employment use over residential use. Strengthen policies related to service, commercial and retail facilities to take into consideration neighbouring community linkages.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
8	Land use designations shall enable retailers of healthy foods such as supermarkets, small and mid-sized grocery stores, produce vendors, and farmers' markets to be located within convenient walking and/or cycling proximity from residences, workplaces, commercial and industrial areas, educational institutions, places of worship, and places of recreation.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 7)	OP 1.3 Under "Access to the Basics", a goal is to ensure that all people have access to adequate food.	Criteria has not been met. Grocery stores and farmers markets are not specifically stated in the OP. Access to food is a component to the guiding principle "Access to the Basics". Explore strengthening policies related to healthy food retailers (i.e. supermarkets, mid-sized grocery stores, produce vendors, farmer's markets) and proximity to population hubs (i.e. residences, educational institutions, workplaces, places of recreation).

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
9	In key locations convenience commercial uses are permitted throughout residential designations.	Region of Peel, 2011 (p. 8)	<p>OP 3.6.1.6 A variety of small, locally-oriented convenience and service uses are encouraged that complement adjacent residential land uses, and are of a size and scale consistent with the needs of nearby residential areas.</p> <p>OP 3.6.5.5 Residential uses are integrated with convenience uses, amenities and services.</p>	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
10	Developments should be within reasonable proximity to an existing or planned employment centre or urban centre. Specifically, the distance should be no more than 10 km.	Region of Peel, 2011 (p. 8)	<p>OP 2.2.2.2 States the permitted ways to achieve employment intensification.</p> <p>OP 2.2.2.20 Balance housing and employment opportunities in urban communities outside the Central Area.</p>	Criteria has been partially met. No specific distance between population and employment centres or urban centres is stated in the OP. Consider implementing targets for distances between proposed developments and existing or planned employment areas.

5.2 MULTIMODAL TRANSPORTATION AND MOBILITY

Prioritize Safety

Prioritizing safety means ensuring that all road users, including pedestrians, and are adequately protected by both street design and infrastructure. *There are 3 policy opportunities for this principle.*



Encourage Use of Public Transit

Encouraging the use of public transit means creating an environment that enables individuals to access reliable public transit. Transit use is an easy way to incorporate physical activity into the daily routine, which has positive impacts on health. *There are 4 policy opportunities for this principle.*



Promote Walkability and Accessible Pedestrian Infrastructure

Promoting walkability and accessible pedestrian infrastructure means designing environments that encourage walking for all levels of mobility and allows for easy access to retail, transportation, and green spaces. *There are 3 policy opportunities for this principle.*



Promote Bicycle Connectivity and Infrastructure

Promoting bicycling connectivity and infrastructure means deploying cycling facilities in a context-appropriate manner and expanding the current cycling network in a coherent, connected way that makes cycling appealing to all, regardless of confidence or proficiency. *There are 3 policy opportunities for this principle.*



Control Parking Supply

Discouraging automobile use means making driving less appealing by reducing minimum parking requirements, minimizing the impact of parking on the area, and providing financial incentives that encourage alternative modes of transportation. *There are 4 policy opportunities for this principle.*



