

**Middlesex County Official
Plan Review 2012**

Middlesex-London Health Unit Recommendations



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For information, please contact:

Wally Adams
Middlesex-London Health Unit
50 King St.
London, Ontario
N6A 5L7
phone: 519-663-5317 ext.2316
fax: 519-663-8241
e-mail: wally.adams@mlhu.on.ca

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Middlesex-London Health Unit
50 King Street
London, Ontario
N6A 5L7

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Wally Adams
Mary Lou Albanese
Joyce Castanza
Emily Hill
Iqbal Kalsi
Kim Leacy
Bernadette McCall
Andrew Powell
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We wish to acknowledge the input and support from members of the Healthy Communities Partnership Middlesex-London: Physical Activity Policy Action Team in contributing to, and reviewing earlier drafts of this document.

1.0 Introduction

The Middlesex-London Health Unit (MLHU), as all health units in Ontario, is mandated under the Health Protection and Promotion Act to provide the programs and services contained within the Ontario Public Health Standards (OPHS) (Service Ontario, 1990). One of the requirements that appear throughout the OPHS is for health units to advocate for, and to assist community partners with the creation of healthy public policies that support and reinforce healthy environments, positive health practices, and behaviours (Ontario Ministry of Health and Long-Term Care [MOHLTC], 2008). The Five Year Review of the Middlesex County Official Plan provides an opportunity for MLHU to provide recommendations that will support healthy, sustainable communities through land use policy and planning, that will in turn, support positive health practices and behaviours.

This document has been written in follow-up to a presentation made on October 23rd by the MLHU at the Five Year Review of the Middlesex County Official Plan public meeting. Three focus areas (Health Hazard Prevention and Management, Road Safety, and Active Living) along with background information on how public health is associated with the Official Plan were introduced. This document has built upon the presentation by expanding upon background information on each topic, as well as introducing two additional topic areas that were not discussed (Local Food Systems & Food Access, and Municipal Alcohol Policies). Specific recommendations that demonstrate how health can be incorporated into the Official Plan to foster healthy communities within Middlesex County will also be stated.

Recommendations within this submission fit under the following topic areas being reviewed as part of the current Five Year Review:

- Economic Development
- Intensification and Redevelopment
- Affordable Housing
- Healthy and Sustainable Communities
- Evolving Nature of Agriculture

Additional topic areas recommended for review include:

- Transportation
- Ground Water Management
- Air Quality
- Climate Change

We hope this submission to the Five Year Official Plan Review will assist Middlesex County Council in making decisions about land use planning that will support improved health and sustainability of its communities.

1.1 Background

1.1.1. Ontario Public Health Standards

Recommendations contained within this submission come from two main areas of the OPHS. First, the Environmental Health Standard, which has the goal of preventing or reducing the burden of illness related to health hazards in the physical environment. Secondly, the Chronic Disease & Injury Prevention Standard, which has the goals of: 1) reducing the burden of preventable chronic diseases; and 2) reducing the frequency, severity and impact of preventable injuries. The MLHU believes that these Standards can be supported through land use policies at multiple government levels including those within the Middlesex County Official Plan.

1.1.2. Physical versus Built Environment

The environments in which people live, work, and play can influence health in a number of different ways. Recommendations in this submission reflect two aspects of the environment; the 'physical environment' and the 'built environment'.

For the purpose of this submission, the physical environment refers to the natural features of the environment such as water, soil, air quality, and weather - and also to health hazards related to chemical, radiological, biological and other physical factors in the environment (MOHLTC, 2008). Information and recommendations related to the physical environment can be found in section 2.0 'Health Hazard Prevention and Management'.

The built environment is a component of the physical environment that includes all things made by humans, for humans, such as buildings, parks, schools, roads, and other infrastructure (Heart and Stroke Foundation of Canada, 2007; Public Health Agency of Canada, 2011). Well-designed built environments can have positive impacts on human health. Ways in which the built environment can influence the health and well-being of Middlesex County residents will be discussed throughout the remainder of the submission.

1.1.3. Healthy Communities

A healthy population is an essential component of a prosperous and vibrant community. Health, as defined by the World Health Organization (WHO, 1946) is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." As such, healthy communities

are those that embrace and facilitate opportunities for citizen engagement in health promoting activities through infrastructure, social services, and supportive environments.

The Ontario Healthy Communities Coalition (OHCC, 2012) suggests that healthy communities share the following characteristics: clean and safe physical environments; commitment to peace, equity and social justice; adequate access to food, water, shelter, income, safety, work, and recreation for all; adequate access to health care services; strong, mutually supportive relationships and networks; a diverse and vital economy; and protection of the natural environments. Attending to these characteristics during the planning process will help ensure that Middlesex County and each encompassed municipality are healthy communities now and in the future to aid in population retention and promotion of quality of life.

1.2 Recommendations

Specific recommendations will follow background information and a description of relevance within each topic area’s section. Recommendations will be formatted to include the current Official Plan number and title, followed by the exact text currently found in the Official Plan. Additions are **in bold lettering** while deleted portions have a strike through them. When all lettering is bold, it means that it is a completely new addition. For example:

1.2 County Strategy

In short, the objectives for land use planning established in the Middlesex County Strategic Plan emphasize key components that will contribute to a healthy community including:

- **safe environments that promote the health of residents**

This example displays the first of our recommendations: that the term of “healthy communities” be clarified, defined, and its principles extended throughout the Official Plan. The current Official Plan mentions healthy communities in a number of places. For instance, in section 2.3.4 - Economic Development, healthy communities are promoted through the encouragement of local municipalities to promote a high standard of urban design to create healthy communities that attract investment and facilitate a sense of place to improve quality of life.

We would like to recommend the addition of a human/social health aspect to the list of healthy community’s attributes within the County Strategy. The current objectives for land use planning listed in the County Strategy (Section 1.2) are to “emphasize key components that will contribute to a healthy community including: the protection of the agricultural community; the management of growth; and a vibrant economy.” A revision such as the one above acknowledges the importance of having an environment that contributes to the health and safety of the population as healthy communities are only as healthy as their members.

2.0 Health Hazard Prevention & Management

2.1 Background Information

Throughout the physical and built environments there are an abundance of influences that can impact the quality of life of those that live within it. Natural and manmade hazards exist and can be created, but must also be prevented to ensure the health of the public is maintained. Through efficient planning, assessment of land use compatibilities, and health impact assessments of proposed interventions/developments, community health can be protected.

It is the intent of this section to address the Middlesex County Official Plan as it relates to public safety policies and protection from environmental and manmade influences associated with any physical, chemical, or biological impacts that are generated,

produced, or influenced by proposed or surrounding land uses.

2.1.1. The Provincial Policy Statement

The Provincial Policy Statement (PPS) currently guides local and regional municipalities with planning principles to achieve safe communities. More specifically, the following policies of the PPS help to guide planning objectives to achieve healthy communities (MMAH, 2005):

Policy 1.1.1 (c) - Healthy, liveable, and safe communities are sustained by....avoiding development and land use patterns which may cause

environmental or public health and safety concerns.

Policy 1.1.3.2 (a) 3 - Land use patterns within settlement areas shall be based on....densities and mix of land uses which; minimize negative impacts of air quality and climate change, and promote energy efficiency.

2.1.2. Health Protection & Promotion Act

Utilizing community partnerships to garner objective health implications of planning decisions is a prime goal of this section, and is specifically guided by the Environmental Health Program Standards of the Ontario Public Health Standards (OPHS). The MOHLTC establishes guidelines to accomplish mandatory programs for Ontario Public Health Units under the Health Protection and Promotion Act, R.S.O 1990, c.H.7. This document addresses the provisions necessary to address program goals and sets expectations for boards of health to provide services that contribute to the “physical, mental, and emotional health and well-being of all Ontarians” (MOHLTC, 2008). Within the Environmental Program Standards, Health Hazard Prevention and Management is delineated by program activities and areas of focus to achieve the desired outcomes by reducing the burden of illness from health hazards in the physical environment, and dictates;

“The board of health shall assist community partners to develop health 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.”

(MOHLTC, 2008).

The expected outcomes of the mandate are to reduce adverse health impacts from “exposure to chemical, radiological, biological and other physical factors in the environment” (MOHLTC, 2008). It is the goal of this section to utilize the planning expertise of Middlesex County, coupled with the health evaluations of the MLHU, to create working relationships that promote overall community health, and meets the vision of Middlesex County. A healthy community, as stated by Dannenberg (2003), is one that “protects and improves the quality of life for its citizens, promotes healthy behaviours and minimizes hazards for its residents, and preserves the natural environment”.