	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Design for roads, crossings and new developments will use active transportation, transit, and engineering best practice approaches that increase safety for non-motor vehicle road users and reduce traffic speeds without the need for enforcement. (33)	Hastings & Prince Edward Counties Health Unit, 2012 (p. 9)	<p>OP 2.2.2.13 (n) Describes provisions for traffic calming and the addition of sidewalks on Arterial Mainstreets.</p> <p>OP 4.3.9 Discusses criteria for the inclusion of sidewalks on one or both sides of street.</p> <p>OP 4.3.11 Describes provisions for pedestrian and cyclist features in new plans of subdivision.</p>	<p>Criteria has been partially met. Provisions for Arterial Mainstreets are strong, but there is a lack of similar provisions for other streets. Many street types also lack provisions for sidewalks. In design, there is often a lack 'equal consideration' for mode types.</p> <p>Ensure that implementation meets the high standard set out in policy, and consider creating policy that ensures of equal consideration of pedestrians and cyclists where infrastructure does not exist.</p>
2	All intersections should be designed to increase the visibility of cyclists and pedestrians, give them priority, reduce crossing distance, and provide adequate crossing time.	Region of Peel, 2011 (p. 87)	<p>OP 2.3.1.6 - 2.3.1.11 Comprehensively discusses provisions facilities for pedestrians where feasible.</p> <p>TMP 6.2; Action 6-4 Limits crossing times and distances for pedestrians and cyclists en route to transit stations.</p> <p>TMP 7.1; Action 7-1 (Complete Streets) Where possible, describes the creation of complete streets, with pedestrians and cyclists prioritized where sustainable choices should be emphasized.</p>	<p>Criteria has been met. Ensure that implementation meets the high standard set out in policy, especially outside of the Central Area and along roadways with high volumes of fast moving traffic.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	While increasing comfort and safety for pedestrians, the design of traffic calming elements should not create undue hazards or obstacles for cyclists.	Region of Peel, 2011 (p. 87)	<p>OP 2.3.1.12 States that new development must include provisions for cyclists, where feasible.</p> <p>TMP 5.3; Action 5-9 Comprehensively describes the deliverance of cycling programs emphasizing safety.</p> <p>TMP 7.1; Action 7-1 (Complete Streets) Where possible, describes the creation of complete streets, with pedestrians and cyclists prioritized where sustainable choices should be emphasized.</p>	<p>Criteria has been partially met. The City has strong provisions for cyclists but policy does not address interactions between cyclists and traffic calming methods.</p> <p>This criteria could be added with the creation of more thorough traffic calming sections within the Official Plan and Transportation Master Plan.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	The distance between at least 50% of the projected population of the development and a low-order transit stop shall be no more than 200 m.	Region of Peel, 2011 (p. 57)	<p>OP 4.3.3</p> <p>The City encourages proponents of new development or redevelopment in close proximity to existing and proposed future transit stations to take into consideration and to demonstrate how the City's Transit Oriented Development Guidelines have been addressed.</p> <p>TMP 6.2; Action 6-3</p> <p>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.</p>	Criteria has been partially met as Ottawa recommends only 600m. To encourage multimodal transportation, the City could establish stricter distances (200m) for projected populations to low-order transit.
2	Where a high-order transit route bisects the development area, 75% of the projected population should be within 400 m of it.	Region of Peel, 2011 (p. 57)	<p>OP 4.3.3</p> <p>The City encourages proponents of new development or redevelopment in close proximity to existing and proposed future transit stations to take into consideration and to demonstrate how the City's Transit Oriented Development Guidelines have been addressed.</p> <p>TMP 3.2; Action 3-3</p> <p>Development around rapid transit stations can provide vital support to transit in several ways.</p>	Criteria has been partially met as Ottawa recommends only 600m. Given the extensive expansion of Ottawa's LRT, population and intensification could be considered within 1600m of transit stations. Special consideration could be made for dwelling units within 400m.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Ensure design quality of both transit stops and the journey to the stop. Transit stops should, where appropriate, provide shelter from the sun and inclement weather and seating. High-order transit stops/stations should also include secure bicycle parking facilities.	Region of Peel, 2011 (p. 81)	<p>OP 4.3.3</p> <p>The City encourages proponents of new development or redevelopment in close proximity to existing and proposed future transit stations to take into consideration and to demonstrate how the City's Transit Oriented Development Guidelines have been addressed.</p> <p>OP 4.3.6</p> <p>The City will require that parking for bicycles be provided in highly visible and lighted areas, sheltered from the weather wherever possible. The zoning by-law will set standards and regulations for land uses that normally generate demand for bicycle parking.</p> <p>TMP 4.2; Action 4-4</p> <p>Provide quality design for pedestrian infrastructure (accessibility, wayfinding, lighting, etc.).</p> <p>TMP 5.2; Action 5-8</p> <p>Provide bicycle parking and end-of-trip facilities in new developments (long and short-term parking, highly visible, and well-lit).</p>	<p>Criteria has been met, however the City does not explicitly mention using CPTED principles to encourage transit use. CPTED principles can encourage the use of public transit.</p> <p>Safety concerns can discourage people from utilizing transit late at night, not to mention fear of bicycle theft. Ensuring that bicycle parking is secure, well-lit, and that adequate sightlines exist is crucial to creating a sense of safety and security.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
4	A network of continuous active transportation and transit infrastructure should be developed that is safe, accessible, and connected to the road system and links with the various uses and destinations in the community in such a way to offer multimodal access to jobs, housing, schools, cultural and recreation opportunities, healthy food outlets, and goods and services.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 12)	<p>TMP 4.1; Action 4-2 Expand the pedestrian network; 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.</p> <p>TMP 5.2; Action 5-6 Provide cycling connections to transit, thereby facilitating bike-ride-walk and bike-ride-bike options for commuters.</p> <p>TMP 6.2; Action 6-4 Make rapid transit stations convenient, comfortable and accessible to all users including pedestrians and cyclists.</p>	<p>Criteria has been met. Ensure that implementation meets the high standard set out in policy.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	In greenfield and infill development development, or where new streets are introduced through infill development, traffic calming will be achieved on neighbourhood streets by using minimum traffic lane widths, minimum number of traffic lanes in the roadway, Pedestrian-priority streets, woonerfs or home-zones (speed limit under 15 km/hr, vehicle must yield to pedestrians and cyclists), or using urban design elements such as speed humps and bollards.	Region of Peel, 2011 (p. 65)	<p>OP 2.2.2.13 Describes traffic calming in general terms as a measure to enhance the pedestrian environment along Arterial Mainstreets.</p> <p>OP 4.3.9 Describes criteria for sidewalk implementation on one or both sides of a street.</p> <p>BBSS 6.7 Implement traffic calming measures (such as those in the Canadian Guide to Neighbourhood Traffic Calming) at the outset of road design for local and collector streets.</p>	<p>Criteria has not been met. Directions through Building Better Suburbs could be more detailed, as it mostly focuses on on-street parking as traffic calming method. The OP does not have detail or clear criteria and enforcement for traffic calming provisions.</p> <p>The City should discuss the implementation of specific traffic calming measures in new development. Additionally, where sidewalks are not implemented, the City could consider pedestrians through reductions in speed limits and/or traffic calming.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
2	Pedestrian-level street lamps of 4.6 m in height or less, spaced apart no more than 30 m, must be provided on all streets.	Region of Peel, 2011 (p. 88)	<p>OP 2.2.2.13 Describes traffic calming in general terms as a measure to enhance the pedestrian environment along Arterial Mainstreets.</p> <p>OP 4.3.9 Describes criteria for sidewalk implementation on one or both sides of a street.</p> <p>BBSS 6.7 Implement traffic calming measures (such as those in the Canadian Guide to Neighbourhood Traffic Calming) at the outset of road design for local and collector streets.</p>	<p>Criteria has been partially met. Provisions are strong in the Central Area but lacking in other parts of the city.</p> <p>The City should discuss the implementation of specific traffic calming measures by roadway type, zoning type, and/or area of the city.</p>
3	Ongoing road maintenance, reconstruction, new road construction, and associated infrastructure shall have equal consideration for pedestrians, cyclists, transit riders, and motorists.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 9)	<p>OP 2.3.1.10 Describes pedestrians as high priority when in the configuration of traffic control.</p> <p>TMP 4.2; Action 4-5 Prioritizes sidewalks in the downtown core and employment areas for maintenance.</p> <p>OPP 5.1 Discusses the hierarchy and criteria for maintenance of routes during snowfall.</p>	<p>Criteria has been partially met as maintenance policy is thorough though 'equal consideration' often not met.</p> <p>As the City seeks to increase sustainable modal share, it should strengthen policy to ensure equal consideration of all modal choices during development.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	A connected and destination-oriented bikeway network should be provided throughout the community, including a variety of on- and off-street bikeway facilities that provide an appropriate degree of separation from motorized traffic, given the speed and volume of traffic on the street. These on-street bikeway facilities may include (but are not limited to) bicycle lanes, cycle tracks, sharrows, signed routes, bicycle boulevards, and multi-use paths on the boulevard.	Region of Peel, 2011 (p. 87)	<p>OP 2.3.1.13 Discusses the requirement of cycling facilities in new development, where feasible.</p> <p>OP 2.3.1.14 Ensures provisions for cyclists, to the extent possible, during the creation or redevelopment of roadways.</p> <p>OP 2.3.1.25 Ensure, where feasible, the provision of separate multi-use pathways near rapid-transit corridors.</p> <p>OP 4.3.11 Ensures provisions for cyclists in new plans of subdivision.</p> <p>TMP 5.1; Action 5-3 Discusses the selection and criteria for different cyclist provisions.</p> <p>Ottawa Cycling Plan 2.2, 4.3 Discusses monitoring of OCP's progress since 2008, and quality of facilities.</p>	<p>Criteria has been partially met, however, cycling infrastructure is not prioritized despite variations in safety for different types (sharrows, separated bike lanes).</p> <p>More specific policy regarding the appropriate context and tradeoffs for sharrows could assist in promoting and encouraging higher order cycling infrastructure.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
2	At a minimum, 100% of the population shall be within 150m of a continuous and connected bikeway facility.	Region of Peel, 2011 (p. 87)	OCP 5.3.1.3 Discusses provisions for Neighbourhood Bikeways, which are cycling paths and infrastructure designed for use at the neighbourhood level and to connect with other facilities.	Criteria has been met. The OCP discusses neighbourhood bikeway standards, though there is not yet a statement dealing average distances from bikeway facilities. The OCP and TMP should be amended to include clear criteria regarding dwelling unit distances from connected cycling facilities.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Development standards shall include supportive infrastructure for active transportation such as bicycle-activated street lights, enhanced street crossings, and bicycle racks.	Hastings & Prince Edward Counties Health Unit, 2012 (p. 12)	<p>OP 2.3.1.14</p> <p>In the construction or reconstruction of transportation facilities (roadways, bridges, transit stations, etc.) and public buildings (community centres, libraries, etc.), the City will ensure, to the extent possible, the provision of facilities to address the needs and safety of cyclists.</p> <p>TMP 4.2; Action 4-4</p> <p>Maximizes pedestrian service and infrastructure for safety.</p> <p>TMP 4.3; Action 4-6</p> <p>Discusses the implementation of audible pedestrian signals and pedestrian countdown signals.</p> <p>TMP 5.2; Action 5-8</p> <p>Provide bicycle parking and end-of-trip facilities in new developments (long and short-term parking, highly visible, and well-lit).</p> <p>TMP 6.2; Action 6-4</p> <p>Make rapid transit stations convenient, comfortable and accessible to all users including pedestrians and cyclists.</p>	<p>Criteria has been partially met.</p> <p>Adequate provisions for bicycle racks and pedestrian/cyclists crossing exist and the use of bicycle signals is being researched.</p> <p>The provincial and municipal governments are currently reviewing standards for bicycle signals. When best practices are established, policy should be created to ensure their construction on existing and new roadways.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Reductions in parking requirements should be given to buildings and other facilities within 400 m of a transit stop; and apartments/condominiums offering car share parking spaces (with each car share space equivalent to 10 regular spaces).	Region of Peel, 2011 (p. 67)	<p>OP 2.3.1.46 (d) Allows the city to alter parking requirements within 600m of transit, recognizing that contextual influences may play a role in numbers.</p> <p>OP 4.3.4 States that the city may use the zoning by-law and cash-in-lieu of parking as tools to reduce parking within 600m of transit for uses where there is a need to reduce automobile dependence</p> <p>TMP 3.2; Action 3-3 Motivate supportive development around rapid transit stations and transit priority corridors.</p>	<p>Criteria has been met. Ottawa surpasses the criteria by stating that reductions should be given within 600 m of transit. The zoning by-law should be referred to for specifications on parking reductions by area.</p> <p>Moving forward, the City should consider incentivizing parking for sustainable (low emission, carpool) vehicles. Where parking must be provisioned, further incentivize clean energy vehicles with EV charging stations.</p>
2	On-street parking should be included on all streets except where inappropriate for technical or safety reasons.	Region of Peel, 2011 (p. 67)	<p>OP 2.2.2.13 (e) States that the city will maximize on-street parking opportunities</p> <p>Municipal Parking Management Strategy Provides guidelines for on-street parking within the city</p>	<p>Criteria has been met. Ottawa's Official Plan discusses maximizing opportunities for on-street parking and also references the Municipal Parking Management Strategy, which comprehensively describes parking management in the city.</p> <p>Create guidelines for interspersing EV charging stations along corridors with street parking.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Where surface parking is provided it should be designed to minimize negative aesthetic and environmental impacts. This can be achieved by locating the parking lot away from the street frontage and by incorporating the following into the parking lot design: Tree planting, landscaping storm water management, porous/permeable surfaces, light-coloured materials (rather than black asphalt), pedestrian access and circulation.	Region of Peel, 2011 (p. 67)	OP 4.3.7 In general, the City requires landscaping features such as shrubs, trees, landscaped berms, decorative walls and fences for surface level parking.	Criteria has been met. Ensure that implementation meets the high standard set out in policy, especially in areas with high pedestrian traffic and small businesses.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
4	Efficient use of parking should be promoted by identifying systems for sharing parking spaces by two or more user groups at different times of the day or week (for example, office staff during weekdays and restaurant clientele in the evenings and on weekends), and by providing preferential parking for carpool vehicles.	Region of Peel, 2011 (p. 67)	OP 2.31.47 Pertains to the broad aspects of management of parking in the City TMP 8.2; Action 8-8 Promote and/or promote carpool lanes and parking lots in collaboration with MTO	Criteria has been partially met. Ensuring that carpooling is further incentivized and promoted will be crucial in encouraging more individuals to utilize it.