2.2 Health Hazard Prevention & Management & the Official Plan

Currently, the Middlesex County Official Plan has incorporated efficient environmental and public health protection policies that safeguard the community’s health. For example, section 2.3.5 regarding general policies for growth management, recognizes the need for land use conflicts prevention. This policy is a broad, overarching statement that is essential to preventing negative health impacts to residents attributed from surrounding land uses.

Complimentary to that protective and forecasting approach to community health, is section 2.3.6, which outlines requirements for Settlement Capability Studies. The components required within the study expand on community servicing requirements, hydrology impacts, and examine long term suitability of the environment for development. The subsidiary influence of the information provided also gives a basis for health assessments, and a clear indication of potential risk from the environment on public health.

2.3 Recommendations

The following is an overview of the Middlesex-London Health Unit’s recommendations to the Official Plan regarding health hazard prevention. While the current Official Plan addresses public health protection, the recommendations outlined here are suggestions that complement the already implemented policies, and assist in future protection from potential health hazards.

2.2.3.3 Aggregate Resources: New Pits and Quarries

In considering applications to permit new pits and quarries, local municipalities shall be satisfied that the following are addressed:

- e) the impact on any existing or potential, **private and/or** municipal water supply resource areas.

2.2.4.5 Petroleum Resources: Hazard Policies

Development on, abutting or adjacent to lands affected by former mineral resource operations will be permitted only if rehabilitation measures to address and mitigate known hazards are underway or have been completed **to the satisfaction of the Middlesex-London Health Unit.**

The inclusion of public health protection would be consistent with Provincial Policy Statement - Policy 2.5.2.4 (MMAH, 2005).

2.3.3 Growth Management: Forecasting Growth

Local municipalities should direct future growth away from incompatible land uses that may pose a health hazard to adjacent residents.

2.3.6 Growth Management: Settlement Capability Study

The Settlement Capability Study shall be completed to the satisfaction of the County in consultation with the Province and shall include the following

- d) an identification of any existing restrictions to future development; **including any potential hazards.**

2.3.7.3 Housing Policies: Intensification and Redevelopment

The County and local municipalities shall support opportunities to increase the supply of housing through intensification and redevelopment in appropriate locations, taking into account municipal services, transportation and environmental **and human health** considerations.

2.3.7.3 Housing Policies: Intensification and Redevelopment

County Council shall encourage residential intensification and redevelopment in areas designated for residential use which comply with the following criteria;

- **current land and/or surrounding land uses do not pose an adverse impact on human health**

2.4.2.2 Transportation Network: General Policies

- k) **Provide adequate buffers from provincial highways/County Roads and residentially designated areas.**

2.4.4.1 Waste Management: General Policies

- c) Require development proposals within 500m of active or closed landfills to be accompanied by a study. **The study shall address buffers to residential areas and potential human health risks, as well as nuisance odour.**

3.2.1 Settlement Areas: Introduction

The Growth Management policies of this Plan, presented in Section 2.3, direct a significant portion of the County's future Growth to Settlement Areas in order to:

- **protect human health**

3.2.3 Settlement Areas: Local Official Plans

To achieve some consistency of approach, the County encourages local municipalities to include general development policies in their local official plan dealing with the following issues:

- m) **community human health protection**

3.3.5 Agricultural Areas: Farm Related Commercial and Industrial Uses

Commercial and industrial development directly related to, and supportive of, agricultural operations, including feed mills, farm implement dealers, grain drying, abattoirs, kennels, stables and veterinary clinics may be permitted providing the following policies are considered:

- h) **commercial/industrial use should not pose an unacceptable adverse risk to adjacent residential areas.**

4.2 Amendments to the County Plan and Monitoring

When submitting an application to amend the County Official Plan, the applicant shall provide supporting documentation, to the satisfaction of County Council, which adequately addresses the following:

- f) **the proposed impact on human health**

Consider a Nonspecific Policy section addition for compatible land uses:

To adequately assess new industrial facilities, as well as expanding residential settlement areas, incorporating established guidelines for separation distances to ensure public health protection and industrial success. More specifically, using the

Ministry of the Environments D-6 Guidelines to delineate separation distances between industrial and sensitive land uses will help to achieve this goal. In conjunction with the Minimum Separation Distance Formulae already incorporated into the Official Plan for agricultural applications, the D-6 Guidelines will compliment land use compatibility throughout both settlement and agricultural areas.

3.0 Active Living

3.1 Background Information

Active living is an important component of a healthy lifestyle and an integral aspect of what makes a community healthy. Although the individual assumes primary responsibility for their own physical activity levels, the environmental supports that exist within a community can play a significant role in how easy or difficult it is to live an active lifestyle. This section outlines the benefits that an active lifestyle can have to both the individual and to the broader community and how land use planning policies can create environments supportive of active living across the lifespan.

3.1.2. Physical Activity

Health Benefits

One particular health-promoting activity from which all Middlesex County residents can receive health benefits from is regular physical activity. Physical activity reduces obesity rates, improves well-being and quality of life, and reduces the risk of over 25 chronic conditions including heart disease, stroke, high blood pressure, type 2 diabetes, and even certain types of cancer. In children and youth, physical activity aids in the development of cardiovascular fitness, strength, and bone density. Among adults it increases individuals' levels of fitness and allows greater ease, comfort, and reduced fatigue in performing daily tasks. Physical activity among the older adult reduces the amount of bone density loss and helps reduce the risk of falls through maintenance of strength, flexibility, balance, and coordination. (Public Health Agency of Canada [PHAC], 2011a; World Health Organization [WHO], 2011a; WHO, 2011b; WHO, 2011c)

Canadian Physical Activity Guidelines

To achieve optimal health benefits, the Canadian Society for Exercise Physiology (CSEP, 2011) recommends adults (age 18+) engage in 150 minutes of moderate to vigorous physical activity (MVPA) per

week, and children and youth (ages 5-17) accumulate at least 60 minutes of MVPA each day. Despite these recommendations, physical inactivity is an alarming trend. Studies have identified that only 15.4% of Canadian adults between the ages of 20 and 79 are accumulating the recommended 150 minutes of MVPA per week, and only 6.7% of children between 6 and 19 years of age are accumulating the recommended 60 minutes of MVPA a day (Colley et al., 2011a; Colley et al., 2011b).

Obesity Rates

Inactivity often leads to obesity, which is a significant societal concern. Rates have more than doubled in Canada over the last 30 years with 26% of children and 25% of adults being overweight or obese (Heart and Stroke Foundation, 2012; PHAC, 2011b). Locally, the Community Health Status Report states 46.7-60.4% of adults over 18 years of age within Middlesex-London in 2009/2010 were overweight or obese (MLHU, 2012a).

Economic Burden

The compounding health problems associated with inactivity stretch beyond the individual to impact the broader community. Obesity has been identified as an economic problem both directly and indirectly. Direct costs of obesity include hospital stays and pharmaceutical expenses while indirect costs include loss in productivity due to disability or death. It is estimated that in 2008 the indirect and direct costs of obesity in Canada were \$4.6 billion, which is a significant increase from \$3.9 billion in the year 2000 (PHAC, 2011b). Cardiovascular disease – the number one cause of premature death in Canada and associated with obesity – claims the lives of 79,000 Canadians annually and costs the health-care system over \$7.3 billion in direct costs and \$12.4 billion in indirect costs (Ministry of Municipal Affairs and Housing, 2008). Local economies also share the

strain of increased costs and reduced productivity due to illness, disability, and death related to obesity.

Physical Activity – Policy Action Team

The alarming statistics stated above, prompted the creation of the Physical Activity - Policy Action Team (PA-PAT) under the umbrella of the Healthy Communities Partnership Middlesex-London. The PA-PAT is made up of representatives from 16 different community organizations that serve the Middlesex-London area. In 2011, as part of the Ministry of Health Promotion's Healthy Communities initiative, the Healthy Communities Partnership conducted Focused Discussion Groups where representatives from the City of London and Middlesex County identified physical inactivity as a top priority to be addressed locally. Through this process suggestions were provided on how to address physical inactivity within both the urban and rural settings of London and Middlesex County (MLHU, 2011a). Input from this partnership has been included in this portion of the report, which reflects and builds upon some of the ideas generated within those Focused Discussion Groups.