5.3 NATURAL ENVIRONMENT AND OPEN SPACES

Preserve and Connect Open Spaces

This element pertains to the importance of preserving environmentally sensitive areas, in order to protect biodiversity and the ecosystem. *There are 10 policy opportunities for this principle.*



Maximize Opportunities to Access and Engage with the Natural Environment

Ensure that there is adequate and easily accessible green space for all to use, as there are many health benefits associated with engaging with the natural environment. *There are 15 policy opportunities for this principle.*



Reduce Urban Air Pollution

Reducing urban air pollution means utilizing adequate and appropriate vegetation to clean the air of pollutants, such as small particulate matter. *There are 3 policy opportunities for this principle.*



Mitigate Urban Heat Island Effect

Urban heat island (UHI) effect refers to the difference in temperature between urban and rural areas, due to increased urbanization. As urban populations grow, the impact of the UHI effect becomes more dangerous, especially to vulnerable populations such as children and older adults. This phenomenon can be mitigated through urban greening and the use of green infrastructure. *There are 7 policy opportunities for this principle.*



	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	The Natural Heritage System should be connected to and integrated with the open space network and trail systems to enhance continuity and interconnections between ecosystems.	Halton Region, 2012 (p.49)	OP 2.4.2 The diversity and connectivity of natural features and the long-term ecological function and biodiversity of the City's natural heritage system shall be maintained, restored, or where possible, improved.	Criteria has been met. The policy includes an explicit requirement ("shall") to maintain the diversity and connectivity of natural features and the function and biodiversity of natural heritage systems. It also clearly sets out the natural heritage features and the linkages with surface and groundwater features that are subject to the policy. This positions natural heritage systems protection effectively within the entire functioning ecosystem. Ensure that implementation meets the high standard set out in policy.
2	Policy should ensure that natural heritage inventories/ studies are undertaken, updated and maintained.	Ontario Nature, 2014 (p.19)	OP 4.7 Table indicates where studies/ assessments may be required, depending on the characteristic of the site, to assess a development application.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
3	Policy should require the identification and protection of core natural heritage features and corridors, and linkages to surface water and groundwater features and functions.	Ontario Nature, 2014 (p.21)	OP 2.4.2.1 Outlines the parts of the natural heritage system that are protected.	Criteria has been met and is considered a best practice. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
4	Policy should establish a commitment or reference to maintaining, improving and restoring the biodiversity and long-term ecological function of natural heritage systems.	Ontario Nature, 2014 (p.26)	OP 2.4.2 The diversity and connectivity of natural features and the long-term ecological function and biodiversity of the City's natural heritage system shall be maintained, restored, or where possible, improved.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
5	Policy should address and protect features, functions and linkages not otherwise identified in the Official Plan.	Ontario Nature, 2014 (p.28)	OP 2.4.2.3 Regardless of whether identified in the Official Plan, an Environmental Impact Statement is required for development proposed within or adjacent to certain features.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
6	Policy should direct that permitted uses take into account the impact on the natural heritage system, including ecological functions, and should incorporate prohibitions on development and site alteration within the natural heritage system.	Ontario Nature, 2014 (p.32)	OP 4.7.8 Outlines when an Environmental Impact Statement (EIS) is required.	Criteria has been met. While the PPS prohibits development and site alteration within certain features, it does not prohibit development within the entire system. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
7	Policy should require the implementation of natural heritage system policies in zoning bylaws and subsequent amendments, as well as in other municipal bylaws.	Ontario Nature, 2014 (p.33)	OP 4.7.3.3 Setbacks from certain environmental features are implemented through zoning by-laws.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.
8	Policy should establish provisions to grow and enhance the secured and environmentally managed portion of the natural heritage system (e.g., through conservation easements, stewardship agreements or acquisitions)	Ontario Nature, 2014 (p.35)	OP 5.2.5 Outlines how the City will ensure that lands are secured in a way that is consistent with their greenspace values. GMP 4.1.6 Outlines procedures for Land Acquisition.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
9	Policy should acknowledge the importance of cross-jurisdictional communication and co-operation regarding natural heritage systems.	Ontario Nature, 2014 (p.47)	OP 2.4 Outlines the need for cross-jurisdictional cooperation, as natural heritage systems cross municipal boundaries.	Criteria has been met. The City of Ottawa expressly recognizes not only the need for partnerships with conservation authorities and neighbouring municipalities, but also the need to work in meaningful consultation and partnership with First Nations. Ensure that implementation meets the high standard set out in policy.
10	Policy should recognize the socio-economic, cultural and ecological values associated with natural heritage features and the services that the natural heritage system provides to the community.	Ontario Nature, 2014 (p.54)	GMP 2.4.1 Highlights how greenspaces have many different ecological and social functions that together create a system that is more effective and stronger than if it were fragmented.	Criteria has been met. Ensure that implementation meets the high standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Greenspace targets should consider both quantity of greenspace as well as quality.	Halton Region, 2012 (p.50)	OP 2.5.4.2 Urban greenspace target of 2.0 hectares per 1000 people. OP 2.4.5.1(b) Encourage a high quality of urban design.	Criteria has been met. The City recognizes the need to increase the amount of greenspace within the inner urban area and ensure quality greenspaces throughout the City. Ensure that implementation meets or exceeds the standard set out in policy.
2	Design and locate parks to utilize Crime Prevention through Environmental Design (CPTED) principles by ensuring clear view into and out of surrounding areas, which include: <ul style="list-style-type: none"> - Adequate lighting; - Locating buildings to overlook public spaces; - Using signs and design for ease of access and egress; and, - Mix of activity for constant use of the space. 	Halton Region, 2012 (p.50)	Park and Pathway Development Manual 3.0 Outlines that CPTED principles shall be considered in the design of parks.	Criteria has been partially met. The Park and Pathway Development Manual (20120 makes direct reference to the inclusion of CPTED principles in park design, but does not explicitly state how the principles will be incorporated. Develop an Official Plan policy that includes CPTED principles and implementation guidelines in park design.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	Parks should accommodate a range of age groups. Co-locating physical activity spaces for children and adults promotes physical activity in different age groups.	Halton Region, 2012 (p.50)	OP 2.5.4.4(e) New Parks and Leisure Areas will be designed for a wide spectrum of ages, socio-economic demographics and recreational interests.	Criteria has been met. Ensure that implementation meets or exceeds the standard set out in policy.
4	An accessible, connected and diverse range of parks should be provided to allow for active and passive recreational opportunities for all residents.	Halton Region, 2012 (p.50)	Park and Pathway Development Manual Outlines park classification.	Criteria has been met. The City of Ottawa has a classification system to define park typologies designed to meet the social, recreational and environmental needs of its residents. Park Classification only applies to new residential development/growth areas. Ensure that implementation meets or exceeds the standard set out in policy.
5	Design a district park to be accessible by transit and internal routes through the park should enable transit access.	Halton Region, 2012 (p.51)	Park and Pathway Development Manual Locate to serve multiple communities.	Criteria has been met. Ensure that implementation meets or exceeds the standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
6	Design wayfinding signage within a unified design vocabulary for ease of use.	Halton Region, 2012 (p.51)	Park and Pathway Development Manual 3.0 Consistency in wayfinding and signage.	Criteria has been met. Ensure that implementation meets or exceeds the standard set out in policy.
7	Community parks serve all the surrounding neighbourhoods and need to be located in a central location for easy access.	Halton Region, 2012 (p.51)	OP 2.5.4.4 Parks and Leisure areas will: (a) Contribute to the equitable distribution of these areas; and, (b) be easily accessible by foot or by bicycle from homes.	Criteria has been met. Ensure that implementation meets or exceeds the standard set out in policy.
8	Where possible, community parks and recreation centres should be linked to the NHS and any pedestrian/bicycle paths.	Halton Region, 2012 (p.51)	OP 4.3.11 New developments will connect existing networks to parks and other open spaces.	Criteria has been met. Ensure that implementation meets or exceeds the standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
9	Generally, the neighbourhood park could include elements such as play structures, non-illuminated mini-recreational fields, tennis courts, informal playgrounds, seating, hard surface areas, shaded areas under tree canopies or open air structures, community mailboxes and specimen tree, shrub and ground cover planting.	Halton Region, 2012 (p.52)	<p>OP 2.4.5 The City of Ottawa's greenspaces assume many forms.</p> <p>OP 2.5.4 Parks and Leisure Areas will provide features such as drinking fountains, playgrounds, paved areas, benches, and vegetation.</p>	Criteria has been met. Ensure that implementation of this policy occurs in new park developments.
10	100% public frontage is encouraged. Public frontage can be a public road, a school, or the natural heritage system.	Halton Region, 2012 (p.52)	<p>OP 2.5.4.4 (e) New Parks and Leisure areas will have significant street frontage, in proportion to their size.</p>	Criteria has been partially met. Ensure that implementation meets or exceeds the standard set out in policy.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
11	Whenever possible, locate neighbourhood parks adjacent to school sites with shared amenities.	Halton Region, 2012 (p.52)	OP 2.5.4.1 (a) Parks and leisure areas will be developed in conjunction with other facilities such as schools, stormwater management facilities, etc.	Criteria has been met. Although the criteria has been met, ensure that Community Design Plans implement this policy.
12	Bike racks should be accessible and conveniently located adjacent to play areas and park entrances, with hard surfaces under the bike rack.	Halton Region, 2012 (p.54)	N/A	Criteria has not been met. Ensure that local policy and implementation considers the criteria in new developments.
13	Parkettes/Village Squares should be easily accessible for residents within a 200 to 400 meter radius (3-5 minute walk) and have road frontages on at least three sides.	Halton Region, 2012 (p.54)	Park and Pathway Development Manual Outlines specific targets for different park classifications.	Criteria has been partially met. The current Service Area Radius is set at 200-450m and the preferred minimum frontage on abutting streets is 50%. Consider strengthen the guideline to be consistent with the criteria.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
14	In local Official Plans and Zoning By-laws, consider the opportunity for community gardens and/or allotments gardens in parks and open spaces.	Halton Region, 2012 (p.55)	OP 1.6 The provision of parklands, recreational pathways and facilities, community gardens, walking and cycling provide opportunities for a healthy lifestyle.	Criteria has been partially met. Community gardens are mentioned in the Official Plan under the Guiding Principle “Healthy and Active City” however, they could be supported more throughout the development review process or within Community Design Plans. Strengthen the policy language to encourage and promote the inclusion of community gardens in new developments.
15	Parks and trails should be designed to accommodate a wide range of users and abilities.	Halton Region, 2012 (p.56)	Parks and Pathways Inclusive Design Checklist 1.0 The City is committed to providing facilities that are accessible to all its citizens. City of Ottawa Facility Accessibility Design Standards Recreational Trail Checklist	Criteria has been partially met. The Parks and Pathways Inclusive Design Checklist (2012) should be updated to include the City of Ottawa's 2015 Facility Accessibility Design Standards.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	Establish an urban tree canopy coverage target to recognize the importance of tree cover and strategic planting in new developments.	Halton Region, 2012 (p.28)	OP 2.5.4.7 The City will maintain a target for forest cover for the entire city of 30 per cent. UFMP 3.5.3 (Draft 2016) States the target for canopy coverage.	Criteria has been partially met. The Urban Forest Management Plan is currently being developed and has not finalized how the City will enhance the urban forest to promote a more consistent canopy cover. Consider developing minimum canopy coverage standards at a smaller scale, rather than city wide. For example, canopy targets could be neighbourhood wide or for each zoned land use.
2	Plant trees and vegetation along roadways near schools to filter air and act as a physical barrier.	Halton Region, 2012 (p.25)	N/A	Criteria has not been met. Ensure that street trees and vegetation are planted on school lots, to reduce exposure to air pollution.
3	Ensure the protection of all trees during new development, as the removal of pollutants per tree increases over time as trees grow in size and mature.	N/A	Urban Tree Conservation By-law Outlines when a landowner must obtain a Distinctive Tree Permit from the city.	Criteria has not been met. Only trees over 50cm in diameter are protected. Consider strengthening the bylaw to increase protection of mature trees.