The following recommendations will focus on two primary areas that promote physical activity: 1) recreational opportunities and facilities, and 2) the use of active transportation. Official Plan policies can play a key role in improving the physical activity habits of residents. For example, the Heart and Stroke Foundation of Canada (2011) recommends that local governments work with other levels of government to create policies, communities, and environments that are walkable, provide access to recreational facilities, and support active transportation.

The remainder of this section will describe how land use planning can encourage physical activity through Official Plan amendments. Specific recommendations of how these particular concepts can be incorporated into the Official Plan are stated at the end.

3.2 Recreation

Recreational opportunities do not always require large, expensive facilities. Parks, walking trails, and other green spaces can be developed that not only provide options for physical activity, but work towards preserving the natural environment, creating a sense of community, and improving the mental health of individuals.

Parks

The presence of, and access to, parks have been found to increase children's physical activity levels,

facilitate gross motor activity, promote free play, maintain healthy weights, and potentially decrease psychological distress (McCurdy et al., 2010; Tucker, Irwin, Gilliland, & He, 2008). Physical components that parents have identified as encouraging them to allow their children to access parks include sufficient shade, water facilities, swings and other equipment, and picnic areas (Tucker, Gilliland, & Irwin, 2007). Research shows that providing more trees in parks will facilitate greater levels of physical activity among all ages as well as provides further health benefits associated with sun safety and the provision of shade (Levine-Coley, Kuo, & Sullivan, 1997; Taylor, Wiley, Kuo, & Sullivan, 1998). Parks also provide a low-cost option for activity among low-income residents. Proximity to parks is also a determinant of physical activity (Cohen et al., 2007). Policies should therefore support the creation and preservation of municipal green space in the form of parks and other natural environments that can have a positive impact on physical activity levels of all residents.

Trails

Increased participation in recreational activities can also be achieved through the development and maintenance of trails. Trails are one of the assets of Middlesex County given the Carolinian forests and conservation areas. Natural recreation environments such as trails can also provide positive economic impacts on a community. For example, the regular maintenance of trails not only promotes the conservation of natural resources and increased physical activity, but also provides an opportunity for tourism. Input from the Healthy Communities Partnership focus groups further recommended the use of technology such as smartphones to access trail maps and the use of Geographic Positioning System (GPS) units for geocaching. Ideas such as this could serve to attract youth and further promote tourism and physical activity within Middlesex County (MLHU, 2011a).

3.3 Active Transportation (AT)

Active transportation (AT) is any mode of travel that is human powered (non-motorized), including walking, running, cycling, in-line skating, skateboarding, and the use of a wheel chair. AT can be used for commuting/purposeful or recreational reasons. It is important to develop environments where physical activity is engineered into communities so the healthy choice also becomes the *convenient and enjoyable* choice as a lack of motivation has been identified as a primary reason for Canadian adults' being inactive (Dallaire et al., 2012).

Active transportation has been shown to increase the amount of time spent being physically active for both

adults and children (Cooper, Page, Foster, & Qahwaji, 2003; Dill, 2009; Gotschi et al., 2011). Children who use AT for the journey between home and school are more likely to meet their daily physical activity recommendations compared to those who use motorized modes of travel (Davison, Werder, & Lawson, 2008). The benefits to children using AT will be discussed further in section 4.0: Road Safety.

The current rate of Middlesex County residents using AT ranges from 3.3% in Adelaide Metcalfe to 6.3% in Strathroy-Carodoc, which is comparable to the Provincial average of 6.8% (MLHU, 2011a). While the County is a largely rural community, there are several settlement areas that provide an ideal opportunity for residents to use AT for access to general amenities as destinations are often closer together than in some urban and suburban settlement areas.

3.3.1. Active Transportation & the Built Environment

Communities can be created to be more conducive to AT through:

- **intensification** or increasing **residential density** to decrease the distance between destinations,
- **higher connectivity or intersection density** to provide multiple routes and decreased distances between destinations,
- **mixed land-uses** to provide amenities within walking distance to residential locations, and
- **aesthetically pleasing building design**, particularly in commercial areas

(Bungum, Lounsbery, Moonie, & Gast, 2009; Kerr, Frank, Sallis, & Chapman, 2007; Maddison et al., 2009)

Settlement areas that are conducive to AT have many benefits that include increased health equity, accessibility, improved air quality, and opportunities for economic development. Increasing accessibility through AT allows those who do not own a motor-vehicle whether due to age, abilities, or income levels, access to amenities. Creating equity among those of different social classes further improves health impacts as those in lower income brackets are already at greater health disadvantages (WHO, 2012a). Policies that provide access to schools within settlement areas through trails, pathways, and sidewalks will also allow children access to their primary destination through AT. Creating environments conducive to AT for children, youth, and the aging population, with all levels of abilities, results in a community that is accessible for all.

Economics

Active transportation is economically advantageous as gas prices continue to rise. Although travel by motor-vehicle is necessary to access destinations throughout the County, supporting AT within settlement areas provides opportunities for people to be active once they reach their destination. This is also the ideal location for cost savings as mileage is poorer within settlement areas that require ample starting and stopping.

Creating “walkable” communities that promote AT have also been found to be beneficial in revitalizing downtown and main streets of small communities. Larger urban centres have recently been incorporating theories of “Smart Growth” and “New Urbanism” that take the approach of creating small town-like centres throughout cities to create neighbourhoods that are walkable, accessible, and foster distinctive, attractive communities with a strong sense of place (Tirado, 2012). The purpose of these approaches is to advocate for better growth policies that promote farmland protection, neighbourhood revitalization, affordable housing, and livable and sustainable communities (Tirado, 2012). Walkable communities that promote a sense of place also facilitate social cohesion where neighbours have increased trust in people and are more socially engaged (Leyden, 2003). Middlesex County is the ideal place to foster these types of communities because of its strong agricultural roots and a culture where these characteristics are valued.

Air Quality & Respiratory Health

Decreasing the number of vehicles on the roads will improve air quality by reducing the amount of greenhouse gas and carbon dioxide being emitted. Reducing the amount of pollutants in the air benefits human health for those with respiratory ailments. The most commonly reported health conditions among children within Middlesex-London are breathing problems such as asthma and bronchitis. The Ontario Medical Association’s Illness Costs of Air Pollution model estimated 434 total premature deaths in 2012 within Middlesex-London were attributed to air pollution (MLHU, 2012b). The Canadian Medical Association (2008) analyzed the economic costs attributed to illnesses related to air pollution and found \$3.6 billion in costs per year in Ontario and \$8.1 billion across Canada. Reducing the amount of greenhouse gas and carbon dioxide being emitted can also decrease impacts related to climate change. Therefore, decreasing car use within settlement areas will aid in incidence reduction of respiratory illness, create environments more conducive to being physically active, and help protect the environment. This can benefit individuals, businesses, and the municipalities economically.

3.4 Physical Activity & the Official Plan

The current Middlesex County Official Plan recognizes the need to promote healthy and diverse communities as seen through policies such as 2.3 within Growth Management. This policy recommends “creating communities where residents can live, work and enjoy recreational opportunities”. The Transportation Network (2.4.2) General Policies also provides specific guidelines with regard to encouraging safe, convenient, and visually appealing pedestrian facilities. These, along with other policies within the current Official Plan present opportunities for creating environments that reinforce active lifestyles. Additional support can be provided through the following Official Plan recommendations.

3.5 Recommendations

The following recommendations support the current Middlesex County strategy for a healthy community through land use policies that promote active living. Adopting the following recommendations will also provide leadership to individual municipalities by encouraging active living policies to be incorporated into their local Official Plans.

2.3.4 Growth Management: Economic Development

Through the policies of this plan the County will;

- d) encourage local municipalities to promote a high standard of **aesthetically pleasing** urban design to create healthy, **vibrant** communities which attract investment;
- f) support the retention **and creation of accessible** ~~of~~—educational, health, cultural, **recreational**, and religious facilities to ensure that the County’s communities are provided with those opportunities that facilitate growth **and optimize health** and well-being. Such facilities provide a vital role in small communities and add economic vitality and a sense of place **and community** where quality of life is considered a major

attraction for growth, ~~and~~ development, **and sustainability**.

2.3.5 Growth Management: General Policies

The policies of this Plan are intended to promote communities that are diverse, **healthy**, and have a sense of place **and community**.