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
1	<p>Reduce ambient surface temperatures, and provide shade for human health and comfort:</p> <p>Use a combination of the following strategies to treat at least 50% of the site's non-roof hardscape (including driveways, walkways, courtyards, surface parking areas, artificial turf, and other on-site hard surfaces:</p> <ul style="list-style-type: none"> · High-albedo surface materials with an initial reflects of at least 0.3 or SRI (Solar Reflectance Index) of 29 · Open grid pavement with at least 50% perviousness · Shade from existing tree canopy or within 5 years of landscape installation · Shade from structures covered by solar panels 	City of Toronto Green Standard, 2014	<p>OP 2.4.1.3(d)</p> <p>Reducing the urban heat island effect through landscaping, tree planting, and encouragement of courtyards and innovative green spaces with permeable surfaces and trees and of green building measures such as the use of green roofs, living walls and light coloured building materials.</p>	<p>Criteria has not been met.</p> <p>Although the OP does support innovative green infrastructure, they are not adequately encouraged in the development review process.</p> <p>Consider developing a Green Development Standard, including mandatory requirements that would apply to certain types and sizes of new development.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
2	Integrate tree establishment solutions with the City's 'complete streets' and 'green streets' policies and implementation framework.	N/A	<p>OP 2.4.5 Mentions that the Greenspace Master Plan will develop guidelines for 'green streets'.</p> <p>OP 4.7.2.6 Streetscapes will be designed to include the provision for trees.</p> <p>GMP 2.4.7 Introduces and outlines the 'green street' concept.</p>	<p>Criteria has been partially met. The City of Ottawa has Official Plan policies that support 'complete streets' and 'green streets' however, they could be strengthened.</p> <p>Consider incorporating 'green streets' into the complete street concept and using sustainable infrastructure innovations where appropriate.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
3	<p>Reduce ambient surface temperatures on or from rooftops:</p> <ul style="list-style-type: none"> · Install a green roof to meet the requirements of the Green Roof Bylaw (where required) · Green roof installed for at least 50% of Available Roof Space · Cool roof installed for 100% Available Roof Space · Use a combination of a green and cool roof for at least 75% of Available Roof Space 	City of Toronto Green Standard, 2014	<p>OP 2.4.1.3(d)</p> <p>Reducing the urban heat island effect through landscaping, tree planting, and encouragement of courtyards and innovative green spaces with permeable surfaces and trees and of green building measures such as the use of green roofs, living walls and light coloured building materials.</p>	<p>Criteria has not been met.</p> <p>Although the OP does support green roofs and innovative green infrastructure, they are not adequately encouraged in the development review process.</p> <p>Consider developing a Green Development Standard, including a mandatory Green Roof By-law, which would apply to certain types and sizes of new development.</p>
4	<p>Paved surfaces, such as roads, sidewalks, parking lots and residential driveways should use “cool paving” technologies such as grass pavers, gravel pavers, or permeable concrete.</p>	City of Toronto Green Standard, 2014	<p>OP 2.4.1.3(d)</p> <p>Reducing the urban heat island effect through landscaping, tree planting, and encouragement of courtyards and innovative green spaces with permeable surfaces and trees and of green building measures such as the use of green roofs, living walls and light coloured building materials.</p>	<p>Criteria has been partially met.</p> <p>Although the OP does support innovative green infrastructure, such as cool paving technology, they could be more encouraged in the development review process.</p> <p>Promote and incentivize the use of ‘cool paving’ techniques, such as permeable materials, during development and redevelopment projects.</p>

	CRITERIA	SOURCE	LOCAL POLICY	FINDINGS & RECOMMENDATIONS
5	New trees and landscaping within parks should be of native plant materials and where possible, consider salvage from the site or the local area.	Halton Region, 2012 (p.50)	OP 4.7.2.4 The City will promote the use of native species in public projects and private tree planting and land conservation wherever appropriate.	Criteria has been met. Ensure that implementation meets the standard set out in policy.
6	Plant species should be selected based on the growing environment. For example, use species (native or non-native) that are hardy, drought- and salt-tolerant, and resistant to the stresses of compacted soils and weather exposure.	City of Toronto - Design Guidelines for 'Greening' Surface Parking Lots, 2013 (p.13)	Urban Design Guidelines for Large-Format Retail, Guideline 25 Consider tolerant trees and vegetation.	Criteria has not been met. There are no Official Plan policies that support the selection of plant species based on their tolerance to urban conditions, such as road salt and heat. Rather than simply supporting the inclusion of native species, the Official Plan could recognize the importance of resilient species when implementing urban greening initiatives.
7	If surface parking is permitted and provided, plan shade trees throughout the parking lot interior at a ratio of one tree planted for every 3 parking spaces supplied.	City of Toronto Green Standard, 2014	OP 4.3.7 City requires that parking areas be screened from the street with low shrubs, and trees	Criteria has not been met. While this allows for trees to be planted it does not provide a ratio of how many trees should be planted, only that they be used as a screen. Ensure that policy and by-laws encourage tree planting within parking lots.

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6

Chapter 6: Recommendations

CHAPTER 6. RECOMMENDATIONS AND CONCLUSIONS

The contents of this chapter are a distillation of the 89 policy opportunities that were identified in Chapter 5. Specifically, we have developed 15 recommendations that represent the full range of planning principles that guided our analyses. For each recommendation, we identify its number from the corresponding chart located in the Toolkit (Chapter 5). Please refer to the Toolkit presented in Chapter 5 for our exhaustive list of policy opportunities for healthier built environments in Ottawa.



6.1 URBAN FORM AND COMMUNITY DESIGN

6.1.1 Encourage Mixed Land Use



Recommendation: Explore setting targets for land use mixes. More suburban areas of at least 40 acres should have a mix of: 10-15% of area allocated to public space, 30-70% of area allocated commercial and employment uses 50-80% of area allocated to housing and urban areas. Urban growth areas and transit and activity nodes are suggested to have within a minimum of 10 acres, a mix of: 5-15% of area allocated to public space, 30-70% of area allocated to commercial and employment, 20-60% of area allocated to housing (Calthorpe, 1993).

Precedent:

- Halton Region *Creating Walkable and Transit-Supportive Communities* toolkit and is guided by Peter Calthorpe's research about Transit Oriented Development (1993).

Chart: Encourage Mixed Land Use (3).

Rationale:

- Currently the City of Ottawa *Official Plan* and Community Design Plans do not set targets for land use types to ensure an appropriate mix.
- While the suggested targets from Calthorpe (1993) were initially set for **Transit Oriented Development**, it is important that all neighbourhoods have an adequate mix of different land uses to promote walkable, transit-supported, and vibrant communities. It is also important that these types of land uses are mixed and dispersed equally throughout the community and that the uses are not separated across the community.
- The City of Ottawa's *Official Plan* does encourage mixed-use development, though it does not set targets for ideal land-use mix in new developments. Community Design Plans simply list the percentages of each land use type.
- Targets can help to ensure an adequate mix of land uses in all new communities and in new Community Design Plans.

6.1.2 Promote an Inclusive and Accessible Public Realm



Recommendation: Strengthen language to ensure neighbourhoods are designed to include meeting spaces and common areas that address the needs of residents of all ages and physical abilities.