2.3.6 Growth Management: Settlement Capability Study

- i) **an assessment of active transport infrastructure needs, including existing infrastructures and their condition.**

2.4.2.1 Transportation Network: Transportation Hierarchy

- c) Based on the volumes, types, and nature of the traffic, municipal roads may be classified as arterial, collector or local roads in the local official plan. **Local Official Plans should also include policies that encourage and support the development and maintenance of road design that includes features that support safe active transportation for all users.**

2.4.2.2 Transportation Network: General Policies

- e) Encourage safe, convenient and visually appealing ~~pedestrian~~ **infrastructure and facilities for active modes of transportation (i.e., walking and cycling) within Settlement Areas;**

New Policy:

Adoption of a Physical Activity Charter within Middlesex County, and to encourage the adoption and implementation of the Charter among individual Municipalities to help guide and influence policies that promote physical activity.

4.0 Road Safety

4.1 Background Information

Road safety is an important public health issue where human health and safety can be greatly protected and promoted. Road safety strategies helps attain the Ontario Public Health Standard related to reducing the frequency, severity, and impact of preventable injuries. Collisions on roads impact all users

including drivers, cyclists, and pedestrians, with national, provincial, and local data indicating motor-vehicle collisions (MVCs) as a leading cause of death and injury (Ontario Injury Prevention Resource Centre, 2012a).

4.1.1. Motor-vehicle Collisions (MVC)

Motor-vehicle collisions are the second leading cause of injury-related hospitalizations and deaths among both males and females within Middlesex-London (MLHU, 2012c). Of all emergency room visits and hospitalizations related to road injuries (Middlesex-London), collisions among motor-vehicles are first, followed by cyclists and then pedestrians. Deaths related to road injuries have a slightly different pattern with motor-vehicles being first, followed by pedestrians, then cyclists. Within Middlesex County, residents are more likely to be injured (1.5-1.9 times) or die (2.3 times) from MVCs than London residents (MLHU, 2009).

4.1.2. Safety Concerns among Children

The previous Active Living (3.0) section discussed the benefits of active transportation (AT); however, road safety concerns are preventing the use of active modes of travel (Timperio, Crawford, Telford, & Salmon, 2004). Among children, safety concerns related to traffic are a primary factor preventing the use of AT between their most common destinations of home and school (Rodriguez & Vogt, 2009). Providing supportive infrastructure that promotes safe AT has been found to increase the number of children using AT to school and in and around their neighbourhoods (Kerr et al., 2006). AT among children has been shown to benefit their health as those who use AT to school have higher levels of overall physical activity and are more likely to use AT for other destinations that continue into adulthood (Tucker et al., 2009). Children using AT to school also improves respiratory health problems such as asthma as more children using AT decreases the number of children being driven in motor-vehicles, which will lead to a reduction of air pollutants being emitted in the school's vicinity (Schwartz, 2004). Environments that are conducive to children's use of AT also create communities that are accessible for all users as children are often more limited than other populations.

4.1.3. Cycling & Pedestrian Death Reviews

The recent Cycling Death Review and Pedestrian Death Review released by the Office of the Chief Coroner for Ontario reviewed all accidental deaths to determine measures to prevent deaths attributed to walking and cycling. The Cycling Death Review assessed all accidental cycling deaths in Ontario from January 1, 2006 to December 31, 2010. The Pedestrian Death Review included all pedestrian deaths in Ontario from January 1, 2010 to December 31, 2010. The recommendations were direct responses to circumstances related to the reviewed deaths. One identified area of concern was that of road infrastructure. Both the cycling and pedestrian

reviews recommended providing "complete streets" when building new communities or reconstructing older ones, to decrease the incidence of pedestrian and cycling deaths. (Queen's Printer for Ontario, 2012a; Queen's Printer for Ontario, 2012b).

4.2 Roads for all Users

4.2.1. Physical Infrastructure & Complete Streets

The recommendations concluding this section will focus on decreasing the number of injuries and deaths through transportation infrastructure on Middlesex County roads.

One method that has been gaining popularity in both theory and practice, as was recommended by the Cycling and Pedestrian Death reviews, is that of complete streets. Complete streets "are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities" (Smart Growth America, 2010). Complete streets policies are supported by many federal, provincial and local organizations such as the National Complete Streets Coalition, the Office of the Chief Coroner for Ontario, the Ontario Ministry of Transportation, and the Healthy Canada by Design CLASP initiative.

Roads are often built for cars, which can jeopardize the safety of vulnerable road users such as pedestrians and cyclists. In 2004 to 2006, vulnerable road users accounted for 22% of traffic fatalities in Canada (pedestrians = 13%; motorcyclists = 7%; and bicyclists = 2%) (Transport Canada, 2010). However, complete streets increase access and safety for all road users and modes of transportation. Implementing complete streets policies also help to accommodate people with disabilities, seniors and those of low socio-economic status who require affordable and safe transit options. (LaPlante & McCann, 2008; McCann, 2005).

Physical infrastructure recommended to aid in the development of complete streets includes:

- Improved pedestrian infrastructure,
 - Sidewalks
 - Landscaping features such as trees, planters, and ground covers
- Improved cycling infrastructure,
 - Bike lanes
 - Racks and parking areas
 - Wider shoulders

(Queen's Printer for Ontario, 2012b)

We recommend that Middlesex County consider inserting complete streets policy statements into the

Official Plan that promote the health and safety of County residents. Due to the transportation hierarchy leading to different roads being owned and operated by the federal government, provincial government, County, local municipalities, and public and private agencies, the focus of the recommendations will be for Middlesex County to encourage safety for all road users on County roads, as well as to guide municipalities to include complete streets within their Official Plans for local roads.

4.2.2. Cycling Infrastructure

Due to the large distances between settlement areas within the County, providing infrastructure for pedestrians is difficult; however, it is much more feasible to provide infrastructure for cyclists. The Ministry of Transportation's (2011a) Transit-Supportive Guidelines states "in small towns or rural settlement areas where the provision of sidewalks may not be feasible, consider providing a paved shoulder linking major destinations". Appropriate widths will vary according to engineering standards for road traffic volumes and speeds; however, the Ministry of Transportation (2011b) is currently reviewing their Bicycle Policy to better accommodate cycling within the provincial highway network. Part of this project is to update the Bike Path Design Guidelines that will provide engineering design standards to safely accommodate cyclists on all types of roads. Providing this infrastructure will thereby benefit the health of Middlesex County residents by providing safer places for cycling.

Economic Benefits

Providing safe cycling infrastructure on Middlesex County roads will also provide an avenue for tourism. Cycling has been gaining popularity in North America and several Ontario regions are implementing infrastructure to support this development (Welcome Cyclists, 2012). Other communities have found that cycling tourists offer more economic gain as they do not spend as much money on transportation, but are more likely to spend money along their route and at destinations (Pratte, 2006).

4.2.3. Pedestrian Infrastructure

Infrastructure related to pedestrians may not be as feasible between communities within Middlesex County, but the settlement areas provide excellent opportunities for AT. The Active Living (3.0) segment identified ways to remove infrastructural barriers to AT while this section will review infrastructural changes to remove safety concerns.

Safe road design for all users goes beyond complete streets and includes traffic calming interventions that can reduce the number and severity of collisions. Components of traffic calming include speed reduction, volume reduction, decreased number of points of conflict, and improved visibility.

Traffic calming structures include:

- Street trees and landscaping
- Raised cross walks
- Raised intersections
- Textured pavement
- Traffic circles
- Curb extensions at intersections
- Curb extensions midblock
- Speed humps
- Centre-island narrowing

(Fehr & Peers, 2012)

Roundabouts serve to decrease conflict points and speed, curb extensions improve pedestrian visibility and reduce the distances they have to travel on the road, and textured pavement and complex environments for drivers can result in more attention being paid to the roads. Motor-vehicle traffic volume will also decrease as active modes of travel increase.

4.3 Road Safety & the Official Plan

The encouraging aspect of injuries and deaths is that they are preventable. Using a multi-pronged approach is the most effective strategy to decrease injuries. Strategies for injury prevention include education (i.e. social media), enforcement (i.e. police) and engineering (i.e. road design and infrastructure). According to the Canadian Injury Prevention and Control Curriculum, engineering and enforcement are the most effective approaches when complimented by educational interventions (Alberta Centre for Injury Control & Research, 2003).

Middlesex County has been experiencing a decrease in the number of fatalities due to MVCs since 2008 with the help of the Collision Reduction Strategy, a partnership between Middlesex County, 3M, and the Ontario Provincial Police. We believe that the Official Plan can continue to support and enhance road safety in Middlesex County through policy statements that promote road infrastructure designed for all road users. The following recommendations demonstrate specific ways that the Official Plan can be enhanced to provide safe travel for all ages and abilities, both within and between the communities of Middlesex County.

4.6 Recommendations:

2.4.2.2 Transportation Network: General Policies

The County shall:

- b) Allocate resources to ensure the transportation system meets the need of **all** road users, **including drivers, cyclists and walkers**, and growth policies of the County
- g) Ensure that development proposals that are likely to generate significant traffic are accompanied by a transportation study addressing the potential impact on the transportation network and surrounding land uses. **Impacts for all road users should be considered and included in the transportation study.**
- h) Encourage the conversion of abandoned railway rights-of-way back to private ownership or to other appropriate public uses **such as multi-use trail.**
- l) **Encourage road design that is safe for all users including pedestrians and cyclists on the appropriate roadways.**
- m) **Develop a safe cycling county plan and encourage each municipality to consider developing a safe cycling plan.**
- n) **Consider traffic-calming measures when designing new roads or redesigning older roads.**

3.2.3 Settlement Areas: Local Official Plans

To achieve some consistency of approach, the County encourages local municipalities to include general development policies in their local official plan dealing with the following issues:

- j) **transportation for all road users (pedestrians, cyclists, and motorists);**

3.2.4.1 Urban Area: Permitted Uses

- h) **Transportation for all road users (pedestrians, cyclists, and motorists);**

3.2.5.1 Community Areas: Permitted Uses

- h) **Transportation for all road users (pedestrians, cyclists, and motorists);**

Consider a new Policy to:

Encourage local municipalities to regulate new subdivision developments so that they provide safe and supportive infrastructure for all modes of transportation.

5.0 The Local Food System & Food Access

5.1 Background Information

Middlesex County has an established and strong agricultural base with much food grown and produced locally. As an upper tier policy framework, the Middlesex County Official Plan can promote and support a healthy, sustainable local food system including issues related to food production, local processing, distribution, consumption, and disposal. A sustainable local food system and healthy food access for all residents can positively impact the economic, environmental, health, and social dimensions of the County. According to the Ontario Professional Planners Institute (2011), the local government has “a fundamental influence on food

systems and, in turn, on the health and sustainability of communities” (p.5). Middlesex County already shows a commitment to policies that support health as is seen in the current plan where it states that “local municipalities [are] to promote a high standard of urban design to create healthy communities which attract investment” (2.3.4). It is the goal of this section of the report to have revisions considered for the Middlesex County Official Plan that support and promote the health of the community through access for all residents to local, healthy foods and a sustainable local food system.

5.1.1. Healthy Food Access & Human Health

The top ten leading causes of death in Ontario between 2005 and 2007 were chronic diseases (i.e., heart disease, diabetes, high blood pressure, arthritis, cancers, and gallbladder disease) and accounted for about half of all deaths (Intellihealth Ontario, 2007). Between 2005 and 2007, 25.9% of deaths within Middlesex County were caused by ischemic heart disease and cerebrovascular disease, 5.8% of Middlesex-London residents reported having diabetes, and 17.2% reported high blood pressure (Intellihealth Ontario, 2007; Statistics Canada, 2009/10). Poor nutrition has been shown to lead to increased risk for chronic and infectious diseases, low birth weight among infants, and negative impacts on the growth and development of children (MLHU, 2011b). Higher intakes of vegetables and fruit are associated with lowering the incidence of chronic disease (Health Canada, 2008).

Poorer nutritional intake often leads to being overweight or obese, which has a strong link to increased risks of chronic disease (Ministry of Health Promotion, 2010). As was stated in section 3.1.2 of this report, rates of being overweight or obese within Middlesex-London are 46.7-60.4% among adults over 18 years of age. Obesity rates among children has been called an epidemic by the World Health Organization (WHO, 2012b), with worldwide obesity rates more than doubling since 1980. Although genetic and individual behaviours contribute to unhealthy weights, the social, cultural, physical, and economic environments, including the food environment, can also have an impact on human health and the risk of obesity (Canadian Institute for Health Information, 2006).

5.1.2. Food (In) Security

Households that are food secure have physical and/or economic access to sufficient, safe, nutritious, and culturally acceptable food that fulfills the dietary needs and food preferences for living an active and healthy life that promotes human dignity. Unfortunately, many households are living with food insecurity and related health problems.

In 2004, 29.1% of lower to middle income Canadian households and 48.3% of low income households reported food insecurity (Statistics Canada, 2004). Within Middlesex-London, nearly 8% of households in 2009/10, reported moderate or severe food insecurity and over 60% of residents reported consuming less than 5 servings of vegetables and fruit each day (Statistics Canada, 2009/10). Five servings is still below the Eating Well with Canada's Food Guide that recommends 7 to 10 daily servings of vegetables and fruit for teens and adults, depending on age and gender (Health Canada, 2007).

5.2 Local Study Results

In 2011, a focus group conducted by the Healthy Communities Partnership (MLHU, 2011a), identified gaps and needs related to Healthy Eating, as well as opportunities and recommendations for possible action. Using a participant prioritizing exercise, the top two recommendations for action were determined:

- 1) to advocate for policies at all levels that address healthy eating, including policies related to the food environment and improving healthy, local fresh food access;
- 2) to increase skill building opportunities including community kitchens, community gardens, and additional farmers' markets.

Specific discussions related to Middlesex County included extra land availability for community gardens, and greater use of foods from community gardens, particularly for farmers who pool farm resources.

5.3 Sustainable Local Food Systems

An environmentally sustainable local food system is one that is secure and resilient to change (i.e. climate change, rising energy prices, etc.), is accessible and affordable to all residents, energy efficient, promotes the local agricultural economy, promotes organic farming, among many other characteristics (Pothukuchi & Jufman, 1999). Sustainable practices could be considered related to soil quality, pest control, and nutrient management, among others (Ontario Professional Planners Institute, 2011). Supporting an environmentally sustainable local food system within Middlesex County would be beneficial by contributing to the vitality and economic strength of the County, supporting local farmers, conserving natural resources and the environment, shortening the distance food travels and that people travel to buy food thereby reducing the demand on transportation infrastructure and vehicle emissions, increasing access to locally grown and other healthy foods, and contributing to healthier eating choices and general health through good nutrition.

Farmers' Markets

Official Plans written through a food system lens can impact the accessibility and availability of healthy and affordable food for all residents. When residents have easy access to places where they can buy or grow fresh, healthy, and affordable foods they are more likely to meet their nutritional needs, have reduced incidence of chronic disease and need for treatment facilities, have lower levels of obesity, and are less dependent on public or private

transportation (Barnes, 2010; Enns et al., 2008; Xuereb & Desjardins, 2005).

The presence of food retailers, including neighbourhood markets and farmers' markets, can positively impact local economies, the environment, and help build and maintain a sense of community. Introducing farmers' markets in areas with poor access to healthy food (i.e., food deserts) may make a healthy food basket more affordable and increase the variety of vegetables and fruit available for purchase (Larsen & Gilliland, 2009).

Most, but not all, Middlesex County municipalities have policies that support the establishment of farmers' markets or have revised existing policies that impede their establishment. Municipalities could be further encouraged to:

- permit temporary farmers' markets in all land use designations, including designation of permanent sites for year round markets;
- provide zoning and financial incentives to attract food retailers to specific locations (Xuereb & Desjardins, 2005);
- require developers to secure a food retailer (if lacking) as a condition for approval of a new development (Frank & Raine, 2007); and
- promote urban agriculture.

Additional Forms of Access to Local Agriculture

Urban agriculture (i.e., growing, processing, and distributing food in or around a settlement area) provides an additional venue for residents to access fresh, nutritious, and locally grown food and encourages local food production and distribution. Edible landscaping and rooftop gardens can contribute to community beautification and produce additional healthy foods on public and private lands within settlement areas. Community gardens further provide opportunities for recreation, physical activity, skill development, community building, and cross cultural participation, as well as improve air quality (MLHU, 2011a).

5.4 Local Food Access & the Official Plan

There are numerous statements and policies in the current Official Plan that promote sustainable local food systems including: the preservation and protection of agricultural land; restricting fragmentation of agricultural land; permitting farm related commercial and industrial use of agricultural land to support local food processing and "value-added" farm based businesses; groundwater management and protection, land use designations; and the directing of residential and commercial

growth to urban areas. The Official Plan also supports affordable housing, which allows adequate access to resources for lower income residents and greater affordability for locally grown and healthy food products.

5.5 Recommendations

The following recommendations are based on the intent and purpose of the current Official Plan, focus group results, and other literature sources. Recommendations to the Official Plan include revisions and/or additions under the themes of sustainable agriculture techniques and best management practices, improving food access, and promoting urban agriculture.