Precedent:

- Hastings and Prince Edward Counties *Building Complete and Sustainable Communities: Healthy Policies for Official Plans.*
- Ontario Professional Planners' Institute *Healthy Communities Planning: A Call to Action.*

Chart: Promote an Inclusive and Accessible Public Realm (1).



Figure 9: Public space in Hintonburg, Ottawa, ON (Libera, 2016).

Rationale:

- The City of Ottawa *Official Plan* is limited and inconsistent in considerations for public realm features.
- The City of Ottawa *Official Plan* states that the public realm should consider “the provision of publicly accessible landscaped area, amenity space, street trees, public art, active land use frontages, legible entrances and views to the street, canopies, awnings and colonnades for continuous weather protection”, but only in considering proposals for high-rise buildings (OP 4.11.11 (e)).
- The Ontario Professional Planners Institute released a call to action in 2016, discussing the importance of the public realm and the importance of making it accessible to all individuals.
- The suggestion would allow for specific considerations to be listed in the proposals for all developments in the City of Ottawa. Furthermore, considerations would be made to ensure that the public realm is accessible and inclusive for Ottawa’s growing population.

6.1.3 Promote Compact Development



Recommendation: Explore the implementation of a density range for proposed residential developments of between 34-85 units per net hectare.

Precedents:

- *Halton Region Healthy Communities Guidelines*
- *Region of Peel Health Background User Study Guide.*
- *Places to Grow Act for the Greater Golden Horseshoe.* NB: Although Ottawa does not fall under the Act, its total population and growth are similar to many of the municipalities under the Act.
- *City of Oshawa Official Plan.*

Chart: Promote Compact Development (1).



Figure 10: Compact development in Barrhaven, Ottawa, ON (Libera, 2016).

Rationale:

- The *Growth Plan for the Greater Golden Horseshoe* states that: “All development on Designated Greenfield Areas shall achieve a minimum overall density target of 50 people and jobs per hectare.” This criterion has been met by both the Region of Peel and the Region of Halton.
- The City of Ottawa *Official Plan* states an average density target of 34 units per net hectare for areas in Developing Community designations and Urban Expansion Study Area designations, which would be higher than 50 people.
- The City of Oshawa *Official Plan* has a residential density classification table that lists net density ranges by density type. The suggestion has been formulated based on Ottawa’s current minimum density (34 units per net hectare) and Oshawa’s high-end for Medium Density II Residential (85 units per net hectare).
- Higher density may allow for a more compact form, which can promote service proximity, active transportation, and a diversity of housing.

6.1.4 Create a Safe Street Network with High Connectivity



Recommendation: Blocks in a proposed development could consider not exceeding 80 m x 180 m in size.

Precedent:

- Region of Peel *Health Background Study User Guide*.

Chart: Create a Safe Street Network with High Connectivity (5).



Figure 11: Large block length in Ottawa, ON (Libera, 2016).

Rationale:

- We found inconsistencies in the maximum range of block lengths in different City of Ottawa policies.
- *Urban Design Guidelines for Greenfield Developments* states that blocks should range between 150-250m whereas the *Regional Road Corridor Design Guidelines* states that blocks should range between 50-150m.
- The *Building Better and Smarter Suburbs Guidelines* does not state a specific block length range, though it does suggest having shorter block lengths.
- While the Region of Peel's suggestion for block lengths makes exceptions for Parks and Employment area land uses, to encourage quality over quantity and to better integrate parks and employment uses within communities, this exception has been removed in Ottawa's recommendation.
- Shorter block lengths will allow for more connections between streets, which can help improve the pedestrian and cycling network by shortening travel lengths.

6.1.5 Diversify Housing



Recommendation: Strengthen language regarding secondary dwelling units and coach house units to encourage their development and improve housing affordability.

Precedent:

- Region of Peel *Health Background Study User Guide*.
- The City of Mississauga *Official Plan*.

Chart: Diversify Housing (3)

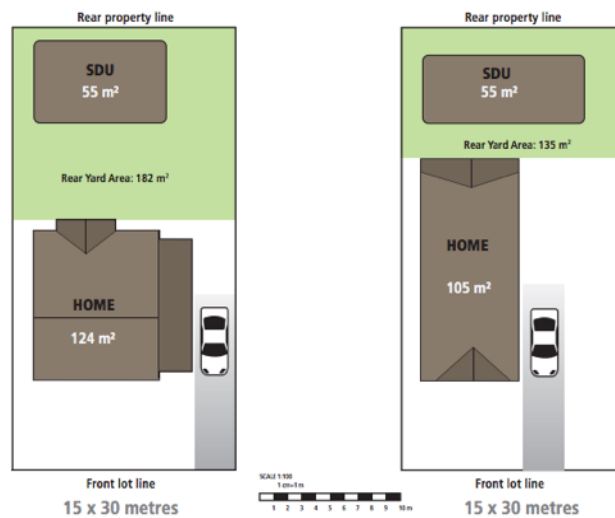


Figure 12: Secondary dwelling units and accessory structures (City of Ottawa, 2015).

Rationale:

- The City of Ottawa *Official Plan* states that secondary dwelling units are “permitted in all parts of the city”. (OP 2.5.2.10)
- The City of Mississauga states in section 7.2.2 of their *Official Plan* (2016) to “provide opportunity for” in relation to secondary dwelling units. This is a way to further encourage the development of secondary dwelling units in the City of Ottawa.
- Secondary dwelling units such as basement apartments and coach house dwellings can help improve housing affordability for both homeowners and tenants. They can also provide opportunities for older adults to remain in their communities and age-in-place.
- Strengthening the policy language to promote secondary dwelling units serves a method to diversify housing, as outlined by the Region of Peel.

6.1.6 Prioritize Service Proximity



Recommendation: Policies could consider the benefits of differentiating between elementary schools, secondary schools and postsecondary schools.

Precedent:

- Region of Peel *Health Background Study User Guide*.
- Region of Peel *Official Plan*.

Chart: Prioritize Service Proximity (5) & (6).



Figure 13: Secondary school on arterial road in Barrhaven, Ottawa, ON (City of Ottawa, 2015).

Rationale:

- Currently, the City of Ottawa *Official Plan* does not differentiate between school types for decisions relating to school locations.
- The Region of Peel states that the distance between 100% of the projected population and a planned elementary school shall be no more than 1.2 km and 2.4 km from a secondary school.
- The Region of Peel *Official Plan* does not currently differentiate between school types, however in Section 5.9.10.2.6, it does encourage active transportation to schools (Region of Peel, 2014). The City of Ottawa should look at incorporating the Region of Peel's policies regarding active transportation to school, but strengthen the policy by integrating maximum distances by school type.
- This suggestion was formulated because elementary school students should not be expected to walk the same distance to get to school as secondary school students, or post-secondary students.



6.2 MULTIMODAL TRANSPORTATION AND MOBILITY

6.2.1 Prioritize Safety



Recommendation: Work towards ensuring equal consideration for pedestrians on all roads by reducing speed limits or installing traffic calming measures where sidewalks do not exist.

Precedent:

- Hastings and Prince Edward Counties *Building complete and sustainable communities: Healthy policies for official plans.*
- The City of Burlington *Official Plan Review: Mobility Hub Opportunities and Constraints.*

Chart: Prioritize Safety (2).



Figure 14: Cambridge St Woonerf in Ottawa, ON (Google, 2016).