The following recommendations are specific ways in which the previous information can be incorporated into the current Official Plan.

2.2.2.2 Agriculture: General Policies

Local municipalities are encouraged to include policies that promote the use of sustainable agricultural techniques and best management practices through their Official Plans.

2.3.6 Growth Management: Settlement Capability Study

- j) an assessment of the local food system, including access to healthy food**

3.2.3 Settlement Areas: Local Official Plans

- n) access to healthy, affordable food, including food retail access and green spaces providing opportunities for local food production**

3.2.4.1 Urban Areas: Permitted Uses

- i) Urban agriculture (e.g., community gardens, roof top gardens, edible landscaping, and fruit-bearing trees)**

3.2.5.1 Community Areas: Permitted Uses

- i) Urban agriculture (e.g., community gardens, roof top gardens, edible landscaping, and fruit-bearing trees)**

6.0 Municipal Alcohol Policy

6.1 Background Information

6.1.1 What is a Municipal Alcohol Policy?

A Municipal Alcohol Policy (MAP) is a written set of comprehensive guidelines that regulate the service of alcohol on municipally-owned property, including, but not limited to, arenas, banquet halls, museums, art galleries, and recreation facilities. A MAP is designed to influence consumption patterns that maximize social and economic benefits while minimizing alcohol-related harm and costs. Most municipalities provide recreational facilities for citizens to enjoy, but when alcohol is served on municipal property, problems can, and often do, occur. Potential problems include:

- drinking and driving
- injury and death
- underage drinking
- violence
- vandalism
- drinking to intoxication

(Centre for Addiction and Mental Health, 2003)

6.1.2 Development of MAPs

The development of MAPs began in the late 1970s within Ontario due to concerns regarding the number and degree of alcohol-related problems occurring at municipal facilities. Babor et al. (2003) identified

“policies that influence the availability of alcohol, the social circumstances of its use, and its retail price are likely to reduce the harm caused by alcohol in a society” (p. 7). MAPs have previously been proven to decrease the number of police interventions, public complaints, frequency of underage drinking, and fighting and vandalism at events held at municipally-owned establishments (Gliksman, Douglas, Rylett, & Narbonne-Fortin, 1995).

6.2 Recommendations

While MAPs are meant to be implemented by local municipalities, it is recommended that an overarching policy encouraging municipalities to implement a MAP within their local Official Plans be considered for addition to the Middlesex County Official Plan.

It is suggested that the following recommendation be included in the Detailed Land Use Policies section.

3.2.3 Local Official Plans as an additional expectation.

It is recommended that all municipalities in Middlesex County have and enforce a current Municipal Alcohol Policy.

7.0 Summary

The Five Year Official Plan Review for Middlesex County is an opportunity to revisit and review the County strategy, objectives, framework, and policies of the current Official Plan. Land use policy can have a positive impact on the health and well-being of Middlesex County residents by influencing the environments in which people live, work and play. Both the physical and built environments are important factors in determining the health of a community.

Specific recommendations have been made that address the following five topic areas (comprehensive list of recommendations located on page 20):

- Health Hazard Prevention and Management
- Active Living
- Road Safety
- Local Food System and Food Access
- Municipal Alcohol Policy

We respectfully submit these recommendations to the Middlesex County Council for consideration and possible inclusion in an amended County of Middlesex Official Plan.

References

- Active Canada 20/20. (2011). *About Active Canada 20/20*. Retrieved from <http://www.activecanada2020.ca/>
- Alberta Centre for Injury Control & Research. (2003) *Preventing Injuries in Alberta: a resource for decision makers*. Retrieved from http://acicr.ca/Upload/acicr/acicr-documents-cabinet/decision-makers-resource/ACICR_DecisionMakersResource.pdf
- Babor, T. F., Caestano, R., Cassweel, S., Edwards, G., Giesbrecht, N., Graham, K., ... Rossow, I. (2003). *Alcohol: No ordinary commodity - research and public policy*. Oxford: Oxford University Press Inc.
- Barnes, M. (2010). *Access to healthy, affordable food*. In Solving the problem of childhood obesity within a generation, report to the President. White House task force on childhood obesity.
- Canada. National Collaborating Centre for Healthy Public Policy. (2011). *Urban Traffic Calming and Health: A Literature Review*.
- Canadian Institute for Health Information. (2006). *Improving the health of Canadians: Promoting healthy weights*. Ottawa, ON: Author.
- Canadian Society for Exercise Physiology (CSEP) (2011). *Canadian Physical Activity Guidelines and Canadian Sedentary Behaviour Guidelines*. Retrieved from <http://www.csep.ca/english/view.asp?x=804>
- Centre for Addiction and Mental Health (2003). *The Municipal Alcohol Policy Guide: a practical resource for successfully managing drinking in recreational settings*. Toronto: Marketing and Sales Services Centre for Addiction and Mental Health.
- Colley, R.C., Garriguet, D., Janssen, I., Craig, C.L., Clarke, J., & Tremblay, M.S. (2011a). Physical activity of Canadian adults: accelerometer results from the 2007 to 2009 *Canadian Health Measures Survey*. *Health Reports (Statistics Canada, Catalogue 82-003)* 22(1), 1-8. Retrieved from <http://www.statcan.gc.ca/pub/82-003-x/2011001/article/11396-eng.htm>
- Colley, R.C., Garriguet, D., Janssen, I., Craig, C.L., Clarke, J., & Tremblay, M.S. (2011b). Physical activity of Canadian children and youth: accelerometer results from the 2007 to 2009. *Canadian Health Measures Survey*. *Health Reports (Statistics Canada, Catalogue 82-003)* 22(1), 1-9. Retrieved from <http://www.statcan.gc.ca/pub/82-003-x/2011001/article/11397-eng.htm>
- Cooper, A. R., Page, A. S., Foster, L.J., & Qahwaji, D. (2003). Commuting to school: Are children who walk more physically active? *American Journal of Preventive Medicine*, 25(4), 273-276. doi:10.1016/S0749-3797(03)00205-8
- Dallaire, C., Gibbs, L. B., Lemyre, L., & Krewski, D. (2012). The gap between knowing and doing: How Canadians understand physical activity as a health risk management strategy. *Sociology of Sport Journal*, 29, 325-347.
- Dannenberg, A. L., Jackson, R. J., Frumkin, H., Schieber, R.A., Pratt, M., Kochtitzky, C., Tilson, H.H. The Impact of Community Design and Land-Use Choices on Public Health: A Scientific Research Agenda. *American Journal of Public Health*, 9, 1500-1508.
- Davison, K., Werder, J., & Lawson, C. (2008). Children's active commuting to school: Current knowledge and future directions. *Prevention of Chronic Disease*, 5(3), 1-11.
- Enns, J. et al., (2008). *A seat at the table: Resource guide for local governments to promote food secure communities*. British Columbia: Provincial Health Services Authority.
- Fehr & Peers. (2012). *Traffic Calming*. Retrieved from <http://trafficalming.fehrandpeers.net/measures/speed-humps/>
- Frank, L.D., & Raine, K. (2007). *Creating a healthier built environment in British Columbia*. British Columbia: Provincial Health Services Authority.

- Gliksman, L., Douglas, R. R., Rylett, M., Narbonne-Fortin, C. (1995). Reducing problems through municipal alcohol policies: the Canadian experience in Ontario. *Drug: Education, Prevention and Policy*, 2(2), 105-118.
- Gorber, S.C., Tremblay, M., Moher, D., & Gorber, B. (2007). A comparison of direct vs. self-report measures for assessing height, weight and body mass index: A systematic review. *Obesity Reviews*, 8(4), 307-26.
- Health Canada. (2007). *Eating well with Canada's food guide*. Ottawa, ON: Author.
- Health Canada. (2008). *Vegetables and fruit*. Ottawa, ON: Author. Retrieved from <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/choose-choix/fruit/index-eng.php>.
- Healthy Communities Partnership. (March, 2011). *Community Picture*. Middlesex-London: Community Picture.
- Heart and Stroke Foundation of Canada. (2007). *Heart and Stroke Foundation of Canada – Position Statement, The Built Environment, Physical Activity, Heart Disease and Stroke*. Heart and Stroke Foundation of Canada.
- Heart and Stroke Foundation of Canada (2012). *Statistics*. Available online at <http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.3483991/k.34A8/Statistics.htm>, accessed October 20, 2012.
- Heart and Stroke Foundation of Canada (2011). *Position Statement: Physical Activity, Heart Disease and Stroke*. Available online at <http://www.heartandstroke.com/atf/cf/%7B99452D8B-E7F1-4BD6-A57D-B136CE6C95BF%7D/PhysicalActivity4pager.pdf>, accessed October 20, 2012.
- Kerr, J., Rosenberg, D., Sallis, J. F., Saelens, B. E., Frank, L. D., & Conway, T. L. (2006). Active commuting to school: Associations with environment and parental concerns. *Med. Sci. Sports Exerc.*, 38(4), 787-794. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/16679998>
- LaPlante, J. and McCann, B. (2008). *Complete Streets: We can get there from here*. Retrieved from www.completestreets.org/webdocs/resources/cs-ite-may08.pdf
- Larsen, K., & Gilliland, J. (2009). A farmers' market in a food desert: Evaluating impacts on the price and availability of healthy food. *Health & Place*, 15(4), 1158-1162.
- Levine-Coley R, Kuo F, Sullivan W. (2007). Where does the community grow? The social context created by nature in urban public housing. *Environment and Behavior*, 29(4):468-494.
- Leyden, K. M. (2003). Social capital and the built environment: the importance of walkable neighborhoods. *American Journal of Public Health*, 93, 1546-1551.
- McCann, B. (2005). *Complete the Streets! American Planning Association, May 2005*. Retrieved from <http://www.planning.org/planning/2005/may/complete.htm?print=tr>
- McCurdy, L., Winterbottom, K., Mehta, S., & Roberts, J. (2010). Using nature and outdoor activity to improve children's health. *Current Problems in Pediatric and Adolescent Health Care*, 5, 102-117.
- Middlesex County. (2006). *Middlesex County Official Plan*.
- Middlesex-London Health Unit (MLHU). (September, 2009). *Leading Causes of Unintentional Injury: a statistical profile of Middlesex-London*. London, Ontario: Crosse, E. Retrieved from <http://healthunit.com/articlesPDF/15210.pdf>
- Middlesex-London Health Unit [MLHU] (2011a). *Healthy Communities Partnership Middlesex-London Community Picture*. London, Ontario: Albanese, M. L., Dyck, K., Lagerlund, M., McCall, B., & Tomlinson, J.
- Middlesex-London Health Unit. (2011b). *Nutrition facts: The weekly cost of the nutritious food basket London and Middlesex County 2011*. London, ON: Author.
- Middlesex-London Health Unit [MLHU]. (2012a). *Middlesex-London Community Health Status Resource. Figure 7.5: Overweight or obese according to their body mass index category (by age group)*. Retrieved from

<http://www.communityhealthstats.healthunit.com/chart/healthy-weights/figure-75-overweight-or-obese-according-their-body-mass-index-category-age>

- Middlesex-London Health Unit [MLHU]. (2012b). *Middlesex-London Community Health Status Resource. Air Quality*. Retrieved from <http://www.communityhealthstats.healthunit.com/indicator/environmental-health/air-quality>
- Middlesex-London Health Unit (MLHU). (2012c). *Middlesex-London Community Health Status Resource: Figure 5.4: hospitalizations and death for leading causes of unintentional injury*. Retrieved from <http://communityhealthstats.healthunit.com/chart/leading-causes-unintentional-injury/figure-54-hospitalizations-and-death-leading-causes>
- Ministry of Health and Long-term Care. (October, 2008). *Identification, Investigation and Management of Health Hazards Protocol*. Retrieved from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/protocols/identification_health_hazards.pdf
- Ministry of health and Long Term Care. 2008. *Ontario Public health Standards, 2008*. (ISBN 978-1-4249-7576-1). Toronto, Ontario. Queens Printer for Ontario, 2008.
- Ministry of Health Promotion. (2010). *Healthy eating, physical activity and healthy weights guidance document*. Queen's Printer for Ontario.
- Ministry of Municipal Affairs and Housing. (2008). *Planning By Design: a healthy communities handbook (2009)*. Retrieved from <http://www.mah.gov.on.ca/Page6737.aspx>
- Ministry of Municipal Affairs and Housing. (2005). *Provincial Policy Statement*. (ISBN 0-7794-7485-6). Toronto, Ontario. Queens Printer for Ontario, 2005
- Ministry of Transportation. (October 13, 2011). *Transit-Supportive Guidelines*. Retrieved from <http://www.mto.gov.on.ca/english/transit/supportive-guideline/creating-complete-streets.shtml>
- Ministry of Transportation. (August 19, 2011b). *Southern Highways Program 2011-2015*. Retrieved from <http://www.mto.gov.on.ca/english/pubs/highway-construction/southern-highway-2011/constant-innovation.shtml>
- Intellihealth Ontario. (2007). *Ontario mortality data 2005 to 2007*. Ontario Ministry of Health and Long-Term Care.
- Ontario Healthy Communities Coalition (OHCC). (2012). *What makes a Healthy Community?* Retrieved from <http://www.ohcc-ccso.ca/en/what-makes-a-healthy-community>
- Ontario Injury Prevention Resource Centre. (March 13, 2012). *Ontario Injury Data Report*. Retrieved from http://www.oninjuryresources.ca/publications/ontario_injury_data_report/ontario_injury_data_report.html
- Ontario Ministry of Health and Long-Term Care (MOHLTC). (2008). *Ontario Public Health Standards*. Retrieved October 30, 2012, from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/index.html
- Ontario Public Health Standards. (2008). Retrieved from http://www.health.gov.on.ca/english/providers/program/pubhealth/oph_standards/ophs/progstds/pdfs/ophs_2008.pdf
- Ontario Professional Planners Institute. (2011). *Healthy communities and planning for food: Planning for food systems in Ontario*. Toronto, ON: Author.
- Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values*, 16(2), 213-224.
- Pratte, Jeff. (2006). Bicycle tourism: on the trail to economic development. *Prairie Perspectives: Geographical Essays*, 9(1), 62-84.

- Public Health Agency of Canada. (2011a). *Supportive Environments for Physical Activity: How the Built Environment Affects Our Health*. Retrieved October 30, 2012, from <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/be-eb-eng.php>
- Public Health Agency of Canada [PHAC]. (January 20, 2011a). *Benefits of Physical Activity*. Retrieved from <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/02paap-eng.php>
- Public Health Agency of Canada [PHAC]. (June 23, 2011b). *Obesity in Canada*. Retrieved from <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/oic-oac/ack-rem-eng.php>
- Queen's Printer for Ontario. (July 26, 2012a). *Office of the Chief Coroner – Publications & Reports: Cycling Death Review*. Retrieved from http://www.mcscs.jus.gov.on.ca/english/DeathInvestigations/office_coroner/PublicationsandReports/CyclingDeathReview/DI_Cycling_Death_Review.html
- Queen's Printer for Ontario. (September 20, 2012b). *Office of the Chief Coroner – Pedestrian Death Review*. Retrieved from http://www.mcscs.jus.gov.on.ca/english/DeathInvestigations/office_coroner/PublicationsandReports/PedestrianDeathReview/DI_Pedestrian_Death_Review.html
- Rodriguez, A., & Vogt, C. A. (2009). Demographic, environmental, access, and attitude factors that influence walking to school by elementary school-aged children. *Journal of School Health, 79*(6), 255-261. doi:10.1111/j.1746-1561.2009.00407.x
- Schwartz, J. (2004). Air pollution and children's health. *Pediatrics, 113*(S3), 1037-1043. Retrieved from http://pediatrics.aappublications.org/content/113/Supplement_3/1037.short
- Service Ontario. (1990). *Health Protection and Promotion Act*. Retrieved October 30, 2012, from http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90h07_e.htm
- Smart Growth Canada. (2010). *National Complete Streets Coalition: What are complete streets?* Retrieved from <http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/complete-streets-faq>
- Statistics Canada. (2004). *Canadian community health survey, share file*. Ontario Ministry of Health and Long-Term Care.
- Statistics Canada. (2009/10). *Canadian community health survey, share file*. Ontario Ministry of Health and Long-Term Care.
- Taylor AF, Wiley A, Kuo FE, Sullivan SC. (2008) Growing up in the inner city: green spaces as places to grow. *Environment and Behavior, 30*(1):3-27.
- Tirado, J. New Urbanism (2012). *Creating Livable and Sustainable Communities*. <http://www.newurbanism.org/newurbanism/smartgrowth.html>
- Transport Canada. (2010). *A quick look at fatally injured vulnerable road users [Fact Sheet]*. Road Safety and Motor-vehicle Regulation Directorate. Retrieved from <http://www.tc.gc.ca/eng/roadsafety/tp-tp2436-rs201002-1067.htm>
- Timperio, A., Crawford, D., Telford, A., & Salmon, J. (2004). Perceptions about the local neighborhood and walking and cycling among children. *Preventive Medicine, 38*(1), 39-47.
- Tucker, P., Irwin, J. D., Gilliland, J. & He, M. (2008). Adolescents' perspectives of home, school and neighborhood environmental influences on physical activity and dietary behaviors. *Children Youth and Environments, 18*(2), 12-35.
- Tucker, P., Irwin, J. D., Gilliland, J., He, M., Larsen, K., & Hess, P. (2009). Environmental influences on physical activity levels in youth. *Health & Place, 15*, 357-363. doi:10.1016/j.healthplace.2008.07.001
- Tucker, P., Gilliland, J., & Irwin, J. D. (2007). Splashpads, swings, and shade: Parents' preferences of neighbourhood parks. *Canadian Journal of Public Health, 98*(3), 198-202.