Rationale:

- The City of Ottawa *Official Plan* has good provisions for sidewalks on arterial and collector streets, though there are some cases where sidewalks are not required, especially at the neighbourhood level.
- The City could then amend the *Official Plan* to consider pedestrians through design or reduction of speed limits where sidewalks do not exist.
- The City has discussed making up 50% of the modal share with sustainable mobility choices, and having equal consideration for pedestrians in design would support this.
- Streets could be designed upon the principles of 'woonerfs', which are Dutch complete streets with considerations for cars, pedestrians and cyclists.
- This is notable as the provincial government is considering amending the Highway Traffic Act to reduce neighbourhood speed limits to 40km/h.
- The term 'equal consideration' is being used in other Ontario jurisdictions, including the City of Burlington and Hastings and Prince Edward County.

6.2.2 Encourage Use of Public Transit



Recommendation: Consider incorporating Crime Prevention Through Environmental Design (CPTED) principles more explicitly into transit development and redevelopment plans.

Precedent:

- The Region of Peel *Health Background Study User Guide*.
- The City of Waterloo *Official Plan*.
- The City of Kitchener *Official Plan*.

Chart: Encourage Use of Public Transit (3).



Figure 15: Safety call box in Ottawa, ON (OC Transpo, 2016).

Rationale:

- A 2013 survey conducted by OC Transpo found that women are significantly more uncomfortable using transit after dark.
- The incorporation of CPTED principles into the design of transit facilities can help address equity issues; transit shelters with multiple exits, adequate sightlines, and sufficient lighting all contribute to making transit more appealing and safe to more vulnerable populations.
- Safety Call Boxes are only installed in transit stations and park-and-ride facilities. Installing them at transit shelters (where appropriate and/or feasible) could enhance riders' sense of safety, especially at night or when travelling alone.
- Ensuring that bicycle parking is well lit, visible, and secure can alleviate concerns about theft, especially when bicycles are left all day.
- The City of Waterloo *Official Plan* requires consideration for CPTED principles with new development and in public realm design, while the City of Kitchener *Official Plan* considers CPTED principles in the construction of pedestrian and cycling infrastructure.

6.2.3 Promote Walkability and Accessible Pedestrian Infrastructure



Recommendation: Consider strengthening traffic calming policies by establishing criteria for specific roadway and zoning types.

Precedent:

- *The Region of Peel Health Background Study User Guide.*
- *The City of Hamilton Official Plan.*
- *The City of Ste. Catherine's Official Plan.*

Chart: Promote Walkability and Accessible Pedestrian Infrastructure (1).



Figure 16: Traffic calming in downtown Ottawa, ON (City of Ottawa, 2016).

Rationale:

- The *Official Plan* currently prioritizes traffic calming on arterial streets within the greenbelt as well as design priority areas. In the Transportation Master Plan, traffic calming is described in general terms or in the context of street parking.
- The City could consider amending the *Official Plan* to address specific traffic calming measures. This would ensure pedestrian-oriented design with development. Describing traffic calming with specific examples will encourage a wide-range of traffic calming methods being utilized at the neighbourhood level.
- In-depth discussion of traffic calming as recommended here can be found in several Ontario municipalities' official plans, including those of Hamilton and Ste. Catharine's.
- The Region of Peel *Health Background Study User Guide* suggests creating strict provisions for traffic calming.

6.2.4 Promote Bicycle Connectivity and Infrastructure



Recommendation: Emphasize that while sharrows are an important step in developing robust cycling infrastructure, higher orders of cycling infrastructure should be encouraged.

Precedent:

- The Region of Peel *Health Background Study User Guide*.
- The City of Toronto *Official Plan*.

Chart: Refer to Promote Bicycle Connectivity and Infrastructure (1).



Figure 17: Sharrow in Toronto (Toronto Star, 2013).

Rationale:

- While the *Official Plan*, *Transportation Master Plan*, and *Cycling Plan* all encourage and support cycling infrastructure, they could be more specific regarding contexts and tradeoffs for sharrows.
- Sharrows do little to genuinely increase the real or perceived safety of cycling, require more frequent maintenance relative to other cycling infrastructure, and are not currently recognized in the Highway Traffic Act.
- The lack of physical boundaries separating motor vehicles from cyclists does nothing to change the behaviour of motorists, many of whom do not respect the 1 metre distance that must be maintained between bicycles and cars.
- The Region of Peel *Health Background Study User Guide* discusses safety standards for bicycle infrastructure in greater detail.

6.2.5 Reduce Parking Supply



Recommendation: Encourage the designation of parking spaces for the exclusive use of rideshare vehicles.

Precedent:

- The Region of Peel *Health Background Study User Guide*.
- The City of Toronto *Official Plan*.

Chart: Refer to Reduce Parking Supply (1) and (2).



Figure 18: Parking spaces reserved for carpool vehicles (Drudl, 2015).

Rationale:

- The *Official Plan* discusses the management of carpools through the Parking Management Strategy, though the final version of the Parking Management Strategy lacks provisions for carpooling. (OP 2.3.1.47)
- The *Transportation Master Plan* seeks to encourage sustainable mobility choices, which include carpooling. It discusses the creation of lots in MTO-controlled areas (highways), as well as the creation of HOV lanes on City of Ottawa roads, though it would benefit from a section discussing the creation of carpool parking spaces within the city.
- The City of Toronto's *Official Plan* for instance, includes a section discussing the creation of carpool parking spaces within the city which could be adapted in Ottawa's context.



6.3 NATURAL ENVIRONMENT AND OPEN SPACES

6.3.1 Preserve and Connect Open Spaces



Recommendation: Continue to identify, monitor, and protect environmentally sensitive areas, especially when on private property.

Chart: Refer to Preserve and Connect Open Spaces



Figure 19: Environmentally sensitive area in Ottawa, ON (City of Ottawa, 2016).

Rationale:

- Many of the City of Ottawa's policies regarding the Natural Heritage System are considered to be best practices in Ontario.
- Most of the significant features in Ottawa's natural heritage system have already been identified and designated for protection, however, the majority of the system is under private ownership.
- Good stewardship by both public and private landowners is essential to the continued preservation and enhancement of the natural heritage system.
- Environmental Impact Statements are required for development proposed within or adjacent to certain natural heritage system features, and serve to identify the natural features of a site early in the development process and consider ways to avoid or mitigate these impacts, to enhance and preserve natural features.

6.3.2 Maximize Opportunities to Access and Engage with the Natural Environment



Recommendation: Consider developing an Official Plan policy requires the inclusion of Crime Prevention Through Environmental Design (CPTED) principles incorporated in all phases of the design, review, and approval for new Park and Leisure Areas.

Precedent:

- The Halton Region *Official Plan*

Chart: Refer to Maximize Opportunities to Access and Engage with the Natural Environment (2)

Rationale:

- Ottawa's *Official Plan* could do more to address safety in Parks and Leisure Areas.
- The Halton Region *Official Plan* encourages local municipalities to develop CPTED guidelines for use in their site plan approval process.
- Incorporating CPTED principles, such as natural surveillance, can create a sense of comfort and safety, while discouraging potential criminals and reducing crime.



Figure 20: Vanier neighbourhood park in Ottawa at night (CBC, 2011),

6.3.3 Reduce Urban Air Pollution



Recommendation: Consider developing minimum canopy standards at small scale, such as at the neighbourhood level or for different zoned land uses, rather than a city-wide target.