- Welcome Cyclists. (2012). *Explore Ontario by bike. Stop at bicycle friendly places to eat, visit and sleep*. Retrieved from <http://www.welcomecyclists.ca/>
- World Health Organization (WHO) (2011a). *Physical activity*. Available online at <http://www.who.int/dietphysicalactivity/pa/en/index.html>, accessed July 5, 2011.
- World Health Organization (WHO) (2011b). *Obesity*. Available online at <http://www.who.int/topics/obesity/en/index.html>, accessed July 5, 2011.
- World Health Organization (WHO) (2011c). *Myths about physical activity*. Available online at http://www.who.int/dietphysicalactivity/factsheet_myths/en/, accessed July 5, 2011.
- World Health Organization [WHO]. (2012). *Social determinants of health*. Retrieved from http://www.who.int/social_determinants/en/
- World Health Organization (WHO). (2012b). *Childhood overweight and obesity*. Retrieved from <http://www.who.int/dietphysicalactivity/childhood/en/>
- World Health Organization (WHO). (2012c). *Childhood overweight and obesity*. Retrieved from <http://www.who.int/dietphysicalactivity/childhood/en/>
- Xuereb, M., & Desjardins, E. (2005). *Towards a healthy community food system for Waterloo Region*. Interim report. Health Determinants, Planning & Evaluation, Region of Waterloo Public Health.

Compiled Recommendations

2.2.2.2 Agriculture: General Policies

Local municipalities are encouraged to include policies that promote the use of sustainable agricultural techniques and best management practices through their Official Plans.

2.2.3.3 Aggregate Resources: New Pits and Quarries

In considering applications to permit new pits and quarries, local municipalities shall be satisfied that the following are addressed:

e) the impact on any existing or potential, **private and/or** municipal water supply resource areas.

2.2.4.5 Petroleum Resources: Hazard Policies

Development on, abutting or adjacent to lands affected by former mineral resource operations will be permitted only if rehabilitation measures to address and mitigate known hazards are underway or have been completed **to the satisfaction of the Middlesex-London Health Unit.**

2.3.3 Growth Management: Forecasting Growth

Local municipalities should direct future growth away from incompatible land uses that may pose a health hazard to adjacent residents.

2.3.4 Growth Management: Economic Development

Through the policies of this plan the County will;

d) encourage local municipalities to promote a high standard of **aesthetically pleasing** urban design to create healthy, **vibrant** communities which attract investment;

f) support the retention **and creation of accessible** ~~of~~ educational, health, cultural, **recreational**, and religious facilities to ensure that the County's communities are provided with those opportunities that facilitate growth **and optimize health** and well-being. Such facilities provide a vital role in small communities and add economic vitality and a sense of place **and community** where quality of life is considered a major attraction for growth, ~~and~~ development, **and sustainability.**

2.3.5 Growth Management: General Policies

The policies of this Plan are intended to promote communities that are diverse, **healthy**, and have a sense of place **and community.**

2.3.6 Growth Management: Settlement Capability Study

The Settlement Capability Study shall be completed to the satisfaction of the County in consultation with the Province and shall include the following:

d) an identification of any existing restrictions to future development; **including any potential hazards.**

i) an assessment of active transport infrastructure needs, including existing infrastructures and their condition.

j) an assessment of the local food system, including access to healthy food

2.3.7.3 Housing Policies: Intensification and Redevelopment

The County and local municipalities shall support opportunities to increase the supply of housing through intensification and redevelopment in appropriate locations, taking into account municipal services, transportation and environmental **and human health** considerations.

County Council shall encourage residential intensification and redevelopment in areas designated for residential use which comply with the following criteria;

- **current land and/or surrounding land uses do not pose an adverse impact on human health**

2.4.2.1 Transportation Network: Transportation Hierarchy

c) Based on the volumes, types, and nature of the traffic, municipal roads may be classified as arterial, collector or local roads in the local official plan. **Local Official Plans should also include policies that encourage and support the development and maintenance of road design that includes features that support safe active transportation for all users.**

2.4.2.2 Transportation Network: General Policies

The County shall:

b) Allocate resources to ensure the transportation system meets the need of **all** road users, **including drivers, cyclists and walkers**, and growth policies of the County

e) Encourage safe, convenient and visually appealing **pedestrian infrastructure and facilities for active modes of transportation (i.e. walking and cycling) within Settlement Areas;**

g) Ensure that development proposals that are likely to generate significant traffic are accompanied by a transportation study addressing the potential impact on the transportation network and surrounding land uses. **Impacts for all road users should be considered and included in the transportation study.**

h) Encourage the conversion of abandoned railway rights-of-way back to private ownership or to other appropriate public uses **such as multi-use trail.**

k) Provide adequate buffers from provincial highways/County Roads and residentially designated areas.

l) Encourage road design that is safe for all users including pedestrians and cyclists on the appropriate roadways.

m) Develop a safe cycling county plan and encourage each municipality to consider developing a safe cycling plan.

n) Consider traffic-calming measures when designing new roads or redesigning older roads.

2.4.4.1 Waste Management: General Policies

c) Require development proposals within 500m of active or closed landfills to be accompanied by a study. **The study shall address buffers to residential areas and potential human health risks, as well as nuisance odour.**

3.2.1 Settlement Areas: Introduction

The Growth Management policies of this Plan, presented in Section 2.3, direct a significant portion of the County's future Growth to Settlement Areas in order to:

- **protect human health**

3.2.3 Settlement Areas: Local Official Plans

To achieve some consistency of approach, the County encourages local municipalities to include general development policies in their local official plan dealing with the following issues:

j) transportation **for all road users (pedestrians, cyclists, and motorists);**

m) community human health protection

n) access to healthy, affordable food, including food retail access and green spaces providing opportunities for local food production

3.2.4.1 Urban Areas: Permitted Uses

The local official plans shall provide detailed land use policies for the uses permitted in Urban Areas. These uses shall include:

h) Transportation for all road users (pedestrians, cyclists, and motorists);

i) Urban agriculture (e.g., community gardens, roof top gardens, edible landscaping, and fruit-bearing trees)

3.2.5.1 Community Areas: Permitted Uses

h) Transportation for all road users (pedestrians, cyclists, and motorists);

i) Urban agriculture (e.g., community gardens, roof top gardens, edible landscaping, and fruit-bearing trees)

3.3.5 Agricultural Areas: Farm Related Commercial and Industrial Uses

Commercial and industrial development directly related to, and supportive of, agricultural operations, including feed mills, farm implement dealers, grain drying, abattoirs, kennels, stables and veterinary clinics may be permitted providing the following policies are considered:

h) commercial/industrial use should not pose an unacceptable adverse risk to adjacent residential areas.

4.2 Amendments to the County Plan and Monitoring

When submitting an application to amend the County Official Plan, the applicant shall provide supporting documentation, to the satisfaction of County Council, which adequately addresses the following:

f) the proposed impact on human health

New recommendations:

- **Consider a Nonspecific Policy section addition for compatible land uses:**
To adequately assess new industrial facilities, as well as expanding residential settlement areas, incorporating established guidelines for separation distances to ensure public health protection and industrial success.
- **Adoption of a Physical Activity Charter within Middlesex County, and to encourage the adoption and implementation of the Charter among individual Municipalities to help guide and influence policies that promote physical activity.**
- **Encourage local municipalities to regulate new subdivision developments so that they provide safe and supportive infrastructure for all modes of transportation.**
- **It is recommended that all municipalities in Middlesex County have and enforce a current Municipal Alcohol Policy.**