Precedent:

- *North Oakville Urban Forest Strategic Management Plan*

Chart: Refer to Reduce Urban Air Pollution (1)



Figure 21: An example of urban trees in Ottawa (OCED, 2013)

Rationale:

- The *Official Plan* and the *Urban Forest Management Plan* (currently under development) outline a target forest canopy cover of 30% city wide.
- We suggest the development of minimum canopy standards at a smaller scale, such as at the neighbourhood level or for each zoned use. This could be achieved through zoning by-laws and over time could increase the amount of urban trees near vulnerable populations, such as near schools.
- An increase in canopy coverage has significant health benefits, as trees have the ability to absorb large quantities of air pollution.
- A lower scale target promotes health equity by ensuring that opportunities to reduce air pollution through carbon sequestration are present across the city, thereby limiting the risk of respiratory related chronic diseases among vulnerable populations.

6.3.4 Mitigate Urban Heat Island Effect



Recommendation: Consider developing a mandatory Green Roof By-law for certain types and sizes of development.

Precedent: City of Toronto, Green Roof By-law

Chart: Refer to Mitigate Urban Heat Island Effect (3)



Figure 22: Green roof atop the Canadian War Museum in Ottawa, ON (Flynn, 2016)

Rationale:

- The *Official Plan* supports green infrastructure, however green roofs are not adequately encouraged throughout the development review process.
- Ottawa could seek to develop a similar policy to that of the City of Toronto, which has a mandatory Green Roof Bylaw for certain types and sizes of buildings. The By-law requires green roofs on new commercial, institutional, industrial and residential development with a minimum Gross Floor Area of 2,000m². The green roof coverage requirement is graduated, depending on the size of the building.
- Green roofs have great potential to both increase greenspace in Ottawa, as well as mitigate the urban heat island effect and help with stormwater management.

6.4 CONCLUSIONS

This report has been created to further link the work of planning and public health in the Ottawa context. Three overarching elements ultimately guided this report: urban form and community design; multimodal transportation and mobility; and natural environment and open spaces. These elements were then elaborated with 15 planning principles that emerged from a literature review of the relevant health implications and an analysis of other healthy community planning toolkits in Canada.

The toolkits we examined were instrumental in guiding the design of this report and provided the criteria against which City of Ottawa policies were evaluated. Numerous City of Ottawa policies were examined, particularly those that pertain to the built environment elements that are the focus of this report. The resulting Toolkit is the product of our assessments of City of Ottawa policies against suggested best practices from other municipalities. In cases where Ottawa already meets the criteria, we recommended continuing to meet the high standards found in policy. In cases where there were discrepancies or where we feel Ottawa could go further, we have included recommendations on how to take their policy to the next level.

The Toolkit within this report provides Ottawa Public Health with a robust framework of policy recommendations to be shared in consultation with staff at the City of Ottawa. Though this Toolkit was created for the use of Ottawa Public Health, we anticipate that some City of Ottawa staff will read it with great interest, as well as other stakeholders who seek to improve the built environment in Ottawa.

In the coming years, Ottawa's population will surpass one million and the City will face significant demographic changes. How the City of Ottawa plans for health now will have implications for the health of future generations. The City of Ottawa is on a positive planning trajectory and many of its existing policies can be seen as best practices in Ontario. There is nonetheless room for improvement, and this toolkit offers examples and references for opportunities to strengthen policy and anticipate the coming changes. Looking forward, it is important to uphold the high standard that the City of Ottawa has set and ensure robust implementation where possible. Many of Ottawa's policies will soon be reviewed, at which time there will be opportunities to further strengthen policies related to healthy built environments. We hope that this Toolkit will assist in maximizing these opportunities to make healthier changes to the built form, and solidify Ottawa as a leader in Canadian planning policy.

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GLOSSARY

8 to 80 principle: The 8 to 80 principle refers to the practice of designing spaces that are sensitive to the varying physical capacities and abilities of individuals ranging from 8 to 80 years old. Effectively, this principle is intended to ensure that spaces are accessible and functional for all.

Age in Place: Having the health and social supports and services you need to live safely and independently in your home or your community for as long as you wish and are able.

Accessibility: Planning the city to bring people closer to their destinations and making it easier for people to reach jobs, services, education and recreation.

Amenity: Something that contributes to an area's needs, whether social, environmental, or cultural.

Body Mass Index (BMI): A key index for relating weight to height. BMI is a person's weight in kilograms (kg) divided by his or her height in meters squared.

Coach House: Means a separate dwelling unit detached from a principal dwelling unit located either in its own building or within an existing accessory building and on the same lot as the principal dwelling.

Complete Streets: Complete Streets incorporate the physical elements that allow a street to offer safety, comfort and mobility for all users of the street regardless of their age, ability, or mode of transportation. A Complete Streets approach uses every transportation project as a catalyst for improvements

within the scope of that project to enable safe, comfortable and barrier-free access for all users.

Crime Prevention Through Environmental Design (CPTED): is a proactive design philosophy built around a core set of principles that is based on the belief that the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime as well as an improvement in the quality of life. CPTED goes well beyond conventional approaches to safeguarding the environment by exploiting natural forms of surveillance, access control and territorial reinforcement in a deliberate attempt to present a psychological deterrent for the purpose of positively influencing human behaviour as people interact with the environment.

Cycling Infrastructure: All physical elements and components that mark where and how cyclists should behave and operate on the road. These can include sharrows, separated bike lanes, bicycle parking, and signage.

Density: A measure of specified units as in persons, employees or buildings/floor space per unit of area.

Equal Consideration: Refers to making sure that the needs of all road users, especially vulnerable ones, are integrated in the planning and design of the urban environment.

Equity: Means treating everyone fairly by acknowledging their unique situation and addressing systemic barriers. The aim of equity is to ensure that everyone has access to equal results and benefits.

Green Equity: Refers to ensuring that individuals have equitable access to well maintained, safe, and inviting greenspaces.

High-order Transit: Transit service separated partially or completely from general vehicular traffic and therefore able to maintain higher levels of speed, reliability and vehicle productivity than can be achieved by transit vehicles operating in mixed traffic.

Low-order Transit: Refers to public transit vehicles operating in mixed traffic (i.e. buses, some streetcars).

Multimodal Transportation: refers to planning that considers various modes (walking, cycling, automobile, public transit, etc.) and connections among modes.

Obesity: is a condition where a person has accumulated so much body fat that it might have a negative effect on their health. If a person's bodyweight is at least 20% higher than it should be, he or she is considered obese. If your Body Mass Index (BMI) is between 25 and 29.9 you are considered overweight.

Parking Minimums: Refers to the number of parking spaces that must be provided with most new developments.

Secondary Dwelling Units: Additional residential living space, either as a distinct dwelling unit incorporated by interior renovation with an existing detached or semi-detached house or within an accessory garage.

Sense of Place: The lens through which people experience and make meaning of their experiences in and with place.

Sharrows: The purpose of a sharrow – road markings showing a bicycle with two chevrons – is to remind residents to share the road when driving or cycling.

Social Capital: Networks together with shared norms, values and understandings that facilitate cooperation within or among groups.

Sustainable Planning: Sustainable planning is a strategy that requires the integration of economic growth, social equity, and environmental management. It is about ensuring a better quality of life for everyone, now and for generations to come.

Traffic Calming Measures: Refers to physical design and other measures to improve safety for motorists, pedestrians and cyclists. It aims to encourage safer, more responsible driving and potentially reduce traffic flow.

Transit Oriented Development (TOD): Refers to a mix of moderate to high-density transit-supportive land uses located within an easy walk of a rapid transit stop or station that is oriented and designed to facilitate transit use.

Tree Diversity: Measured using indexes or statistics which combine the number of species, called richness, with the abundance, importance, or evenness of tree species.

Urban Tree Canopy: Refers to the total urban area covered by the foliage of trees.